



The Journal  
OF THE  
American Medical Association

EDITED FOR THE ASSOCIATION UNDER THE DIRECTION OF THE BOARD OF TRUSTEES BY

MORRIS FISHBEIN, M D

VOLUME 126

SEPTEMBER—DECEMBER 1944

AMERICAN MEDICAL ASSOCIATION CHICAGO 10 1944



# OFFICERS OF THE AMERICAN MEDICAL ASSOCIATION—1944-1945

HEADQUARTERS OF THE ASSOCIATION 535 N DEARBORN ST, CHICAGO

## GENERAL OFFICERS

PRESIDENT—HERMAN L KRFTSCHNER - - - - - Chicago  
 PRESIDENT ELECT—ROGER I LEE - - - - - Boston  
 VICE PRESIDENT—STANLEY J SEEGER - - - - - Texarkana, Tex  
 SECRETARY AND GENERAL MANAGER—OLIN WEST - - - - - Chicago  
 TREASURER—J J MOORE - - - - - Chicago  
 SPEAKER HOUSE OF DELEGATES—H H SHOULDERS - - - - - Nashville, Tenn  
 VICE SPEAKER, HOUSE OF DELEGATES—R W FOUTS - - - - - Omaha  
 EDITOR—MORRIS FISHBEIN - - - - - Chicago  
 BUSINESS MANAGER—WILL C BRAUN - - - - - Chicago

### BOARD OF TRUSTEES

Ralph A Genton Portland Ore. 1945  
 James R Blo s Chairman  
 Huntington W Va 1945  
 Charles W Roberts Atlanta Ga 1946  
 Edward M Pallette\* Los Angeles 1947  
 R L Sensenich South Bend Ind 1947  
 Ernest E Irons Secretary Chicago 1948  
 William T Braasch Rochester Minn 1948  
 Louis H Bauer Hempstead N Y 1949  
 E L Henderson Louisville Ky 1949

### JUDICIAL COUNCIL

G E Hollanshee Cleveland 1945  
 Walter F Donaldson Pittsburgh 1946  
 Lloyd Noland Fairfield Ala 1947  
 John H O Sher Spokane Wash 1948  
 Edward R Cunniffe Chairman New York 1949  
 Olin West Secretary ex officio Chicago

### COUNCIL ON MEDICAL EDUCATION AND HOSPITALS

H G Weiskotten Syracuse N Y 1945  
 R L Wilbur Chairman  
 Stanford University Calif 1946  
 John H Musser New Orleans 1947  
 Harvey B Stone Baltimore 1948  
 Reginald Fitz Boston 1949  
 Russell I Haden Cleveland 1950  
 Charles Gordon Heyd New York 1951  
 Victor Johnson Secretary Chicago

### COUNCIL ON SCIENTIFIC ASSEMBLY

A A Walker Chairman  
 Birmingham Ala 1945  
 Frederick A Collier Ann Arbor Mich 1946  
 Clyde L Cummer Cleveland 1947  
 Edward I Portz Philadelphia 1948  
 Charles H Pfister Chicago 1949

### AND EX OFFICIO

The President Elect the Editor and the Secretary of the Association

### COUNCIL ON MEDICAL SERVICE AND PUBLIC RELATIONS

A W Adson Rochester Minn 1945  
 W S Leathers Nashville Tenn 1945  
 E J McCormick Toledo Ohio 1946  
 Thomas A McGoldrick Brooklyn 1946  
 James R McVay Kansas City Mo 1947  
 John H Fitzgibbon Chairman  
 Portland Ore 1947  
 James E Paulin Atlanta Ga  
 Herman L Kretschmer Chicago  
 Louis H Bruer Hempstead N Y  
 Olin West Chicago  
 \* Deceased

### COUNCIL ON PHARMACY AND CHEMISTRY (Standing Committee of Board of Trustees)

Morris Fishbein Chicago 1945  
 G W McCoy New Orleans 1945  
 Perrin H Long Baltimore 1945  
 Elmer M Nelson Washington D C 1945  
 Torald Sollmann Chairman Cleveland 1946  
 E M Landis Boston 1946  
 E L Sevringhaus Madison Wis 1946  
 E M K Geiling Chicago 1947  
 W W Palmer New York 1947  
 S W Clausen Rochester N Y 1947  
 R P Herwick Washington D C 1948  
 C S Keefer Boston 1948  
 H N Cole Cleveland 1948  
 Stuart Mudd Philadelphia 1948  
 James P Leake Washington D C 1949  
 David P Barr New York 1949  
 W Barry Wood Jr St Louis 1949  
 Austin E Smith Secretary Chicago

### COUNCIL ON PHYSICAL MEDICINE

(Standing Committee of Board of Trustees)  
 A U Desjardins Rochester Minn 1945  
 H B Williams New York 1945  
 Frank H Krusen Rochester Minn 1945  
 Anthony C Cipollaro New York 1946  
 M A Bowie Bryn Mawr Pa 1946  
 George M Piersol Philadelphia 1946  
 W E Garrey Nashville Tenn 1947  
 W W Coblentz Washington D C 1947  
 John S Coulter Chairman Chicago 1947  
 Eben J Carey Milwaukee 1948  
 Frank R Ober Boston 1948  
 Frank D Dickson Kansas City Mo 1948  
 Morris Fishbein ex officio Chicago  
 Howard A Carter Secretary Chicago

### COUNCIL ON FOODS AND NUTRITION

(Standing Committee of Board of Trustees)  
 Irvine McQuarrie Minneapolis 1945  
 Morris Fishbein Chicago 1945  
 R M Wilder Rochester Minn 1946  
 Howard B Lewis Ann Arbor Mich 1946  
 J S McLester Chairman  
 Birmingham Ala 1946  
 Philip C Jeans Iowa City 1947  
 C A Elvehjem Madison Wis 1947  
 Lydia J Roberts Chicago 1948  
 George R Cowgill New Haven Conn 1948

C S Ladd Washington D C 1949  
 John B Youmans Nashville Tenn 1949  
 George K Anderson Secretary Chicago

### COUNCIL ON INDUSTRIAL HEALTH

(Standing Committee of Board of Trustees)  
 Leroy U Gardner Saranac Lake N Y 1945  
 A J Lanza New York 1945  
 C D Selby Detroit 1945  
 Warren F Draper Washington D C 1946  
 Raymond Hussey Baltimore 1946  
 Henry H Kessler Newark N J 1946  
 J D Bristol New York 1947  
 Philip Drinker Boston 1947  
 Stanley J Seeger Chairman  
 Texarkana Texas 1947  
 Harvey Bartle Philadelphia 1948  
 W A Sawyer Rochester N Y 1948  
 James S Simmons Washington D C 1948  
 C M Peterson Secretary Chicago

### COMMITTEE ON SCIENTIFIC EXHIBIT

E L Henderson Chairman Louisville Ky  
 Ralph A Genton Portland Ore  
 C W Roberts Atlanta Ga  
 Thomas G Hull Director Chicago

### ADVISORY COMMITTEE

George Blumer Pasadena Calif  
 Paul I Hanzlik San Francisco  
 Ludwig Hektoen Chicago  
 Urban Macs New Orleans  
 Eben J Carey Milwaukee  
 James P Lerke Washington D C

### BUREAU OF LEGAL MEDICINE AND LEGISLATION

J W Holloway Jr Director Chicago

### BUREAU OF HEALTH EDUCATION

W W Bauer, Director Chicago

### BUREAU OF INVESTIGATION

Paul C Barton Director Chicago

### BUREAU OF MEDICAL ECONOMICS

R G Leland Director Chicago

### LABORATORY

Albert E Sidwell Jr Director Chicago

### LIBRARY

Marjorie Hutchins Moore Librarian Chicago

## SECTION OFFICERS

PRACTICE OF MEDICINE—Chairman Wilham D Stroud Philadelphia Vice Chairman W O Thompson Chicago Secretary Cecil J Wat on 412 Delaware St S F Minneapolis

SURGERY—GENERAL AND ABDOMINAL—Chairman Daniel C Elin Atlanta Ga Vice Chairman William D Andrus New York Secretary Alton Ochsner 1430 Tulane Ave New Orleans

OBSTETRICS AND GYNECOLOGY—Chairman Philip F Williams Philadelphia Vice Chairman Francis B Carter Durham N C Secretary William I Menckert 2211 Oak Lawn Dallas Texas

OPHTHALMOLOGY—Chairman Frederick C Cordes San Francisco Vice Chairman Grady E Clay Atlanta Ga Secretary Robert J Masters 23 East Ohio St Indianapolis

ENTOMOLOGY AND RHINOLOGY—Chairman Louis H Clerf Philadelphia Vice Chairman Henry B Orton Newark N J Secretary Fletcher D Woodward 102 E Market St Charlottesville Va

PEDIATRICS—Chairman John Akman Rochester N Y Vice Chairman Henry G Poncher Chicago Secretary Gilbert J Levy 188 S Bellevue Blvd Memphis Tenn

EXPERIMENTAL MEDICINE AND THERAPEUTICS—Chairman Edgar A Allen Rochester Minn Vice Chairman Carl A Dragstedt Chicago Secretary Dwight L Wilbur 237 14th Ave San Francisco

PATHOLOGY AND PHYSIOLOGY—Chairman Virgil H Moon Philadelphia Vice Chairman J J Moore Chicago Secretary Frank W Hagan 2799 West Grand Ave Detroit

NERVOUS AND MENTAL DISEASES—Chairman Percival Bailey Chicago Vice Chairman H Houston Merritt Boston Secretary R P Mackay 8 S Michigan Blvd Chicago

DERMATOLOGY AND SYPHILOLOGY—Chairman Clyde L Cummer Cleveland Vice Chairman Dudley C Smith Charlottesville Va Secretary Nelson P Anderson 2007 Wilshire Blvd Los Angeles

PREVENTIVE AND INDUSTRIAL MEDICINE AND PUBLIC HEALTH—Chairman E L Stebbins New York Vice Chairman C O Sappington Chicago Secretary W A Sawyer 343 State Street Rochester N Y

UROLOGY—Chairman Arthur D Minger Lincoln Neb Vice Chairman Lloyd G Lewis Washington D C Secretary Grayson L Carroll 539 N Grand Blvd St Louis

ORTHOPEDIC SURGERY—Chairman Theodore A Willis Cleveland Vice Chairman Francis M McKeever Los Angeles Secretary J Warren White 206 E North St Greenville S C

GASTROENTEROLOGY AND PROCTOLOGY—Chairman J Arnold Barger Rochester Minn Vice Chairman Martin S Kleckner Allentown Pa Secretary Sara M Jordan 605 Commonwealth Ave Boston

RADIOLOGY—Chairman Edwin C Ernst St Louis Vice Chairman Bernard P Widmann Philadelphia Secretary U V Portmann 2020 E 93d St Cleveland

ANESTHESIOLOGY—Chairman An el M Came, New Orleans Vice Chairman Harold C Kelley New York Secretary John S Lundy 102 Second Ave SW Rochester Minn

# The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL 126, No 1

CHICAGO, ILLINOIS  
COPYRIGHT 1944 BY AMERICAN MEDICAL ASSOCIATION

SEPTEMBER 2, 1944

## BLOOD LOSS IN SURGICAL OPERATIONS

CHAIRMAN'S ADDRESS

FREDERICK A COLLER, MD

CLARENCE E CROOK, MD

AND

VIVIAN IOB, PH D

ANN ARBOR, MICH

The amount of blood lost during surgical operations of various types has been measured and reported by a number of observers. The facts disclosed by these observations have not been generally recognized, nor has their practical importance been sufficiently emphasized. In order to bring attention to this technical problem, the literature on it has been reviewed and further studies have been made as are here reported. Shock appearing during and after operation is still the apprehension of the surgeon and a menace to the patient. During the past three years an enormous amount of investigation on the subject of shock has added materially to our knowledge of it. One fact however, remains clear. There is no single reliable test or clinical sign of impending shock, especially in anesthetic and postanesthetic states. By the time shock is recognized as such it is well established. Our ability to treat shock has improved, but it is far from satisfactory. The earlier the treatment is instituted the better the results, and if its advent is anticipated it may be prevented far easier than it may be cured. Though there are no positive early tests of impending shock, there is a large background of clinical observation from which to deduce that shock will appear under certain circumstances—burns involving 20 per cent or more of the body surface, severe dehydration, multiple fractures and wounds, crushing injuries, exposure to cold, air or immersion in cold water, and extensive blood loss. It is well known that shock develops more readily with a given injury if there exists malnutrition or starvation anemia, dehydration, physical or mental exhaustion chronic illness or prolonged bed rest. With these facts available one should be able to anticipate and usually prevent shock in the surgery in civilian hospitals.

In 1924 Gatch and Little<sup>1</sup> reported the first study of blood loss during some of the more common operations in general surgery in which accurate measurements of the losses were made. They pointed out that the amount of blood lost in the ordinary laparotomy is

not great but that in operations involving extensive dissection the loss may be excessive. They concluded that a patient in fairly good physical condition could lose from 600 to 700 cc of blood without any apparent harmful effect on the postoperative course. Likewise an adult in good health does not manifest any serious effect from hemorrhage until the amount of blood lost is between 800 and 1,000 cc. Alexander Blain<sup>2</sup> in 1929 in commenting on his experience with 3,000 transfusions, stated that the amount of blood lost at operation is often several times greater than that estimated by the surgeon. He urged the preoperative correction of anemia and the immediate replacement of blood lost during operation and condemned delay in giving blood transfusions until after shock had developed. Coller and Maddock<sup>3</sup> in 1932 measured blood loss during some of the ordinary operations and concluded that the amount of blood lost is always greater than the surgeon estimates. Windfeld<sup>4</sup> in 1937 made direct measurements of blood loss during operations and concluded that the loss is often far greater than supposed, so that without appearing dangerous it may reduce the volume of the circulating blood considerably. Determination of hemoglobin concentrations before and after operation did not give quantitative information regarding the amount of blood lost. Pilcher and Sheard<sup>5</sup> in 1937 estimated the blood loss by a photometric method and found that the average loss from prostatic resections was 479 cc. This finding stimulated efforts to secure better hemostasis, and in a second series studied following alterations in technique the average loss was reduced to 291 cc. A group of 49 general surgical cases was studied for comparison. Hubly<sup>6</sup> in 1937 used this method to determine the hemostatic effect of congo red. White, Whitlaw, Sweet and Hurwitz<sup>7</sup> in 1938 made an exhaustive study of blood loss in neurosurgical operations. They found that in the course of extensive intracranial operations the average loss was from 500 to 1,500 cc. They concluded that these patients rarely develop the typical shock state unless the loss is over 1,200 cc or unless the loss is rapid. They urged greater attention to hemostasis at the expense of time and advocated discontinuing the operation if the loss exceeded 1,200 to 1,500 cc. Stewart and Rourke<sup>8</sup> in 1938 studied changes in blood and

Aided by a Grant from the Horace H Rackham Fund  
From the Department of Surgery, University of Michigan Medical School

Read before the Section on Surgery, General and Abdominal, at the Ninety Fourth Annual Session of the American Medical Association Chicago, June 15 1944

<sup>1</sup> Gatch W D and Little W D Amount of Blood Lost During Some of the More Common Operations J A M A 83 1075 (Oct 4) 1924

<sup>2</sup> Blain A Impressions Resulting from 3 000 Transfusions of Unmodified Blood Ann Surg 89 189 1929

<sup>3</sup> Coller F A and Maddock W G Dehydration Attendant on Surgical Operations J A M A 99 875 (Sept 10) 1932

<sup>4</sup> Windfeld P Blutverluste und Blutveränderungen bei Operationen Acta chir Scandinav 79 453 1937

<sup>5</sup> Pilcher F and Sheard C Measurements on the Loss of Blood During Transurethral Prostatic Resection and Other Surgical Procedures Determined by Spectrophotometric and Photometric Methods J Soc Staff Meet Mayo Clin 12 209 1937

<sup>6</sup> Hubly J W Hemostatic Effect of Congo Red in Tran urethral Resection Proc Staff Meet Mayo Clin 12 213 1937

<sup>7</sup> White J C Whitlaw C P Sweet W H and Hurwitz F S Blood Loss During Neurosurgical Operations Ann Surg 107 1287 1938

<sup>8</sup> Stewart J D and Rourke C V Changes in Blood and Interstitial Fluid Resulting from Surgical Operations and Ether Anesthesia J Clin Investigation 17 413 1938

interstitial fluid resulting from surgical operation and ether anesthesia. They pointed out that the hematocrit changes induced by trauma and blood loss of operation are not proportional to the blood loss and that the structurally important elements of blood plasma, that is protein, sodium and chloride, are accurately sustained by the body. They emphasized the fallacy of assuming a quantitative relationship between the changes in the concentration of hemoglobin or plasma protein and changes in the plasma volume.

Nadal<sup>9</sup> in 1939 studied blood loss in orthopedic operations and found that patients losing over 20 per cent of the blood volume frequently showed clinical signs of shock. Leriche and Vasilaros<sup>10</sup> in 1939

TABLE 1—Blood Loss in Operations of Various Kinds in 626 Cases Compiled from the Literature

| Operations                                       | Num<br>ber<br>of<br>Cases | Blood Loss        |                   |                   |
|--|---------------------------|-------------------|-------------------|-------------------|
|  |                           | Maxi<br>mum<br>Cc | Mini<br>mum<br>Cc | Aver<br>age<br>Cc |
| Brain operations (7)                             | 30                        | 2 150             | 457               | 1 084             |
| Postganglionic neurectomy Cr N V (7 10)          | 4                         | 650               | 86                | 837               |
| Spinal cord operations (7 10)                    | 7                         | 1 264             | 107               | 676               |
| Thyroidectomies (1 4 5)                          | 29                        | 1 118             | 16                | 237               |
| Other neck operations (3 5 10)                   | 3                         | 410               | 105               | 230               |
| Mastectomies radical (1 3 4 5 8 10 14)           | 20                        | 1 272             | 204               | 732               |
| Mastectomies simple (1 5)                        | 5                         | 220               | 180               | 200               |
| Thoracic operations (8 13)                       | 113                       | 2 835             | 35                | 575               |
| Biliary operations (1 3 4 5 10)                  | 16                        | 400               | 51                | 100               |
| Gastric operations (1, 3 4 5 8 10 14)            | 41                        | 650               | 45                | 233               |
| Splenectomies (4 14)                             | 2                         | 900               | 160               | 525               |
| Intestinal operations above sigmoid (3 14)       | 11                        | 230               | 10                | 81                |
| Appendectomies (1 3 5)                           | 14                        | 0 <sup>a</sup>    | 4                 | 13                |
| Sigmoidal rectal and anal operations (3 5 10 14) | 21                        | 1 220             | 8                 | 377               |
| Hernia operations (1 3 4 5 8)                    | 13                        | 306               | 11                | 74                |
| Hiatal hernia abdominal operations (1 3 5 10)    | 6                         | 546               | 14                | 218               |
| Pelvic operations (1 4 5 6 10 14)                | 30                        | 650               | 22                | 266               |
| Prostatic resections transurethral (5 6 11)      | 220                       | 1 254             | 4                 | 260               |
| Kidney operations (1 3 4 5)                      | 10                        | 1 144             | 130               | 372               |
| Orthopedic operations (1 3 9 10 14)              | 31                        | 1 564             | 40                | 441               |
| Total  | 626                       |                   |                   |                   |

The numbers following the names of operations refer to the foot notes cited in the text

TABLE 2—Relationship of Blood Loss to Total Blood Volume

| Weight  | Total Blood Volume | 100 Cc Loss |
|---------|--------------------|-------------|
| 10 lbs  | 450 cc             | 22.0 %      |
| 20 lbs  | 890 cc             | 11.0 %      |
| 40 lbs  | 1 600 cc           | 6.0 %       |
| 60 lbs  | 2 800 cc           | 3.6 %       |
| 140 lbs | 5 000 cc           | 2.0 %       |
| 200 lbs | 7 000 cc           | 1.4 %       |

reported measurements of blood loss in twenty-nine operations of diverse character. They concluded that a loss even as small as 500 cc of blood is not a matter of indifference to a body which is called on to effect the repair of trauma and disease. Nesbit and Conger<sup>11</sup> in 1941 measured blood loss associated with transurethral prostatectomy and stated that this determination is easily carried out at the time of operation and should be made a routine procedure, so that untoward blood losses may be immediately appreciated and corrected by transfusion. They urge the use of whole blood to replace the blood loss accurately. Wangenstein<sup>12</sup> in 1942 described a gravimetric method for

determining the status of hydration and blood loss during operation. He advocated the replacement of minor blood loss by an amount of plasma 100 to 200 cc greater than the blood lost, or if the loss is excessive it should be replaced by whole blood. He found the average blood loss from gastric resection to be 300 to 500 cc. In 1942 Buxton and White<sup>13</sup> measured blood loss in 109 patients undergoing operations on and in the thorax. The loss in these operations was exceptionally large, averaging about 700 cc for each stage thoracoplasty, 1,600 cc in lobectomy and about the same for pneumonectomy. Large transfusions during operation were advised. Oppenheim, Pack, Abels and Rhoads<sup>14</sup> in 1944 measured the amounts of blood lost in various abdominal operations and described a simplified method for carrying out this technic. The amount of blood lost was not excessive. However, they felt that a transfusion of 500 to 600 cc of blood during the operation is of great benefit to patients operated on for cancer of the gastrointestinal tract. They advised the routine determination of blood loss especially in elderly patients with cardiovascular insufficiency in order to prevent the administration of unnecessarily large amounts of fluid.

In table 1 are shown blood losses from 626 operations collected from the data of these authors. The cases are grouped according to the types of operation, and the maximal, minimal and average losses are given. It was the unanimous conclusion of all who studied this problem that the blood losses in nearly every operation were greater than expected by the surgeon. The constant ooze of blood from large vascular fields leads to a large loss, of which the surgeon is frequently not cognizant. Accurate measurement of blood loss leads to an appreciation of the importance of better hemostasis. Nevertheless at times, in spite of every effort at hemostasis, the loss will still be large and transfusions should be planned in advance.

Analysis of the literature impresses one with the fact that not enough emphasis has been placed on the relation of the amount of blood lost to the total blood volume. Since the blood volume varies with the weight of the patient, it makes a vital difference whether a given amount of blood is lost from a large adult or from a small child. In table 2 are shown some figures illustrating the relationship of a 100 cc blood loss to the blood volume in patients of differing weights.<sup>15</sup> Blood comprises 77.7 cc per kilogram of body weight in the male and 66.1 cc per kilogram in the female.<sup>16</sup> For all practical purposes one thirteenth of the body weight is blood, and cells make up 45 per cent of the blood volume in men and 40 per cent in women. A simple method of calculating blood volume is to allow 30 cc of blood for every pound or 75 cc for each kilogram of body weight. Stewart and Rourke<sup>8</sup> showed blood loss in terms of percentage of total blood volume but did not comment on its critical relation to weight. Nadal<sup>9</sup> pointed out the important relationship between the size of the patient and the amount of blood that could be lost before signs of shock would appear.

<sup>13</sup> White M L, and Buxton R W. Blood Loss in Thoracic Operations. J Thoracic Surg 12 198, 1942.

<sup>14</sup> Oppenheim A, Pack G T, Abels J C and Rhoads C P. Estimation and Significance of Blood Loss During Gastrointestinal Surgery. Ann Surg to be published.

<sup>15</sup> Table 2 is adopted from Robinow and Hamilton (Blood Volume and Extracellular Fluid Volume of Infants and Children. Studies with Improved Dye Micromethod for Determination of Blood Volume. Am J Dis Child 60 827 [Oct 1940] and from Gibson and Evans<sup>16</sup>).

<sup>16</sup> Gibson J G 2d and Evans F A Jr. Clinical Studies of Blood Volume. Relation of Plasma and Total Blood Volume to Venous Pressure, Blood Velocity Rate, Physical Measurements, Age and Sex in Ninety Normal Humans. J Clin Investigation 16 317 1937.

<sup>9</sup> Nadal J W. Blood Loss in Orthopedic Operations. Univ Hosp Bull Ann Arbor 5 74 1939.

<sup>10</sup> Leriche R and Vasilaros E. De la perte de sang occasionnée par les divers ex. Contribution à l'étude de la maladie post opératoire. Mem Acad de chir 65 1242 1939.

<sup>11</sup> Nesbit R M and Conger A B. Studies of Blood Loss During Transurethral Prostatectomy. J Urol 46 713 1941.

<sup>12</sup> Wangenstein O H. The Controlled Administration of Fluid to Surgical Patient. Minnesota Med 25 783 1942.

Since several of the preceding studies were carried out in the University Hospital<sup>17</sup> our surgical staff has come to realize the importance of a knowledge of blood loss during operation. Further investigations have been made to stress the necessity of admitting that blood will be lost, that its approximate amount should be known and that it should be replaced by blood. Fifty cases were studied, and 42 have been selected for presentation. The method used for determining blood loss was essentially that of Gatch and Little with the following exceptions:

1 Oxyhemoglobin was measured in the Evelyn photoelectric colorimeter.

2 The fluid from aspirator bottle, instrument and glove washings was kept separate from the washtub fluid.

3 The sample from the 50 liters of washtub fluid was taken directly from the washtub before the drapes and gauze sponges were removed. Controlled washings, using known amounts of blood on sample outfits of drapes and sponges, yielded an average recovery of 95 per cent. The detailed method was as follows:

With Evelyn's method, oxyhemoglobin was determined on the solution containing equal volumes of the following fractions:

1 Fluid from drapes and sponges extracted in washing machine in 50 liters of distilled water for two hours.

2 Aspirated fluid and water used to wash instruments and gloves diluted to 5 liters, or to 10 liters if necessary and finally diluted 1:10, or 1:5, with distilled water. The solution was centrifuged to clarify it and diluted 1:1 with distilled water.

The patient's preoperative concentration of hemoglobin was determined at the same time.

#### Calculations

$$\frac{\text{Gm Hb lost} = \text{Gm \% Hb from blood curve} \times \frac{1000}{250}}{\frac{\text{Hb lost}}{\text{pt's preop Hb}} \times 100 = \text{cc blood lost}}$$

The cases here presented were selected for study on the basis that, owing to their character, a high blood loss might be expected, and they were limited chiefly to five categories to facilitate comparison. Particular interest was centered in changes in the blood picture associated with hemorrhage. Therefore many patients whose blood loss was minimal were excluded from the presentation. Consequently the blood loss in these groups does not represent average results from routine operations of their types. The operations were performed by ten surgeons from the resident staff.

In tables 3 to 8 are shown measured blood loss and its percentage of total blood volume, intravenous solutions given in the operating room, blood transfusions given during or immediately after operation, and the degree of hypotension stated in terms of 1 to 4 plus, in patients during various types of operation. In table 3 the blood loss from radical mastectomy is slightly higher than found by others, but, since these operations are always accompanied by such losses, transfusion during these operations has been made a routine at the University Hospital by our staff. Patient 27 developed a moderate hypotension, which was corrected by transfusion of blood equal in amount to the loss. In table 4 the blood loss associated with thyroidectomy is shown. These patients all presented large, recurrent or unusually toxic goiters, and the average blood loss was much higher than found in routine thyroidectomies. In 2 instances the loss was above 25 per cent of the blood volume, but the surgeon realized this fact and replaced the lost blood by transfusion during the operation.

In table 5 is shown a group of patients presenting difficult technical problems in surgery of the biliary tract. Many had been operated on previously. The majority were jaundiced, and in all the common duct was explored or reconstructed. The operations were long and the blood loss averaged nearly 600 cc. Case 41 is of interest since the blood loss of 1,065 cc represented 41 per cent of the blood volume, the patient was emaciated and weighed only 86 pounds (39 Kg). This

TABLE 3—Blood Loss During Radical Mastectomy

| Four women nitrous oxide and ether |     |            |                               |            |                |  |                        |               |
|------------------------------------|-----|------------|-------------------------------|------------|----------------|--|------------------------|---------------|
| Case Number and Sex                | Age | Weight Lbs | Duration of Operation Minutes | Blood Loss |                | Intra venous Solution During Operation Cc. | Blood Trans fusion Cc. | Hypo- tension |
|                                    |     |            |                               | Amount Cc  | Total Volume % |  |                        |               |
| 1 ♀                                | 59  | 215        | 147                           | 827        | 12.8           | 1 900                                      | 450                    | +             |
| 27 ♀                               | 61  | 189        | 189                           | 994        | 17.8           | 1 900                                      | 900                    | ++            |
| 29 ♀                               | 34  | 121        | 168                           | 59         | 14.6           | 1 900                                      | 450                    | 0             |
| 40 ♀                               | 55  | 140        | 215                           | 1 091      | 20.8           | 1 000                                      | 450                    | 0             |
| Average                            |     |            |                               | 821 cc     | 17.7%          |  |                        |               |

TABLE 4—Hemithyroidectomy and Blood Loss During Subtotal Thyroidectomy for Very Large, Toxic, Adenomatous Goiters

| Eight cases         |     |            |                               |            |                |   |                       |              |
|---------------------|-----|------------|-------------------------------|------------|----------------|---|-----------------------|--------------|
| Case Number and Sex | Age | Weight Lbs | Duration of Operation Minutes | Blood Loss |                | Intra Venous Solution During Operation Cc | Blood Trans fusion Cc | Hypo tension |
|                     |     |            |                               | Amount Cc  | Total Volume % |   |                       |              |
| 2 ♀                 | 53  | 94         | 110 *                         | 234        | 8.3            | 1 400                                     | 0                     | 0            |
| 3 ♂                 | 14  | 104        | 58 *                          | 216        | 7.5            | 0   | 0                     | 0            |
| 9 ♀                 | 44  | 150        | 140 *                         | 409        | 9.1            | 1 000                                     | 0                     | 0            |
| 10 ♀                | 51  | 191        | 93 *                          | 204        | 5.3            | 1 000                                     | 0                     | 0            |
| 15 ♂                | 58  | 185        | 121 *                         | 389        | 6.0            | 1 000                                     | 0                     | 0            |
| 16 ♀                | 15  | 87         | 102 †                         | 725        | 27.8           | 1 000                                     | 450                   | 0            |
| 20 ♀                | 15  | 87         | 110 †                         | 688        | 26.4           | 700                                       | 450                   | 0            |
| 37 ♀                | 36  | 120        | 90 †                          | 99         | 2.9            | 1 000                                     | 0                     | 0            |
| Average             |     |            |                               | 379 cc     | 11.7%          |   |                       |              |

\* Tribromoethanol nitrous oxide and ether  
† Tribromoethanol nitrous oxide local procaine

TABLE 5—Blood Loss During Secondary and Plastic Operations on the Biliary Tract

| Eight cases nitrous oxide and ether |     |            |                               |            |                |   |                       |              |
|-------------------------------------|-----|------------|-------------------------------|------------|----------------|---|-----------------------|--------------|
| Case Number and Sex                 | Age | Weight Lbs | Duration of Operation Minutes | Blood Loss |                | Intra venous Solution During Operation Cc | Blood Trans fusion Cc | Hypo-tension |
|                                     |     |            |                               | Amount Cc  | Total Volume % |   |                       |              |
| 11 ♀                                | 50  | 134        | 105                           | 158        | 3.9            | 1 000                                     | 0                     | 0            |
| 14 ♂                                | 54  | 110        | 290                           | 412        | 10.5           | 760                                       | 450                   | +            |
| 21 ♂                                | 51  | 164        | 255                           | 1 455      | 27.5           | 1 600                                     | 900                   | ++           |
| 22 ♂                                | 50  | 178        | 113                           | 242        | 3.8            | 1 100                                     | 450                   | 0            |
| 28 ♂                                | 68  | 143        | 185                           | 406        | 8.1            | 1 000                                     | 0                     | ++           |
| 32 ♀                                | 51  | 158        | 160                           | 257        | 6.0            | 2 000                                     | 0                     | 0            |
| 39 ♀                                | 34  | 99         | 180                           | 454        | 16.4           | 600                                       | 400                   | 0            |
| 41 ♀                                | 51  | 86         | 130                           | 1 065      | 41.0           | 500                                       | 400                   | ++++         |
| Average                             |     |            | 594 cc                        | 14.6%      |                |   |                       |              |

patient developed an alarming shock state from the operative trauma, blood loss and bile peritonitis and was given 3,000 cc of blood in the next forty-eight hours, after which convalescence was relatively uneventful. Contrast this 41 per cent loss with that of case 21, in which a much larger amount of blood 1,455 cc, was lost, the latter amount representing only 27 per cent of the total blood volume. Both cases required extensive replacement by blood. In operations of this character performed on undernourished and jaundiced patients, one should always plan on adequate replacement of the blood loss. The routine immediate replacement of blood in these patients was found to be inadequate at the

time of this study, and we have since planned for a liter of blood to be given during operation

Table 6 presents studies of blood loss in 12 cases of cancer of the rectum treated by a single stage abdomino-

TABLE 6—Blood Loss During Combined Abdominoperineal Resection of the Rectum for Carcinoma

| Twelve cases        |     |             |                                |            |                |  |                        |              |
|---------------------|-----|-------------|--------------------------------|------------|----------------|--|------------------------|--------------|
| Case Number and Sex | Age | Weight, Lbs | Duration of Operation, Minutes | Blood Loss |                | Intra venous Solution During Operation, Cc | Blood Trans fusion, Cc | Hypo tension |
|                     |     |             |                                | Amount Cc  | Total Volume % |  |                        |              |
| 7 ♂                 | 69  | 128         | 107 *                          | 163        | 4.1            | 1 200                                      | 450                    | ++           |
| 13 ♀                | 55  | 150         | 180 *                          | 410        | 9.0            | 2 000                                      | 0                      | 0            |
| 17 ♂                | 69  | 198         | 145 *                          | 523        | 11.0           | 1 000                                      | 450                    | 0            |
| 15 ♀                | 61  | 198         | 185 *                          | 510        | 13.5           | 1 200                                      | 450                    | 0            |
| 21 ♂                | 49  | 107         | 200 *                          | 474        | 13.3           | 1 000                                      | 450                    | +            |
| 24 ♀                | 70  | 125         | 235 †                          | 686        | 15.5           | 1 200                                      | 300                    | ++           |
| 26 ♀                | 60  | 116         | 110 *                          | 247        | 7.1            | 1,100                                      | 450                    | +++          |
| 30 ♀                | 45  | 158         | 245 †                          | 494        | 10.4           | 1 000                                      | 450                    | 0            |
| 34 ♂                | 73  | 126         | 156 †                          | 225        | 5.5            | 950  | 450                    | +            |
| 39 ♀                | 54  | 138         | 85 *                           | 483        | 11.6           | 1 000                                      | 450                    | 0            |
| 38 ♂                | 75  | 167         | 185 †                          | 315        | 6.3            | 1,100                                      | 450                    | +            |
| 47 ♀                | 48  | 142         | 160 †                          | 306        | 6.1            | 1 400                                      | 450                    | +            |
| Average 410 cc 9.5% |     |             |                                |            |                |  |                        |              |

\* Spinal nupercaine † Continuous spinal

perineal resection. The losses in this group averaged 410 cc, the principal loss resulting from the perineal dissection. While this loss is not great it should always be replaced by blood, as so many of these patients are

TABLE 7—Blood Loss During Operation for Complicated Gastric Lesions

| Three cases nitrous oxide and ether |     |            |                               |            |                |   |                       |              |
|-------------------------------------|-----|------------|-------------------------------|------------|----------------|---|-----------------------|--------------|
| Case Number and Sex                 | Age | Weight Lbs | Duration of Operation Minutes | Blood Loss |                | Intra venous Solution During Operation Cc | Blood Trans fusion Cc | Hypo tension |
|                                     |     |            |                               | Amount, Cc | Total Volume % |   |                       |              |
| * 6 ♀                               | 62  | 131        | 287                           | 552        | 14.0           | 3,000                                     | 450 (and 400 plasma)  | +++          |
| † 8 ♂                               | 65  | 114        | 270                           | 804        | 20.0           | 1,000                                     | 900                   | 0            |
| † 31 ♂                              | 59  | 134        | 155                           | 321        | 6.8            | 1,000                                     | 0                     | 0            |
| Average                             |     |            |                               | 599 cc     | 13.6%          |   |                       |              |

\* Attempted total gastrectomy. Lesion frozen at gastroesophageal junction. Partial gastrectomy and gastrojejunostomy done.  
† Total gastrectomy.  
‡ Partial gastrectomy. Previous pyloroplasty.

malnourished, anemic and dehydrated (Miles regimen). The occurrence of hypotension in these patients (case 26) was thought to be of anesthetic origin. Table 7 presents three complicated gastric resections

TABLE 8—Blood Loss During Operations Involving Large Body Surfaces

| Three cases         |     |            |                               |            |                 |   |                       |              |
|---------------------|-----|------------|-------------------------------|------------|-----------------|---|-----------------------|--------------|
| Case Number and Sex | Age | Weight Lbs | Duration of Operation Minutes | Blood Loss |                 | Intra venous Solution During Operation Cc | Blood Trans fusion Cc | Hypo tension |
|                     |     |            |                               | Amount Cc  | Total Volume, % |   |                       |              |
| * 12 ♀              | 35  | 105        | 153                           | 1,257      | 33.9            | 1 500                                     | 900                   | 0            |
| † 19 ♂              | 55  | 192        | 210                           | 1,397      | 20.6            | 1 500                                     | 900                   | 0            |
| * 33 ♀              | 60  | 175        | 120                           | 837        | 22.9            | 900                                       | 450                   | 0            |

\* Resection of presacral chondroma. Anesthesia nitrous oxide and ether.  
† Exploration of large intrathoracic thyroid adenoma. Anesthesia nitrous oxide and ether (intratracheally).  
‡ Resection of large sarcoma of shoulder and hemiscapulectomy. Anesthesia nitrous oxide and ether.

accompanied by a blood loss averaging 600 cc. In table 8 is shown the relatively large blood losses resulting from operation in which large body surfaces are opened. This blood loss is from multiple small rather

than from single large vessels. The use of gauze packs as hemostatic agents tends to obscure hemorrhage rather than control it. Table 3 is a similar example of operations on large body surfaces.

Concurrently with the blood loss determinations, observations were made of changes in hematocrit and hemoglobin and plasma protein concentration before and after operation. These findings are listed in relation to blood loss in table 9, and deductions from them agree with those of Stewart and Rourke.<sup>18</sup> There was found no correlation between the amount of blood lost and the simultaneous changes in hematocrit, hemoglobin and concentration of plasma protein immediately before and

TABLE 9—Blood Loss and Changes in Hematocrit, Hemoglobin and Plasma Protein During Operations

| Case Number                          | Blood Loss |                | Hematocrit Vol % R B C |                | Hemoglobin, Gm % |                | Plasma Proteins Gm % |                |
|--------------------------------------|------------|----------------|------------------------|----------------|------------------|----------------|----------------------|----------------|
|                                      | Amount Cc  | Total Volume % | Pre Operative          | Post Operative | Pre Operative    | Post Operative | Pre Operative        | Post Operative |
|                                      |            |                |                        |                |                  |                |                      |                |
| Radical Mastectomies                 |            |                |                        |                |                  |                |                      |                |
| 1                                    | 827        | 12.8           | 43.3                   | 42.3           | 15.0             | 12.7           | 7.21                 | 6.73           |
| 25                                   | 670        | 15.8           | 47.0                   | 41.7           | 13.6             | 12.9           | 7.04                 | 6.66           |
| 27                                   | 924        | 17.8           | 47.2                   | 44.6           | 15.6             | 13.3           | 7.25                 | 6.66           |
| 29                                   | 579        | 14.6           | 42.3                   | 37.6           | 13.2             | 10.7           | 7.86                 | 6.50           |
| 40                                   | 1 091      | 25.8           | 45.7                   | 44.8           | 13.3             | 11.8           | 8.74                 | 7.72           |
| Subtotal and Hemithyroidectomies     |            |                |                        |                |                  |                |                      |                |
| 2                                    | 234        | 8.3            | 34.5                   | 34.2           | 12.1             | 11.7           | 6.40                 | 6.25           |
| 5                                    | 276        | 7.5            | 48.4                   | 43.5           | 15.6             | 14.0           | 7.28                 | 6.73           |
| 9                                    | 409        | 9.1            | 41.6                   | 38.7           | 11.6             | 11.3           | 7.35                 | 7.28           |
| 10                                   | 204        | 5.3            | 46.2                   | 43.4           | 14.8             | 13.8           | 6.70                 | 6.22           |
| 15                                   | 389        | 6.0            | 54.4                   | 51.2           | 12.7             | 12.7           | 7.33                 | 7.35           |
| 16                                   | 725        | 27.8           | 41.4                   | 41.2           | 13.1             | 12.7           | 7.14                 | 7.17           |
| 20                                   | 688        | 26.4           | 39.3                   | 39.0           | 12.4             | 11.7           | 6.53                 | 6.32           |
| 37                                   | 89         | 2.9            | 32.4                   | 44.4           | 10.2             | 13.3           | 7.07                 | 8.10           |
| Biliary Tract                        |            |                |                        |                |                  |                |                      |                |
| 11                                   | 158        | 3.9            | 40.6                   | 45.1           | 15.9             | 13.9           | 7.58                 | 6.00           |
| 14                                   | 412        | 10.5           | 43.1                   | 40.4           | 14.3             | 14.6           | 7.42                 | 7.23           |
| 21                                   | 1 455      | 27.5           | 40.4                   | 38.6           | 13.6             | 13.8           | 6.40                 | 5.69           |
| 22                                   | 242        | 3.8            | 57.9                   | 53.3           | 10.6             | 17.2           | 7.25                 | 7.42           |
| 28                                   | 406        | 8.1            | 50.5                   | 48.1           | 15.6             | 14.5           | 7.69                 | 7.42           |
| 32                                   | 287        | 6.0            | 44.5                   | 47.0           | 14.0             | 12.9           | 7.78                 | 7.33           |
| 39                                   | 454        | 16.4           | 40.3                   | 44.0           | 12.93            | 12.60          | 7.93                 | 7.52           |
| 41                                   | 1 065      | 41.0           | 44.0                   | 41.5           | 14.61            | 12.44          | 7.45                 | 6.70           |
| Combined Abdominoperineal Resections |            |                |                        |                |                  |                |                      |                |
| 7                                    | 183        | 4.1            | 38.4                   | 47.5           | 15.9             | 13.1           | 7.32                 | 7.24           |
| 13                                   | 410        | 9.0            | 46.7                   | 40.9           | 14.6             | 12.8           | 6.94                 | 5.66           |
| 17                                   | 523        | 11.6           | 42.8                   | 40.4           | 13.2             | 13.1           | 7.11                 | 6.80           |
| 18                                   | 519        | 13.5           | 41.3                   | 40.6           | 13.3             | 12.6           | 6.63                 | 6.15           |
| 23                                   | 474        | 13.3           | 39.8                   | 35.5           | 12.2             | 11.8           | 6.56                 | 6.40           |
| 24                                   | 686        | 15.5           | 47.2                   | 40.8           | 14.2             | 13.3           | 7.48                 | 6.97           |
| 26                                   | 247        | 7.1            | 47.8                   | 44.0           | 15.2             | 14.0           | 7.32                 | 7.04           |
| 30                                   | 494        | 10.4           | 37.0                   | 32.4           | 10.7             | 0.2            | 7.68                 | 6.60           |
| 34                                   | 255        | 5.5            | 47.1                   | 44.2           | 14.7             | 13.7           | 6.60                 | 6.36           |
| 36                                   | 483        | 11.0           | 39.8                   | 37.0           | 11.3             | 10.8           | 6.76                 | 6.66           |
| 38                                   | 375        | 6.3            | 39.0                   | 40.5           | 10.84            | 11.01          | 0.80                 | 0.19           |
| 42                                   | 306        | 6.1            | 47.7                   | 42.6           | 15.00            | 13.06          | 6.46                 |                |

after operation. These determinations, therefore, cannot be used to estimate the need for blood volume replacement during and after operation. Obviously, it follows that if one wishes to know the amount of blood lost in any operation one must depend on direct measurement. This approach is not often practical, in which event one must rely primarily on a knowledge of average losses to provide a basis for the replacement of blood loss during operation. Additional blood may be given if the clinical state of the individual demands it. We believe that even minimal blood loss retards convalescence, that all loss over 300 cc in healthy adults should be replaced and that all blood loss in operations on aged, undernourished, seriously ill or bedfast patients should be replaced with equal quantities of blood.

18. In table 9 the hemoglobin was determined by use of the colorimeter described by K. A. Evelyn (Oxyhemoglobin J. Biol. Chem. 115: 63 1936) plasma proteins Gibson and Evans<sup>19</sup> and Pregl<sup>1</sup>. Die Quantitative organische Mikroanalyse, ed. 2, Berlin 1923.

## CONCLUSIONS

From this study we have drawn the following conclusions

1 No correlation exists among the amount of blood lost and changes in hematocrit, hemoglobin and plasma protein concentrations before and after operation

2 A knowledge of blood loss during operation as available in the literature offers a practical basis for planned transfusions during operation

3 The patient is benefited most when the blood loss is replaced by blood, given as the loss occurs

THE CLINICAL MANIFESTATIONS OF  
LEPTOSPIROSIS IN LOUISIANA

HARRY A SENEKJIE, M D  
NEW ORLEANS

The classic description of infectious jaundice was presented by Weil<sup>1</sup> in 1886, who reported 4 cases in which there was a sudden onset of fever, chills, prostration, jaundice, hepatosplenomegaly, hemorrhagic tendency and renal failure. All 4 patients recovered. Inada and his associates<sup>2</sup> discovered the causative agent, and Noguchi<sup>3</sup> named it *Leptospira icterohemorrhagiae*. Stimson<sup>4</sup> described a spirochete in the organs of a patient in New Orleans who died presumably of yellow fever and called it *Spirochaeta interrogans*. Wadsworth<sup>5</sup> introduced laboratory methods for the diagnosis of Weil's disease in the United States. Jeghers,<sup>6</sup> Packchamian,<sup>7</sup> Larson<sup>8</sup> and others have reported numerous cases from this country.

Spirochetal jaundice is not a proper term, because jaundice is present only in about two thirds of the cases. Weil's disease refers to infection with *Leptospira icterohemorrhagiae*. *Leptospira canicola* infections occur in man and dog. In this country canine leptospirosis was reported by Meyer and his associates<sup>9</sup> in California, by Molner and Kasper<sup>10</sup> in Michigan, by Clara Raven<sup>11</sup> in Pennsylvania and by Bruno, Wilen and Snively<sup>12</sup> in Louisiana, but Tiffany and Mar-

torana<sup>13</sup> did not find any evidence of this infection in New York. The European *L. canicola* infections do not give rise to jaundice in human beings or dogs, but the American type may be icterogenic.

Vervoot, cited by Strong,<sup>14</sup> found in cases of pseudodengue in Java a leptospira which he called *Leptospira pyrogenes*. This disease is endemic in plantations and may be associated with jaundice and rash. In southeastern Europe Tarassoff<sup>15</sup> and Korthof<sup>16</sup> reported a mild type of leptospirosis in which there was no jaundice. *Leptospira grippotyphosa* is the name given to the causative organism.

*Leptospira hebdomadis* is the causative organism of seven day fever, and *Leptospira autumnalis* is the causative agent of autumn fever in Japan.

Since leptospirosis is a general term which includes all the leptospiral infections, it is advisable to use specific terms, such as leptospirosis icterohemorrhagiae and leptospirosis canicola or canicola fever.

## EPIDEMIOLOGY

Rat to rat transmission is accomplished through the contamination of the food by the excreta of the infected rats and less commonly through sexual intercourse among the rats. The incidence of infection is higher among the older than among the younger rats.

Rat to man transmission occurs mainly through the contamination of human food with the excreta of infected rats. Rarely a rat bite may be responsible for infection. The handling of rats is a frequent method of infection, so that the disease is found among sewer workers, harvesters, farmers, sugar cane cutters, fishermen, fish handlers, slaughterhouse employees and miners. Occasionally the infection is acquired by bathing in water contaminated with pathogenic leptospires. Dog to dog and dog to man transmission in canicola infection is similar to that of the rat borne leptospirosis.

In this series of 30 patients, the groups represented were cooks, gardeners, laborers, farmers, carpenters, porters, warehouse employees, truck drivers and orphans. In most of these cases there was a definite history of contact with rats and dogs.

## INCIDENCE

The total hospital admissions to the Louisiana State Charity Hospital of New Orleans from September 1939 to February 1944 were 236,466, while the patients admitted to general medicine during this period were 37,610. During this period there were 28 cases of leptospirosis diagnosed by laboratory methods. Thus the ratio is 1 case of leptospirosis to every 8,445 general admissions and 1 case to every 1,343 general medicine inpatients.

Seven of the 30 patients were Negroes, and the only female in this series was a Negro woman. The age incidence varied from 14 to 68 years, but the majority of the patients were 20 to 40 years old.

The patients were admitted to the hospital from the second to the ninth day after the onset of the disease, but the majority were admitted on the fourth to the sixth day of the disease. The period of hospitalization

From the Department of Tropical Medicine Tulane University of Louisiana.

Permission to study their cases which are included in this report was granted by Dr. John H. Musser, professor of medicine at Tulane University School of Medicine, and senior visiting physician at the Charity Hospital in New Orleans, by Dr. Edgar Hull, professor of medicine at Louisiana State University School of Medicine and senior visiting physician at the Charity Hospital in New Orleans, and by Dr. F. C. Coleman of Toussaint Infirmary in New Orleans. Dr. Musser and Dr. E. C. Faust gave many valuable suggestions in the preparation of this paper.

1 Weil H. A. Ueber eine Eigentümliche mit Miltztumor, Ikterus und Nephritis Einhergehende akute Infektionskrankheit. *Deutsches Arch f. klin. Med.* 39: 209, 1886.

2 Inada R, Ido Y, Hoki R, Kaneko R and Ito H. Etiology, Mode of Infection and Specific Therapy of Weil's Disease. *J. Exper. Med.* 23: 377, 1916.

3 Noguchi H. Nomenclature of *L. Icterohemorrhagiae*. *J. Exper. Med.* 27: 575, 1918.

4 Stimson A. M. A Note on an Organism Found in Yellow Fever Tissue. *Pub. Health Rep.* 22: 541, 1907.

5 Wadsworth A, Langworthy V, Stewart C, Moore A and Coleman M. Infectious Jaundice Occurring in New York State. Case of Accidental Infection of Human Subject with *Leptospira Icterohemorrhagiae* from a Rat. *J. A. M. A.* 75: 1120 (April 15) 1922.

6 Jeghers H, J. Houghton J D and Tole J A. Weil's Disease. Report of a Case with Postmortem Observations and Review of Recent Literature. *Arch. Path.* 20: 447 (Sept.) 1935.

7 Packchamian A. La spirochetose icterohemorrhagique (maladie de Weil) aux Etats Unis. *Bull. Office internat. d'hyg. pub.* 29: 2350, 1937.

8 Larson C L. Weil's Disease in Porto Rico and the United States. *Pub. Health Rep.* 56: 1650, 1941.

9 Meyer H, F. Stewart Anderson B and Eddie B. Epidemiology of Leptospirosis. *Am. J. Pub. Health.* 29: 347, 1939.

10 Molner, J. G. and Kasper, J. A. Outbreak of Jaundice in Detroit. *J. A. M. A.* 110: 2069 (June 18) 1938.

11 Raven C. Canine Leptospirosis in Pennsylvania. *J. Infect. Dis.* 69: 131, 1941.

12 Bruno F E, Wilen C J W and Snively J R. Spirochaetal Jaundice. Report on Fifteen Cases Including Two Cases of *Leptospira Canicola* Infection. *J. A. M. A.* 123: 519 (Oct. 30) 1943.

13 Tiffany E J and Martorana N F. Leptospirosis in New York City. *Am. J. Hyg.* 36: 195, 1942.

14 Strong R P. Stuts. Diagnosis, Prevention and Treatment of Tropical Diseases. Philadelphia: Blakiston Company, 1943.

15 Tarassoff S. Sur la decouverte de l'agent infectieux de la chlamme fieber ou leptospirosis grippotyphosa aquatilis. *Ann. Inst. Pasteur.* 46: 222, 1931. Trois eclosions d'epidemie de fièvre aquatique ou leptospirosis grippotyphosa aquatilis. 1932-1933 en U. R. S. S. *Bull. Office internat. d'hyg. pub.* 27: 683, 1935.

16 Korthof G. Experimentelles Schlammeieber beim Menschen. *Zentralbl. f. Bakt.* (Abt. 1) 125: 429, 1932. abstracted *Trop. Dis. Bull.* 30: 17, 1933.



ranged from three to thirty-eight days. Four patients were hospitalized for three to nine days, 5 for ten to nineteen days, 8 for twenty to twenty-nine days and 11 for thirty to thirty-nine days. The duration of the fever ranged from eight to thirty-seven days. In 10 instances the duration of the fever was one to two weeks, in 5 two to three weeks, in 10 three to four weeks and in 4 four to five weeks. Three of the patients died in the second week and 2 in the fourth week of the disease.

#### CLINICAL FEATURES

Leptospirosis is a hepatorenal syndrome. In the anicteric cases the involvement of the liver is very slight, but there is always a mild hepatitis. In the majority of the cases there is a moderately severe hepatitis, and in some it is very severe. Similarly the kidney lesion may be very mild, moderate or very severe.

Icterus is due to partial biliary obstruction caused by inflammation of the biliary ducts. There is injury and damage of the hepatic cells, and this is a reversible phenomenon. Hemolysis does not play an important role in the causation of the jaundice. The renal lesion is of toxic origin and is primarily tubular. Hemorrhagic phenomena are a characteristic part of the clinical picture. They are apparently the result of the

TABLE 1—Ratio of Leptospirosis Among Hospital Admissions

| Year      | General Admissions | General Medicine Admissions |
|-----------|--------------------|-----------------------------|
| 1941      | 1 to 8 581         | 1 to 1 436                  |
| 1942      | 1 to 4 909         | 1 to 775                    |
| 1943      | 1 to 5 263         | 1 to 760                    |
| 1939-1944 | 1 to 8 446         | 1 to 1 346                  |

local toxic action of the leptospiras on the capillary endothelium and a deficiency of vitamin K due to liver dysfunction.

**Septicemic Stage**—The incubation period of the disease varied from one to two weeks. The onset of the disease in 20 of the cases was sudden with either a chilly sensation or a distinct chill, followed by fever, nausea, vomiting, arthralgia, myalgia, frontal headache, prostration, anorexia, diarrhea or constipation. Epigastric pain and discomfort, pain and tenderness in the muscles of the legs and back, as well as painful ocular movements, were very common. Infection of the upper part of the respiratory tract with cough and bloody sputum might simulate atypical pneumonia. The temperature of the patient varied between 101 and 104 F. The respiration was normal or rapid, the pulse was accelerated and there was a tendency to hypotension. Conjunctival injection was present in half of the cases. There was at times a mild injection, but in some cases severe hemorrhages took place. There were usually no hepatic or urinary disturbances, despite the fact that the fever continued to be high. Leptospiras occurred in the peripheral blood and were demonstrated on dark field examination, but there were no circulating antibodies. The duration of these symptoms was about three to seven days.

**Hepatic, or Icteric Stage**—The majority of the patients became icteric about the sixth to the seventh day after the onset of the disease. In a few cases jaundice developed as early as the second or third day and in some as late as the ninth day. According to Irada<sup>2</sup> jaundice appears in the middle of the first week

according to Strasburger and Thill<sup>17</sup> from the third to the ninth day, according to Martin and Pettit<sup>18</sup> on the fifth day, and according to Ashe and his associates<sup>19</sup> from the third to the ninth day. The onset of jaundice was very gradual. Clinically the first evidence was a subicteric hue of the scleras, which progressively became icteric. Two of our patients (6 2/3 per cent) were anicteric. Strong<sup>14</sup> has stated that in Japan 60 per cent of the patients were icteric, while in Europe 13 to 58 per cent were anicteric. Laison<sup>8</sup> reported 7 anicteric patients and inapparent icterus in 51 in the United States and Puerto Rico. The duration of this stage was seven to ten days in the series herein analyzed.

The liver was enlarged, tender and often painful. Usually it was about 2 fingerbreadths palpable, but rarely it reached the umbilicus. In 3 cases (10 per cent) the liver was not enlarged yet there was definite jaundice. In the 2 anicteric cases the liver was palpable. Hepatitis appeared to be present in both the icteric and the anicteric cases.

Splenomegaly was present in 3 cases (10 per cent). The spleen was soft and palpable 1 to 4 cm below the costal margin. Clinically it resembled the splenomegaly of typhoid.

During this stage the gastrointestinal symptoms had a tendency to subside. Vomiting, arthralgia, myalgia and headache were not distressing, but the patient was toxic, apathetic and prostrated and had a continued fever. There was moderate abdominal distention due to low grade ileus and diminished peristalsis.

Hemorrhagic phenomena were present in 16 cases (53.3 per cent). Conjunctival injection, hemorrhages into the eye, petechial hemorrhages, ecchymotic spots in the skin and mucous membranes, epistaxis, melena, hematemesis, hemoptysis and bleeding from the gums were observed, but no demonstrable rashes were noticed.

With the appearance of icterus the pulse had a tendency to become slow. Pruritus occurred in 16 2/3 per cent of the patients, but herpes labialis was not observed. There was no generalized lymphadenopathy, but 4 patients (13.3 per cent) had palpable enlarged lymph nodes in the anterior cervical and inguinal regions, which were painless and subsided after recovery.

**Respiratory Symptoms**—These were present in 12 instances (40 per cent). The following were observed: cough, expectoration, rarely blood tinged sputum, pharyngitis, bronchitis and at times patchy consolidation of the lungs. Not infrequently the clinical diagnosis of atypical or virus pneumonia was made in anicteric cases with the finding of blood tinged sputum. With the appearance of jaundice and later on the basis of the urinary findings, the presumptive diagnosis of leptospirosis was made.

**Cardiovascular System**—The blood pressure was low. At times the heart was enlarged and hemic murmurs were detected. Gallop rhythm, tachycardia developing into bradycardia, premature beats, auricular fibrillation and flutter, pericardial friction rub and evidence of myocardial disease were also observed. The electrocardiogram revealed prolongation of the QT interval and PR interval, defective auriculoventricular

17 Strasburger J and Thill O. Klinik der Weilschen Krankheit. Mit Mitteilung von 2 neuerdings beobachteten Fällen. Klin. Wchnschr. 8: 1391, 1929.

18 Martin L and Pettit A. A. Presentation des preparations microscopiques et pieces anatomiques relatives a la spirochetose icterohemorrhagique. Compt. rend. Soc. de biol. 79: 659, 1916.

19 Ashe W T, Pratt Thomas H R and Kump C W. Weils Disease. A Complete Review of American Literature and an Abstract of the World Literature. Medicine 20: 145, 1941.

conduction, functional or actual incomplete auriculo-ventricular block, low T waves blocked auricular beats, sinus tachycardia, low voltage, with wide and slurred QRS complex. During convalescence the heart and the electrocardiographic findings gradually returned to normal.

**Central Nervous System**—Headache, delirium, apathy, hallucinations, disorientation and restlessness were among the common observations. In severely ill patients there were rigidity of the neck and retraction of the head, loss of consciousness and symptoms of meningeal irritation. The following case is interesting from the point of view of the findings.

R. R., a white man aged 52, was admitted to the Charity Hospital on Aug. 7, 1943 with the complaint of headache, chills and fever since July 31 and the development of jaundice on August 5. He worked in a butcher's shop where there were many rats. On admission the temperature was 101 F, the pulse rate 115 and the respiratory rate 40. On August 8 he became irrational and incontinent, and gallop rhythm with a 200 per minute ventricular rate developed. On August 10 the neck became stiff and the patient was completely irrational. Leptospiras were observed in the blood and cerebrospinal fluid on the dark field examination. The pressure of the cerebrospinal fluid was 74, the color icteric, the cell count normal, the Pandy reaction 4 plus, proteins 57 mg and chlorides 625 mg per hundred cubic centimeters. All the agglutination reactions as well as the blood cultures were negative. The blood picture showed 4.95 million erythrocytes with 15.8 Gm of hemoglobin, 27,800 white blood cells with 93 per cent polymorphonuclears. The urine had albumin (1 plus), no sugar and a specific gravity of 1.010, with numerous white and red blood cells and granular casts. The blood urea nitrogen level was 27.6 mg, icterus index 199.8, van den Bergh 40 units direct and the clotting time five minutes. The patient was given digitals, infusions of dextrose, transfusions and other treatment but died on August 10, with a temperature of 107 F.

Leptospiras were demonstrated in the blood and urine by the dark field method. Agglutinins appeared in the blood but did not rise to diagnostic titer during the hepatic stage.

**Nephritic, or Uremic, Stage**—The transition from the hepatic to the nephritic stage was gradual and not clearcut. Even during the septicemic stage there was some diminution in the urinary output, mild albuminuria and occasional red and white blood cells. During the hepatic stage there was oliguria, with red and white blood cells and occasional casts in the urine, but there was no retention of metabolites in the blood. Now symptoms of kidney failure became superimposed on those of hepatic failure, so that a state of cholemia and uremia resulted. The clinical diagnosis of Weil's disease was confirmed in a patient who had a sudden onset of fever with chills, arthralgia, myalgia, icterus and in whom kidney failure finally developed.

All patients had oliguria, while 5 (16⅓ per cent) had anuria. Albuminuria from 1 plus to 4 plus was present in 80 per cent of the cases, while glycosuria was present in 10 per cent. Red and white blood cells and hyaline or granular casts were present in 80 per cent of the cases. There was a steady rise in the blood pressure, a retention of nitrogenous metabolites, lowering of the kidney function tests (such as excretion of phenolsulfonphthalein) and fixation of the specific gravity of the urine but no hyperglycemia. The patient became irrational, restless and drowsy, with a continuous tendency to somnolence. There was disorientation as to time, place and person, and loss of sphincter control, so that the urinary output could not be measured. He became extremely toxic and semicomatose and finally died of uremia and hyperpyrexia. Lepto-

spiras could not be demonstrated in the blood but they were found in the urine. The agglutinins rose to a diagnostic titer of 1:300 or above.

**Convalescence**—In favorable cases the intensity of the jaundice and uremia gradually diminished, and there began to be secretion of more urine. The temperature began to fall by lysis, the hemorrhagic phenomena subsided and the patient became free from symptoms but suffered from general weakness for a few weeks. Ordinarily convalescence occurred in the third week, but it might be as late as the fifth or sixth week. The last symptom to disappear was jaundice which at times persisted a few weeks after the temperature had become normal. In about 25 per cent of the cases in the third to the fifth week of the disease there was a relapse, which suddenly occurred with all the accompanying symptoms of the disease but was usually milder and lasted only two to seven days. Leptospiras were found in the urine, but the titer of the agglutinins in the blood was high.

#### LABORATORY DATA

**Hematologic Observations**—The blood picture was one of microcytic hypochromic anemia. The blood count varied from normal to 1.81 million per cubic millimeter, with an average of about 3.5 million. There was occasionally a slight reduction in the platelet count. The bleeding and coagulation times were not altered. The prothrombin time was determined in 7 cases, and 6 showed moderate to considerable prolongation. The lowest was 40 per cent. The fragility of the erythrocytes was not altered. The sedimentation rate was increased. There was an active leukocytosis in 83 per cent of the cases, ranging from 10,000 to 30,000. In 6 instances the white cell count was within normal limits. There was a striking increase in the number of neutrophils with a shift to the left.

**Blood Chemistry**—The van den Bergh reaction was direct. In the beginning of the disease the reaction was not intense, but progressively the icterus index and blood bilirubin levels reached as high as 300 units and 90 mg per hundred cubic centimeters respectively. The blood chlorides, sugar and cholesterol were not altered. The blood urea and uric acid began to rise, and they reached their peak during the nephritic stage. Usually the urea nitrogen in the blood was around 50 mg, but the highest level in this series was 177 mg per hundred cubic centimeters. The blood creatinine was determined at frequent intervals. Late during the course of the disease it rose to very high levels. Ten mg per hundred cubic centimeters of creatinine was found to be a bad prognostic sign, and when the level reached 12 to 14 mg the outcome of the infection was invariably fatal. The highest level in the present series was 17.8 mg. There was some evidence of reduction in the serum proteins. The carbon dioxide combining power of the plasma was normal or reduced. The hippuric acid test for liver function was reduced, and the cephalin cholesterol flocculation test was at times positive.

**Urinary Observations**—The urinary output was diminished, and in the fatal cases there was anuria. Albumin, red and white blood cells, hyaline and granular casts, bile pigments and excess of urobilinogen were present. Glycosuria occurred in 10 per cent of the cases. The phenolsulfonphthalein excretion was reduced.

**Stools**—Four patients (13.3 per cent) had clay colored stools.



## COMPLICATIONS

Severe hemorrhages may be the usual features of the disease. Pneumonia, meningismus and meningitis are unusual. Multiple bacterial abscesses of the liver, myocarditis, iridocyclitis and optic neuritis have also been reported.

## MORTALITY

Strong<sup>14</sup> stated that in Japan the mortality rate is 48 per cent while in Europe it is 4 to 32 per cent. In this series the mortality rate was 16 $\frac{2}{3}$  per cent. A white man aged 39 died on the eighth day of the disease, a Negro man aged 68 died on the twenty-seventh day of the disease, a white man aged 49 died on the thirteenth day, a white man aged 53 died on the eleventh day and a white man aged 43 died on the twenty-fifth day of the disease. Patients may die at any stage of the disease but young patients invariably recovered.

## LABORATORY DIAGNOSIS

In 1939 laboratory methods for the diagnosis of Weil's disease were introduced in New Orleans. Since that time 45 patients have been admitted to the Charity Hospital with the probable diagnosis of Weil's disease and 30 were found to have leptospirosis by diagnostic laboratory methods, hence 66 $\frac{2}{3}$  per cent of the presumptive diagnoses were confirmed. In 1 case the diagnosis was Weil's disease on admission. In 5 other cases the admission diagnosis was catarrhal jaundice.

TABLE 2—Summary of the Agglutinin Titers

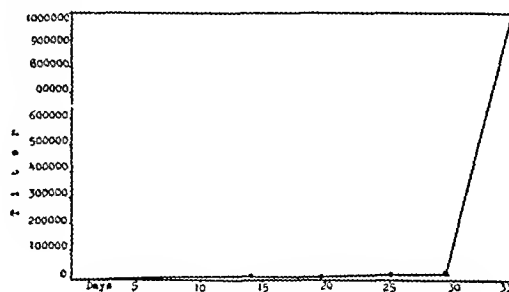
| Cases | Titer              |
|-------|--------------------|
| 10    | 1 300 to 1 100 000 |
| 3     | 1 3 000            |
| 3     | 1 10 000           |
| 1     | 1 30 000           |
| 2     | 1 100 000          |
| 5     | 1 1 000 000        |

Multiple clinical diagnoses were given in every case, including pneumonia and atypical pneumonia, cholecystitis, hepatitis, typhus, typhoid, subacute bacterial endocarditis, abscess of the liver, yellow fever, acute yellow atrophy of the liver, nephritis, tularemia, meningitis, malaria, brucellosis, peripheral neuritis and avitaminosis.

The protean nature of the manifestations of leptospiral infections is well recognized. Therefore all clinical diagnoses must be proved by laboratory methods. During the septicemic and hepatic stages the blood is teeming with leptospires, and the dark field examination of the blood by an experienced investigator is the best diagnostic method. Schultz<sup>20</sup> observed pseudospirochetes arising from red blood cells, which can be easily mistaken for leptospires by an inexperienced worker. In this series 7 cases (23.3 per cent) were diagnosed by the finding of leptospires in the dark field. In 1 case the organisms were found as late as the tenth day after the onset of the disease. If the blood of the patients had been examined routinely during the early stages, the percentage would undoubtedly have been higher. In 1 case leptospires were found in the urine and in the cerebrospinal fluid in another case.

In 24 cases (80 per cent) the diagnosis was made by the agglutination reaction. The titer began to rise during the hepatic stage, reached the diagnostic level during the nephritic stage and was at its peak during

convalescence. In my opinion the diagnostic titer must be at least 1 300, with a steady rise in the titer. Amnestic reaction may be observed in persons who have residual agglutinins in the blood due to a previous clinical or subclinical infection and in whom a fever develops which is not related to leptospirosis. In such cases there may be an early rise in the agglutinin titer, with fall later on.



Agglutinin titers in a case of leptospirosis

The following case report illustrates the way in which the agglutinin titer may remain at a low level during the course of the disease and then rise very rapidly toward the end, as shown in the accompanying chart.

J Y, a white man aged 56, was admitted to the hospital on Jan 12, 1942, the seventh day of his illness, with a tentative admission diagnosis of Weil's disease, catarrhal jaundice, yellow fever or acute yellow atrophy of the liver, because he was having chills, fever, nausea, vomiting, articular and muscular pains, headache, epigastric pain, jaundice, conjunctival injection, auricular premature beats, palpable anterior cervical lymph nodes, leukocytosis of 30,000 with 92 per cent neutrophils and 325 million erythrocytes, direct van den Bergh reaction and icterus index of 120 units, with urobilinogen and bilirubin, albumin, red and white blood cells and granular casts in the urine. The blood pressure was 140/70, the blood urea nitrogen level was 37 mg per hundred cubic centimeters, 0.22 Gm of sodium benzoate was detoxified, and 50 per cent of injected bromsulphalein was excreted in five minutes, 0 in fifteen and 0 in thirty minutes. The duration of the disease was thirty-five days. The patient was hospitalized thirty-seven days.

Leptospira canicola infection was reported by Bruno and his associates<sup>12</sup>. The serum of these patients agglutinated L. canicola in 1 10,000 and 1 1,000,000

TABLE 3—Important Data in Fatal Cases of Leptospirosis

| Patient | Age, Yr | Duration, Days | Levadi | Agglutination | Dark Field |
|---------|---------|----------------|--------|---------------|------------|
| O D     | 39      | 8              | +      |               |            |
| A T     | 68      | 27             | —      | 1 1 000 000   |            |
| H G     | 49      | 13             | —      | 1 300         |            |
| R R     | 53      | 11             | +      |               | +          |
| J O     | 43      | 25             | +      |               | +          |

dilutions respectively and L. icterohemorrhagiae in 1 1,000 and 1 1,000,000 respectively. There is no laboratory evidence that dogs in New Orleans suffer from canicola fever, even though jaundice is at times present in local dogs. Cultural methods and guinea pig inoculations were performed in some of the present cases, but the results have been consistently negative, even though young guinea pigs and large inoculums were used. Lately Lederle's slide agglutination antigen has been employed for the quick diagnosis of the disease, but it requires checking with the regular agglutination technique.

20. Schultz, E. W. The Pseudospirochetes Derived from the Red Blood Cell. J. Lab. & Clin. Med. 8: 375, 1923.

Leptospiras can be demonstrated by the Fontana stain in fluids and by the Levaditi stain in tissues. If the interval between death and preservation of the tissues for the silver stain is prolonged, the organisms may disintegrate. Table 3 shows the laboratory data in 5 fatal cases. Although a high agglutinin titer is usually a good prognostic sign, 1 patient (A T) died even though the titer was 1,000,000.

#### CLINICAL DIAGNOSIS

In New Orleans leptospirosis must be suspected in a patient who presents the following picture:

- 1 Sudden onset of chills, fever, arthralgia, myalgia, injection of the conjunctiva, hemorrhagic phenomena, leukocytosis.

- 2 Hepatomegaly and jaundice appearing on the fifth to seventh day, but anicteric cases must be considered.

- 3 Albuminuria, casts, kidney failure with the retention of metabolites in the blood.

- 4 A history of exposure to rats or of coming into contact with water or food which is polluted with the excreta of rats and possibly of dogs.

- 5 The finding of leptospiras in the blood or urine and agglutinins in the serum of the patient.

#### TREATMENT

It is claimed that the specific treatment of leptospirosis consists in the administration of hyperimmune horse serum which must have an agglutinin titer of 1,000,000 against *Leptospira icterohemorrhagiae* and *Leptospira canicola*. The dose is 60 cc (Inada<sup>21</sup>). Inada and his associates,<sup>2</sup> Griffith,<sup>22</sup> Pettit and his associates,<sup>23</sup> Zimmermann and Arjona<sup>24</sup> and Walch-Sorgdrager<sup>25</sup> have shown that when the serum is used early in the disease the mortality is lowered. In Japan the mortality rate dropped from 30.6 to 18.3 per cent. In this country Games and Johnson<sup>26</sup> used 30 cc of convalescent serum, and Ashe and his associates<sup>19</sup> used 500 cc of convalescent whole blood with good results. To be effective the convalescent serum must have a titer of 1:20,000. In the present series no hyperimmune horse serum was used. One patient received 250 cc of convalescent whole blood in the fourth week of the disease, with no appreciable results.

All arsenicals are probably contraindicated, even though neoarsphenamine has been used in some cases with questionable results.

Sazerac and Nakamura<sup>27</sup> used sodium bismuth tartrate intravenously in guinea pigs with favorable results. Uhlenhuth and Seiffert<sup>28</sup> used soluble colloidal bismuth chimiofon compound and reported good results. None of these drugs have been tried in the New Orleans series. Sulfonamides were administered in some of these cases, but they appeared to have no effect on the leptospiras. However, they are indicated when there is a bacterial complication.

21 Inada R. Prophylaxis and Serum Treatment of *Spirochaetosis Icterohemorrhagica*. Japan M World 2: 189, 1922.

22 Griffith A. Cultivation of *L. Icterohemorrhagiae* and the Production of Therapeutic Spirochaetal Sera. J Hyg 18: 59, 1919.

23 Pettit A. and others. Les spirochetoses. Bull Office internat d'hyg pub 29: 1023, 1937.

24 Zimmermann E. and Arjona E. Serologischer Titer und Heilwert der Seren gegen Weilsche Krankheit. Ztschr f Immunitätsforsch u exper Therap 84: 111, 1934. abstracted Trop Dis Bull 32: 601, 1935.

25 Walch-Sorgdrager B. Leptospiroses. Bull Health Organ League of Nations 8: 143, 1939.

26 Games A. R. and Johnson R. P. Weil's Disease. Report of Seven Cases. Arch Int Med 60: 817 (Nov.) 1937.

27 Sazerac, R. and Nakamura, H. Le bismuth dans la spirochetose ictérohemorrhagique. Presse med 1: 759, 1927.

28 Uhlenhuth, P. and Seiffert W. Untersuchungen über die Ausheilung der Weilschen Krankheit bei Meerschweinchen unter der Behandlung mit Bismuto Yatron A. Zentralbl f Bakt (Abt 1) 114: 241, 1929.

Since hyperimmune horse serum and convalescent serum are not usually available and since the diagnosis of the disease is made late during the course of the infection, it is obvious that treatment must be symptomatic. The patients are given high carbohydrate, high protein and high vitamin diets to support the liver. Calcium gluconate is administered parenterally. The fluid intake of the patient must be adequate so that fluids must be given by mouth, intravenously or by hypodermoclysis. Saline and dextrose infusions should be given frequently. When kidney failure becomes apparent the amount of dextrose must be increased. Caffeine derivatives must be given in moderately large doses and hot applications or diathermy must be applied to the lumbar regions to encourage the secretion of urine. Mercurial diuretics are contraindicated. Small transfusions are helpful. Sedatives must be used when needed, cardiac tonics and stimulants are indicated when there is derangement of cardiac functions. During convalescence tonics, vitamins and iron should be administered.

#### PROPHYLAXIS

Wani<sup>29</sup> prepared a vaccine by treating emulsions of infected liver or cultures with 0.5 per cent phenol and refrigerating for seven days. Ten thousand two hundred and sixty-two miners were inoculated; they showed a morbidity of 0.3 per cent, while in the control, nonvaccinated, group the morbidity rate was 1.12 per cent. The serum of such persons protected guinea pigs against lethal doses of leptospiras. Van Thiel<sup>30</sup> used living avirulent strains of leptospiras which were maintained in cultures for eight years. He inoculated 5 persons with this strain. Four had atypical attacks, but the fifth manifested icterus. It is not advisable to use living leptospiras, since the factors which enhance the virulence of the organisms are not known. In the United States the disease is sporadic and there is no necessity for prophylactic inoculation.

#### SUMMARY

A clinical report on 30 cases of leptospirosis in Louisiana reveals that:

- 1 The incidence among the Charity Hospital inpatients from 1939 to 1943 was 1 case of leptospirosis to 8,445 general admissions and 1 case to 1,343 general medical admissions, while in 1943 it was 1 case to 5,263 general admissions and 1 to 760 general medical admissions.

- 2 Two patients had *L. canicola* infection.

- 3 The onset of the disease was sudden in two thirds of the cases and icterus developed between the sixth and the seventh day after the onset of fever. Two patients were anicteric. The van den Bergh reaction was direct, the prothrombin time was prolonged, and hippuric acid excretion was reduced. In 10 per cent of the cases the liver was not enlarged even though jaundice was present. Splenomegaly was present in 10 per cent, hemorrhagic phenomena in 53.3 per cent and respiratory symptoms in 40 per cent of the cases. There was electrocardiographic evidence of cardiac lesions. All patients showed varying grades of pathologic changes in the kidneys, but 16.7 per cent had anuria, 80 per cent had albuminuria, casts, red and white blood cells, 10 per cent glycosuria and 83.4 per cent had leukocytosis. The phenolsulfonphthalein excretion

29 Wani H. Ueber die Prophylaxe der Spirochaetose icterohemorrhagica. Inada durch Schutzimpfung. Ztchr f Immunitätsforsch u exper Therap 79: 1, 1933.

30 van Thiel P. H. Immunization Against Weil's Disease with Live Avirulent *Leptospira*. Geneesk tijdschr v Nederl Indie 78: 1859, 1934.

was reduced, and there was elevation of blood urea and creatinine. The duration of the disease was three to six weeks, and the mortality rate was 16% per cent.

4 Sixty-six per cent of the suspected cases of leptospirosis were confirmed by laboratory methods. Seven cases (23.3 per cent) were diagnosed by the finding of leptospiras in the blood, 1 by their presence in the urine and 1 by their presence in the spinal fluid, in 2 fatal cases diagnosis was made by the Levaditi stain of sections of organs. In 24 cases (80 per cent) diagnosis was established by the agglutination reactions, in which the diagnostic titer ranged from 1:300 to 1:1,000,000.

5 The treatment was symptomatic, but 1 patient received 250 cc of convalescent whole blood.

## HYPERSENSITIVITY OF THE TUBERCULIN TYPE TO CRYSTALLINE PENICILLIN SODIUM

HENRY WELCH, PH D

AND

ADOLPH ROSTENBERG JR, MD

WASHINGTON D C

In the limited number of reports that have appeared on the clinical use of penicillin sodium, urticaria seems to be the chief, if not the only evidence of sensitivity to this drug. Keefer<sup>1</sup> reports 14 cases of urticaria out of 500 cases treated and Lyons<sup>2</sup> 12 cases of urticaria out of 209 treated. These reactions from commercial penicillin sodium, if predicated on a sensitization mechanism, are obviously not necessarily due to penicillin itself.

During the course of some studies designed to determine whether a correlation exists between the immediate local reactions obtained with certain lots of commercial penicillin sodium on intramuscular injection in man and those obtained by intracutaneous injection of the same material in rabbits and in man, a person, J D W, was injected intracutaneously in the left arm with four lots of commercial penicillin sodium representing the products of three different manufacturers. Each injection consisted of 0.05 cc containing 1,000 units of penicillin. The subject had never been inoculated with penicillin previously but has worked with a variety of molds for the past fifteen years. Our investigations (about 200 intracutaneous injections in 12 people) indicate that most lots of penicillin sodium, on intracutaneous inoculation of 1,000 units dissolved in 0.1 cc of water, produce within one to two hours an area of about 8 to 10 mm of erythema and edema, while with some lots a small blister subsequently develops at the site of the inoculation. It therefore may be said that most commercial penicillin sodium is a mild primary irritant when injected intracutaneously. In contrast to this, crystalline penicillin has no primary irritating properties on intracutaneous injection, judging from 24 tests on 6 people. It is obvious, therefore, that the irritating properties of commercial penicillin sodium are from contaminants resulting as a by-product of its manufacture. None of the four skin tests in J D W reacted during the first two hours. The first signs of a reaction occurred about six hours

after the intradermal tests had been made, at which time some redness and itching at the point of inoculation were noted. On observation twenty-four hours after injection, the erythematous areas had extended considerably and some infiltration was present. By the forty-eighth hour the points of inoculation had fused together into one large, erythematous, infiltrated, vesicular area. The reaction reached its peak between the forty-eighth and ninety-sixth hours, at which time the area measured 108 by 20 mm and there was considerable exudation (fig 1). Following the application of calamine lotion the area dried up, the superficial skin exfoliated and healing gradually took place.

Since commercial penicillin sodium is not a chemically pure compound it seemed possible that this person might be sensitive to some contaminating product resulting from the process of extraction. It is of interest that, of the three companies which produced the material injected into J D W, two produce penicillin by the deep tank process while the third uses the surface culture technic. All three companies use different methods of extraction.

In order to determine whether J D W's hypersensitivity was due to "penicillin" as such or to some contaminant resulting from the process of extraction,



Fig 1—Ninety-six hours after the first four intradermal tests with commercial penicillin sodium.

he was given two intracutaneous injections of penicillin in the right arm, one, the crystalline product (1,650 units per milligram) and the other a commercial product. The latter was produced by the surface culture technic. Both injections consisted of 1,000 units of penicillin contained in a volume of 0.05 cc of water. At the same time, similar injections were made into two other persons as controls. Observations after one and two hours showed no reaction in any of these three individuals. The following day (approximately twenty-four hours later) the controls showed no reaction as a result of the injection of either the crystalline or the commercial penicillin sodium, but J D W exhibited a definite reaction to both products. The areas were erythematous and infiltrated, and each measured 15 mm in diameter. Within forty-eight hours the areas had increased to 30 mm in diameter (figs 2 and 3).

It should be pointed out that, although the crystalline penicillin sodium is for all practical purposes a pure product, there might be associated with it minute amounts of contaminating material resulting from the process of extraction and not eliminated in crystallization. The fact, however, that the reaction obtained by the intradermal injection of the crystalline material elicited a reaction of approximately the same intensity as that produced by the injection of the commercial

From the Food and Drug Administration.  
1 Keefer C S, Blake F G, Marshall E K Jr, Lockwood J S, and Wood W B Jr. Penicillin in the Treatment of Infections. A Report of 500 Cases. J A M A 122: 1217 (Aug 28) 1943.  
2 Lyons C. Penicillin Therapy of Surgical Infections in the U S Army. J A M A 123: 1007 (Dec. 18) 1943.

product would tend to obviate any minute amount of contaminating material as the primary cause of the reaction

The course and clinical characteristics of the reaction exhibited to the intradermal injection of the penicillin had led us to believe that the hypersensitivity shown

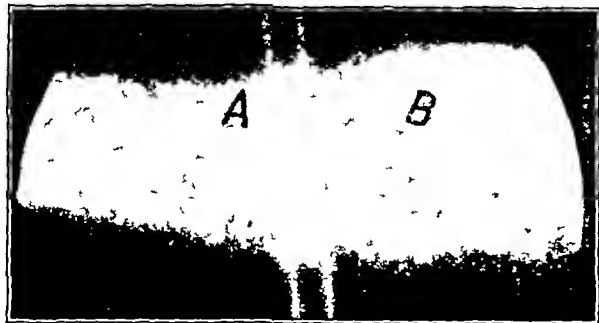


Fig. 2—Twenty four hours after intradermal tests with commercial penicillin sodium

by J D W was of the "tuberculin" variety. But in order to determine whether there was any eczematous component, it was decided to perform patch tests on him. Two patch tests with a few drops of commercial penicillin sodium (assaying 4,000 units per cubic centimeter) were performed. One test was applied to the site at which the crystalline penicillin sodium had previously been injected and the other to the upper arm in a previously uninjected area. The site at which the crystalline penicillin sodium had been injected had apparently completely healed except for a faint tinge of redness. The patches were removed after forty-eight hours, and the one which had been applied to the area where the crystalline penicillin had previously been injected showed a sharply delineated erythematous infiltrated area (fig 4), whereas the patch applied to the upper arm was completely negative.

In order to elucidate this phenomenon further, four patch tests were then applied to the subject's left arm, two were of commercial penicillin sodium (4,000 units per cubic centimeter) and two of the corn steep liquor medium normally used for the production of penicillin. One with each substance was applied to areas where



Fig. 3—Forty-eight hours after intradermal tests with crystalline penicillin sodium

previous penicillin injections had been made, and one with each substance to areas where no previous penicillin injection had been made. The areas where the penicillin sodium had previously been injected were, at the time of patch testing, apparently healed except for a faint residual tinge of redness. In order to be sure that neither the penicillin sodium nor the corn steep liquor medium was a primary irritant these

substances were applied as patch tests to 4 persons who had not exhibited any reaction to penicillin sodium on intradermal injection. All tests were removed and read at the end of forty-eight hours. The penicillin sodium applied to the previously penicillin injected area (J D W) gave a reaction identical to the one that he exhibited to the same test on the other arm previously described. The test with the corn steep liquor medium gave a weakly positive reaction consisting of erythema and very slight infiltration, but this was quantitatively much less than the reaction manifested by the penicillin sodium. After ninety-six hours the patch test to the penicillin sodium was still positive whereas that to the corn steep liquor medium had faded out. The patch tests applied to the upper arms as well as the tests applied to the controls were completely negative.

The serum of J D W was tested for precipitins against 8 samples of commercial and one of crystalline penicillin sodium. True precipitation was not demonstrated. Although with some samples of penicillin a fine precipitate developed, this type of precipitate was demonstrated also with normal serum and was probably due to a chemical contaminant of these samples.



Fig. 4—Forty eight hour appearance of patch test applied to site of previous injection of crystalline penicillin

Heterophile agglutinins were demonstrated in low titer (1:16) in J D W's serum. Since these agglutinins could be removed completely by adsorption with guinea pig kidney and not by adsorption with rabbit erythrocytes, they were classified as native rather than serum sickness agglutinins.<sup>3</sup>

In order to determine whether it was possible to transfer the sensitivity shown by J D W to animals, 0.5 cc of his serum was injected intradermally into two areas on the clipped abdomen of two rabbits. At the same time two 0.5 cc amounts of a normal serum obtained from a person (G G S) who had never been injected with penicillin were injected similarly. In the first rabbit, twenty-four hours later, 1,000 units of crystalline penicillin sodium was injected into two of the areas previously injected with serum (one injection in the area injected with G G S's normal serum and one injected in the area inoculated with J D W's serum). In the remaining two areas, commercial penicillin sodium was injected similarly. The second rabbit which had been treated with these two serums, was injected with penicillin sodium in exactly the same manner forty-eight hours after the injection of the

3 Stuart C A, Welch H, Cunningham J and Burge A V. Infectious Mononucleosis (Further Studies). Arch Int Med 59: 512 (Sept.) 1936

serum Following injection of the penicillin, the rabbits were observed for a period of three days. At no time during this interval did a reaction occur in the skin. Passive transference experiments were attempted in man. Six persons were injected intradermally in separate sites with 0.1 cc of J. D. W.'s serum, 0.1 cc of a normal serum (from an individual who had never been exposed to penicillin and who, on skin testing with crystalline penicillin, exhibited no cutaneous reactivity) and at a third site with 0.1 cc of crystalline penicillin sodium containing 1,000 units. Twenty-four hours later, at the site of the previous injection of serums (both J. D. W.'s and control), 1,000 units of crystalline penicillin sodium in a volume of 0.1 cc was injected. These six persons were kept under observation for three quarters of an hour and no reaction developed during this time or within the next twenty-four hours. Two of the subjects, however, C. W. P. and V. C., both of whom had had a number of previous intradermal injections of commercial penicillin sodium, showed reactions (erythema plus itching) at the site of these injections.

## COMMENT

From a study of the reactions given by J. D. W. it appears that this person's hypersensitivity is definitely of the tuberculin type. Our reasons for stating this are (a) the lack of any immediate reaction to the intradermal injection of the material, (b) the fact that the reactions first became manifest approximately six hours after the intradermal introduction of the allergen and reached a maximum between twenty-four and forty-eight hours, (c) the fact that the reaction clinically consisted first of erythema, then infiltration and subsequently exudation, (d) the lack of demonstrable anaphylactic antibodies as evidenced by the negative precipitin tests and (e) the lack of demonstrable passive transference antibodies as evidenced by the failure to transfer the sensitivity to human volunteers.

It should be emphasized that as far as we were able to determine this person's sensitivity was to pure crystalline penicillin sodium. The crystalline material used was a portion of the master standard which has been established by the Food and Drug Administration for the assay of penicillin and as far as is known is a definite crystalline entity.

We are unable to state unequivocally the meaning of the positive patch test. Although clinically the reaction was of an eczematous nature and consonant with that seen in an eczematous hypersensitivity, it is difficult to explain the negative patch tests in J. D. W. when applied to normal skin. As far as we can see, the reason for the lack of reaction on the part of the normal skin could have been from one of two causes: (a) the eczematous hypersensitivity did not exist except in the areas that had previously been injected with penicillin or (b) the normal skin was less permeable than the areas that had previously been injected so that the penicillin could not get to the eczematogenous shock tissue. It is possible of course that the positive patch test result in the lower arm was in a sense pseudo-positive in that it was not a reaction on the part of a hypersensitive epidermis but a reaction of the cells of the reticuloendothelial system in the cutis brought about by the transepidermal penetration of the allergen or, in other words, another demonstration of this individual's tuberculin type of sensitivity.

Ordinarily the tuberculin type of hypersensitivity indicates that the individual has had exposure to the

living agent. J. D. W. gives no history of an illness which we could reasonably state was due to *Penicillium* sp., but this man has been intimately exposed to molds of various kinds for the past fifteen years, so that it is not too unreasonable to assume that he has had a subclinical infection with *Penicillium* sp. or an immunologically related fungus, which has caused this alteration in his immune responses.

Preliminary unpublished observations in this laboratory indicate that various sensitization phenomena may develop fairly readily to penicillin in both man and animals. The experience with J. D. W. and these facts suggest that penicillin should be handled with caution, especially in its commercial production in which intimate contact with large volumes of this drug and great numbers of spores cannot be avoided.<sup>4</sup>

## SUMMARY AND CONCLUSIONS

- 1 A person was observed who exhibits a tuberculin type of hypersensitivity to crystalline penicillin sodium. The man had no prior exposure to penicillin.
- 2 However, he has had intimate contact with molds over a period of years.
- 3 The significance of such a hypersensitivity when the drug is to be used therapeutically is unknown.

## PENICILLIN IN THE TREATMENT OF CAVERNOUS SINUS THROMBO- PHLEBITIS

### RECOVERY WITH UNILATERAL ASCENDING OPTIC ATROPHY

W. M. NICHOLSON, M.D.

AND

W. B. ANDERSON, M.D.

DURHAM, N. C.

Until the advent of the sulfonamides cavernous sinus thrombosis or thrombophlebitis, infected with the staphylococcus, was universally fatal, but several instances of recovery under sulfonamide treatments have been reported.

We shall report in this paper an instance of cavernous sinus thrombosis, with staphylococcal septicemia, which was successfully treated with penicillin.

A detailed anatomic description of the cavernous sinuses and the clinical significance of their tributaries is contained in a paper by Grove.<sup>1</sup> According to this author, when a thrombophlebitis of the facial vein develops as a result of the injudicious incision of a furuncle of the upper lip, or the extraction of a hair from an infected follicle of the brow or nares, and this thrombophlebitis extends through the angular and ophthalmic veins to the cavernous sinus (the anterior route) the mortality is 100 per cent. Statistical studies, gathered from previous reports, which included cavernous sinus thrombosis as an extension of the thrombophlebitis from the lateral or the pterygoid sinuses, reveals a mortality of 90 per cent.

<sup>4</sup> Since submission of this article a study of 140 unexposed persons indicates that approximately 3 per cent exhibit a tuberculin type of reaction to the intral injection of crystalline penicillin sodium.

From the Departments of Medicine and Surgery, Duke Hospital and Medical School.

The penicillin was provided by the Office of Scientific Research and Development from supplies assigned by the Committee on Medical Research for clinical investigations recommended by the Committee on Chemotherapeutic and Other Agents of the National Research Council.

<sup>1</sup> Grove, W. E. Septic and Aseptic Types of Thrombosis of the Cavernous Sinus. *Arch. Otolaryng.* 24:29 (July) 1936.

In 8 instances of cavernous sinus thrombosis studied at Duke Hospital, including 1 in which 10,000 units of penicillin was administered intravenously and 15,000 units by continuous intravenous drip during the twenty-four hour hospital stay, all the patients died. As late as 1937, MacNeal and Cavallo<sup>2</sup> could find records of only seven reported recoveries from acute thrombosis of the cavernous sinus.

However, the Wolfes<sup>3</sup> report a recovery from an anterior focus (infected hair follicle) through the use of sulfathiazole.

Skemp, Afrenow and Rhoads<sup>4</sup> also report a recovery from an anterior focus (infected hair follicle of brow) due to the use of sulfathiazole (149 Gm in twenty-three days, at one time 21 Gm per day). Schall<sup>5</sup> cites three recoveries due to the use of sulfonamides by Barnshaw, Seydell and Pace.

The case here reported is of especial interest, particularly to ophthalmologists, in that we were able to observe the obliteration of branches of the retinal artery in association with engorgement of the retinal veins and a rapid atrophy of the optic nerve.

#### REPORT OF CASE

**History**—A white farmer aged 30 was admitted on Oct 31, 1943 in a semicomatose condition. Four days before admission he noticed a small furuncle in the right external naris. The following afternoon he received a smart blow across the bridge of his nose and later in the evening developed a severe pain in this area and severe bifrontal headache. The next morning, two days before admission he had a hard chill, which was followed by high fever. At this time periorbital edema was apparent, and during the day it progressed to such an extent that he could not open his eyes. Thick yellow pus exuded from the right eye. The edema and redness extended from the bridge of the nose up over both frontal areas and down across both maxillae. The patient was given sulfadiazine while at home, in spite of which he continued to have chills and fever. On the morning of admission he became stuporous and could be aroused only by painful stimuli.

On admission three days after onset, he presented the picture of an extremely ill person lying quietly in bed in a semicomatose state. There was bilateral exophthalmos with a pronounced swelling of the lids. The right upper lid could not be voluntarily retracted; the left could be retracted partially. A brawny, deep reddish purple swelling extended from below the mandible over the nose and cheeks well up to the hair line. The nose was remarkably swollen, being enlarged to more than twice its normal size (fig 1). There was local elevation of temperature and much tenderness over the entire area. The right side of the face in all respects showed greater involvement than the left. The conjunctiva of the right eye was chemotic; the right eye more proptose than the left. Movement of the right eye was limited but no paralysis was noted at this time. There was no involvement of the fundi at this stage of the disease.

The lungs were clear both to physical and to x-ray examination. Save for a loud systolic murmur over the apical region the heart was normal. The remainder of the examination revealed nothing of interest.

**Laboratory Studies**—Blood Kahn and Kline reactions were negative. Blood examination revealed 5,150,000 red blood cells, hemoglobin 160 Gm, 30,600 white blood cells, of which 89 per cent were segmented polymorphonuclears, 0 per cent stab cells, 0 per cent young forms, 0 per cent eosinophils, 0 per cent basophils, 1 per cent mononuclears, 5 per cent large lymphocytes and 5 per cent small lymphocytes.

Blood cultures on October 31 yielded two colonies of hemolytic *Staphylococcus aureus* per cubic centimeter, November 3 less than one colony of hemolytic *Staphylococcus aureus* per cubic centimeter, and November 5, 7 and 9 no growth.

In the urine November 1 albumin was 1 plus, and there was an occasional red blood cell and white blood cell in the sediment. November 6 there was a trace of albumin and an occasional red blood cell. Subsequent examinations of the urine gave normal results.

**Course in the Hospital**—The patient had been given sulfadiazine before admission, and the concentration of sulfadiazine in the blood was 75 mg per hundred cubic centimeters. During the next twelve hours he was given 3 Gm of sulfadiazine intravenously and 4 Gm by mouth, but despite this his condition grew worse. The edema and induration became so great as to make fundus examination impossible. It was decided that penicillin should be given, and he then received 10,000 units intravenously and 5,000 units subcutaneously. No further intravenous administration of the material was given but the subcutaneous route was used throughout his hospital stay in dosages



Fig 1—Appearance of the patient three days after admission to the hospital. The face, eyelids and nose are edematous.

as shown in the chart (fig 4). Since the differential showed a predominance of segmented forms of polymorphonuclear cells, staphylococcus antitoxin was not given.

No change in his condition was apparent until six days after admission at which time he became rational and responded to questions. The swelling of his face was less and the temperature had fallen considerably. He complained bitterly of a frontal headache which was somewhat worse on the right.

His course from that time was one of steady improvement. By the fourteenth hospital day penicillin was discontinued as the patient had been afebrile for twenty-four hours. However, on the nineteenth hospital day his temperature had risen to 38.5 C (101.5 F) and the headache which had improved somewhat became more severe. Penicillin was again given and continued for eight days. After two days he was relieved of his headache entirely, became afebrile and his improvement became more pronounced. On the tenth day the swelling had subsided sufficiently to permit the use of the left eye. On the twelfth day the left lid was practically normal; the right still greatly swollen. On the twenty-second day of illness the right lid could be partially elevated. It was then discovered that vision in the right eye was limited to light perception.

<sup>2</sup> MacNeal W J and Cavallo M E. Streptococcus Bacteremia and Afferent Thrombosis of the Cavernous Sinus with Recovery. J A M A 109 2139 (Dec. 25) 1937.

<sup>3</sup> Wolfe C T and Wolfe W C. Thrombosis of the Cavernous Sinus with Recovery. Arch Otolaryng 33 81 (Jan) 1941.

<sup>4</sup> Skemp H I, Afrenow M L and Rhoads F S. Thrombosis of the Cavernous Sinus with Staphylococcus Septicemia Treated by Intravenous Injection of Sodium Sulfathiazole with Recovery. Arch. Otolaryng 34 1025 (Nov.) 1941.

<sup>5</sup> Schall L R. Treatment of Septic Thrombophlebitis of the Cavernous Sinus. J A M A 117 581 (Aug 23) 1941.



On the twenty-sixth day of the illness the sensorium had cleared and the condition of the patient was such as to permit a satisfactory ophthalmologic examination. Vision of the right eye was reduced to light perception. The left eye was apparently normal. The upper and lower lids were both puffy, the epider-



Fig. 2—Appearance at discharge from the hospital. There is still brawny edema over the bridge of the nose, pronounced dilatation of small veins over the nose and ptosis of the right lid.

mis glazed and cracked and discolored a dusky brownish red. There was considerable bulbar chemosis bilaterally, the right being more pronounced than the left. The pupils were regular and equal and reacted to light. There was bilateral limitation of upward motion. The intraocular tension was not recorded. Ophthalmoscopic examination of the left fundus revealed a normal disk, macula and vascular tree. The right disk showed

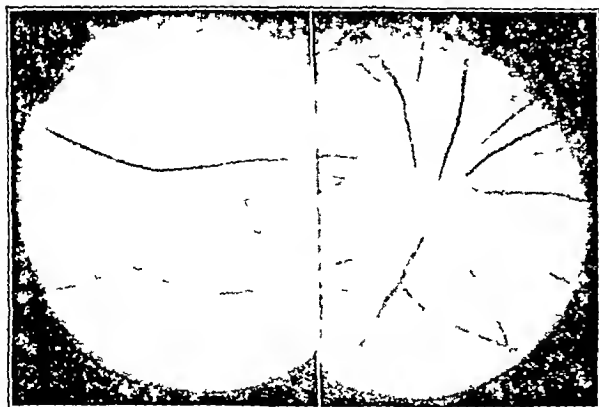


Fig. 3—Right fundus five months after onset. The arteries are constricted; there is also retinal edema.

moderate swelling, with engorgement of the retinal veins and partial collapse of the arterial bed. There was a diffuse retinal edema, the macula being sharply outlined but not having the cherry red color suggesting occlusion of the central retinal artery. One received the impression, nevertheless, that the retinal edema and the accentuated macula were the result of

ischemia, secondary to the collapse of the arterial tree, the expression collapse being here used as best describing the appearance of the arteries. The inferior temporal artery also showed extensive perivascular sheathing, as did the other branches though to a lesser degree.

The patient was discharged from the hospital after thirty-eight days. There was total loss of vision in the right eye. Sight in the left eye was unimpaired. Otherwise there were no symptoms. Slight edema of the upper part of the face persisted, particularly over the right orbit and the bridge of the nose. Also over the nose small dilated veins could be seen (fig. 2). There was a paresis of the right superior rectus and a ptosis of the right lid. The fundi remained as described.

On Feb. 17, 1944, sixty-one days after discharge, the patient returned to the clinic. The small veins (the inferior palpebral arcade) beneath both eyes were considerably dilated, with some fullness of the veins over the temporal area. There was occasional frontal headache. Vision in the right eye remained limited to light perception.

The optic fundi were examined in detail. The left was normal. The right disk was slightly elevated. A pronounced pallor was already apparent. The sheathing of the arteries

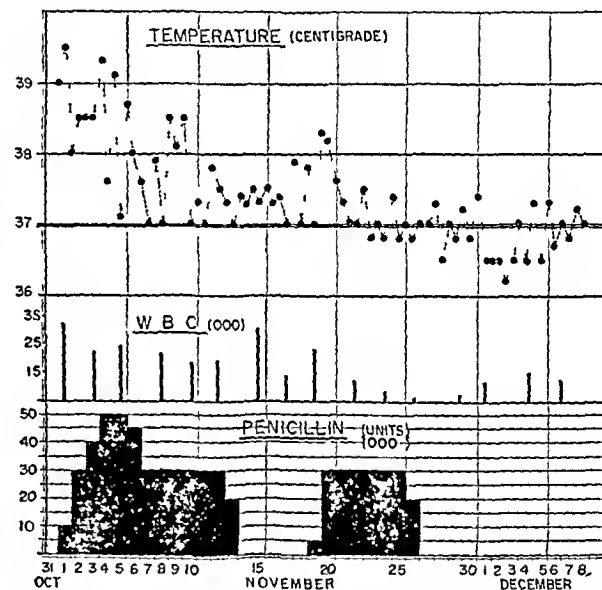


Fig. 4—Temperature, white blood cells and penicillin therapy while patient was in the hospital.

noted previously was not so apparent but was present to an abnormal degree. The arterial bed was more constricted near the disk than in the areas between the first and second bifurcations. The macula reflex was normal. Retinal edema was not apparent with the ophthalmoscope but could be demonstrated by fundus photography.

The physical examination on this date was otherwise negative.

The patient returned on March 21, approximately three months after discharge. Collateral superficial circulation about the lower lids in association with the temporal veins was more apparent. The bridge of the nose, the malar eminences and the median portion of the forehead appeared as a red mask and slight magnification revealed a tremendous number of dilated interlacing venules.

The left fundus was again found to be normal, vision 20/20. Vision in the right eye was limited to light perception. The disk showed great pallor with minimal gliosis. The macula appeared normal and the veins appeared normal in size and color. The arteries continued to show the great constriction noted previously. The perivascular sheathing of the arteries was not so prominent but was present. The arteries continued to show the greater constriction near the disk. Figure 3 is a fundus photograph on this date showing this abnormality in the caliber of the arterial tree. Some retinal edema still persisted.

## COMMENT

Two questions arise

1 Was the diagnosis correct?

2 What is the explanation for the constriction of the arterial tree and the optic atrophy?

As proof of the accuracy of the diagnosis in this case (1) there is the history of the furuncle in the lateral nasal wall with the secondary insult resulting from the sharp blow over the nasal bridge, (2) after a short incubation period there is the onset of general malaise, chills and increased temperature, (3) there is the definite bacteremia, staphylococci being recovered on two occasions from the blood stream, (4) there is the bilateral exophthalmos, chemosis of the conjunctiva, edema of the face and dusky red discoloration of the skin as evidence of venous obstruction and, finally, there is (5) the profound stupor

The increased perivascular sheathing of the proximal portions of the retinal artery, with constriction in these portions, and papilledema followed by secondary atrophy is difficult to explain. As a matter of fact no thoroughly satisfactory explanation has been offered as to why cavernous sinus thrombosis, proved at autopsy, can occur without papilledema. The explanation that the central retinal vein may empty into one of the ophthalmic veins rather than the cavernous sinus seems inadequate. The elder Stocker in 1906 suggested that papilledema in cavernous sinus thrombosis is uncommon because the arterial pressure in the eye is, at least in some cases, reduced by the increase in venous pressure coincident with the venous obstruction. In this particular case we feel that there was impediment to the arterial circulation, definitely more than would be expected by the relatively mild papilledema. The sheathing of the arteries suggested an inflammatory reaction in the arterial wall. This inflammatory reaction could have extended directly along the artery from the sinus, since it is here that the artery comes in closest contact with the infected focus, or the apparent inflammatory reaction, with constriction most pronounced in the proximal portions of the arterial tree, may have been due to the irritation of the sympathetic plexus in the carotid sheath in the sinus.

In any case it is probable that the atrophy was secondary to embarrassment of the arterial circulation with ischemia and later edema of the retina, in other words, an ascending degeneration.

## CONCLUSIONS

The efficacy of penicillin as a therapeutic agent is further demonstrated when used in cavernous sinus thrombosis.

Optic atrophy, resulting from cavernous sinus thrombosis, may be the result of an ascending degeneration secondary to constriction in the central retinal artery with ischemia of the retina, due either to arteritis or to irritation of the sympathetic plexus in the sinus.

**Founder of British Dermatology**—Robert Willan (1757-1812) of London is the accepted founder of British dermatology, who marks the beginning of modern dermatology. In 1785 he presented a plan for the classification of skin diseases before the Medical Society of London, which five years later was given the Fothergillian medal. Jenner received the same medal a few years later—Pusey, William Allen. *The History of Dermatology*. Springfield, Ill., Charles C Thomas, 1933.

NONSPECIFIC MAJOR OPERATIONS AND  
LUMBODORSAL SYMPATHECTOMYA COMPARISON BETWEEN THEIR EFFECTS ON  
THE BLOOD PRESSURE

FRANCISCO ROJAS, MD  
SANTIAGO CHILE

R H SMITHWICK, MD  
AND

PAUL D WHITE, MD  
BOSTON

The surgical treatment of hypertension by sympathetic resection has met many objections in the last few years. One of these concerns the specific value of sympathectomy in the reduction of blood pressure in the patients who have undergone operation.

In 1939 Volini and Flaxman<sup>1</sup> followed the course of the blood pressure of 17 hypertensive patients oper-

TABLE 1—General Data

|         |                           |                          |
|---------|---------------------------|--------------------------|
| Group 1 | Nonspecific operations    |                          |
|         | Number of cases           | 100                      |
|         | Males                     | 13                       |
|         | Females                   | 87                       |
|         | Mean age                  | 50 years<br>and 3 months |
| Group 2 | Lumbodorsal sympathectomy |                          |
|         | Number of cases           | 100                      |
|         | Males                     | 40                       |
|         | Females                   | 60                       |
|         | Mean age                  | 41 years<br>and 3 months |

TABLE 2—Immediate Effect of Operation

|         | No<br>Results   | Moderate<br>Reduction | Pronounced<br>Reduction |
|---------|---|-----------------------|-------------------------|
| Group 1 | Immediate reduction (up<br>to 6 months after the operation)                 |                       |                         |
|         | Systolic pressure   | 49%                   | 49%                     |
|         | Diastolic pressure  | 60.3%                 | 27.1%                   |
|         |   |                       | 2%<br>1% 6%             |
| Group 2 | Immediate reduction (10<br>days after the second stage of<br>the operation) |                       |                         |
|         | Systolic pressure   | 3.3%                  | 21.4%                   |
|         | Diastolic pressure  | 8.6%                  | 37.7%                   |
|         |   |                       | 2% ~ 3%<br>3.5%         |

ated on for different reasons not related to their hypertension. They observed in almost every case a decided reduction of the blood pressure after the operation. They arrived at the conclusion that the blood pressure reduction attributed to nerve resection was actually due to the general conditions to which every patient who is operated on is subjected: bed rest, anesthesia, sedatives, operative shock and special diet. On these bases they denied the specific effect of sympathetic nerve resection on hypertension.

In September 1943 Adamson and Dubo<sup>2</sup> arrived at a similar conclusion. Following the course of the blood pressure of 58 hypertensive patients submitted to various major operations during eight to ten days after the operation was performed, they observed a reduction of the systolic blood pressure, which was, on the average, 29 per cent of the blood pressure prior to the operation. Comparing this figure with the 28 per cent of systolic blood pressure reduction reported by

Read before the New England Heart Association, Jan. 31, 1944.  
1. Volini, I. F. and Flaxman, N. Effect of Nonspecific Operations on Essential Hypertension. *J. A. M. A.* 112: 2126-2128 (May 27) 1939.  
2. Adamson, J. D. and Dubo, S. The Effect of Surgical Operations on Blood Pressure. *Canad. M. A. J.* 49: 161-166, 1943.



Crile<sup>3</sup> after celiac ganglionectomy, they concluded, as Volini and Flaxman had done, that the results of sympathetic operations are not specific and can be observed after any major operation.

With the purpose of checking these opinions, we have reviewed the records of hypertensive patients admitted

TABLE 3—Condition Six or More Months Later

|  | No Results | Moderate Reduction | Pronounced Reduction |
|--|------------|--------------------|----------------------|
| Group 1 Late reduction (more than 6 months after the operation average period of observation 10 months)                      |            |                    |                      |
| Systolic pressure  | 82.7%      | 17.3%              | 0%                   |
| Diastolic pressure   | 86%        | 14%                | 0%                   |
| Group 2 Late reduction (more than 12 months after the second stage of the operation average period of observation 20 months) |            |                    |                      |
| Systolic pressure  | 0.6%       | 28.1%              | 62.3%                |
| Diastolic pressure   | 7.6%       | 36.1%              | 56.3%                |

to the Massachusetts General Hospital during the last ten years who were submitted to different major operations, in particular hysterectomy, mastectomy, gastrectomy and thyroidectomy. We have studied 100 cases in which the blood pressure readings were adequate for our purpose.

On the other hand, we have studied the reduction of blood pressure in 100 hypersensitive patients submitted to bilateral lumbodorsal sympathectomy by the procedure of Smithwick,<sup>4</sup> performed in two stages but otherwise unselected. Some of these records were taken from the files of the Massachusetts General Hospital and others from the private files of one of us (R. H. S.). The general data concerning the patients are summarized in table 1.

We have summarized in table 2 the immediate effect that the operations had in both groups. We have considered as "no results" reductions of less than 5 per cent of the initial systolic or diastolic blood pressure, "moderate" the reductions between 5 and 25 per cent and "pronounced" the reductions over 25 per cent of the blood pressure prior to the operation. As shown in table 2, even the immediate reduction of blood pressure is quite different in the nonspecific and the specific operation groups. Six or more months later this difference is still more evident, as summarized in table 3.

TABLE 4—Reduction of Blood Pressure After First Stage and After Second Stage of Lumbodorsal Sympathectomy

|   | No Results | Moderate Reduction | Pronounced Reduction |
|---|------------|--------------------|----------------------|
| Results 10 days after first stage of lumbodorsal sympathectomy  |            |                    |                      |
| Systolic pressure   | 30%        | 64%                | 6%                   |
| Diastolic pressure  | 4%         | 44%                | 14%                  |
| Results 10 days after second stage of lumbodorsal sympathectomy |            |                    |                      |
| Systolic pressure   | 3.3%       | 24.4%              | 72.3%                |
| Diastolic pressure  | 8.8%       | 37.7%              | 53.5%                |

We have also made a comparison of the reduction of blood pressure observed after the first stage with that after the second stage of lumbodorsal sympathectomy. The first stage of this operation can be considered like any major operation. It lasts one to one

and a half hours and is performed under general anesthesia. If the sympathetic resection has no specific effects, there should be no reason for a difference between the two stages of the operation. We have summarized in table 4 the results of this comparison.

Observing the figures in table 4, it is reasonable to conclude that the blood pressure reduction obtained by the first stage of lumbodorsal sympathectomy is quite similar to that observed after any other operation. It is not until the second stage is performed that a real reduction of blood pressure is observed.

As a final indication of the specificity of the sympathetic operation, we have summarized in table 5 the

TABLE 5—Blood Pressure of Patients Who Had Another Operation Besides Lumbodorsal Sympathectomy

| Patient  | Blood Pressure                        |
|--|---------------------------------------|
| 1 M G<br>3/23/43<br>Ovarietomy<br>3/24/43<br>4/7/43<br>Lumbodorsal sympathectomy<br>6/21/43<br>7/10/43   | 190/120<br><br>200/90<br><br>150/90   |
| 2 M B<br>12/13/29<br>Cholecystectomy<br>12/16/29<br>4/13/41<br>Lumbodorsal sympathectomy<br>6/3/41<br>6/28/41  | 150/90<br><br>224/114<br><br>140/80   |
| 3 L A<br>11/4/42<br>Right lumbodorsal sympathectomy<br>11/14/42<br>Cholecystectomy<br>11/28/42<br>Left lumbodorsal sympathectomy<br>12/23/42<br>12/28/42       | 240/100<br><br>210/110<br><br>170/90  |
| 4 I T<br>8/26/43<br>Thyroidectomy<br>8/27/43<br>8/29/43<br>Lumbodorsal sympathectomy<br>9/25/43<br>10/14/43  | 200/110<br><br>160/90<br><br>180/90   |
| 5 N M<br>5/10/43<br>Right lumbodorsal sympathectomy<br>5/13/43<br>Cholecystectomy<br>5/26/43<br>6/5/43<br>Left lumbodorsal sympathectomy<br>6/19/43<br>7/15/43 | 160/100<br><br>170/100<br><br>120/80  |
| 6 M L<br>5/30/38<br>Hysterectomy<br>6/5/38<br>9/18/38<br>Lumbodorsal sympathectomy<br>10/5/38<br>10/15/38  | 190/120<br><br>186/120<br><br>140/100 |

blood pressure data of a certain number of patients who have had, in addition to the lumbodorsal sympathectomy, another operation performed before or in the interval between the two stages of the sympathectomy.

## SUMMARY AND CONCLUSIONS

This study has shown that nonspecific major operations, as studied in 100 patients, produce some immediate reduction of the blood pressure of hypertensive patients, as has been reported in previous papers. However, this reduction is not pronounced and in the great majority of cases persists for only a short time. On the contrary, lumbodorsal sympathectomy by Smithwick's technique, as studied in a second group of 100 cases, produces in the majority a pronounced reduction of

<sup>3</sup> Crile G. Two Years Results of Treatment of Essential Hypertension by Celiac Ganglionectomy. Cleveland Clin. Quart. 6:42-52, 1939.  
<sup>4</sup> Smithwick R. H. Technique for Splanchnic Resection for Hypertension. Preliminary Report. Surgery 7:18, 1940.

blood pressure which is still present after a considerable period of observation. The specificity of this operation is also demonstrated by the fact that definite results are not observed until after the second stage operation has been performed, the first stage producing about the same effect as any other major operation. Finally, the fact that in patients in whom major operations were performed in addition to lumbodorsal sympathectomy a pronounced and lasting reduction of blood pressure is not observed until the sympathetic resection is performed is further evidence of the fact that lumbodorsal sympathectomy has a specific effect in reducing blood pressure.

Massachusetts General Hospital

## INFECTIOUS HEPATITIS IN THE MIDDLE EAST

A CLINICAL REVIEW OF 200 CASES SEEN IN A MILITARY HOSPITAL

CAPTAIN WALTER P. HAVENS, JR.

MEDICAL CORPS, ARMY OF THE UNITED STATES

Within the past two or three years infectious hepatitis has become recognized as an epidemic disease of increasing military importance.<sup>1</sup> Its prevalence among British troops in the Middle East has been high,<sup>2</sup> but it has not been limited to British forces or to that particular geographic area, for this disease has occurred in the armies of other allied nations, in the French army in Tunisia,<sup>3</sup> in the Italian army in Sicily in 1941<sup>4</sup> and in the German army<sup>5</sup> as well as in the civilian population of Palestine.<sup>6</sup> Outbreaks of what may be the same disease have also occurred in the civilian population of Scandinavia,<sup>7</sup> England<sup>8</sup> and America,<sup>9</sup> but in the absence of diagnostic tests the relationship of infectious jaundice to so-called catarrhal jaundice<sup>10</sup> as well as to various types of "epidemic jaundice"

(with the exceptions of yellow fever and Weil's disease) is not clear.<sup>11</sup> Furthermore the question has arisen as to whether the types of hepatitis following the inoculation of human serum<sup>12</sup> (icterogenic serum) and yellow fever vaccine<sup>13</sup> are the same and thus represent artificial examples of infectious hepatitis. In view of these obscurities, it will not be the function of this paper to review the literature or to consider the pathogenesis and epidemiology of infectious hepatitis. My object in the present report has been to assemble data on the clinical picture of this disease as seen in a group of patients diagnosed as having infectious hepatitis (and infectious cholangitis) at an American military hospital in the Middle East during the years of 1942 and 1943.

### CLINICAL MATERIAL AND METHODS

The patients described in this paper had contracted their disease in various sections of the Middle East North Africa and the eastern Mediterranean area including Sicily and Italy. In these areas the disease had been endemic in British and American troops throughout the year, but there was a sharp rise in prevalence beginning in late October and receding during the winter months. Actual dates of admission to the hospital by months appear in chart 1.

For the clinical analyses the pertinent data were assembled from 200 hospital case histories on a master chart. All histories were included from patients on whom the diagnosis of infectious hepatitis (or infectious cholangitis) was made during the period of Nov. 11, 1942 to Feb. 1, 1944. For purposes of convenience and clarity of description the clinical course of the disease was divided when possible into two phases: the preicteric phase, starting with the onset of symptoms, and the icteric phase starting with the time when the patient first noticed that his urine was dark and terminating when the serum icterus index reached approximately normal levels.

A definite preicteric phase was presented by 167 (83.5 per cent) of 200 patients, while the remaining 33 patients (16.5 per cent) presented jaundice as the first complaint without any preceding symptoms. The latter group was included in the description of the icteric phase. All patients were men of an average age of 25.5 years, ranging individually from 19 to 52 years, although there were only 3 who were older than 40 years of age.

From the Medical Division General Hospital  
Assistance in the collection of clinical material was given by the following medical officers: Lieut. Col. Robert B. Nye, M. C.; Major Edgar Dessen, M. C.; Capt. Edward Tallant, M. C.; Capt. Albert Maisel, M. C.; and Capt. John Stone, M. C.

This work was carried out under the direction of the Commission on Neurotropic Virus Diseases of the Board for the Investigation and Control of Influenza and Other Epidemic Diseases in the Army Preventive Medicine Service Office of the Surgeon General U. S. Army.

1. Epidemic Hepatitis or Catarrhal Jaundice editorial J. A. M. A. 123: 636-637 (Nov. 6) 1943. Infective Hepatitis Bull. War Med. 3: 394-395 (March) 1943.

2. Van Rooyen, C. E. and Gordon, I. Some Experimental Work on Infective Hepatitis in the Middle East Force J. Roy. Army Med. Corps 79: 213-225 (Nov.) 1942. Cameron.<sup>14</sup>

3. Senevet, G., Moutrier, P., Gros, H., Alcaï, L. and Bougarel, R. A propos de l'ictère de Tunisie Arch. Inst. Pasteur d'Algérie 19: 47-63 (March) 1941.

4. di Benedetto, J. Contributo alla conoscenza dell'epidemia fra le truppe in Sicilia. Settim. med. 30: no. 50, 1942.

5. Siegmund, H. Zur pathologischen Anatomie der Hepatitis epidemica (zugleich als Beispiel für die Grenzen der anat. Pathologie). Munchen med. Wechschr. 89: 463 (May 22) 1942. Gutzeit, K. Icterus infectious ibid. 89: 161 (Feb. 20) 1942. Dietrich, S. Der sogenannte katarrhalische Icterus und die Hepatitis epidemica Deutsche med. Wechschr. 68: 5 (Jan. 2) 1942.

6. Infectious Hepatitis in Palestine Foreign Letters J. A. M. A. 123: 1062 (Dec. 18) 1943. Jossin, J. On the Problem of Epidemic Jaundice (Icterus Epidemicus) Harefuah October and November 1940 vol. 19. English summary November 1940 p. 31. Bull. Hyg. 16: 273 (June) 1941.

7. Stuhlfauth, K. Epidemic Jaundice Group Outbreak Amongst Soldiers and Civil Population in Norway Bull. War Med. 3: 213 (Dec.) 1942. abstracted Deutscher Militärarzt 5: 591-602 (Oct.) 1941.

8. Ford, J. C. Infective Hepatitis (Epidemic Catarrhal Jaundice). Three Hundred Cases in Outer London Borough Lancet 1: 675 (May 29) 1943. Edwards, L. R. H. Outbreak of Epidemic Catarrhal Jaundice Brit. M. J. 1: 474-475 (April 17) 1943. Follows, A. B. Epidemic Catarrhal Jaundice, M. Officer 63: 23-24 (Jan. 20) 1940.

9. Rogers, O. F. Epidemic Hepatitis Correspondence J. A. M. A. 123: 1066-1067 (Dec. 18) 1943. Norton, J. A. Acute Infectious Jaundice ibid. 113: 916-917 (Sept. 2) 1939. Molner, J. G. and Kasper, J. A. An Outbreak of Jaundice in Detroit ibid. 110: 2069 (June 18) 1938.

10. Wolter, F. Der sogenannte katarrhalische Icterus (Eppinger) und die Hepatitis epidemica mit besonderer Berücksichtigung ihres Verhältnisses zum Icterus catarrhalis Virchow's Deutsche med. Wechschr. 68: 558 (May 29) 1942. Dietrich.<sup>5</sup>

11. Problem of Infectious Jaundice editorial J. A. M. A. 122: 1186-1187 (Aug. 21) 1943.

12. McNally, A. S. Acute Infectious Jaundice and Administration of Measles Serum in Annual Report of the Chief Medical Officer of the Ministry of Health for the Year 1937. London: His Majesty's Stationery Office 1938. Sergiev, P. G., Tareev, E. M., Gontsya, A. A., Lyschuz, I. M., Svirski, G. N., Trofimovski, M. A. and Zimmermann, A. N. Virus Jaundice. Epidemic Hepatitis in Relation to Immunization with Human Serum Terap. Arkh. 18: 595-611 1940. Homologous Serum Jaundice. Memorandum Prepared by Medical Officers of Ministry of Health Lancet 1: 83-88 (Jan. 16) 1943. Infective Hepatitis and Serum Jaundice editorial Lancet 1: 683 (May 29) 1943. Report A. S. Hepatitis After Prophylactic Serum Brit. M. J. 2: 677 (Sept. 24) 1938. Morgan, H. V. and Williamson, D. A. J. Jaundice Following Administration of Human Blood Products. ibid. 1: 750-753 (June 19) 1943.

13. Findlay, G. M. and MacCallum, F. O. Hepatitis and Jaundice Associated with Immunization Against Certain Virus Diseases Proc. Roy. Soc. Med. 31: 799-806 (May) 1938. Soper, I. L. and Smith, H. H. Yellow Fever Vaccination with Cultivated Virus and Immune and Hyperimmune Serum, Am. J. Trop. Med. 18: 111-134 (March) 1938. Fox, J. P., Manso, C., Penna, H. A. and Maturera, P. Observations on the Occurrence of Icterus in Brazil Following Vaccination Against Yellow Fever Am. J. Hyg. 36: 68-116 (July) 1942. Jaundice following Yellow Fever Vaccination editorial J. A. M. A. 119: 1110 (Aug. 1) 1942. Findlay, G. M. and Martin, A. H. Jaundice following Yellow Fever Immunization Lancet 1: 678-680 (May 29) 1943. Turner, R. H., Snively, J. R., Grossman, E. B., Buchanan, R. N. and Porter, S. O. Some Clinical Studies of Acute Hepatitis Occurring in Soldiers After Inoculation with Yellow Fever Vaccine with Special Consideration of Severe Attacks Ann. Int. Med. 20: 193-218 (Feb.) 1944. Gilman, J. W., Gilman, A. G. and Larson, C. L. Jaundice following Administration of Human Serum Pub. Health Rep. 58: 1213-1242 (Aug. 1) 1943.

## CLINICAL COURSE OF THE DISEASE

In chart 2 a diagram has been composed to show the clinical picture of a typical average case of the disease which is to be described in this paper. The preicteric phase when present, ranged in length from one to eighteen days, with an average of five days and mani-

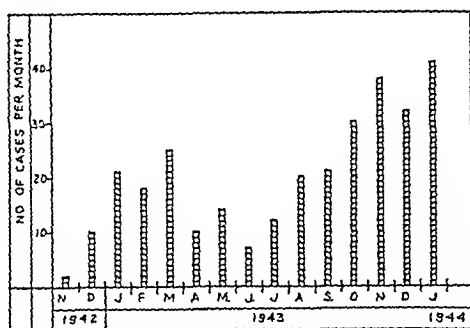


Chart 1—Seasonal variation in the admission rate of American troops with infectious hepatitis to an American general hospital in the Middle East from Nov 11 1942 to Feb 1 1944

festated all grades of severity from the mildly sick to the severely prostrated patient.

The most common symptom in the preicteric phase of the disease was anorexia, which began insidiously and which was usually the first complaint. This early loss of appetite was particularly noticeable in the field, where rations were monotonous, and such early aversion to food was often observed by the group medical officer as beginning evidence of disease before the patient felt actually sick. Nausea soon became evident after meals, and although vomiting was less common it frequently occurred later in the preicteric phase just before the onset of jaundice. In the ensuing few days many men complained of weakness and described it as lack of energy to perform duty and disinterest in work. Members of the Air Force in particular noted lack of

sensation in the left upper quadrant. Palpation of the upper abdomen in these cases in the preicteric phase frequently elicited tenderness, although rarely was the liver or spleen palpable. Disorders of bowel function were not common, constipation occurred more frequently than diarrhea.

In approximately one half of the 167 patients manifesting a preicteric phase the onset was sudden with frank chill or chilliness, fever, malaise, headache and generalized aches and pains. In general the temperature was remittent, with a daily peak of 102 F declining gradually to normal in the course of five days, although not infrequently daily chill with elevation of temperature to 103-104 F, followed by return to normal, was encountered during the first two to three days (chart 2). These patients were often prostrated and complained of aching eyes and occasionally pain on motion of the eyeballs. A certain number of patients had evidence of inflammation of the upper respiratory tract coincident with the onset of disease. As in the afebrile cases, anorexia, nausea, vomiting and upper abdominal distress developed early in the course of disease. Clinical jaundice appeared twenty-four to forty-eight hours after the temperature reached normal.

TABLE 1—Preicteric Phase

| Total number of patients  | 167            |            |
|---------------------------|----------------|------------|
| Average duration in days  | 4.89           |            |
|                           | No of Patients | Percentage |
| Malaise                   | 138            | 82         |
| Anorexia                  | 138            | 82         |
| Nausea                    | 126            | 75         |
| Weakness                  | 126            | 75         |
| Aches and pains           | 70             | 42         |
| Fever                     | 67             | 40         |
| Chills                    | 67             | 40         |
| Upper abdominal distress  | 73             | 43         |
| Headache                  | 53             | 32         |
| Vomiting                  | 23             | 14         |
| Constipation              | 23             | 14         |
| Upper respiratory disease | 24             | 14         |
| Flatulence                | 10             | 6          |
| Diarrhea                  | 7              | 4          |
| Frequency                 | 4              | 2          |
| Itching                   |                |            |

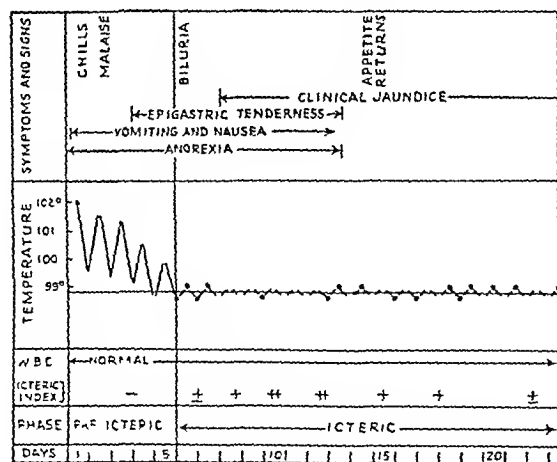


Chart 2—Course of disease obtained from the averaged assembled data in 200 cases of infectious hepatitis

interest in flying. Upper abdominal discomfort developed early and was reported as a sense of fullness and aching in the epigastrium and right upper quadrant, particularly evident after eating and occasionally associated with flatulence. Activity or jolting the body usually intensified this discomfort. Occasional patients complained of a sense of tightness and a dragging

Such patients constituted problems in differential diagnosis, and they were usually admitted with the diagnosis of fever of unknown origin. Malaria and, during the early Autumn, sandfly fever were the two diseases most frequently considered. The repeated chills with high fever associated with nausea and vomiting suggested malaria, while the headache, pain in the eyes and discomfort in the eyeballs on motion associated with pyrexia simulated sandfly fever. In such a clinical picture the presence of anorexia was a most important guide to the diagnosis of infectious hepatitis. Later in the preicteric state tenderness over the liver and the appearance of bile in the urine established the diagnosis. The importance of bilirubin cannot be overemphasized, and daily gross examination of the urine by the medical officer himself for bile did much to establish early diagnosis before clinical jaundice was evident.

An analysis of symptoms in order of their importance appears in table 1.

The icteric phase varied in severity and length from four to eighty-three days, with an average duration of twenty-seven days. Other patients have been observed, however, in whom jaundice lasted one hundred and twenty days (chart 3).

The presence of bile in the urine was the earliest and most frequent sign of developing icterus and usually

preceded the appearance of clinical jaundice by forty-eight to seventy-two hours

Fever was almost always absent in this phase. Anorexia, nausea, vomiting and epigastric discomfort persisted for two to thirty days in varying degrees of severity, with an average duration of nine to ten days. In the mildest cases these symptoms were slight. However, in the severely sick patients symptoms at times persisted as long as a month. As the jaundice increased the pigment diminished in the stools, and acholic stools commonly occurred in the sicker patients. Constipation was often associated with this and diarrhea occasionally. Such general choleric symptoms as lassitude, mental irritability and depression were present in a small number of patients. Itching was not common, but at times it was intractable. Occasional patients were seen with severe lacerations of the skin due to scratching. Bradycardia was uncommon and appeared in the first two weeks of jaundice, lasting from five to twelve days but averaging seven days in duration. However, a pulse rate of 60 to 70 was common throughout the period of jaundice when patients were at rest.

Physical examination revealed enlargement of the liver in 58.5 per cent of patients by the time jaundice

Occasional patients\* in this series had such mild disease that clinical jaundice was never evident. The presence of the characteristic symptoms with mild tenderness in the right upper quadrant and epigastrium, bile in the urine and elevation of the serum icterus index as high as 12 to 18 units occurring in patients

TABLE 2—Icteric Phase

| Number of patients<br>Average duration in days |                 | 200<br>27.07 |  |
|--|-----------------|--------------|--|
| Symptoms                                       | No. of Patients | Percentage   |  |
| Malaria  | 163             | 81.5         |  |
| Anorexia                                       | 167             | 83.5         |  |
| Nausea   | 145             | 72.5         |  |
| Epigastric discomfort                          | 69              | 34.5         |  |
| Vomiting                                       | 63              | 31.5         |  |
| Itching  | 34              | 17           |  |
| Signs  |                 |              |  |
| Enlarged liver                                 | 117             | 58.5         |  |
| Tender liver                                   | 108             | 54           |  |
| Enlarged and tender liver                      | 86              | 43           |  |
| Enlarged spleen                                | 21              | 10.5         |  |
| Tender spleen                                  | 5               | 2.5          |  |
| Enlarged spleen and liver                      | 13              | 6.5          |  |
| Bradycardia                                    | 16              | 8            |  |

from groups in which infectious hepatitis was present suggested the diagnosis of infectious hepatitis without clinical jaundice.

An analysis of signs and symptoms of the icteric phase in order of their importance appears in table 2.

After the icterus reached its height which generally occurred by the tenth day of jaundice the symptoms regressed and a sense of well-being returned. Pigment reappeared in the stool in increasing amounts. By this time it was not uncommon for patients to have lost 5 to 10 pounds (2.3 to 4.5 Kg.) and many of them had a ravenous appetite. Strength returned rather quickly in the mild and moderately sick patients. It was observed, however, that activity not uncommonly caused a sense of fullness and discomfort in the abdomen for several days after the patient felt well otherwise. Jaundice faded slowly and patients were kept in the hospital until their icterus index was normal. Most of those who had had mild or moderately severe disease were fit for duty at this time, but those who had been severely sick often required ten days' sick leave. Hospitalization of the entire group ranged from seven to eighty-seven days, with an average length of 29.8 days.

Occasionally the course of disease was more severe in the older patients and recuperation more prolonged. In an effort to correlate the severity and duration of jaundice with the age of the patient it was shown that the greater number, 167 (73.5 per cent), fell in the

TABLE 3—Relation of Age to Duration of Jaundice

|                                   | Average Days of Jaundice |
|-----------------------------------|--------------------------|
| 200 patients of series            | 27.07                    |
| 167 patients (19 to 29 years old) | 26                       |
| 33 patients (30 to 59 years old)  | 31                       |

decade between 19 and 29. The remaining 33 patients (26.5 per cent) were between 30 and 39 years of age with the exception of 3 (48, 51 and 52 respectively).

Table 3 shows the relation of age to duration of jaundice.

**Complications**—The only complication observed in this series was seborrheic dermatitis which occurred in many patients during the icteric phase. Ascites was not observed in any patient.

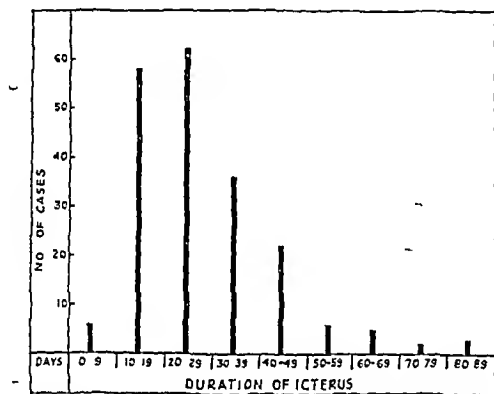


Chart 3—Duration of icterus (in ten day periods) in 200 patients with infectious hepatitis

was evident. The edge of the liver was firm and palpable 1 to 2 fingerbreadths below the costal border. While enlargement and tenderness of the liver did not always coincide, both were present in 43 per cent of patients. In general, tenderness subsided in nine to ten days, although it occasionally persisted as long as three weeks. Enlargement of the liver lasted from seven to thirty-three days, with an average duration of twelve days. Epigastric tenderness and distention were often associated, and clinical evidence of pylorospasm with dilatation of the stomach was occasionally present. Vomiting of copious quantities of undigested food and liquids afforded temporary relief. Enlargement and tenderness of the spleen occurred in a small number of patients. These signs and symptoms ordinarily persisted for seven to fifteen days after the appearance of jaundice, diminishing rapidly after the icterus reached its height. Continuation of epigastric discomfort and tender enlarged liver were regarded as signs of persistence of activity of disease.

It has been previously pointed out that mild forms of this disease without clinically evident icterus have occurred among outbreaks of frank jaundice.<sup>14</sup>

**Relapse**—Of 200 patients in this series 3 had a relapse during their course of disease, manifest by an increase in jaundice and exacerbation of symptoms but without fever. The average duration of jaundice in these patients including the relapse was forty-nine days, with an individual variation from forty-three to fifty-eight days. Other patients have been observed who have had fever associated with the onset of a relapse.

It was difficult to associate the occurrence of a relapse with anything in particular. One of the aforementioned patients had received 122 Gm of sulfaguanidine for bacillary dysentery early in the course of jaundice, given four weeks before the occurrence of the relapse. Another patient not included in this group had a secondary rise in the icterus index after receiving carbarsone in the treatment of amebiasis found incidentally during the course of jaundice.

In individual cases it seemed at times as though overexposure or excessive activity induced an increase in jaundice, however, such occurrences also took place without preceding overactivity and did not appear to be related to any specific stimulus.

**Antisyphilitic Therapy**—It is already recognized that the prevalence of infectious hepatitis is far higher in patients undergoing antisyphilitic therapy.<sup>15</sup> In this group 6 patients had received antisyphilitic therapy in the form of neoarsphenamine, mapharsen or bismuth within three months before onset of jaundice. In these

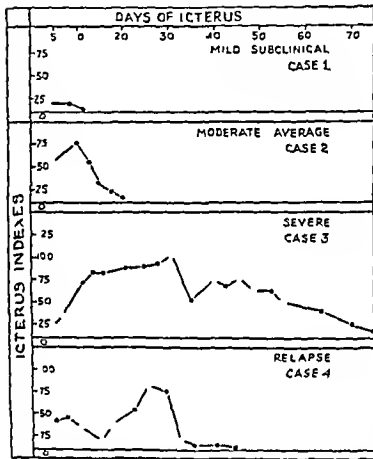


Chart 4—Levels and trends of jaundice as measured by serum icterus index determination in a mild, moderate and severe case of infectious hepatitis and in a case with relapse.

patients the average period of jaundice was prolonged over the usual to 39.8 days, with individual variations ranging from twelve to eighty days.

**Recurrence**—No patients were encountered who had acquired this disease twice in the Middle East.

**Postvaccinal Hepatitis**—Two patients of this series had had postvaccinal hepatitis following the administration of yellow fever vaccine one year before the onset of infectious hepatitis. Their course of disease was similar to that of the average case.

**Course of Icterus**—Frequent serial determinations of the serum icterus index throughout the course of disease has demonstrated that the maximum peak of jaundice was reached within the first ten days after appearance in 80 per cent of patients. The remaining patients reached their high point during the ensuing four to five days, with the exception of a few patients

who had gradually increasing icterus lasting as long as thirty-one days before the peak was reached.

Curves drawn to show the severity and duration of jaundice revealed considerable variation. These variations (based on tests for 180 patients) have been divided into four groups according to the duration of jaundice (chart 4).

**GROUP 1**—Sixty-four patients (32 per cent) had jaundice varying from four to nineteen days and constituted examples of mild disease. While the serum icterus index in some of these patients reached as high as 60 units, a few had jaundice of such slight degree that it was not demonstrable clinically.

Case 1 represents a mild case of infectious hepatitis in which jaundice was not evident clinically and its detection was dependent on the icterus index determination and the presence of bile in the urine.

An enlisted white man aged 24 was admitted to the hospital with the chief complaint of nausea, vomiting and diarrhea. The patient was well developed and nourished and was dehydrated. His temperature was 99 F, pulse rate 80 and respiratory rate 20. No icterus was evident. The heart and lungs were normal. There was slight tenderness in the right lower quadrant. The liver and spleen were not felt. On the third day of disease the leukocytes numbered 7,700, with 65 per cent polymorphonuclear cells, 32 per cent lymphocytes, 1 per cent monocytes and 2 per cent basophils. Urinalysis showed albumin 1 plus and bile present in the urine with urobilinogen positive in a dilution of 1:200. The icterus index measured 18 units. The blood Kahn reaction was negative.

His recovery was uneventful and rapid. The nausea and vomiting disappeared after five days. The icterus index was at its maximum, 18 units on the third day of disease and diminished to normal in the course of the next ten days.

**GROUP 2**—Ninety-eight patients (49 per cent) had jaundice lasting twenty to thirty-nine days and made up the group having moderately severe disease. The serum icterus index very often ranged as high as 80 to 90 units.

**CASE 2**—A medical officer aged 22 was admitted on Jan 26 1943 with the chief complaint of dark urine of four days duration. Eight days before admission he had a sudden onset with chills, fever and anorexia, generalized aches and pains with headache and pain in the eyes on motion. Clinical jaundice became evident two days before admission.

The patient was well developed and nourished. He was jaundiced but did not appear sick. His temperature was 98.6 F, pulse rate 88 and respiratory rate 18. Examination was essentially negative except that the liver was tender and palpable 1 fingerbreadth below the costal border. The erythrocytes numbered 4,240,000, hemoglobin was 85 per cent and leukocytes numbered 4,650, with 65 per cent polymorphonuclear cells, 20 per cent lymphocytes, 8 per cent monocytes and 1 per cent basophils. The serum icterus index measured 54 units. The blood Kahn reaction was negative. Urinalysis revealed bile and albumin 3 plus. The icterus index reached its height of 72 units on the tenth day of the disease and receded over the next eleven days to normal. Anorexia and tenderness of the liver subsided shortly after the jaundice reached its height and recovery was uneventful.

**GROUP 3**—Thirty-eight patients (19 per cent) had jaundice lasting from forty to eighty-three days, constituting the group with severe disease. The icterus index was as high as 149 units in an occasional patient.

Case 3 represented a severe case of infectious hepatitis, prolonged over a period of eighty-three days.

**CASE 3**—An enlisted man aged 22 was admitted to the hospital Aug 15 1943 with the chief complaint of dark urine for three days. Three days before admission he had been feverish and had generalized aches and pains, profuse sweats, anorexia

15 Marshall J. Jaundice in Syphilis (Coincidence of Increase of Infective Hepatitis). Brit. J. Ven. Dis. 19 52:58 (June) 1943. Ruge R. Die akute Leberatrophie und ihre Beziehung zu Syphilis und Salvarsan nach den der Marine von 1920 1925 beobachteten Fällen. Arch. f. Dermat. u. Syph. 153:518 1927. Die Zusammenhänge zwischen Syphilis Salvarsan und der sog. fataralen Gelbsucht auf Grund von 200 in der Marine von 1919 1929 beobachteten Fällen. Dermat. Wehnchr. 94:278 (Feb. 20) 1932. Anderson T. F. Jaundice in Syphilis. Brit. J. Ven. Dis. 19 58:67 (June) 1943. Mitchell H. S. Incidence Compared with Jaundice Following Arsenotherapy for Syphilis. Canad. M. A. J. 48:9496 (Feb.) 1943.

and constipation. He continued to feel bad and the day before admission had generalized abdominal pain, with nausea and vomiting.

The patient was well developed but dehydrated. He was not in acute distress. His temperature was 98.6 F, pulse rate 80 and respiratory rate 20. There was a faint icteric tint to the scleras. The heart and lungs were normal. There was generalized abdominal tenderness, and the liver was palpable 1 finger-breadth below the costal border. The leukocytes numbered 8,200, with 77 per cent polymorphonuclear leukocytes, 18 per cent lymphocytes and 5 per cent monocytes. Urinalysis showed albumin 2 plus. The serum icterus index measured 22 units. The blood Kahn reaction was negative. During the ensuing thirty days the icterus index ascended gradually to its maximum 102. During much of this time the patient was prostrated with anorexia, nausea and intermittent vomiting. Mental irritability was present and he lost approximately 12 pounds (5.4 Kg).

Following the peak of jaundice came a slow decline of icterus over the subsequent fifty-three days. Return of appetite came slowly after the jaundice began to decline. Recovery was apparently complete and the patient was discharged after eighty-three days of hospitalization.

**GROUP 4—Relapse** was a rare occurrence, being present in only 3 of 200 patients.

Case 4 represented a moderately severe case of infectious hepatitis with relapse.

**CASE 4—**An enlisted man aged 24 was admitted to the hospital Nov. 7, 1943 with the chief complaints of nausea, anorexia and flatulence for eight days. His urine had been dark for five days.

The patient was well developed and nourished. His temperature was 97.4 F, pulse rate 80 and respiratory rate 20. The scleras were mildly icteric. The heart and lungs were normal, and the liver and spleen were not palpable. The leukocytes numbered 6,200, with 68 per cent polymorphonuclear cells, 28 per cent lymphocytes and 4 per cent monocytes. Urinalysis revealed bile. The serum icterus index measured 41 units and 75 per cent bromsulphalein dye was retained in the blood after thirty minutes. The blood Kahn reaction was negative.

The icterus index reached its high point of 44 units on the eighth day of jaundice and then diminished over the ensuing week to 19 units. The patient's symptoms of anorexia and nausea had ameliorated. On the seventeenth day of jaundice, however, he began to feel worse with anorexia, nausea and discomfort in the epigastrium and right upper quadrant. The jaundice began to increase again and reached a maximum of 85 units on the twenty-sixth day of jaundice, from which point it descended over the ensuing three weeks to normal. His symptoms improved rapidly as the jaundice declined.

Nothing definite could be found which might have precipitated this relapse.

#### LABORATORY STUDIES

**1 Blood Counts—**Complete blood counts were done on 183 patients at varying stages of the disease. The erythrocytes averaged 4,500,000 and the hemoglobin 85 per cent (Sahli). Total leukocyte counts were within normal limits, with rare deviations from 4,500 to 10,200 and averaging 6,200. Relatively few leukocyte counts were performed in the preicteric phase, but those done were essentially normal. A slight increase in monocytes was observed in several patients during the first ten days of the icteric phase, with individual counts as high as 14 per cent, although the average in the icteric phase was 5.2 per cent. In general there was nothing distinctive or diagnostic.

**2 Coagulation and Bleeding Time—**The coagulation and bleeding time of the blood and erythrocyte fragility were measured in 38 and 42 patients respectively and were found to be normal.

**3 Icterus Index—**The serum icterus index of 180 patients was measured. The reading of 10 units was

selected as the upper limit of normal, and any measurements over this were considered to be indications of icterus. Determinations at various times throughout the course of disease in 180 patients varied from 10 to 149 units. In occasional patients the serum icterus index was only slightly elevated above normal from 12 to 18 units when clinical icterus was at times impossible to detect. In many patients in whom the jaundice disappeared slowly at the end of the disease the icterus index was useful in determining whether subclinical jaundice was still present. Although the serum icterus index is less delicate than the serum bilirubin determination as a test of the excretory function of the liver, it proved a practical test under conditions in which more elaborate laboratory facilities were not available at all times.

**Serum Bilirubin—**Qualitative and quantitative van den Bergh determinations were made on the serum of 60 patients in various stages of jaundice. The qualitative van den Bergh was positive direct in all but 3 patients, many of these determinations were made within the first five days of jaundice. Two negative direct and one biphasic reaction were encountered in

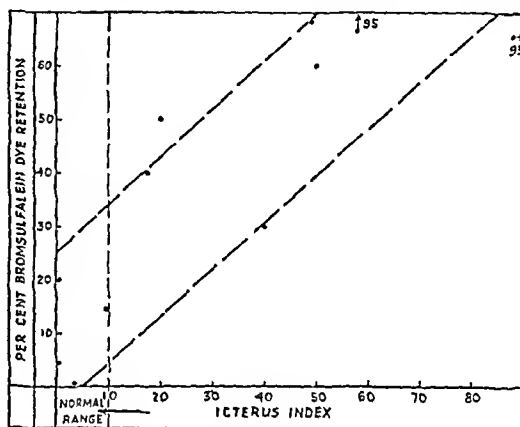


Chart 5—Correlation between height of serum icterus index and per cent of bromsulphalein dye retained in the blood thirty minutes after intravenous injection of 15.15 mg. per 55 pounds (25 Kg.) of body weight. The two determinations were made in blood drawn the same day.

patients with a serum bilirubin measuring around 1.5 mg, occurring either at the beginning or at the termination of jaundice.

The serum bilirubin determinations in this group of 60 patients ranged as high as 10.8 mg. Although a more delicate test of liver function than the icterus index determination, the inability to have available constantly the materials necessary for the performance of the test limited its usefulness under the conditions of military hospitalization.

**4 Liver Function Tests—**As a further test of the excretory function of the liver the bromsulphalein dye retention test was used. In patients with infectious hepatitis it was found that the more pronounced jaundice the greater the amount of dye was retained in the blood, indicating the degree or severity of impairment of the function of the liver.

An effort was made to correlate the amount of bromsulphalein dye retained in the blood after thirty minutes with the height of the icterus index. Simultaneous determinations were made on 48 patients on various days ranging from the second to the thirty-second day. Patients whose icterus index was 20 or below showed little evidence of impairment of bromsulphalein dye



excretion, most of the figures ranging between 5 per cent and 15 per cent of dye retained in the blood (chart 5). As the icterus index rose, however, the retention of dye in the blood increased proportionately, so that in general the higher the icterus index the greater the amount of dye retained in the blood, up to 75 per cent dye retention. Although several patients had an icterus index ranging from 60 to 96 units, only 1 showed more than 75 per cent retention of bromsulphalein in the blood.

**5 Blood Kahn Reaction**—Kahn tests were performed on 180 patients in various stages of the disease in both preicteric and icteric phases. One patient had a 2 plus reaction on the sixteenth and twenty-fifth days of disease. No history of venereal exposure was elicited and it was thought that the positive reaction was related to the acute infection. Subsequent tests were advised but we were unable to follow the patient.

**6 Urinalysis**—Of 184 patients on whom urinalysis was performed 72 (39 per cent) had albumin early in the course of disease, frequently in the preicteric phase. Increased urobilinogen in the urine was found to be a good diagnostic measure before clinical jaundice was evident. Biliuria was most often the first evidence of jaundice presented by the patient and it persisted throughout the greater part of the icteric phase. Otherwise the urine was normal.

**7 Stools**—In a large number of cases the stool became light in color early in the icteric phase, and in the more severely sick patients acholic stools were common, although exact percentages were not obtained. This was frequently associated with constipation and flatulence.

Cultures were made of the stools of 58 patients, and of those 12 per cent were found to contain dysentery bacilli of the Flexner or Hiss group. This percentage of carriers was not unusual for troops in the area at this time. Diarrhea was usually not associated with the positive stools and since most of the patients had had previous history of diarrhea, it was assumed that they were carriers. They were treated with sulfaguanidine in therapeutic doses.

#### THERAPY

The treatment of this disease was symptomatic. It was entirely possible for those patients with subclinical jaundice or very mild disease to remain ambulatory, but for the sicker patients hospitalization with bed rest was indicated during the acute phase, since activity apparently aggravated the symptoms of even the mildly sick when they were obliged to live under field conditions. As recovery took place and jaundice waned, increasing activity according to the tolerance of the individual patient was advised. Chilling and excessive activity were avoided.

Full unrestricted diet was given as soon as the patient could tolerate it. Supplementary vitamins were added, although their utilization and value were undetermined. Early in the course of disease when anorexia, nausea and upper abdominal discomfort were present difficulty was encountered in providing adequate food intake. Diet rich in proteins and carbohydrate was given. No advantage was demonstrated for excessive intake of carbohydrates except that it provided for some patients a more palatable way of increasing their amount of food eaten. Fats were not withheld unless the patient was unable to tolerate them. This occurred at times when bile was completely absent from the

gastrointestinal tract. Frequent small feedings were better tolerated than large meals at longer intervals.

Duodenal drainage was performed on 90 of the 200 patients as a "therapeutic" measure. The average duration of jaundice in all patients was twenty-seven days. In the 110 patients who did not have biliary drainage the average period of jaundice was 23.8 days, while in the 90 patients who had biliary drainage performed the average period of jaundice was thirty-one days. No reason could be found to account for this discrepancy. There was no selection of cases according to severity. Sixty per cent of the drainages were done within the first ten days of jaundice when most of the patients were reaching their maximum icterus. It is of interest to note that in most cases in which drainage was performed during the height of jaundice no B (dark) bile was obtained. It is impossible to draw any inference from these data to indicate that biliary drainage had any beneficial effect. No opinion can be given as to whether it had any effect on prolonging the jaundice.

Constipation was relieved by the administration of  $\frac{1}{2}$  to 1 ounce (15 to 30 Gm) of crystalline sodium sulfate in warm water each morning before breakfast. Many patients stated that this afforded relief of the sense of fulness and epigastric oppression.

Anorexia, nausea and vomiting were ameliorated at times by giving 0.0325 Gm of phenobarbital three times daily, but intractable vomiting at times required the administration of parenteral fluids in the form of 2,000 to 3,000 cc of 5 per cent dextrose in isotonic solution of sodium chloride intravenously.

Upper abdominal distress was severe enough at times to require codeine sulfate 0.065 Gm, but frequently the application of local heat was of benefit.

Itching was relieved by the administration of 0.0325 Gm of phenobarbital three times daily, and for more severe cases the local application of calamine lotion containing 1 per cent phenol afforded relief.

**Sulfonamides**—Seven patients in this group of 200 patients received sulfonamides in full therapeutic dosages. Six of them had sulfaguanidine for dysentery and 1 sulfathiazole for chancroid. To all patients the drug was given early in the course of jaundice. One patient had a relapse of jaundice about four weeks after the cessation of sulfaguanidine. However, the course of jaundice in this group of seven averaged twenty-three days, with individual variations ranging from twelve to forty-six days, so that no evidence was available from this small number that sulfonamides were detrimental.

#### SUMMARY

Infectious hepatitis has assumed epidemic proportions in British, Italian, German, French and American troops during the past two to three years in the Middle East, with a sharp seasonal prevalence beginning in late October and reaching a peak in late January.

The clinical picture of the disease among 200 American troops admitted to an American General Hospital in the Middle East was found to be similar to that described by British observers.

An acute onset initiated a clearly defined preicteric period of five days characterized by anorexia, chilliness, fever, headache, nausea, vomiting, upper abdominal discomfort and generalized aches and pains.

This phase was terminated by the decline of fever and the appearance of dark urine, which marked the onset of the icteric phase. Anorexia, nausea, vomiting and epigastric distress were associated with hepatic

enlargement and tenderness during the first ten days of jaundice, at the end of this period the icterus usually diminished and the signs and symptoms regressed. Recovery was uneventful in practically every case. Only 3 patients had relapse, and no associated etiologic factor could be determined in these cases. The average duration of jaundice was twenty-seven days, and patients over 30 years of age averaged five days more in duration of icterus. Patients who received antisyphilitic therapy within three months before the onset of disease had their jaundice prolonged twelve days more than the average. A few patients received sulfonamide, and no effect could be observed on the jaundice.

Individual patients manifested all degrees of severity of disease, ranging from the mild case with subclinical jaundice in which icterus was detected only by examination of the urine and blood serum to the severely prostrated patient with deep jaundice prolonged over a period of eighty-three days. Eighty-one per cent of patients had mild to moderately severe disease, while 19 per cent had severe jaundice.

Laboratory studies revealed that blood counts, coagulation and bleeding time and erythrocyte fragility tests were normal. The serum icterus index was used as a measurement of icterus and was found to be valuable both alone and in conjunction with the bromsulphalein dye retention test. It was found that the percentage of dye retained in the blood was in direct proportion to the height of the icterus index. The blood Kahn tests were negative in all but 1 patient.

Urinanalysis gave the most important early clue to diagnosis, and the occurrence of biliruria cannot be stressed enough as an important diagnostic measure. Albuminuria was present in a goodly percentage of patients.

Duodenal drainage was performed on a large number of patients early in the course of jaundice and failed to shorten the disease.

Pigment disappeared from the stools of a large number of the patients as the icterus approached its height and, in the severely sick, acholic stools were common.

#### CONCLUSIONS

1 Data from 200 cases of infectious hepatitis in American troops occurring between Nov 11, 1942 and Feb 1, 1944 in the Middle East were assembled and analyzed.

2 The course of disease in these troops simulated the clinical descriptions of British observers.

3 Because of prolonged hospitalization (average 28.8 days) infectious hepatitis constitutes a problem of military importance.

4 The most important simple laboratory procedure in diagnosis was examination of the urine for bile at the bedside of the patient by the medical officer.

5 The serum icterus index determination afforded a simple, effective method of following the course of jaundice and demonstrating subclinical icterus under the circumstances of military hospitalization.

**Fuel Requirement of Man**—The energy requirement of a person for twenty-four hours or for a shorter period expressed in calories, can be determined with a high degree of accuracy. This figure is the sum of (a) the basal metabolism, (b) the energy liberated in exercise or work and (c) the increment of energy due to the specific dynamic action of food, the so called cost of digestion—McLester, James S. *Nutrition and Diet in Health and Disease*, Philadelphia, W B Saunders Company, 1943.

## EFFECT OF INTRAVENOUS FLUIDS ON DEHYDRATED PATIENTS AND ON NORMAL SUBJECTS

CARDIAC OUTPUT, STROKE VOLUME PULSE RATE AND BLOOD PRESSURE

JAMES D HARDY, MD  
AND  
LINCOLN GODFREY JR, MD  
PHILADELPHIA

Dehydration is frequently encountered in both medical and surgical patients. Whether dehydration is the result of vomiting, diarrhea, inability to swallow or electrolyte derangement such as occurs in diabetic acidosis,<sup>1</sup> the intravenous administration of fluids is the mode of therapy usually relied on to restore the normal state of hydration and electrolyte balance. Indeed, so routinely and with such gratifying results are intravenous fluids used for these patients that the physician seldom pauses to consider the exact effect of his therapy.

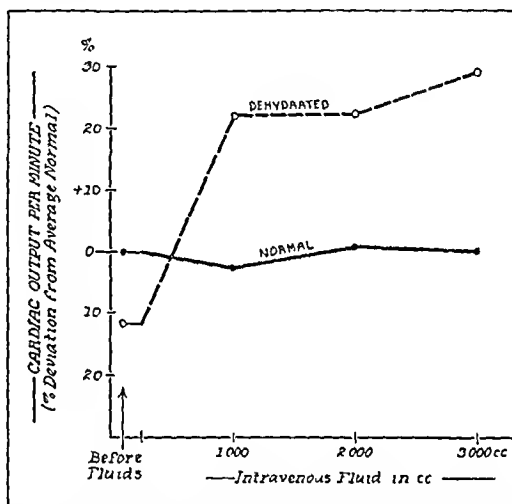


Fig 1—The cardiac output of the normal subjects has been averaged and is compared graphically with the average of the dehydrated patients before and after intravenous fluid administration.

on the cardiovascular system. Previous reports in the literature have dealt with the effect of intravenous infusions on pulse rate, blood pressure, blood volume, venous pressure, velocity of blood flow and the electrocardiogram.<sup>2</sup> Altschule and Gilligan<sup>3</sup> have also reported the changes in cardiac output in normal men. However, no workers so far as we are aware, have studied the effect of intravenous fluids on cardiac output in dehydrated patients as compared with the effect on normal subjects. For this reason two such groups have been investigated and the results are reported here. Except in 1 instance in which no blood chemistry determinations were done no patient was considered

From the Medical Clinic and the Research Department of Therapeutic Hospital of the University of Pennsylvania.

This study was made at the suggestion of Dr Isaac Starr who permitted us to use his laboratory and bowed us numerous other kindnesses.

1 McCance R A. *Medical Problems in Mineral Metabolism*. 11 Sodium Deficiencies in *Clinical Medicine* Lancet 1:704 1936.  
2 Bainbridge F A. The Influence of Venous Infusion on the Rate of the Heart. *J Physiol* 50:63 1915. Kahn M H. The Influence of Venous Filling on the Heart. *Ann Int Med* 3:969 1930. Gilligan D R. Altschule M D and Volk M C. The Effects on the Cardiovascular System of Fluids Administered Intravenously in Man. 11 Studies of the Amount and Duration of Changes in Blood Volume. *J Clin Investigation* 17:7 1938. Altschule and Gilligan.<sup>3</sup>  
3 Altschule M D and Gilligan D R. The Effects on the Cardiovascular System of Fluids Administered Intravenously in Man. 11 The Dynamics of the Circulation. *J Clin Investigation* 17:91 1938.



dehydrated who did not present abnormal blood chemistry values as outlined in the table. The dehydrated individuals experienced a pronounced increase in cardiac output after the infusions, while the normal subjects presented little or no such rise.

#### CLINICAL MATERIAL

The patients were examined as soon as possible after reaching the hospital, and when dehydration was found to exist the subject was taken on a litter directly to the ballistocardiograph, having no treatment prior to the test. Blood was drawn for determinations of serum protein, serum chloride and blood urea nitrogen. The diagnoses of the dehydrated subjects are listed in the table. The control group consisted of the authors, of subject J. M. tested first just after admission when he was dehydrated who volunteered to repeat the test

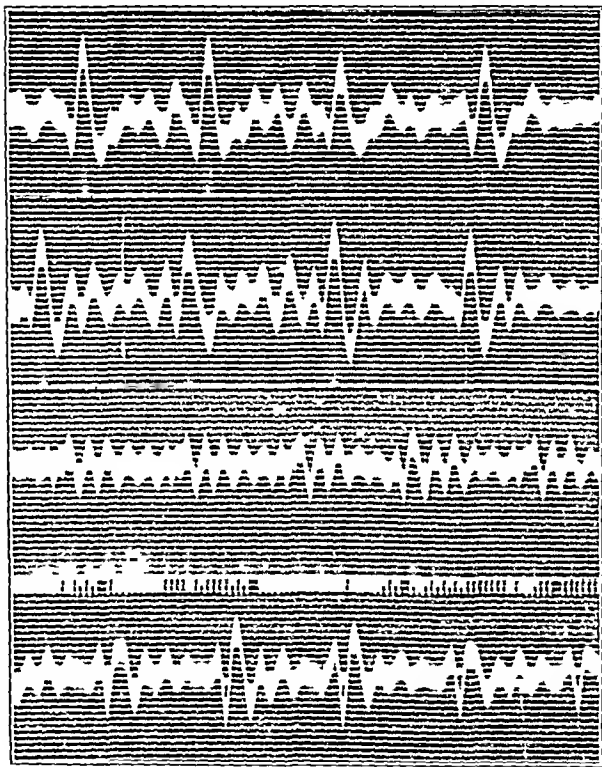


Fig. 2.—Typical ballistocardiographic tracings of a normal subject before and after intravenous fluid administration are compared with those of a dehydrated patient. Top subject L. G. before fluids. Second L. G. after 3,000 cc of intravenous fluid. Third patient J. M. before fluids. Fourth patient J. M. after 3,000 cc of intravenous fluid. The time record applies to all tracings. Largest interval equals one second.

fifteen days later when all evidence of dehydration had disappeared and of 3 patients normal from the point of view of this study but to whom it was necessary to give fluid intravenously. The blood chemistry values for this group are recorded in the table, all were within the normal range.

#### TECHNIC

The intravenous fluids were given with the subject lying on the ballistocardiograph table,<sup>4</sup> so that measurements of cardiac output could be made at will. The ballistocardiograph consists essentially of a table suspended by wires and free to move in a lengthwise direction only, of an optical system attached to the

table which magnifies its movements by the deflections of a beam of light, and of a camera which photographs the movements of the beam of light. When the patient lies lengthwise on the table, the recoil of his body downward when ejection of blood from the heart commences, followed by a movement upward when the blood is turned by the aortic arch, is transmitted to the ballistocardiograph table and a corresponding deflection of the beam of light is produced. In persons of the same age, height and weight the greater the excursions of the beam of light, the greater is the stroke volume. Cardiac output was calculated by the area method and the correction of Cournaud, Ranges and Riley<sup>5</sup> was employed. By means of a timer, the heart rate can be calculated from the film.

After the subject had lain quietly on the table for fifteen minutes, readings of cardiac output, stroke volume, pulse rate and blood pressure were taken. Following this, intravenous fluids were begun at a rate of around 20 cc per minute, approximately two hours being required for the administration of 2,500 cc. Though there was an occasional exception, the first liter of fluid was usually isotonic solution of sodium chloride, the second 5 per cent dextrose in isotonic solution of sodium chloride and the third (when used) 5 per cent dextrose in water. Ballistocardiograms, pulse rate and blood pressure readings were taken after each liter of fluid. Owing to the illness of the dehydrated patients, the observations were terminated as soon as all the necessary fluid was in.

#### RESULTS

From the data recorded in the table, it will be seen that the cardiac output of the dehydrated group, expressed as percentage deviation above or below the average normal cardiac output per pound per minute,<sup>6</sup> increased substantially with the administration of intravenous fluids, while that of the normal group underwent no such rise. These results are represented graphically in figure 1. The increases in cardiac output were caused chiefly by increases in stroke volume. In figure 2 are typical ballistocardiograph tracings of a normal subject and of a dehydrated patient, taken before and after the intravenous administration of fluids.

Of particular interest were the responses of 1 patient (J. M.). He was admitted to the hospital acutely dehydrated with symptoms suggestive of pyloric obstruction due to a peptic ulcer. After the administration of 3,000 cc of fluid intravenously, his cardiac output rose 41 per cent. He responded well to conservative therapy and was eating a normal diet within one week. Fifteen days after admission he was again given 3,000 cc of fluid, and this time his cardiac output fell 1 per cent.

It is worth noting that 3,000 cc of fluid administered intravenously provoked no subjective symptoms in any of the normal subjects, but it was followed by a prompt diuresis.

#### COMMENT

It was evident that the normal persons had to void frequently during the infusion and that the dehydrated patients did not. Thus in the latter group more fluid was retained in the body. Previous workers<sup>7</sup> have

4. Starr J., Rawson A. J., Schroeder H. A. and Joseph N. R. Studies on the Estimation of Cardiac Output in Man and Abnormalities in Cardiac Function from the Heart's Recoil and the Blood's Impacts. *The Ballistocardiogram*. *Am J Physiol* 127: 1, 1939.

5. Cournaud A., Ranges H. A. and Riley R. L. Comparison of Results of the Normal Ballistocardiogram and Direct Fick Method in Measuring Cardiac Output in Man. *J Clin Investigation* 21: 287, 1942.

6. Starr J. and Schroeder H. A. Ballistocardiogram. II. Normal Standards. Abnormalities Commonly Found in Diseases of the Heart and Circulation and Their Significance. *J Clin Investigation* 19: 437, 1940.

7. Meek W. J. and Eyster J. A. E. The Effect of Plethora and Variations in Venous Pressure on Diastolic Size and Output of the Heart. *Am J Physiol* 61: 186, 1922. Robertson J. D. Blood Volume Changes After Intravenous Infusions. *Lancet* 2: 634, 1938. Altschule and Gilligan<sup>8</sup> Gilligan, Altschule and Volk.

shown that fluids given intravenously usually increase the circulating blood volume, and thus doubtless occurred in most of our dehydrated patients. But in 1 dehydrated subject no dilution of blood proteins was demonstrated after the infusion. Though it is possible that a change in serum protein within the limits of laboratory error occurred, the increased cardiac output in such a case might be attributed partly to an improved condition of the myocardium, and of the vasomotor center of the brain when needed sodium chloride and water were supplied. That intravenous dextrose can

the feeling of general well-being so often experienced by the dehydrated patient after receiving fluid intravenously is accompanied by concomitant objective changes in the circulatory dynamics. That the maximum effect is quite often produced by the first liter of fluid suggests that this amount may be sufficient in instances in which there is danger of giving too much fluid intravenously. To state this somewhat differently, when giving fluids intravenously to dehydrated patients one should remain aware of the increased work which such therapy imposes on the hearts of these persons.

*Effect of Intravenous Fluid Administration on Cardiac Output, Stroke Volume, Pulse Rate and Blood Pressure*

| Name, Sex, Age, Height, Weight                  | Intravenous Fluid, Cc                           | Pulse Rate per Min    | Blood Pressure, Mm Hg                 | Cardiac Output per Minute per Cent Deviation from Average Normal | Stroke Volume per Beat Cc | Blood Urea Nitrogen, Mg per 100 Cc | Serum Protein, Gm per 100 Cc | Serum Chloride, MEq per Liter | Diagnosis and Comment   |
|---|---|-----------------------|---------------------------------------|--|---------------------------|------------------------------------|------------------------------|-------------------------------|---|
| Persons Showing No Evidence of Dehydration      |   |                       |                                       |  |                           |                                    |                              |                               |   |
| J M ♂<br>47 years<br>5 ft 7 in<br>120 pounds    | 1 Before fluid<br>2 1 000<br>3 2 000<br>4 3 000 | 70<br>66<br>72<br>64  | 104/70<br>100/60<br>90/58<br>104/70   | -12%<br>-6%<br>-2%<br>-15%                                       | 40<br>44<br>44<br>47      | 11                                 | 7.6                          | 103.4                         | Pyloric stenosis asymptomatic for 1 week prior to test                  |
| L G ♂<br>27 years<br>5 ft 11 in<br>188 pounds   | 1 Before fluid<br>2 1 000<br>3 2 000<br>4 3 000 | 66<br>70<br>68<br>66  | 136/76<br>118/73<br>114/70<br>114/70  | -17%<br>-17%<br>-17%<br>-22%                                     | 65<br>61<br>64<br>60      | 10                                 | 6.6                          |                               | Healthy physician   |
| J D H ♂<br>25 years<br>5 ft 11 in<br>165 pounds | 1 Before fluid<br>2 1 000<br>3 2 000<br>4 3 000 | 68<br>64<br>67<br>70  | 120/60<br>115/55<br>115/55<br>100/50  | +3%<br>-1%<br>+7%<br>+5%   | 67<br>68<br>74<br>67      | 12                                 | 7.1                          | 102.6                         | Healthy physician   |
| E N ♀<br>32 years<br>5 ft 4 in<br>94 pounds     | 1 Before fluid<br>2 1 000<br>3 2 000<br>4 3 000 | 84<br>88<br>73<br>78  | 114/86<br>96/70<br>80/56<br>90/64     | 0<br>-10%<br>-2%<br>+15%   | 33<br>30<br>36<br>38      | 8                                  | 6.9                          | 102.7                         | Syphilitic gastric crises nausea and vomiting not clinically dehydrated |
| L L ♀<br>58 years<br>5 ft 2 in<br>118 pounds    | 1 Before fluid<br>2 1 000<br>3 2 000<br>4 3 000 | 102<br>91<br>89<br>82 | 104/70<br>104/64<br>110/68<br>110/68  | +27%<br>+18%<br>+20%<br>+20%                                     | 40<br>41<br>43<br>43      | 13<br>11                           | 6.7<br>6.8                   | 96.0<br>100.8                 | Mild pneumonitis  |
| C W O ♂<br>61 years<br>5 ft 9 in<br>134 pounds  | 1 Before fluid<br>2 1 000<br>3 2 000<br>4 3 000 | 78<br>70<br>65<br>60  | 98/70<br>105/70<br>108/68<br>106/70   | -1%<br>0<br>+1%<br>+13%  | 46<br>52<br>57<br>68      | 9                                  | 5.3                          | 97.6                          | Pyloric stenosis mild vomiting not clinically dehydrated                |
| Patients Who Were Dehydrated                    |   |                       |                                       |  |                           |                                    |                              |                               |   |
| J M ♂<br>47 years<br>5 ft 7 in<br>105 pounds    | 1 Before fluid<br>2 1 000<br>3 2 000<br>4 3 000 | 77<br>65<br>73<br>78  | 90/80<br>110/70<br>110/65<br>110/65   | -13%<br>-2%<br>+23%<br>+28%                                      | 36<br>49<br>55<br>54      | 35<br>27                           | 8.9<br>6.3                   | 91.7<br>98.5                  | Pyloric stenosis vomiting for 3 days                                    |
| M M ♀<br>29 years<br>5 ft 2 in<br>88 pounds     | 1 Before fluid<br>2 1 000<br>3 2 000<br>4 3 000 | 77<br>78<br>91<br>92  | 108/76<br>110/75<br>108/68<br>100/60  | -10%<br>+3%<br>+20%<br>+30%                                      | 27<br>53<br>32<br>56      |                                    |                              |                               | Psychic vomiting considerably dehydrated on clinical examination        |
| J L ♂<br>47 years<br>5 ft 10 in<br>205 pounds   | 1 Before fluid<br>2 1 000<br>3 2 000<br>4 3 000 | 75<br>80<br>84<br>77  | 130/80<br>130/70<br>146/74<br>130/80  | -20%<br>-7%<br>-1%<br>+9%  | 59<br>65<br>65<br>40      | 27<br>19                           | 6.3<br>6.3                   | 98.5<br>97.3                  | Intestinal obstruction nausea and vomiting                              |
| J R ♂<br>63 years<br>5 ft 7 in<br>105 pounds    | 1 Before fluid<br>2 1 000<br>3 2 000<br>4 3 000 | 84<br>77<br>77<br>77  | 130/110<br>130/80<br>130/80<br>130/80 | -22%<br>-2%<br>-2%<br>+9%  | 27<br>40<br>40<br>40      | 60<br>27                           | 6.9<br>6.3                   | 70.7<br>74.7                  | High intestinal obstruction   |
| H W ♀<br>76 years<br>5 ft 5 in<br>80 pounds     | 1 Before fluid<br>2 1 000<br>3 2 000<br>4 3 000 | 84<br>79<br>80<br>80  | 110/70<br>130/60<br>136/60<br>136/60  | +7%<br>+61%<br>+60%<br>+60%                                      | 27<br>43<br>43<br>43      | 69<br>16                           | 6.9<br>4.4                   | 74.7<br>99.7                  | High intestinal obstruction   |

stimulate a diseased heart was demonstrated by Edmunds and Cooper,<sup>8</sup> but in our experiments the maximum increase occurred after the first liter of fluid before any dextrose had been given, so we are not inclined to weigh this factor heavily. Despite the uncertainty regarding the exact mechanism, it is obvious that intravenous fluids may cause effects in diseased subjects very different from those observed in healthy persons.

In conclusion, several clinical considerations merit emphasis. It is evident from the results reported that

#### SUMMARY

1 The effect of intravenous fluids on the cardiac output, stroke volume, pulse rate and blood pressure of a group of dehydrated patients was compared with similar observations made in a group of subjects not demonstrably dehydrated.

2 The dehydrated group manifested a prompt and significant rise in cardiac output, resulting chiefly from an increase in stroke volume and this was accompanied by a small increase in the pulse pressure.

3 Similar effects were not observed in the control group, although a smaller and more delayed increase in cardiac output was found in 2 subjects who had been vomiting.

8 Edmunds C W and Cooper R G. Action of Cardiac Stimulants in Circulatory Failure Due to Diphtheria. J A M A 85: 1798 (Dec 5) 1925.

## Clinical Notes, Suggestions and New Instruments

### COMPRESSION OF SEVENTH CERVICAL NERVE ROOT BY HERNIATION OF AN INTERVERTEBRAL DISK

PAUL C BUCY M.D. AND HARVEY CHENAULT M.D.  
CHICAGO

Several cases of herniation of a cervical intervertebral disk have been recorded in the literature but nearly all of these have been instances in which compression of the spinal cord itself by a midline herniation predominated.<sup>1</sup> Semmes and Murphy<sup>2</sup> mention 4 cases from the literature which presented symptoms of compression of a cervical nerve root without involvement of the spinal cord and present 4 similar cases of their own. Three of the latter cases of unilateral herniation of a cervical intervertebral disk were verified by operation. The syndrome of compression of the seventh cervical nerve root as shown in the latter 4 cases was remarkably constant and occurred on the left side in all 4. All these patients gave a history of numerous "cricks" in the neck for months or years preceding the severe attack. Two gave a definite history of trauma to, or motion of, the neck as precipitating factors. In all the predominant symptom was excruciating pain. The radiation of the pain was to three regions: "(1) the precordium, (2) a point just medial to the upper angle of the scapula and (3) down the lateral and medial surfaces of the arm." In the 3 cases which presented objective sensory loss the disturbance consisted of hypalgesia and hypesthesia "limited to the index and middle fingers without involvement of the thumb, the hand or the forearm."

Recently there has come under our observation such a case of unilateral herniation of a cervical intervertebral disk in which there were certain differences from the syndrome as presented by Semmes and Murphy.

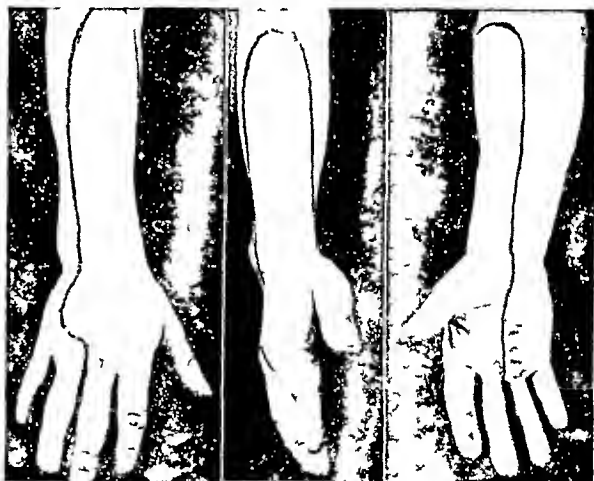
#### REPORT OF CASE

C. H., a white man aged 41, a factory fireman, referred by Dr. Luther J. Osgood of Waukegan, Ill., was admitted to the Illinois Neuropsychiatric Institute on Dec. 1, 1943 with a complaint of "pins and needles," creeping or "electricity" in the thumb, index and middle fingers of the right hand which extended up the radial aspect of the right forearm. The past medical, family and marital histories were irrelevant.

The patient stated that he was quite well until January 1938, when he slipped and fell in an icy alley, striking the back of his head and shoulders on the pavement. He was not knocked unconscious and continued on his way to work with only a

mild headache, which lasted not longer than two hours. He thereafter felt well and had no pain in the neck or shoulders from the fall. He did not even develop any swelling of his scalp. However, two days later he began to have a dull, continuous, aching pain in the region of the right shoulder blade (he indicated a localized area just beneath the medial portion of the spine of the scapula). The pain became increasingly severe in the next week. As a result he had to leave his work as a fireman.

The pain remained localized, nonradiating and severe. There was no associated numbness or paresthesias comparable to the present complaint at that time. He had chiropractic treatments, which made the pain so much more severe that he was obliged to stop them. Conservative treatment with heat and medicines prescribed by numerous physicians was to no avail. The pain in the region of the scapula gradually disappeared after six or seven weeks. Thereafter he was quite well in all respects and able to continue his work until six months later (summer of 1938), when he had another bout of the same pain, lasting three weeks. This time the scapular pain was associated with a sensation of "pins and needles" in the right thumb and the index and middle fingers, which extended up the radial aspect of the forearm nearly to the elbow. Osteopathic treatments were given, and again both the pain and the paresthesias gradually receded. Thereafter he was entirely



Area of hypesthesia resulting from compression of the right seventh cervical spinal root by a herniation of the intervertebral disk.

well for one and a half to two years, when in 1940, without a known precipitating cause, he had a very severe recurrence of the same pain in the same location which lasted altogether about six months. The pain was again associated with the same paresthesias and was excruciating. It was so aggravated by lying down that for two months he had to sleep sitting upright in an easy chair. He went to numerous physicians, one of whom operated on the right side of his neck (apparently an anterior scaleneotomy) without relief. The pain and paresthesia gradually receded over the next three months, during which time he received physical therapy to the right upper extremity for approximately two months.

He was again purely well until about June 1943 (six months prior to admission), when he noticed recurrence of the paresthesias without pain in the day after helping a friend move his household belongings. The abnormal sensations were continuous up to his admission here, but at no time after 1940 did he experience a recurrence of the pain from which he suffered earlier. If he held himself perfectly still, he experienced none of the paresthesias. He usually slept with his right hand underneath his head. Raising either arm above his head, throwing his head back in hyperextension of the neck, or moving the neck about in nearly any way evoked the crawling sensation in the right thumb and the index and middle fingers, extending up the radial border of the right forearm. Specific questioning revealed no history of "cricks" in the neck before or during the present illness. Though he had no pain, the paresthesias

From the Department of Neurology and Neurological Surgery and the Illinois Neuropsychiatric Institute, University of Illinois College of Medicine.

1. Adson A. W. and Ott W. O. Results of the Removal of Tumors of the Spinal Cord. *Arch Neurol & Psychiat* 5: 520-537 (Nov.) 1922.  
Adson A. W. Diagnosis and Treatment of Tumors of the Spinal Cord. *Northwest Med* 24: 309-317 (July) 1925.  
Bradford F. K. and Spurling R. G. The Intervertebral Disk. Springfield, Ill., Charles C. Thomas Publisher, 1941.  
Elsberg C. A. Tumors of the Spinal Cord. New York, Paul B. Hoeber, 1925.  
The Extradural Ventral Chondromas (Eccendromas). Their Favorite Sites, the Spinal Cord and Root Symptoms They Produce and Their Surgical Treatment. *Bull. Neurol. Inst. New York* 1: 350-388 (June) 1931.  
Hawk W. A. Spinal Compression Caused by Eccendromas of the Intervertebral Fibrocartilage with a Review of the Recent Literature. *Brain* 59: 204-224 (June) 1936.  
Love J. G. Protrusion of the Intervertebral Disk (Fibrocartilage) into the Spinal Canal. *Proc. Staff Meet. Mayo Clin* 11: 529-535 (Aug. 19) 1936.  
Love J. G. and Camp J. D. Root Pain Resulting from Intraspinal Protrusion of Intervertebral Disks. *Diagnosis and Surgical Treatment*. J. Bone & Joint Surg. 19: 776-804 (July) 1937.  
Love J. G. and Walsh M. N. Intraspinal Protrusion of Intervertebral Disks. *Arch Surg* 40: 454-484 (March) 1940.  
Protruded Intervertebral Disks. A Report of 100 Cases in Which Operation Was Performed. *J. A. M. A.* 111: 396-400 (July 30) 1938.  
Mixer W. J. and Ayer, J. B. Herniation or Rupture of the Intervertebral Disk into the Spinal Canal. *New England J. Med* 213: 385-393 (Aug. 29) 1935.  
Peet M. M., and Echols D. H. Herniation of the Nucleus Pulposus. Cause of Compression of the Spinal Cord. *Arch Neurol & Psychiat* 32: 925-932 (Nov.) 1934.  
Stookey B. Compression of the Spinal Cord Due to Ventral Extradural Cervical Chondromas. *Diagnosis and Surgical Treatment*. *Arch Neurol & Psychiat* 20: 275-291 (Aug.) 1928.  
Compression of Spinal Cord and Nerve Roots by Herniation of the Nucleus Pulposus in the Cervical Region. *Arch Surg* 40: 417-432 (March) 1940.  
Portugal J. R. Hernia do nucleus pulposus na regio cervical. *Med. cir. pharm.* October 1943, No. 91, pp. 539-538.

2. Semmes R. E. and Murphy F. The Syndrome of Unilateral Rupture of the Sixth Cervical Intervertebral Disk with Compression of the Seventh Cervical Nerve Root. *J. A. M. A.* 121: 1209-1214 (April 10) 1943.

were of such severity that the patient desired operation for relief

The general physical examination revealed nothing significant. The patient was quite husky and robust. There were the scars of an appendectomy and of the scalenotomy. Neurologic examination disclosed that he was tense and anxious. However, he was well aware of his "nervousness" and was quite reliable and consistent in his statements. There was no tenderness of the spine at any point, but hyperextension of the neck invariably initiated the paresthesias in the right forearm. The Naffziger test, using the blood pressure cuff about the neck, also produced the same result. When walking or standing the patient held the right hand supported in his shirt-front in the Napoleonic attitude and said that doing so relieved the paresthesias.

The patient was quite strong and muscular and was right handed. Accordingly, a mild weakness of extension of the right triceps muscle as compared to the left was felt to be significant though there was no perceptible difference in the triceps reflexes. There was no demonstrable motor weakness of the hand or wrist. The sensory examination showed an area of hypalgesia, hypesthesia and hypothermesthesia over the right thumb and the index and middle fingers and on the radial border of the forearm, as shown in the illustration. Deep sensibility in this area was intact to the usual clinical tests. There was no area of complete analgesia except possibly on the tip of the index finger, but the skin of his hand was thick and horny, and for this reason absolute certainty could not be attained. The remainder of the entire neurologic examination showed normal findings. Laboratory examinations of the blood and urine were all negative, and x-ray films of the cervical spine showed no pathologic changes. On lumbar puncture the initial pressure of the spinal fluid and the alterations produced by compression of the jugular veins were entirely normal. The fluid was clear and colorless. It contained no excess of cells and only 12 mg. of protein per hundred cubic centimeters.

A diagnosis of herniation of the fifth cervical intervertebral disk compressing the right seventh cervical nerve root was made. This region was explored on Dec 7, 1943 under general anesthesia. The spines and right laminae of the sixth and seventh cervical vertebrae were exposed. A small amount of the inferior part of the sixth and the superior part of the seventh laminae and the ligamentum flavum were removed, exposing the seventh cervical nerve root. It was quite fixed at its exit through the intervertebral foramen by an obvious small protrusion directly anterior to it. When the nerve root was retracted upward there was visible a small herniation. It had the characteristic glistening white dome and felt rubbery. Incision of the posterior spinal ligament over this protrusion resulted in the spontaneous extrusion of the entire piece of herniated cartilage. It measured not over 3 by 3 mm. in diameter. No further loose material was found, and there was no opening into the disk of sufficient size to warrant further search into it. Removal of the small mass left the nerve root quite free and mobile, and the wound was closed.

The postoperative course was uneventful and the patient was almost entirely relieved of his symptoms. None could be induced by any posture, and as soon as testing could be made there was no demonstrable hypalgesia except on the tips of the index finger and the thumb. Even this objective hypalgesia had receded when he left the hospital on the sixteenth postoperative day, and only a sensation of subjective numbness in the tip of the index finger persisted.

#### SUMMARY

A man aged 41 developed herniation of the intervertebral disk between the sixth and seventh cervical vertebrae on the right side as the result of a fall on an icy street. This gave rise to repeated attacks of severe pain just below the medial part of the spine of the right scapula and persistent paresthesias of the thumb and the index and middle fingers and the radial border of the forearm, all on the right side. Removal of this small piece of herniated cartilaginous material through a partial hemilaminectomy gave immediate complete relief from all symptoms.

3 To eliminate confusion it would probably be best to speak of the intervertebral disk between the sixth and seventh cervical vertebrae but since there is no intervertebral disk between the first and second cervical vertebrae it is actually the fifth cervical disk whose extrusion compresses the seventh cervical nerve root at its exit.

## FRACTURE OF THE BASE OF THE THUMB

### A NEW METHOD OF FIXATION

ERIC C. JOHNSON, M.D., SAVANNAH, GA.  
Surgeon U. S. Public Health Service

Waugh and Ferrazzano<sup>1</sup> and Berkman and Miles<sup>2</sup> recently reported a new method of treatment of fractures of the metacarpals exclusive of the thumb. This method consists in reducing the fracture by pushing a Kirschner wire through the fragment and then running the wire on through into the adjacent metacarpal thus fixing the loose fragment. There is no reason why this same principle cannot be used for metacarpal fractures of the thumb, particularly the Bennett type of fracture involving the base of the thumb.

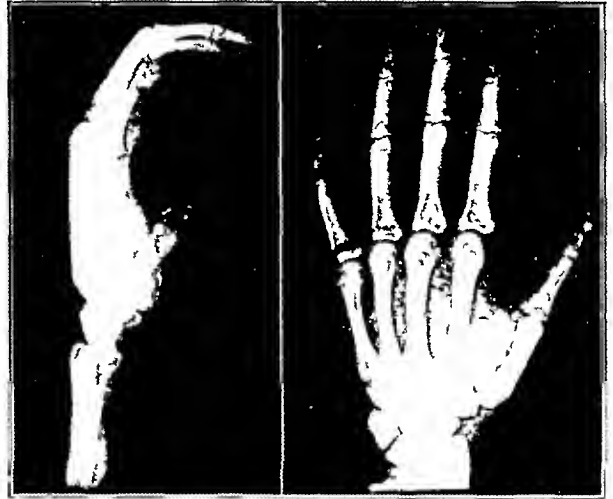


Fig 1 (case 1)—Fracture of base of thumb

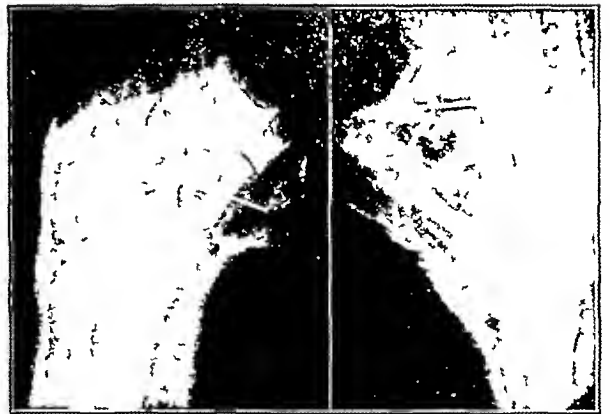


Fig 2 (case 1)—Complete reduction with Kirschner wire fixation and cast

As textbooks and medical journals as far as is known have not described this technic it is considered worth recording.

Fractures involving the base of the thumb usually give sufficient deformity, discomfort and loss of mobility to warrant the use of a method that will result in a complete anatomic reduction. If the hand is anesthetized and the assistant pulls on the thumb the fracture can be reduced but the question is how to maintain this reduction. While the assistant is pulling on the thumb in such a manner that the first metacarpal is lined up on the same plane as the second metacarpal the operator may then introduce a Kirschner wire into the radial side of the metacarpal shaft just volar to the extensor tendons.

1 Waugh R. L. and Ferrazzano C. P. Fractures of the Metacarpal Exclusive of the Thumb. *Am J Surg* 59: 186 (Feb) 1943.

2 Berkman E. P. and Miles C. H. Internal Luxation of Metacarpal Fractures Exclusive of the Thumb. *J Bone & Joint Surg* 25: 816 (Oct) 1943.

# THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

535 NORTH DEARBORN STREET CHICAGO 10, ILL

Cable Address

Medic Chicago

Subscription price

Eight dollars per annum in advance

*Please send in promptly notice of change of address giving both old and new always state whether the change is temporary or permanent. Such notice should mention all journals received from this office. Important information regarding contributions will be found on second advertising page following reading matter.*

SATURDAY, SEPTEMBER 2, 1944

## INDUSTRIAL HEALTH SERVICE FOR FEDERAL EMPLOYEES

Recently hearings were conducted in Washington on H R 4909 by the subcommittee of the House Committee on Civil Service. This bill proposes to make available to federal government employees the kind of medical service found generally advantageous to private industry. Dr Carl Peterson, Secretary of the Council on Industrial Health of the American Medical Association, presented the views of the Council on the essential elements of a good industrial health service.

1 A competent physician who takes genuine interest in applying the principles of preventive medicine and hygiene to employed groups and who is willing to devote regular hours to such service in the working environment.

2 Industrial nurses with proper preparation, acting under the physician's immediate supervision or under standing orders developed by him or by the committee on industrial health of the county medical society.

3 Industrial hygiene service directed at improvement of working environment and control of all unhealthful exposures, to be provided by physicians and others with guidance and assistance from the specialized personnel in state and local bureaus of industrial hygiene.

4 A health program, which should include

(a) Prompt and dependable first aid, emergency and subsequent medical and surgical care for all industrially induced disability.

(b) Health conservation of employees through preventive medicine, physical supervision and health education.

(c) Close correlation with family physicians and other community health agencies for early and proper management of nonoccupational sickness and injury.

(d) Good records of all causes of absence from work as a guide to the establishment of preventive measures.

5 Adequate compensation for industrial health personnel.

In respect to treatment, the Council on Industrial Health draws two clear distinctions.

1 Treatment of compensable injuries and diseases. The disabled worker should be free to choose his physician from all those licensed doctors of medicine competent to supply the required services except in situations provided for by chapter III, article VI, section 3 of the Principles of Medical Ethics, which reads as follows:

The phrase "free choice of physician," as applied to contract practice, is defined to mean that degree of freedom in choosing a physician which can be exercised under usual conditions of employment between patient and physician when no third party has a valid interest or intervenes. The interjection of a third party who has a valid interest or who intervenes does not per se cause a contract to be unethical. A "valid interest" is one where, by law or necessity, a third party is legally responsible either for the cost of care or for indemnity. "Intervention" is the voluntary assumption of partial or full financial responsibility for medical care. Intervention shall not proscribe endeavor by component or constituent medical societies to maintain high quality of service rendered by members serving under approved sickness service agreements between such societies and governmental boards or bureaus and approved by the respective societies.

2 Treatment of noncompensable injuries and diseases. The treatment of injuries or diseases not industrially induced is the function of private medical practice. The physician in his industrial relationships should abstain from such services except in the case of

A Minor ailments. The physician in industry may treat minor physical disorders which temporarily interfere with an employee's comfort or ability to complete a shift, and for the relief of which he may need immediate medical attention.

B First aid for urgent sickness. The physician in industry should employ such measures as the emergency dictates in all cases of urgent sickness occurring during working hours on the working premises, until such time as prompt notification of the family physician relieves him of further responsibility.

C Rehabilitation after sickness and injury. The physician in industry can properly assume responsibility for those phases of rehabilitation after disability industrially induced or otherwise which progress best under controlled working conditions.

Examination of the bill indicated that its proposals did not diverge greatly from the Council's position. During the hearings the committee seemed to be genuinely concerned about the values to be received from such expenditure of public funds, specifically reduction of lost time from sickness, improved production and improved personnel relations. Representatives of man-

agement, labor and medicine who testified were all in general accord that these benefits commonly observed in industry should prevail with equal force in the government. There was objection to the proposal that these industrial health services be set up only on recommendation of the Civil Service Commission after consultation with the United States Public Health Service. The alternative recommendation was that each agency be responsible for its own health program but that each agency may secure medical services by agreement with the Public Health Service. The committee particularly asked for reassurance that a health program of this kind would supplement rather than supplant the activities of the private physician. The general tone of the hearings lent encouragement to the hope that a health service could be organized for government workers along lines which experience in private industry has proved dependable and successful.

#### THE MODE OF ACTION OF THE SULFONAMIDES

During the course of the development of sulfonamide chemotherapy many theories have been propounded relative to the fundamental mode of action of these agents. A recent review by Henry<sup>1</sup> discusses certain of the existing theories. Early belief that the sulfonamides stimulate the defensive powers of the host or inactivate bacterial toxins are, in light of present knowledge, rather questionable. The primary action of these drugs is now generally agreed to be on the bacteria themselves, and the important manifestation of this action is bacteriostasis. How then do the sulfonamides act on bacteria to inhibit their growth?

The assumption that the sulfonamides are oxidized in the body to their hydroxy derivatives led to the so-called anticalase theory of their mode of action. This theory assumed that bacteria convert sulfonamides to hydroxy derivatives, which inhibit the enzyme catalase. The absence of this enzyme was supposed to allow the hydrogen peroxide from bacterial metabolism to accumulate to a point at which it inhibited bacterial growth. This theory was discredited by the subsequent observations that certain bacteria are inhibited by sulfonamides (*a*) in the absence of catalase (*b*) even though they do not produce peroxide (*c*) although they are peroxide resistant and (*d*) in the absence of conditions necessary for the production of peroxide (i.e. anaerobic organisms).

As a result of the now extensively confirmed observation that para-aminobenzoic acid inhibits the sulfonamide effect, a currently popular theory of the mode of action of the sulfonamides developed. This theory is based on the assumption that para-aminobenzoic acid is an essential metabolite for bacterial growth, participat-

ing in the formation of certain vital enzyme systems. It was claimed that the sulfonamides, because of close chemical similarity to para-aminobenzoic acid, were capable of forming ineffective substitutes for this essential metabolite in vital enzyme systems. This theory has done much to further our knowledge of the pharmacology of the sulfonamides. However, the failure of this theory to explain certain recent observations has led to a rather critical reexamination of its claims. If the para-aminobenzoic acid theory is valid, then the widespread effectiveness of the sulfonamides as cell inhibitors would indicate that para-aminobenzoic acid is an almost universally essential metabolite. This however, remains to be shown positively. According to Henry, para-aminobenzoic acid has been demonstrated to be an essential metabolite for only one of the pathogenic bacteria, the diphtheria bacillus. A number of other inhibitors of the sulfonamides such as certain purines, amino acids, glucose, mercuric chloride and urethane, have now been demonstrated. If the logic of the para-aminobenzoic acid theory is established, these substances should also be considered essential metabolites, a view that is obviously fallacious with regard to certain of these inhibitors.

Finally, it was observed in a charcoal model that para-aminobenzoic acid can competitively inhibit the action of the sulfonamides without in itself being an "essential metabolite." Sulfanilamide inhibits the adsorption of methylene blue by charcoal and is in turn inhibited in this respect by para-aminobenzoic acid. Para-aminobenzoic acid therefore effectively antagonizes most of the actions of the sulfonamides, with the exception of certain toxic actions in mammals. The method of this antagonism is not well understood, and its direct relationship to the mode of action of the sulfonamides is somewhat questionable. The sulfonamides inhibit various of the known respiratory enzyme systems. The inhibition of bacterial multiplication bears a direct relationship to the inhibition of respiratory mechanisms of these bacteria, either aerobic or anaerobic.

A recent theory of the mode of action of the sulfonamides postulates that their chemical similarity to the whole or part of various coenzyme molecules allows them to combine with the specific proteins of the respiratory enzymes with either the displacement of the coenzyme by the drug or the formation of an inactive "drug-protein-coenzyme" complex.

A substantial fraction of the overall oxygen consumption of the cell still remains when cell division is completely stopped by the sulfonamides. Henry has therefore suggested that the action of the sulfonamides on bacteria resembles the action of certain narcotics, especially in regard to the more or less specific inhibition of that relatively small portion of the total respiration concerned with supplying the energy for cell division.

<sup>1</sup> Henry, Richard J. The Mode of Action of the Sulfonamides. *Bact. Rev.* 7: 175, 1943.



The specific cellular respiratory enzyme systems against which the sulfonamides act have not as yet been clearly identified, nor has the manner in which these systems are altered been portrayed

### CHEMOSURGICAL TREATMENT OF CANCER OF THE LIP

The chemosurgical method was introduced by Mohs<sup>1</sup> for the excision of accessible forms of cancer under microscopic control. The tissues in question are fixed in situ by means of a suitable solution of zinc chloride and then excised and examined microscopically. This process is repeated if necessary until microscopically cancer free surfaces are reached. The fixation of the tissue by the zinc chloride does not interfere with the microscopic work. A special clinic was established in the department of surgery in the University of Wisconsin eight years ago, and since then many hundreds of cases of cancer have been subjected to the chemosurgical treatment. The results are now becoming available for analysis and evaluation. The first report on these results deals with cancer of the lip.<sup>2</sup>

The report covers the cases treated between July 7, 1936 and May 29, 1943. The cure rates are 91.5 per cent of 164 cases after six months, 59 per cent of 73 cases after three years and 87.5 per cent of 38 cases after five years. The cure rate of 87.5 per cent after five years appears to surpass recently published rates for surgical and radiotherapeutic methods of treatment of cancer of the lip, but of course these rates are not based on sufficiently standardized material to yield strictly comparable results. This is particularly the case with respect to radiotherapy by standardized methods in expert hands.

There would seem to be no question, however, as to the value of the chemosurgical method. The microscopic control of excision gives the method an unequalled advantage—"time after time, unsuspected outgrowths of small caliber from the main tumor mass were found microscopically, at times extending a considerable distance after becoming grossly invisible." The method is practically without risk, it conserves lip tissue and it has no tendency to cause metastasis. As a rule regional metastasis must be removed by standard surgical dissection. "Chemosurgical treatment is particularly advantageous for cancer of the lip recurrent after surgical operation or irradiation. Such lesions often respond poorly to repetition of the original therapy, but they almost invariably respond to chemosurgical treatment." The chemosurgical method of treating cancer is another example of the value of expert specialization along a particular line. Further practical progress requires special training and facilities.

<sup>1</sup> Mohs F. E. and Guyer M. F. Preexcisional Fixation of Tissues in the Treatment of Cancer in Rats. *Cancer Research* 1: 49 (Jan.) 1941.  
Mohs F. E. Chemosurgery: A Microscopically Controlled Method of Cancer Excision. *Arch. Surg.* 42: 279 (Feb.) 1941.

<sup>2</sup> Mohs F. E. Chemosurgical Treatment of Cancer of the Lip. A Microscopically Controlled Method of Excision. *Arch. Surg.* 48: 478 (June) 1944.

### THE INTERNATIONAL LABOR ORGANIZATION ON SICKNESS INSURANCE

Possibly the action of the International Labor Organization at its twenty-sixth conference in Philadelphia during April and May of the present year may have a greater influence on sickness insurance legislation than any of the laws proposed in Congress.<sup>1</sup> Delegates from forty-one nations composed this conference, including nearly all Allied and neutral nations except the Soviet Union. There are four representatives from each nation. Two of these are appointed by the government, and one is chosen by employer and the other by labor organizations.

The recommendations for sickness insurance are more elaborate than those of any previous conference. They constitute a complete outline for legislation, if previous experience points to future possibilities, these recommendations are likely to be followed in legislation introduced in nearly all the countries not having sickness insurance at the present time. Some of the features in the recommended legislation especially suggested are as follows:

The medical care service should cover all members of the community, whether or not they are gainfully occupied.

All care and supplies should be available at any time and without time limit, when and as long as they are needed, subject only to the doctor's judgment and to such reasonable limitations as may be imposed by the technical organization of the service.

Complete and up to date technical equipment for all branches of specialist treatment, including dental care, should be available, and specialists should have at their disposal all necessary hospital and research facilities and auxiliary outpatient services such as nursing, through the agency of the general practitioner.

To achieve these aims, care should preferably be furnished by group practice at centers of various kinds working in effective relation with hospitals.

The working conditions of doctors and members of allied professions participating in the service should be designed to relieve the doctor or member from financial anxiety by providing adequate income during work, leave and illness and in retirement, and pensions to his survivors, without restricting his professional discretion otherwise than by professional supervision, and should not be such as to distract his attention from the maintenance and improvement of the health of the beneficiaries.

The professional supervision of the members of the medical and allied professions working for the service should be entrusted to bodies predominantly composed of representatives of the professions participating with adequate provision for disciplinary measures.

The central government agency should consult the representatives of the medical and allied professions, preferably through advisory committees, on all questions relating to the working conditions of the members of the professions participating, and on all other matters primarily of a professional nature, more particularly on the preparation of laws and regulations concerning the nature, extent and provision of the care furnished under the service.

Group medical service is recommended, and governments are urged to provide equipment for medical centers. The use of salaried physicians is recommended under certain circumstances.

<sup>1</sup> International Labour Conference. Provisional Record 26th Session. Philadelphia No. 30. *Social Security Bulletin* 7: 11 (June) 1944. *Monthly Labor Review* 59: 1 (July) 1944.

The health sections were adopted by a vote of 76 to 6, with 23 extensions. The attitude of one of the employers' representatives, Henry I. Harriman of the United States, who voted against the health section, was expressed as follows:<sup>2</sup>

The employers' group was frankly surprised at the universality of the demand for all-inclusive social security legislation. It was their feeling, as it is mine, that such laws must come as a matter of evolution and I personally voted against the final resolution, feeling that it went too far and too fast.

Now that I am back from Philadelphia and have had an opportunity to view the conference with better perspective, I feel that the employers of the United States must face the demand for enlarged social security and that if they are wise they will not try to stop the enactment of such laws but will guide them into sound and reasonable form.

---

## Current Comment

---

### POLITICAL CARE OF THE MENTALLY ILL IN NEW YORK

When an epidemic of amebic dysentery occurred in the Creedmoor State Hospital in New York in March 1943, Gov. Thomas E. Dewey appointed a commission to investigate the management and affairs of the Department of Mental Hygiene of the State of New York and the institutions operated by it. That report,<sup>1</sup> which has just been made available, emphasizes again the defects that seem inseparable from political medicine. In 1942 New York mental hospitals were caring for 83,053 patients at an annual cost of \$30,474,048.08. The commission found everywhere signs of inadequate examination of mental defectives, unsatisfactory recording of physical conditions on admission and lack of professional care, owing largely to the use of an undermanned professional staff. "The emphasis in all the institutions has been on administration at the expense of clinical medicine," says the report. This is the familiar criticism of all types of political medicine. In the mental hospital service in New York State advancement went to "careerists" and not to the psychiatrists of wide experience and knowledge. New methods of treatment such as shock and physical therapy disturbed the routine of the institutions and were therefore neglected. The report indicates that this service had not attracted competent physicians. Nurses were insufficient in numbers and defective in quality and were assigned to administrators and their families rather than to patients. The diets were monotonous and were not supervised by dietitians. Research and education were neglected or isolated in bureaucratic subdivisions apart from the treatment of patients. Here were all the apparently inevitable evils of mass medical treatment. Here were all the faults that usually accompany compulsory political care. Here, in miniature, is a picture of what the American people may expect if political medicine ever takes over general medical care in this country.

<sup>2</sup> Best's Insurance News 45:27 (Aug.) 1944.

<sup>1</sup> The Care of the Mentally Ill in the State of New York. A Report by a Commission Appointed by Honorable Thomas E. Dewey, Governor of the State of New York. Pursuant to Section 8 of the Executive Law to Investigate the Management and Affairs of the Department of Mental Hygiene of the State of New York and the Institutions Operated by It. Paper. Pp. 124, with 3 illustrations. New York: 1944.

### WALTER REED AND YELLOW FEVER

The investigations on tropical disease now being made all over the world focus attention again on the original experiments conducted under the direction of Walter Reed, which set the pattern for this type of study. In this war members of our armed forces have been decorated for their services as volunteers in the study of sandfly fever and other unusual conditions. When Reed and Carroll landed in Cuba in June 1900, Dr. Walter Reed came to live at the post hospital in Columbia Barracks. He found as executive officer on duty Lieut. Albert E. Truby, later retired as brigadier general. In 1943 General Truby assembled the records and reports of the Yellow Fever Commission and told the story which will be for all time one of the epics in the history of medicine.<sup>1</sup> The Reed board began its work on June 25, 1900. The story of the self-sacrifice, the difficulties that they encountered, the tragedy of the death of Lazear have all been reflected in many a magazine article, in books, in plays and in motion pictures. The Truby account is exceptional because it is so fully documented and because it is really a first hand report. In view of the place that malaria has come to occupy in the present war, it is interesting to read in the annual report of General Leonard Wood to the Secretary of War, June 30, 1901, the following statement:

With the acquisition of our recent knowledge of the propagation of malarial fevers, it may be taken for granted that this preventable disease will be hereafter greatly reduced and at most posts, practically eliminated. As an instance for the week ending June 23, 1900 there were 34 cases of malarial fever under treatment at Rowell Barracks, Cuba (Cienfuegos). A year afterward, for the week ending June 22, 1901, chiefly in consequence of sanitary measures promoted by the post surgeon Lieutenant A. E. Truby, there was not a single case.

---

### HIGH COST OF VITAMIN THERAPY

Elsewhere in this issue (page 29) appears a statement from the Council on Pharmacy and Chemistry on the Comparative Cost of Vitamin Mixtures, which should help explain the \$179,000,000 spent for vitamins in 1943. Those who are familiar with the true indications for vitamin therapy already realize how many hundred million dollars are spent needlessly; others have only to glance at the Council's report. As the report reveals, the individual costs of vitamin mixtures vary greatly, almost as much as the promoted claims. No group of agents is now subjected to greater advertising abuse than vitamins. The radio, newspapers, store counters and other mediums constantly attract the ear and eye with pleas to improve the health, correct constipation, avoid dizzy spells and be successful with love and business affairs. How? Simply by taking vitamins according to the promoters! Fortunately there are bodies such as the Council on Pharmacy and Chemistry to set forth in succinct fashion the basic claims that may be made for vitamins. Such publications of the Council as New and Nonofficial Remedies present the scientifically recognized actions and uses of vitamins. This information should be spread widely.

<sup>1</sup> Memoir of Walter Reed. The Yellow Fever Episode by Albert F. Truby, Brigadier General, U. S. Army, Retired. New York: Paul H. Hoeber, Inc. 1943.



# MEDICINE AND THE WAR

## ARMY

### INVESTIGATION OF JAPANESE MEDICAL DEPOTS ON BIAK ISLAND

Captain Earl W. Schafer  
Squadron Flight Surgeon

MEDICAL CORPS ARMY OF THE UNITED STATES

In a previous report I submitted information concerning an investigation of Japanese medical depots at a recently evacuated air strip in New Guinea. On the beachhead at Biak Island I had the opportunity to investigate four Japanese medical depots. At this time the Japs were still holding the air strips on the island.

The depots were situated along a road leading from the beach and were in the most part intact. They were large huts with a thatched roof and metal sides. The supplies were all in wooden packing cases stacked neatly in piles.

In the previous report a number of drugs and evidence of certain laboratory and x-ray equipment were listed. In addition to the drugs seen on New Guinea there were atropine sulfate crystals, iodoform crystals, magnesium sulfate crystals, thrombogen (Tij), digitaminum, stibnal solution in 20 cc ampules, sodium citrate solution, glacial acetic acid, phenol, lead acetate and concentrated iodine solution. The drugs were identified by the English or Latin names on the containers in addition to the Japanese. There were many items which could not be identified, but the same precision in packing and the predominance of glass containers were noted.

One of the most interesting and speculative biologic preparations found was many packing cases full of ampules of male sex hormone. Anthrax vaccine and antitoxic vaccine were found, also pound jars marked "Vitamin A and D Ointment" in large English letters.

Complete kits packed neatly with cotton in cardboard boxes 1 foot square sealed in rubber bags and then tied with vines were noted in great numbers. Two of these kits were packed in a heavy wooden box. The kits contained a variety of drugs, bandages, intravenous saline solution (500 cc), a quart of alcohol, a small rectangular metal box with a 20 cc glass syringe and needles. The latter were each placed in the end of a small metal tube, two needles to the tube.

Because of high cliffs honeycombed with caves and close to the beachhead, large numbers of Japanese soldiers were able to withdraw into these natural fortresses. Later after artillery and naval bombardment, dive bombing, strafing and flame throwers were employed, the majority of the enemy were disposed of. Medical supplies were found in many of the caves.

Quantities of sake and Kirin beer were captured. The quartermaster gave one issue of the latter to each of the units. The product proved to be as palatable as any American brand in the long long ago.

### NEW NAME IS SELECTED FOR MORALE SERVICES DIVISION

The name of the Morale Services Division, Army Service Forces, has been changed to the Information and Education Division in order to describe more accurately its increasingly important functions. There will be no change in functions or personnel. First established in 1940 as a branch of the Adjutant General's Office, the Information and Education Division is now providing a worldwide service of information to troops as well as off duty educational programs. In addition to its headquarters in Washington, D. C., the division maintains offices in New York City and in Los Angeles. Its military personnel are in every theater where our troops are stationed.

The division, under the direction of Major Gen. Frederick H. Osborn, is charged with the planning and supervision of matters not pertaining to command which relate to the maintenance and improvement of morale within the Army. It conducts research studies through attitude surveys and performance

data designed to furnish information to serve as a guide in problems of military leadership. It supervises the publication of *Yaul*, the army weekly, and 2,023 other army newspapers, operates the largest correspondence school in the world, the United States Armed Forces Institute, which is helping 225,000 men and women of all the armed services prepare themselves for better jobs on their return to civilian life, and produces forty-two hours of transcribed entertainment and educational radio programs weekly for use by more than four hundred overseas radio outlets.

In addition, the Information and Education Division produces and distributes information and educational movies, directs army orientation courses and off duty discussion programs and prepares "short guides" to foreign countries to which our troops may be sent.

### ARMY AIR FORCES CONFERENCE ON RHEUMATIC FEVER

A recent conference on rheumatic fever was held by the Army Air Forces in Denver. The objectives of the meeting were outlined by Col. William P. Holbrook, chief, Professional Division, Office of the Air Surgeon. Colonel Holbrook also discussed some of the unsolved problems of rheumatic fever which must be met during the next year. The report of the Committee on the Prophylactic Use of the Sulfonamides indicated that these drugs should be used in treatment only as a last resort and that their principal indication is for prophylaxis. The report of the Committee on Criteria for the Diagnosis of Rheumatic Fever contained recommendations based principally on the paper given by Dr. T. Duckett Jones at the Chicago session of the American Medical Association in June. The important recommendations of the Committee for Standardization of Convalescent Care of Rheumatic Fever were that no patient should be discharged to duty until he had actually undertaken duty under supervision in the convalescent center and that this duty should be in accord with his military occupational specialty.

### PRISONERS OF WAR

Major Edwin S. Kagy is a prisoner of war of the Japanese and is now in a prison camp in Tokyo. Dr. Kagy is a graduate of Tulane University of Louisiana School of Medicine, New Orleans, in 1934. He was commissioned in the regular Medical Corps of the Army in August 1935 and was ordered to the Philippines in the fall of 1940. He was at Corregidor when Batan fell and was taken prisoner. In the fall of 1943 he was transferred from the Philippines to Tokyo.

Lieut. Edwin Fucker, formerly of New Orleans, has been a prisoner of the Japanese since the fall of Batan. Dr. Fucker graduated from Tulane University of Louisiana School of Medicine, New Orleans, in 1936 and entered the service July 2, 1941.

Capt. Peter C. Graffagnino, who was recently reported missing, is now a German prisoner. Dr. Graffagnino is a graduate of Tulane University of Louisiana School of Medicine, New Orleans, 1939. He entered the Army Medical Corps in September 1941.

### COLONEL BLECKWENN APPOINTED NEUROPSYCHIATRIC CONSULTANT

Col. William J. Bleckwenn, professor of neuropsychiatry at the University of Wisconsin Medical School, Madison, has been appointed as the neuropsychiatric consultant to the Sixth Service Command with headquarters in Chicago. Dr. Bleckwenn recently returned from a period of over two years' service in the South Pacific, having gone out in command of a medical regiment. Later he served as a base area surgeon. He graduated from Columbia University College of Physicians and Surgeons, New York, in 1920 and entered the service Jan. 13, 1941.

## TWO THIRDS OF ARMY WOUNDED RETURNED TO DUTY

According to a recent release, fully 96 per cent of all men wounded on battlefields recover, and of these about two thirds return to duty. When the convalescent period is reached the Army's new intensive program of reconditioning begins. This includes planned, progressive physical exercise to speed the recovery of strength and stamina. Occupational therapy encourages normal habits, and educational therapy mental advancement. Following the reconditioning program the men who have recovered but who do not meet the Army's physical standards for general service may remain in the Army in limited service status or in some cases may return to civilian life. Twenty-three per cent of those discharged from hospitals with serious physical limitations, and who were given the option of discharge from the Army, elected to remain in the military service according to War Department figures for the period from June 25 to July 25. Continued hospital care as required will be available to casualties returned to civilian life, together with opportunity for vocational rehabilitation or academic advancement through study in schools and colleges depending on circumstances and personal choice.

## ARMY OPENS MALARIA TREAT- MENT CENTER

The Moore General Hospital Swannanoa, N. C., has been designated a medical center for the study and treatment of tropical diseases under the command of Lieut. Col. Joseph M. Hayman of Cleveland. It was opened on September 1. There are 350 beds in this center for patients who are receiving active treatment, and in addition there are barracks facilities for 1,100 men for the reconditioning program. On release from bed treatment the patients will be transferred to the reconditioning barracks and continue any further treatment required in addition to the training needed to prepare for active duty again. As far as possible all tropical disease patients in the Army will be concentrated at the new center. Particular attention will be paid to malaria and filariasis. Facilities for expansion of bed capacities as required are being provided. The new center will be under the supervision of Lieut. Col. Francis R. Dieuaide, chief of the Tropical Disease Branch of the Medicine Division of the Surgeon General's Office, headed by Brig. Gen. Hugh J. Morgan.

## CONSERVATION OF MEDICAL CORPS OFFICERS

The Adjutant General of the Army has recently issued a circular that will effect the strictest economy in the utilization of Medical Corps officers.

Tables of organization are changed by this order so that many positions that do not require the professional knowledge or skill of medical officers may now be filled by properly qualified Medical Administrative or Sanitary Corps officers. Such changes refer largely to duties of an administrative, executive or training nature.

Under the new provisions it is believed that Medical Corps officers will be more fully utilized for their technical knowledge and professional skill than in the past.

## CAPTAIN ROBERT WARE MISSING

Capt. Robert B. Ware, formerly of Lynchburg, Va., has been reported missing in action since D day. Dr. Ware graduated from the Medical College of Virginia, Richmond, in 1940. He volunteered for duty and was called July 1, 1940. He attended officers' school at Carlisle Barracks, Pennsylvania, and has been overseas since Sept. 27, 1942.

## MEDICAL DEPARTMENT ANNIVERSARY

The Army Medical Department observed on July 27 its 169th anniversary of the establishment of the first medical service for the American Army. The Medical Department had its inception in the creation by the Continental Congress on July 27, 1775 of a hospital for the American forces shortly after George Washington assumed command in the Revolutionary War.

## ARMY AWARDS AND COMMENDATIONS

### Colonel Edward J. Tracy

The Legion of Merit was recently awarded to Col. Edward J. Tracy, formerly of Albuquerque, N. M. The citation accompanying the award read: "For service as Surgeon, VIII Bomber Command, from Aug. 11, 1942 to Jan. 6, 1944. He directed the expansion of medical service for personnel of this command from one group to a large number of groups. Through his foresight and initiative he overcame the problems of sanitation and care and evacuation of casualties which arose from this rapid expansion during a relatively short period. He instituted the policy of flight surgeons accompanying their units on operational crews under their care. He himself participated in several operational missions in order to gain information and better to evaluate the stress and strain to which combat personnel are subjected. The immediate knowledge gained by him enabled him to make recommendations to the commanding general, VIII Bomber Command, as to the limits imposed by the human factor and as to the policies to be adopted on leaves, passes and furloughs and related matters affecting morale. He also kept abreast of modern methods of treatment and use and care of protective flying equipment, applying these new methods whenever practicable. The initiative, skill and sound judgment displayed by him have contributed immeasurably to the combat achievement of the VIII Bomber Command." Dr. Tracy graduated from the University of Minnesota Medical School, Minneapolis, in 1930 and entered the service after graduation from the Army Medical School in 1932.

### Captain Joseph E. Sokal

The Bronze Star Medal was recently awarded to Capt. Joseph E. Sokal for 'meritorious achievement in connection with military operations against the enemy at Makin Atoll, Gilbert Islands, Nov. 20-21, 1943. Captain Sokal set up an aid station under extremely adverse conditions and under constant enemy sniper fire. From this position he administered medical treatment to approximately 100 men. He was tireless in his efforts to aid the wounded and by his diligent application of professional skill saved many lives.' Dr. Sokal graduated from Yale University School of Medicine, New Haven, Conn., in 1940 and entered the service after completion of his internship in 1941. Besides the Gilbert Islands campaign he took part in the recent landing of Saipan. Dr. Sokal was also commended for his loyal cooperation, untiring zeal and unselfish devotion to duty during the Gilbert campaign. He has also been cited for the Silver Star.

### Captain William E. Nunnery

The Soldier's Medal was recently awarded to Capt. William E. Nunnery for heroism at March Field, California, on Feb. 1, 1944, when an army airplane made a forced landing and caught fire. An officer of the combat crew was pinned in this airplane. An explosion of the gas tanks was expected at any minute. Captain Nunnery, who was approximately 300 to 500 yards from the scene of the airplane at the time of its crash, immediately proceeded thereto and on arriving at the then burning airplane heroically and with utter disregard for his own safety assisted in extricating an officer crew member who was trapped and seriously burned. Dr. Nunnery graduated from the University of Kansas School of Medicine, Kansas City, in 1942 and entered the service in July 1943.

### Captain Benjamin I. Schneiderman

Capt. Benjamin I. Schneiderman was recently awarded the Bronze Star. The citation that accompanied the award read in part: "For heroic achievement in the action of 12 February 1944 near Anzio, Italy. During an enemy air attack on the Anzio-Nettuno beachhead area, Captain Schneiderman remained at his post of duty even though flak was falling throughout the hospital. Disregarding the extreme danger, he performed one operation after another. Bombs fell in the hospital area and shell fragments pierced the operating tent, yet he continued to perform his duties in a cool and efficient manner. His courage and devotion to duty reflect credit on himself and the Medical Corps." Dr. Schneiderman graduated from New York University College of Medicine, New York, in 1939 and entered the service in May 1942.

## NAVY

NAVAL HOSPITAL IN ENGLAND TREATS  
HUNDREDS OF WOUNDED FIRST  
TWO WEEKS OF INVASION

At a U S naval hospital in England, several hundred U S casualties from France were treated with the loss of only 1 man. Formerly a British hospital, this institution is a quarter of a mile long, is three stories high with more than a hundred wards, operating rooms and laboratories, and is maintained in a state of constant readiness. Sixty outbuildings can be utilized in emergencies, almost doubling the normal capacity. The hospital maintains a staff of 50 doctors, 12 hospital corps officers serving as technicians, 98 trained navy nurses and 400 skilled hospital corpsmen. Another 180 men are engaged in maintenance. On D day the supply of medicine and drugs included 537,500 cc of plasma, 398,500 cc of other intravenous solutions, 794 gallons of alcohol, 50,000 tablets of sedatives of various types, 143,500 sulfonamide tablets and 71 pounds of sulfonamide powders, 50,300,000 units of penicillin, 299 pints of medicinal whiskey, 4,958 bandages of all types, plus orthopedic equipment including 5,326 pounds of cotton, 2,500 pounds of plaster of paris, 100,000 yards of ermoline and 200 rolls of sheet wadding.

Each casualty on arrival at this hospital is examined separately by the chiefs of surgery, medicine and neuropsychiatry to determine as quickly as possible the preliminary treatment necessary and whether surgery is needed. After preliminary examinations and treatment each man is bathed, shaved, issued clean clothes and put into a clean, comfortable bed in rooms staffed twenty-four hours a day.

Complete arrangements for the transfer of this hospital from British to American hands began last fall, when Rear Admiral Luther Sheldon Jr, Medical Corps, U S N, assistant chief of the navy's Bureau of Medicine and Surgery arrived in the United Kingdom. Early in the spring Capt C J Brown, formerly of Philadelphia, brought his staff over to assume command. Capt J W Miller, formerly of Washington, D C, is executive officer. Other members of the medical corps on the staff are Capt James M Faulkner, Brookline, Mass, chief of medicine; Capt A H Weiland, Coral Gables, Fla, chief of orthopedic surgery; Comdr Henry W Hudson, Waban, Mass, chief of surgery; and Comdr Robert T Baldrige, Providence, R I, chief of the urology department.

MEDICAL COMPANY COMMENDED FOR  
MERITORIOUS SERVICE

Company C, Third Medical Battalion, attached to the Third Marine Division Reinforced, in the capture of a beachhead on Bougainville Island, has been commended by Major Gen Roy S Geiger, U S Marine Corps, commanding general of the First Marine Amphibious Corps. The citation reads: "During the military operations commencing Nov 1, 1943 which resulted in the capture by the Third Marine Division, Reinforced, of a beachhead on Bougainville Island, British Solomon Islands, Company C, Third Medical Battalion, made conspicuous and valuable contributions to the success of our arms. At the battles of Cape Torokina, Koromokina Lagoon, the Coconut Grove, Piva Piva Forks and Fry's Nose, as well as during enemy bombing attacks and combat operations of a minor nature, the personnel of the company brought aid to the wounded under the most adverse conditions of weather and jungle terrain, cheerfully enduring enemy fire throughout each of these actions and frequently risking their own lives in order to evacuate and administer medical assistance to the injured during the heat of combat. The officers and men of the company acquitted themselves gallantly, winning the admiration of the combat troops and saving the lives of hundreds of the wounded."

The commanding officer of the company was Lieut Comdr Rodney Robert Gleysten. Dr Gleysten graduated from the State University of Iowa College of Medicine, Iowa City, in 1938 and entered the service Aug 15, 1941.

Other Medical Corps officers with this company were Lieut Leo John Koscinski, Chicago, who graduated from Northwestern University School of Medicine, Chicago, in 1941 and entered the service April 13, 1942; Lieut Charles Reid Goodwin, Port Arthur, Texas, who graduated from the University

of Texas Medical Branch, Galveston, in 1940 and entered the service in October 1942; and Lieut Frederick Gordon Grant, Seaton, N Y, who graduated from the University of Rochester School of Medicine and Dentistry, New York, in 1940 and entered the service in September 1942.

NAVAL HOSPITAL PROGRAM TO  
BE EXPANDED

Southern California, the Navy's largest medical center with more than 17,000 navy marine and coast guard men as patients in hospitals in this area, has an expansion program under way, including recommissioning of former navy hospitals at Spadra, Beaumont and Banning. In anticipation of increased intensity in Pacific warfare, additions are being made at several of the navy hospitals in southern California and work is under way to recommission the former army hospitals at Spadra, Beaumont and Banning. The three convalescent hospitals at Spadra, Beaumont and Banning now are being made ready for more than 3,000 patients. The hospital at Spadra will be commanded by Capt Harold L Jensen as an annex to the Corona hospital, also under his command. Spadra was formerly a state medical center. It has been adapted for service use with several temporary buildings added to the permanent structures erected by the state. The Corona hospital, formerly a luxurious hotel, is one of the nation's most beautiful medical centers. It has been named the rheumatic fever center for the Navy and is the largest navy tuberculosis center on the West Coast. An almost separate hospital within the hospital has been opened to treat cases of tuberculosis.

## NAVY AWARDS AND COMMENDATIONS

## Lieutenant William B Neal Jr

The Navy and Marine Corps Medal was awarded to Lieut William B Neal, formerly of Chicago, "for distinguishing himself by heroism while attached to the U S S *Lansdale* during and following an attack by enemy aircraft off the coast of Algeria on the night of April 20, 1944. When the *Lansdale* was damaged and the ship subsequently sunk, Lieutenant Neal was severely injured by the shock of the initial explosion but promptly commenced rendering first aid to other casualties of the disaster. With great skill and the utmost fortitude, he continued administering medical assistance until after the order had been given to abandon ship. When removed from the water by a rescue vessel he was completely exhausted but within a short time resumed his nursing efforts to revive survivors and care for the wounded for over thirty-six hours, at which time it became necessary to hospitalize him. He undoubtedly contributed to the saving of several lives. The extraordinary courage, selflessness and devotion to duty displayed by Lieutenant Neal were in keeping with the highest traditions of the Naval Service." Dr Neal graduated from the University of Chicago School of Medicine in 1941 and entered the service in August 1943.

## Commander Emil Edward Napp

Comdr Emil Edward Napp, formerly of New Rochelle, N Y, was awarded the Silver Star Medal "for conspicuous gallantry and intrepidity as a regimental surgeon during the seizure and occupation of Japanese held Cape Gloucester, New Britain, from Dec 26 to 31, 1943. Accompanying assault troops into the zone of action on numerous occasions throughout this hazardous period, Commander Napp repeatedly risked his life in order to care for injured personnel and supervise their evacuation from front lines to battle aid stations, in one instance ministering medical aid to a wounded marine while pinned down by Japanese sniper fire. By his keen foresight in interpreting material needs of casualties in the field of battle and his outstanding skill, Commander Napp contributed to the saving of many lives. His professional integrity and daring courage in the face of grave peril were in keeping with the highest traditions of the United States Naval Service." Dr Napp graduated from New York Medical College, Flower and Fifth Avenue Hospitals, New York, in 1933 and entered the service June 9, 1941.

## MISCELLANEOUS

## WARTIME GRADUATE MEDICAL MEETINGS

The following subjects and speakers for Wartime Graduate Medical Meetings have just been announced

Combined Wartime Graduate Medical Meeting and Regional Meeting of the American College of Physicians, Hotel Vancouver, Vancouver, B C The Recent Status of Rickettsia Disease, Dr Matthew Riddle, Control of Staphylococcal Infections with Sulfonamide Drugs, Lieut Col Roy H Tufner, Clinical Experience with Penicillin, Capt Charles E Watts, Some Pharmacologic Problems in the Use of Chemotherapeutic Drugs, Dr Norman D Davis, luncheon address, Major Gen G R Pearkes, Respiratory Limitations in Altitude Flying, Group Capt G E Hall Respiratory Disease Problems in an East Coast Base, Surg Comdr J Wendell MacLeod, Visualization of the Chambers of the Heart and Great Vessels Lieut Comdr Israel Steinberg, Experimental and Clinical Aspects of Carotid Sinus Reflexes, Dr Hance Haney, dinner addresses, Dr David P Barr and Comdr Corydon M Wassell, September 14

Hepatitis, Lieut Col Roy H Turner, Psychosomatic Medicine, Brig Gen W P Warner, Gastroenterological Problems in the Canadian Navy, Surg Comdr J Wendell MacLeod, Some Principles and Problems in Immunity, Dr C E Dolman, Thiouracil in Graves Disease, Dr David P Barr, Body Section Radiography, Comdr Wendell G Scott, Maintenance of Normal Body Temperature in Service Personnel, Group Capt G E Hall, Some Experience with the Use of Gold Salts in the Treatment of Arthritis, Dr P H Sprague, Observations on Active Rheumatic States, Dr John MacEachern, Malaria Control (with two films), Lieut Comdr Frank P Mathews, September 15

Rhoads General Hospital, Utica, N Y, in conjunction with the fifth district branch of the Medical Society of the State of New York Tuberculosis, Drs Ethan Flagg Butler and S Eric Simpson, Chest X-Rays in Industry, Dr William C Jensen, Tuberculosis in Military Service, Capt Daniel J Feldman, president's address, Dr Herbert H Bauckus Rehabilitation of the War Veteran Dr Roy Woodward, motion picture demonstration, "Psychology in Action," September 19

At Mayo General Hospital, Galesburg, Ill Diseases of the Kidneys and Urogenital Tract, Drs Francis D Murphy and Wilbur E Post and Lieut Col Harold C Lueth, September 20

HOSPITALS NEEDING INTERNS  
AND RESIDENTS

The following hospitals have indicated to the Council on Medical Education and Hospitals that they have not completed their house staff quota allotted by the Procurement and Assignment Service

(Continuation of list in THE JOURNAL August 26 page 1197)

## CALIFORNIA

Santa Monica Hospital Santa Monica Capacity 220 admissions 7 970  
Mr Ritz E Heerman General Manager (5 interns)

## ILLINOIS

Belmont Community Hospital Chicago Capacity 125 admissions 3 778 Miss Gertrude F Scofield Superintendent (interns)  
Elgin State Hospital Elgin Capacity 4 946 admissions 1 495 Dr Charles F Read Managing Officer (residents—psychiatry)  
Peoria State Hospital Peoria Capacity 2 708 admission 765 Dr Joseph H Ellingsworth Medical Superintendent (residents—psychiatry)

## NEW YORK

Harlem Eye and Ear Hospital New York City Capacity 50 admissions 1 719 Dr Charles B Meding Executive Surgeon (resident—ophthalmology-otology)  
Sydenham Hospital New York City Capacity 247 admissions 4 619  
Miss Fanny Fried Executive Secretary (interns—2 October 2 November 2 December)

## PENNSYLVANIA

Chester County Hospital West Chester Capacity 178 admissions 3 442 Mr Alton F Reichert Director (2 interns)

## TENNESSEE

Davidson County Tuberculosis Hospital Nashville Capacity 300 admissions 328 Dr R R Crowe Superintendent (2 residents—tuberculosis July 1945 to March 1946)

## VIRGINIA

Alexandria Hospital Alexandria Capacity 175 admissions 4,474  
Mr R G Whitton Superintendent (3 interns)

WARREN F DRAPER PROMOTED  
TO MAJOR GENERAL

Announcement has just been made of the promotion of Brig Gen Warren F Draper to the rank of major general General Draper, a graduate of Harvard Medical School, Boston in 1910, began as assistant surgeon, United States Public Health Service, in that year During the first world war he was assigned to the Army and had charge of extracantonment sanitation in the Norfolk, Va, area Since then he has served as assistant surgeon general in charge of the states relation division of the Public Health Service and for three years he served as state health officer of Virginia In 1939 he was named assistant to the Surgeon General under Dr Thomas Parran and later became deputy surgeon general In the spring of this year he was assigned to duty with the Army in the grade of brigadier general at the request of Hon Henry L Stimson, Secretary of War At present General Draper is chief of the public health branch of civil affairs in the European theater This branch is responsible for the care of ill and injured civilians in the battle area, helps distribute medical supplies and gives advice on prevention and control of disease among civilians and animals General Draper was a member of the House of Delegates of the American Medical Association from 1925 to 1943 inclusive

## PUBLIC HEALTH UNDER HITLER

For the first time during the war Reich Health Leader Dr Conti on May 24, according to DNB, addressed a large gathering of men and women medical students of Freiburg University when he spoke on the problem of recruiting for the medical profession He drew a picture of the aims and tasks which today just after the victorious conclusion of the war face the future members of the medical profession in the spheres of public health, racial and population policy, and the guidance of the people from a purely scientific medical point of view His statements in which he drew a parallel between the profession of doctor and the young medical student of the period after the first world war and today culminated in an appeal to make a substantial and energetic contribution to solving all problems arising in this struggle, which is a necessity of fate

Referring in particular to future doctors Conti emphasized that however great the number of new men and women doctors we shall always need them The postwar tasks in all the various fields of public health are so numerous that we can never have enough doctors (Freiburg University has put a ban on admission to a number of other faculties) After the war the German people will see a new upward development in the numbers of all population too which will put into the shade all previous experience The basis of nutrition which is closely connected with that of the health policy of the German nation, is completely safeguarded and all our enemies' hopes for a collapse have come to naught for the victory in which we believe remains ours

According to *Völkischer Beobachter* of April 23 1944 (Germany) as part of the work of the RDI the Office for Racial Policy, in agreement with the party chancellery, has founded a marriage bureau It started as a correspondence center of the RDI first of all in Dresden In view of the excellent results achieved in Saxony a Rhineland branch of the correspondence center was recently opened in Strasbourg Danzig, Frankfurt on the Main, Munich, Graz, Vienna, Hannover and Berlin The Cologne correspondence center is under the direction of the head of the Office of Racial Policy of the Gau Administration Köln-Aachen Oberbürgermeister Merzenich

*Nieuwe Rotterdamse Courant* of April 14, 1944 (Netherlands) publishes figures for cases of contagious diseases reported during the week March 19 25 inclusive diphtheria 1 427 (Amsterdam 172, Rotterdam 164), scarlet fever 800 (Amsterdam 176, Rotterdam 73), infantile paralysis 13 (Hennepolderadeel 4)

# ORGANIZATION SECTION

## WASHINGTON LETTER

(From a Special Correspondent)

Aug 28, 1944

### Recent Developments in Emergency Medical Service

Through their voluntary organization to meet disasters and emergencies under the Emergency Medical Service of the Office of Civilian Defense, doctors throughout the nation have demonstrated their ability to serve in time of disaster. Their work in the Hartford circus fire is one recent striking example. While the OCD budget has been reduced from some \$4,000,000 last year to \$778,000 for 1944, its voluntary program carries on, and there is indication that its emergency medical program is one form of voluntary organization that will continue after the war.

The OCD medical program has of late been under the direction of a U S Public Health Service doctor, Senior Surgeon John J. Bourke. As medical assistant to the director of civilian defense, Lieut. Gen. William N. Haskell, he has been responsible for much of the planning that has prompted recent developments. Most significant of these was the appointment of Public Health Service commissioned officers assigned to the service commands of the Army as liaison officers, to be available, in addition to their regular duties, as medical field representatives of the Office of Civilian Defense. Their new duties will be to assist the states in all Emergency Medical Service problems.

Because of budget limitations of OCD the services of medical officers in the nine civilian defense regions were terminated. As a result, General Haskell requested Dr. Thomas Parran, Surgeon General of the U S Public Health Service, to make the liaison officers available for OCD duty if needed. Dr. L. H. Thompson, Assistant Surgeon General of the U S Public Health Service, has pointed out that the new duties will involve dealings with the medical assistant to the director of OCD, with the state chiefs of Emergency Medical Service, the officers of the service commands in matters pertaining to Emergency Medical Service.

A word about the background of the Emergency Medical Service program of the Office of Civilian Defense. For several years volunteer organizations had been developed in fire and police services. Since EMS has more recently been developed, it has provided competent medical relationship in the community,

assisted by an advisory committee representing the various responsible agencies such as the medical profession, hospital groups, nursing organizations and the Red Cross. It has provided a "relatively safe" type of field operation which allows for the use of specially trained volunteers in the field of first aid and rescue.

What is said to be even more important from the standpoint of prospective patients in a disaster is a coordinated central control which tends to prevent the overloading of any one institution beyond its capacity as to bed space and professional or specialized service. The internal organization and planning which have taken place within the hospitals as part of the Civilian Defense program have tended to develop competent medical teams under physician and nurse supervision to report promptly to the scene of the accident, while other professional groups within the hospital are assigned specific duties following the reception of patients which will allow them to exercise special skills in surgery, shock, resuscitation, burn therapy and fracture work to the ultimate advantage of the patient's recovery. The work of the local chief of Emergency Medical Service and his advisory committee has provided a careful, unbiased appraisal of the medical facilities.

The nine Public Health Service commissioned officers now with the army service commands as liaison officers who will also act as field representatives of OCD, are:

Sr. Surgeon O. F. Hedley, Liaison Officer U S P H S First Service Command, 808 Commonwealth Avenue, Boston.

Sr. Surgeon Albert W. Russell, Liaison Officer U S P H S Second Service Command Headquarters, Governors Island, N. Y.

Sr. Surgeon Fred W. Kratz, Liaison Officer U S P H S Third Service Command Headquarters, U S Post Office and Courthouse, Baltimore.

Medical Director Joseph Bolten, Liaison Officer U S P H S Fourth Service Command, Post Office Building, Atlanta, Ga.

Surgeon Charles F. Blankenship, Liaison Officer U S P H S Fifth Service Command, Fort Hayes, Columbus 18, Ohio.

Sr. Surgeon Adolph S. Rumreich, Liaison Officer U S P H S Sixth Service Command, 2129 Civic Opera Building, 20 North Wacker Drive, Chicago 6.

Medical Director I. O. Weldon, Liaison Officer U S P H S Seventh Service Command, Federal Building, Omaha.

Medical Director K. E. Miller, Liaison Officer U S P H S Eighth Service Command, Fort Sam Houston, San Antonio, Texas.

Medical Director W. T. Harrison, Director Ninth U S P H S Service District, 1223 Flood Building, San Francisco.

## MEDICAL LEGISLATION

### MEDICAL BILLS IN CONGRESS

**Changes in Status**—A subcommittee of the House Committee on Labor has initiated hearings to investigate the aid given to the physically handicapped pursuant to H. Res. 230 adopted by the House of Representatives in June 1944. Representative Kelley of Pennsylvania is chairman of the subcommittee. The other members are Representatives Randolph West Virginia, Worley Texas, Scanlon Pennsylvania, Welch California, Day, Illinois and Baldwin New York. The initial hearing was scheduled for the period extending from August 29 to August 31, at which time testimony was received with respect to the blind. A subcommittee of the House Committee on Civil Service has been conducting hearings on H. R. 4909, a bill to provide health programs for government employees. Among the witnesses who testified at the hearings were War Manpower Commissioner Paul V. McNutt, Civil Service Commissioner Arthur S. Fleming, Brigadier General Hines, Veterans Administrator, Surgeon General Parran, United States Public Health Service, Dr. Victor G. Heiser, Medical Consultant of the National Association of Manufacturers, and Dr. Carl Peterson, Secretary of the Council on Industrial Health of the American Medical Association. H. R. 5125 has passed the Senate, with numerous amendments, proposing to establish a Surplus War Property Administration and to provide for the proper disposal of surplus war property. One section assigns to veterans including physicians and dentists suitable preferences to the extent feasible in

acquisition of types of surplus property useful in carrying on the business or professional activity of the veteran. In the discussion of this section on the floor of the Senate, reference was made to the fact that many physicians and dentists sold their "businesses to go into the armed forces when they were called."

**Bills Introduced**—H. R. 5171, introduced by Representative Dingell, Michigan, provides that, under the rules and regulations prescribed by the Secretary of War, the Surgeon General of the Army will be authorized and directed to appoint as second lieutenants in the Medical Department of the Army enlisted men who have served three years or more in such department. H. R. 5172, introduced by Representative Dingell, Michigan, provides that under rules and regulations prescribed by the Secretary of the Navy, the Surgeon General of the Navy will be authorized and directed to appoint as ensigns in the Medical Department of the Navy enlisted men who have served three years or more in the Hospital Corps. H. R. 5173, introduced by Representative Harless of Arizona, provides that any enlisted man in the Medical Department of the Army who is serving or shall have served in a combat area during the present war shall be paid additional compensation at the rate of \$10 per month for the period beginning as of the date of the commencement of such service or as of Jan. 1, 1944, whichever date is the later, and ending six months after the date of the cessation of hostilities as proclaimed by the President.

## Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH)

### ALABAMA

**Dr McLester Named Chairman of Hospital Board**—Dr James S McLester, Birmingham, has been named chairman of a five member administrative board of hospitals which is to meet twice a month to administer operation of Jefferson and Hillman hospitals within the pattern of the University of Alabama School of Medicine, Birmingham. The position of chairman will be occupied by a member for one year, rotating among other members, according to vote of the board in a recent meeting with members of the Jefferson County Commission and Raymond R Paty, LL.D., president of the university. Dr McLester will serve as chairman until Dec 31 1945. Other members of the board are Judge Gardner F Goodwyn Jr, Bessemer, vice chairman E A Lowe, secretary, and Dr Harry I Jackson, Thomas W Martin and Edward Norton, all of Birmingham.

### CONNECTICUT

**Clinical Congress**—The twentieth clinical congress of the Connecticut State Medical Society will be held at the New Haven Lawn Club, New Haven, September 28-29. Among the speakers will be

Dr William B Terhune New Canaan Psychiatric Problems of the Returning Soldier  
Dr John R Paul New Haven Infectious Hepatitis  
Dr Harry Gold New York How to Choose the Correct Digitalis Preparation  
Dr Joseph E F Riseman Boston The Modern Treatment of Angina Pectoris  
Lieut Col Herrman L Blumgart M C The Relation of Effort to Myocardial Infarction  
Dr Robert H Williams Boston Thiouracil in the Treatment of Hyperthyroidism  
Dr Robert M Yergason Hartford Metallic Fixation of Fractures by the Use of Recently Devised Methods and Appliances. Special Reference to Kirschner Wire Vitallium Screws Tantalum Foil and Plates  
Dr Herman E Pearse Jr Rochester N Y Recent Advances in Common Duct Surgery  
Dr Arthur J Geiger New Haven Bacterial Endocarditis  
Dr Joseph Kreiselman Washington D C Resuscitation  
Dr Kenneth W Thompson New Haven Present Trends in the Treatment of Varicose Veins  
Dr Julian B Herrmann New York Recent Advances in the Treatment of Cancer of the Breast  
Dr John J Morton Jr Rochester Progress in Cancer Research

One afternoon session will be devoted to a symposium on penicillin medicine and surgery by Dr Francis G Blake dean and professor of medicine, Yale University School of Medicine and his staff and Dr Samuel C Harvey, professor of surgery at Yale, and his staff. A second afternoon session will be devoted to demonstrations in the treatment of burns at the New Haven Hospital and the care of extremities with deficient arterial circulation.

### FLORIDA

**Personal**—Dr Robert G Nelson, Tampa, has been appointed a member of the state board of medical examiners to succeed Dr William M Rowlett, Tampa, resigned.

**Food Handlers Educational Program**—Arrangements are being made by the Jacksonville Health Department in cooperation with the state and county department of vocational education, to start a perpetual food handlers educational program the early part of September. The program will be a twelve hour course, comprising six meetings each two hours in length and is designed to meet the practical needs of food handlers.

### ILLINOIS

#### Chicago

**Anton Carlson Honored**—The July issue of *Gastroenterology*, the official journal of the American Gastroenterological Association, was dedicated to Dr Anton J Carlson recipient of the association's Friedenwald Medal for 1944 and emeritus professor of physiology University of Chicago School of Medicine, since 1940. In addition to carrying scientific material, the journal includes editorial tributes to Dr Carlson.

**University News**—Major General George F Lull, deputy surgeon general, U S Army, will be the principal speaker

at the graduation exercises for the class of 1944 at Northwestern University Medical School in Thorne Hall September 14, at 4 o'clock. Admission will be by invitation only. After the exercises the medical division of the alumni association will hold a reception in Thorne Hall for the graduating class, faculty members and their families.

**Institute for Hospital Administrators**—The Chicago Institute for Hospital Administrators will be held at International House University of Chicago, September 11-22. This year for the first time the institute will be conducted by the American College of Hospital Administrators instead of by the American Hospital Association. Dr Malcolm T MacEachern will be director of the institute, a position he has held since it was started twelve years ago. Additional information may be obtained from the American College of Hospital Administrators, 18 East Division Street.

**Fernel Named in Violation of Drug Act**—Dr Jean Paul Fernel was named August 21 in a criminal information filed before Federal Judge Michael L Igoe that charged twenty-three counts of violating the Federal Food, Drug and Cosmetic Act. The action alleged that Dr Fernel had engaged in a mail order business "purveying medical preparations that the government charges are misbranded," according to newspaper reports. It is further stated that Dr Fernel was found guilty last November of similar charges (*THE JOURNAL*, Nov 27, 1943, p 849), was sentenced to one year in the county jail and was fined \$500. He is said to be now out on bail pending an appeal to the U S Circuit Court of Appeals.

### KENTUCKY

**Tuberculosis Commission Appointed**—Governor Simon S Willis on July 31 named a commission of eleven men and one woman to inaugurate Kentucky's first statewide program of tuberculosis treatment and control. Primary task of the commission will be to select sites for five tuberculosis sanatoriums authorized by the 1944 legislature. Initial phases of the program will be financed by \$1,500,000 which the legislature ordered taken from the state treasury's surplus and invested in war bonds until contracts can be let for construction work. Three members of the commission are Drs Gathel L Simpson, Greenville, Omer F Hume, Richmond, and Carl C Howard, Glasgow. Eight members were named from the public at large. Dr Philip E Blackerby, Louisville, commissioner of health of Kentucky was named to a four year term by virtue of his office. Members draw no pay or personal expenses. The 1944 act divided the state into six districts and specified that a sanatorium must be located in each of them excepting only the Louisville district which is already served by the State Tuberculosis Sanatorium (Hazelwood), Louisville. The five remaining districts are drawn to serve the west, north, northeastern, southeastern and south central sections of the state. The commission has the authority to acquire land and should select sites best suited for the purpose. It must report to the governor after ninety days of appointment, but the time can be extended if necessary.

### MARYLAND

**Institute of Alcoholism**—The National Committee on Alcohol Hygiene in conjunction with a Baltimore sponsoring committee, will hold an institute on alcoholism in Baltimore September 14. Three group sessions will be devoted to 'The Effects of Alcohol on the Individual' by Dr Robert V Seliger, Baltimore, 'New Approaches to Understanding the Alcoholic' by Victoria Granford, psychotherapist, Catonsville. Wilson Shaffer, Ph.D. Baltimore, and Dr Lawrence F Woolley, Towson, and 'Alcoholism and Crime' by Robert M Lindner, Ph.D. U S Public Health Service. At an evening session the speakers will be Dr Seliger on 'Alcoholics Are Sick People' Lawrence Kolb, assistant surgeon general, U S Public Health Service 'Alcoholism as Viewed by the U S Public Health Service' and Dr Haven Emerson, New York 'Alcoholism and Public Health'.

### MICHIGAN

**Course on Postwar Diseases**—The University of Michigan School of Public Health Ann Arbor will conduct a course on postwar diseases for public health workers in the Middle West September 20-22. On the first day virus diseases particularly influenza and poliomyelitis will be discussed by Dr Thomas Francis Jr University of Michigan Medical School Ann Arbor, and director of the commission on influenza U S Army. Dr Don W Gudakunst, New York, medical director of the National Foundation for Infantile



**Paralysis**, Major Albert B. Sabin, M. C., Dr. John R. Paul, Yale University School of Medicine, New Haven, Conn., and Dr. Franklin H. Top, medical director of Herman Kiefer Hospital, Detroit. Exotic and tropical diseases will be discussed during the next two days by Brig. Gen. Leon A. Fox, field director of the U. S. Typhus Commission. Malaria will be discussed by Comdr. Lowell T. Coggeshall (MC) and Major Stanley B. Freeborn, M. C., and dysentery by Albert V. Hardy, surgeon, U. S. Public Health Service, and Dr. George D. Cummings, Lansing. Other speakers will include Dr. Joseph G. Molner, deputy health commissioner of Detroit, who recently returned from Mexico and Central America, on tropical diseases and Dr. Haven Emerson, New York chairman of the committee on communicable diseases of the American Public Health Association who will give a preliminary report on the activities of this group.

**Fluorine Program in Michigan**—Grand Rapids has been chosen for a carefully controlled experiment in dental caries under the auspices of the Michigan Department of Health, U. S. Public Health Service and the University of Michigan School of Dentistry. The experiment will include the addition of 1 part per million of sodium fluoride to a municipal water supply artificially to determine whether a reduction can be made in dental caries. A careful clinical and bacterial examination of the saliva of Grand Rapids school children will first be made to establish a base line before the fluorine is put in the water. According to Dr. William DeKleine, state health commissioner, it is now generally accepted that the number of *Lactobacillus acidophilus* organisms found in the saliva is also an accurate diagnostic index of the activity of dental caries in that mouth. Areas having fluorine naturally in the municipal water have a much lower bacterial count. This study stems from the belief that mottled enamel occurring in certain areas of the country is caused by fluorine in the drinking water and causes the mottling only when the crowns of teeth are forming. Investigation showed much less dental caries in these areas than where there is no fluorine or only a trace in the drinking water. Further studies showed that in areas having from 0.5 to 1 part per million of fluorine in the municipal water supply there was a 50 to 60 per cent reduction in dental caries and yet this amount was not sufficient to cause disfiguring enamel. Studies have been carried out in various sections of the country. The plan to add the fluorine to the Grand Rapids water supply was approved by the city commission on July 31. The city was selected because it has a stable population, an item to be considered in an experiment to be continued over a number of years.

### MONTANA

**State Medical Election and Meeting**—Dr. Sidney A. Cooney, Helena, was named president-elect of the Medical Association of Montana at its annual meeting, July 14, in Butte, and Dr. James C. Shields, Butte, was inducted into the presidency. Dr. Raymond F. Peterson, Butte, is secretary. The following speakers were included on the program:

Dr. Harry L. Baum, Denver: Foreign Bodies in Air and Food Passages  
Dr. John K. Colman, Butte: Pyogenic Bone Infections  
Dr. Henry E. Michelson, Minneapolis: Common Diseases of the Skin  
Dr. John M. Waugh, Rochester, Minn.: Traumatic Injuries of the Abdomen  
Dr. Orville M. Moore, Jr., Helena: Exanthema Subitum and Erythema Infectiosum  
Dr. Elma M. Howard, Miles City: Erythroblastosis  
Dr. Coran L. Bourdeau, Missoula: Surgical Indication in Gastric Lesions  
Dr. Chester W. Lawson, Glasgow: Experiences in China  
Dr. Earl L. Hall, Great Falls: (subject not announced)

### NEBRASKA

**Dean Poynter Honored**—On July 15 the faculty and alumni of the University of Nebraska College of Medicine, Omaha, gave a dinner in honor of Dr. Charles William M. Poynter, dean of the medical school, in recognition of his seventieth birthday. Col. Edgar V. Allen, M. C., medical consultant of the Seventh Service Command, a graduate of the Nebraska medical school in 1925, was the toastmaster.

### NEVADA

**Mines Hospital Closed**—On August 15 the Tonopah Mines Hospital, Tonopah, was closed and the buildings and equipment merged into the Nye County Hospital. The action was taken after the closing of all gold and silver mines as nonessential war industries and the resignation of Dr. Robert R. Craig, medical director of the hospital for more than twenty-five years. Dr. Joseph H. Coogan, recently appointed county physician and health officer, will be in charge of the newly reorganized Nye County Hospital.

### NEW JERSEY

**Narcotic Violation**—Dr. Joseph L. Polizzotti, Paterson, pleaded guilty in the U. S. District Court at Trenton July 14 to a violation of the federal narcotic laws and paid a fine of \$500.

**Illegal Practitioner's Fine Increased**—On August 11 the state supreme court ordered the first district court of Jersey City to amend a judgment fining George H. Coleman \$200 on a charge of practicing medicine without a license in Kearny by increasing the fine to \$500. The supreme court's action resulted from an appeal by the state board of medical examiners, which filed the original charge against Coleman and contended that the higher fine should have been imposed because the offense was his second, according to the *New York Times*.

### NEW MEXICO

**Personal**—Judson D. Dowling, senior surgeon of the United States Public Health Service Reserve, has been assigned to the New Mexico Department of Public Health as assistant state director of health.

**New Mexico Joins Rocky Mountain Medical Journal**—Arrangements have been completed by which the *Rocky Mountain Medical Journal* will be the official journal of the New Mexico Medical Society. Dr. Carl H. Gellenthien, Valmora, is to be the editor for New Mexico.

**State Medical Election**—Dr. Charles A. Miller, Las Cruces, was named president-elect and Dr. Carl H. Gellenthien, Valmora, was installed as president of the New Mexico Medical Society at its annual meeting recently. Dr. Leo B. Cohenour, Albuquerque, is secretary. The next annual meeting will be held in Santa Fe some time in June 1945.

### NEW YORK

**Poliomyelitis Delays Opening of Schools**—Opening of Hornell public schools originally scheduled for September 5 has been postponed until October because of the infantile paralysis epidemic, the *Rochester Times Union* reported August 22. At the time of the report Rochester had 39 patients under treatment, 21 of whom were city residents.

**Special Lectures**—Dr. Orren D. Chapman, professor of bacteriology and parasitology, Syracuse University College of Medicine, Syracuse, addressed the St. Lawrence County Medical Society, August 17, in Gouverneur on "Tropical Diseases." Dr. Paul C. Clark, assistant professor of clinical medicine at Syracuse, addressed the Madison County Medical Society at Sylvan Beach, August 10, on "Penicillin Therapy." Both lectures were part of a cooperative project between the state medical society and the state department of health.

### New York City

**Dr. Lasersohn Named Assistant to President at Winthrop**—Dr. Martin Lasersohn, medical director of the Winthrop Chemical Company, has been appointed assistant to the president and assistant treasurer of the company. He has also been elected secretary of Fairchild Brothers and Foster, a Winthrop subsidiary. Dr. Lasersohn has been associated with the company since 1930.

**Sentenced as Abortinist**—Dr. Stephen A. Leslie was sentenced July 18 in General Sessions to a one year term in the penitentiary as an abortinist the *New York Times* reported. It was stated that Judge George L. Donnellan had denounced him as a refugee who had abused the privileges extended to him in America by operating an abortion mill at 993 Park Avenue for several years.

**Ivan Hall Named Professor of Bacteriology**—Ivan C. Hall, Ph.D., since 1942 director of the central laboratory, contaminated wound project, subcommittee of surgical infections, National Research Council, formerly professor and head of the department of bacteriology and public health in the University of Colorado School of Medicine, Denver, has been appointed professor and chairman of the department of bacteriology at the New York Medical College Flower and Fifth Avenue Hospitals. He will succeed Laura Florence, Ph.D., who will retire in September.

**Personal**—Thomas P. Fleming, M.S., librarian of the Columbia University College of Physicians and Surgeons, has been appointed assistant director of the libraries of the university.—Dr. George T. Pack was recently decorated by the president of Chile with the title of Grand Officer of the Order of Merit.—Frank S. Lloyd, Washington, D. C., executive officer of the Committee on Physical Fitness of the Federal Security Agency, has been appointed chairman of the depart-

ment of hygiene of the College of the City of New York, succeeding Frederic A. Woll, Ph.D., who retired on account of age on August 31.

### NORTH DAKOTA

**New Director of Maternal and Child Hygiene**—Dr. Frederick G. Gunlaugson, Fergus Falls, Minn., has been appointed director of maternal and child hygiene of the North Dakota State Department of Public Health, succeeding Dr. Mary E. Soules, Dickinson, who resigned. Dr. Gunlaugson graduated at the University of Minnesota Medical School, Minneapolis, in 1935 and received his master of public health degree from Johns Hopkins.

**Free Plasma for the Public**—The state legislature recently appropriated a fund to set up and finance a free plasma service under the direction of the director of the division of laboratories of the state department of public health in cooperation with the University of North Dakota, Grand Forks. Donor clinics are to be set up throughout the state with a mobile unit from the health department conducting clinics in each community. All donors are given a blood donor certificate indicating that its possessor has rendered a public service in the state by giving blood. Complete coverage of the state with normal supplies is the first objective of the program. Each package sent out into the state will contain one bottle of dried pooled normal human plasma, one bottle of 0.1 per cent citric acid solution for restoration of the plasma, a complete set of equipment for administering plasma and directions for its use. The service is available free of charge to every one in the state.

### OHIO

**New Chairman of Anatomy**—Ralph A. Knouff, Ph.D., professor of anatomy at the Ohio State University College of Medicine, Columbus, since 1932, has been appointed chairman of the department.

**License Suspended**—The license to practice medicine in Ohio of Dr. Ward C. Bell, formerly of Cleveland, has been suspended indefinitely. Dr. Bell was convicted of criminal abortion and served an indeterminate sentence in the Ohio Penitentiary, it is reported.

**Physicians Honored**—The Portage County Medical Society gave a dinner recently in honor of two of its members, Drs. Lucius W. Prichard, Ravenna, and Joseph H. Krape, Kent. Dr. Prichard has completed fifty-four years of practice in Ravenna and Dr. Krape fifty years at Kent. Dr. Bernard H. Nichols, Ravenna, was toastmaster at the dinner.

**Memorial for World War Physicians**—The Toledo Academy of Medicine has recommended the construction of a memorial building as a testimonial to the physicians of Toledo who served with the armed forces of the United States in World Wars I and II. The *Journal of the Michigan State Medical Society* reports that an assessment of \$300 per member for a new memorial building or \$150 per member for remodeling the present home of the academy of medicine is being presented to the membership for decision.

### SOUTH DAKOTA

**Sioux Falls Health Officer Goes to California**—Dr. Francis H. Redewill Jr. has resigned as director of the Sioux Falls health department to accept a position as venereal disease control officer of the Los Angeles County Health Department. He will be succeeded by Dr. Emil G. Ericksen, who once was health officer of Sioux Falls and who for the last year has been assistant to Dr. Redewill, according to the *Journal-Lancet*.

### TENNESSEE

**The Haggard Lecture**—Dr. Alfred Blalock, professor of surgery, Johns Hopkins University School of Medicine, Baltimore, and formerly professor of surgery at Vanderbilt University School of Medicine, Nashville, recently delivered the annual Haggard Memorial Lecture at Vanderbilt on "Recent Advances in Surgery."

**Walter Garrey Made Professor Emeritus**—Dr. Walter E. Garrey, professor and head of the department of physiology, Vanderbilt University School of Medicine, Nashville, retired June 30 with the title professor emeritus. According to an announcement from Dr. Waller S. Leathers, dean of the medical school, July 31, Dr. Garrey's successor had not yet been selected.

**Personal**—Marion Murphy Brooke, Sc.D., associate in parasitology at the School of Hygiene and Public Health of the Johns Hopkins University, Baltimore, has been appointed

associate professor of preventive medicine at the University of Tennessee College of Medicine, Memphis—Dr. James K. P. Blackburn, Pulaski, has been named a member of the state basic science board, succeeding Dr. Waller S. Leathers, Nashville, who resigned recently.

### WEST VIRGINIA

**State Meeting in Clarksburg**—The seventy-eighth annual meeting of the West Virginia State Medical Association will be held at Clarksburg May 14-15, 1945. The Waldo Stone-wall Jackson and Gore have been designated the convention hotels. Technical and scientific sessions will be held at the Waldo Hotel.

**Educational Consultant in Cancer Control**—Mrs. Marian Patrick Hart, assistant chief of the division of social service in the state department of public assistance, Charleston, has been appointed educational consultant in the state division of cancer control, effective September 1. The appointment is a part of the expanded program of cancer control financed by the state legislature and recently inaugurated with the appointment of Dr. Paul R. Gerhardt as director (*THE JOURNAL*, March 4, p. 660).

**Poliomyelitis Quarantine Modified**—To permit poliomyelitis patients to receive early treatment in hospitals suitably equipped, Dr. John E. Offner, Weston state health commissioner, has modified the regulation requiring three weeks' quarantine to permit the immediate transfer of patients from their homes to a hospital. The order will continue in force until November 1. Written permission must be obtained from the local health officer or state health department before a patient may be moved from one county to another. Thirty-eight cases of poliomyelitis were reported to the state department of health from July 1 to August 16.

### WYOMING

**George Baker Named Acting Secretary of State Society**—Dr. George E. Baker, Casper, has been appointed acting secretary of the Wyoming State Medical Society during the illness of Dr. Marshall C. Keith, secretary. Dr. Keith was taken ill July 1 and will not be able to resume his activities for a while.

### GENERAL

**College of Surgeons Cancels Meeting**—The American College of Surgeons, on action of its board of regents has canceled its annual clinical congress because of the acute war situation that has developed, involving greater demands than at any time in the past on our transportation systems for the carrying of wounded military personnel troops and war material. The congress was to have been held in Chicago, October 24-27.

**Meeting of Obstetricians, Gynecologists and Abdominal Surgeons**—The fifty-sixth annual session of the American Association of Obstetricians, Gynecologists and Abdominal Surgeons will be held at the Homestead Hot Springs, Va., under the presidency of Dr. Willard R. Cooke, Galveston, Texas (*THE JOURNAL*, August 12, p. 1051). Features of the meeting will include a series of motion pictures and a banquet address by Hon. Dave E. Satterfield Jr., member of Congress from Virginia. There will be a golf tournament on Saturday, September 9, at which the play will be for the President's Trophy, given in 1938 by Dr. Paul Titus Pittsburgh, then president of the association. Dr. James R. Bloss, 418 Eleventh Street, Huntington, W. Va., is the secretary of the association.

**Wisconsin Foundation Wins Court Reversal**—A United Press dispatch from San Francisco August 24 stated that the U. S. Circuit Court of Appeals the previous day had withdrawn an opinion handed down June 30, 1943, invalidating patents of the Wisconsin Alumni Research Foundation involving the treatment of rickets with vitamins. The court held at the time that vitamins being derived from the sun, could not be patented according to the *Chicago Daily News*. In contradiction of this opinion the foundation in August 1943 asked for a rehearing of the case which charged a Los Angeles company with infringement of the patents, it was stated. No explanation was given for the withdrawal, which was said to be almost unprecedented in court procedure, the *News* reported.

**Special Society Elections**—Dr. William H. Daniel, Los Angeles, was elected president of the American Proctologic Society at its annual meeting in Chicago. Dr. Joseph W. Ricketts, Indianapolis, vice president, and Dr. Harry E. Bacon, Philadelphia, secretary. The next annual meeting of the society will be held in New York preceding the annual

session of the American Medical Association—Dr Claude S Beck Cleveland, was chosen president of the American Association for Thoracic Surgery at its annual meeting in Chicago recently. Dr Isaac A Bigger, Richmond, Va, is vice president and Lieut Col Richard H Meade Jr M C, Memphis Tenn, secretary—Dr S Judd Beach, Portland, Maine, was chosen president of the American Ophthalmological Society at its annual meeting in Hot Springs, Va, recently. Dr Walter S Atkinson Watertown, N Y, is secretary. The next annual meeting will be held in Hot Springs, Va, June 6-8 1945.

**New Group for Rheumatic Fever**—The Council on Rheumatic Fever has been formed to focus attention on the problem of rheumatic fever. Organizations comprising membership in the new council include the American Medical Association, American College of Physicians, American Rheumatism Association, American Academy of Pediatrics, American Public Health Association, American Hospital Association, American Association of Medical Social Workers, American Nurses Association and the American Heart Association. The establishment of the new group stemmed from action taken at a conference on rheumatic fever in New York January 26-27 at which representatives from the various military services and nationally interested groups agreed that a concentrated program on rheumatic fever should be instituted. The American Heart Association under whose authority the creation of the new group was placed, announces that a suggestion has been made to incorporate the council as an independent organization under the laws of New York state. It is hoped that a fund of \$50,000 will be obtained within the near future to justify the selection of a director, the rental of offices and the employment of an office staff. Currently about \$7,000 is available, while another \$5,000 is expected soon. Negotiations are in progress with officers of the American Legion in the hope that the Legion may accept the responsibility for the financial support of the council on a national scale.

**Joint Meeting of Radiologists**—A joint meeting of the American Roentgen Ray Society and the Radiological Society of North America will be held at the Palmer House, Chicago, September 24-29 under the presidency of Drs Sherwood Moore, St Louis and Edwin R Witwer, Detroit, respectively. Among the speakers will be

Drs Herman L Kretschmer, President American Medical Association and Fay H Squire, Chicago. A Study of the Ureters in Bladder Neck Obstructions.  
Col Byrl R Kirklin, M C, representing Surgeon General Norman T Kirk of the Army (subject not announced).  
Lieut Comdr Robert K Arbuckle (MC) representing Surgeon General Ross T McIntire of the Navy. Lieut C Hunter Sheldon (MC) and Lieut Robert H Pudenz (MC) Pathologic Myelography: Correlation of Roentgenological and Neurosurgical Findings.  
Drs Joseph George Teplick and Alison H Price, Philadelphia. Progressive Bilateral Bullous Emphysema.  
Dr John Robert Andrews, Cleveland and Capt Robert O Turek, M C, Plainigraphy: An Evaluation of the Method in the Diagnosis of Cancer of the Lower Respiratory Tract.  
Dr Robert G Bloch, Chicago. Roentgenological Aspect of Tuberculous Calcification: A Clinical and Experimental Study.  
Dr Arbor D Munger, Lincoln, Neb. Testicular Irradiation in Carcinoma of the Prostate.  
Major Milton Friedman, M C, and Lieut Col Lloyd G Lewis, M C, An Improved Technique for the Treatment of Carcinoma of the Testis.  
Dr Russell I Haden, Cleveland. Hematological and Clinical Characteristics of Leukemias.  
Drs Ross Golden and Paul H Ducharme, New York. X-Ray Demonstration of Cecal Deformity in Amebiasis.  
Drs Percival Bailey and Theodore J Wachowski, Chicago. Roentgen Therapy for Brain Tumors.  
Dr William Cyle Crutchfield, University, Va. Neurosurgical Treatment of Patients with Advanced Malignant Disease.  
Dr Dallas B Phemister, Chicago. Subcutaneous Cystlike Lesions of Joints.  
Drs Laurence I Robbins and Clayton H Hale, Boston. Roentgen Appearances in Collapse of the Lung and Its Subdivisions. Preliminary Report.  
Drs Howard R Hunt and Donald H Breit, Omaha. Postirradiation Cutaneous Necrosis: A Study of Its Mechanism, Course and Treatment.  
Lieut Henry I Jaffe (MC) Evaluation of Roentgen Therapy for Filariasis.

Dr Lawrence Reynolds, Detroit, will deliver the Caldwell-Carman Lecture on Tuesday.

**Medical Section of A A A S Meeting**—Section N of the medical section of the American Association for the Advancement of Science, will hold a joint meeting September 12 with the American Society of Parasitologists and the American Society of Zoologists. The session will be held in the Academy of Medicine of Cleveland and will be devoted to a symposium on "Parasitology in Relation to the War." Another joint session of the section with the section on engineering (ME) will be a symposium on "Aviation Medicine." On Thursday a joint session will be held with Alpha Epsilon Delta national honorary premedical fraternity, on "Premedi-

cal Education." Among the speakers in the symposium on "Parasitology in Relation to the War" will be

Brig Gen James S Simmons, M C, The Wartime Importance of Tropical Diseases.  
Major Oliver R McCoy, M C, Malaria and the War.  
Clay G Huff, Sc D, and Frederick Coulston, Ph D, University of Chicago, The Development of Malarial Sporozoites in the Vertebrate Host.  
Dr Harold W Brown, Columbia University College of Physicians and Surgeons, New York, Filariasis.  
Dr Rolla L Dyer, National Institute of Health, Bethesda, Md, Typhus Fever.  
Walter E Dove, Sc D, U S Bureau of Entomology and Plant Quarantine, U S Department of Agriculture, Washington, D C, Development of Insect Powders for the Armed Forces.  
Benjamin Schwartz, Ph D, U S Bureau of Animal Industry, U S Department of Agriculture, Washington, D C, Parasites in Relation to Production of Meat and Other Animal Products in Wartime.

On Friday, September 15, a symposium on science and the press, sponsored by the National Association of Science Writers, will be presented at the Hotel Statler by Louis B Seltzer, editor of the *Cleveland Press*, Martin J Porter, New York, editor of the *American Weekly*, George E Pendray, Pittsburgh, assistant to the president of Westinghouse Electric & Manufacturing Company, and Dr Morris Fishbein, Editor of *THE JOURNAL*. Robert D Potter, science editor of the *American Weekly* and president of the National Association of Science Writers, will preside and Dr Anton J Carlson, Chicago, president of the American Association for the Advancement of Science, will give the introductory remarks. These meetings will be held during the session of the A A A S in Cleveland, September 11-16.

## CANADA

**Personal**—Dr Lorimer J Austin, professor of surgery, Queen's University Faculty of Medicine, Kingston, Ontario, recently was presented with the Montreal medal "for meritorious contribution to the honour of Queen's." The medal is awarded occasionally by the Montreal alumni of the university.

**Course in Tropical Medicine**—McGill University Faculty of Medicine, Montreal, Quebec, is offering for the first time a diploma course in tropical medicine. The course is also suggested as a refresher course for medical graduates who have been working in the tropics and who wish to take advanced work in parasitology and other branches of tropical medicine. The course is divided into three units: tropical medicine and parasitology, care of ambulatory patients and one in which facilities have been arranged for clinical experience in the tropics. Thomas W M Cameron, D Sc, professor of parasitology at McGill, is in charge of the course.

## LATIN AMERICA

**Health Activities in Latin America**—*Medical Center*—The Anglo-American Caribbean Medical Center was opened in July, Port-of-Spain, Trinidad. The establishment of the center is an initial step in the program fostered by the Anglo-American Caribbean Commission to raise health standards in the West Indies.

**Committee to Control Sandfly**—Dr Henry C Dooling, chief health officer of the Panama Canal Health Department, has appointed a committee to devise a program for the relief and protection of residents from the sandfly (*Phlebotomus*). The sandfly is the carrier of numerous diseases, but in Panama it is known to transmit only the American cutaneous leishmaniasis. The committee is composed of a health officer, a sanitary engineer, a physician, an epidemiologist and an entomologist.

**Personal**—Clarence H Waring, medical director, U S Public Health Service, has recently succeeded Dr Henry A Holle as chief quarantine officer of the Panama Canal Health Department. Dr Holle has left Panama for a new assignment in New York.—Dr Fernando D Gomez, Montevideo, was recently appointed rector of the Instituto de Fisiologia of the Faculty of Medicine of Montevideo, succeeding Dr Juan B Morell, who recently retired.—Dr Juan A Sanchez was recently appointed honorary member of the Asociacion Medica Argentina.—Announcement is made of the first anniversary of the death of Dr Nicolas A Solano, which was commemorated in special services at Herrera Cemetery, Panama City, July 23. The observance was conducted by the National Liberal Party, of which the late physician was said to have been national chairman at one time.

## CORRECTION

**Spontaneous Rupture of Aorta**—In the article by Dr Douglas Symmers entitled "Spontaneous Rupture of the Aorta in Syphilitic Aortitis with Aneurysm," in the August 12 issue, page 1035, the word "with" in the title should read "without."

## Foreign Letters

### LONDON

(From Our Regular Correspondent)

July 29 1944

#### The Radical Reform of Medical Education

In October 1941 the minister of health announced the intention of the government to inquire into the organization of medical schools, particularly with regard to facilities for clinical teaching. A small committee consisting mainly of leading teachers was appointed. It examined witnesses representing all the medical schools and others interested in medical education, including such Americans in this country as Professor Cutler and Col William S Middleton. The result is an elaborate report of 300 pages, in which every aspect of the subject is discussed.

Properly planned and carefully conducted medical education is held to be the essential foundation of a comprehensive health service. The national policy should be to secure for every one the highest possible standard of physical and mental health, the report says. Physicians must bear much of the responsibility for attaining this goal, and graduate and postgraduate training must impart the necessary knowledge to physicians. The present system of medical education is held to be seriously deficient in this respect. To the neglect of the promotion of health, medical practice—and consequently medical education—has been concerned primarily with disease chiefly as it affects individuals. A radical reorientation of medical education and practice is essential, the committee believes. One of the basic proposals is that throughout undergraduate and postgraduate education emphasis must be placed on acquisition of a sound knowledge of all measures that may make and preserve a healthy nation.

Although the nation is justified in taking pride in their reputation of British medical practice and traditional methods of education, there is urgent need for improvements, it is held. The training of the undergraduate should provide a university education on broad and liberal lines. The essential unity of medicine should be observed throughout, and the teaching should be so organized that the whole course becomes a smooth and logical development. While primarily practical, the training should give a clear understanding of the constantly developing scientific basis of medicine. The main emphasis should be on fundamental principles rather than on the mass of purely factual knowledge, the committee states.

The unit of organization for undergraduate education should be a medical teaching center consisting of a university medical school and a group of teaching hospitals and clinics of the district health service. A new pattern of staffing is believed to be necessary, more whole time appointments and salaries for clinical teachers in consideration of well defined duties are proposed. A medical school admitting the optimum number, 100 students a year, should have access to between 950 and 1,000 beds, roughly distributed as general medical 250, general surgical 250, maternity 100, gynecologic 50, children 100, and special departments and beds for special purposes 200 to 250. Major teaching hospitals should be linked by means of their staffs with outlying hospitals, and medical schools, as partners in the national health service, should have a place in the administration of the service. Preclinical scientific subjects should be taught by full time professors and there should be more junior staff members, it is suggested. In the clinical field there should be more full time appointments in all grades. At the earliest possible date every medical school should have a whole time professor in medicine, surgery and obstetrics and gynecology, according to the report.

#### STUDENTS

The only barrier to admission to a medical school should be unsuitability. Financial assistance should be given to medical students so that young people of ability are not deterred from entering the medical profession. Students should not be selected on the basis of examinations alone. Interviews are essential and the possible development of aptitude tests is envisaged by the committee. There should be coeducation in all schools and all hospital appointments should be filled by open competition without any sex barrier. It is estimated that the places provided for women students should amount to about one fifth of the whole number.

#### CLINICAL INSTRUCTION

An introductory clinical course of planned scientific instruction, extending over not less than four months, is the best means of effecting a smooth transition from preclinical to clinical study, the report states. A medical student needs a coherently unified knowledge of medicine, which he has to acquire in an atmosphere of specialization and from teachers who to an increasing extent, will be specialists. The teaching should be organized in five divisions: preclinical studies, pathology, medicine, surgery, obstetrics and gynecology. Under medicine should be included child health, psychiatry and social medicine. Clinical instruction should be continuous throughout the year, with emphasis on basic principles. Special attention should be paid to minor ailments and less to the technical details of surgical operations, the committee feels. There is need for more instruction in social medicine, child health and psychology. The total course up to the final examination should last four and one-half years. After passing, the student should have a junior resident's appointment for twelve months in one or more approved hospitals before admission to the medical register.

#### POSTGRADUATE EDUCATION

Postgraduate study should be a regular feature of general practice, it is claimed. The provision of periodic intensive refresher courses should be regarded as only a short term expedient. A better policy, according to the committee is to bring general practitioners, by such means as clinical assistantships, into regular association with the work of hospitals and specialists. For specialists a minimum of four or five years training after registration is proposed, and trainees should hold salaried appointments at teaching centers or special hospitals. As adequate training in tropical medicine cannot be obtained in this country, it is suggested that, having obtained his theoretical and laboratory instruction here, the student should hold an approved hospital appointment in a tropical country.

#### Industrial Rehabilitation Center Established by the Ministry of Labor

Much increased attention is now being given to rehabilitation. The Ministry of Labor has opened a center near London for industrial rehabilitation of male patients. It is realized that the complete use of available manpower, so essential for total war, demands the complete utilization of the individual worker. The center follows lines evolved by the army to meet this problem. It is equipped with workshops for various building and engineering occupations, and there are courses for handy men and gardeners, all under a highly qualified teacher. These facilities are used to test suitability for various occupations. The medical officer, who has undergone a course of special instruction, discusses with the manager the aptitude and potential capacity of each man, cooperates with him in the choice of employment and regulates progression of training on medical grounds. He has a staff of medical auxiliaries, including physical therapists. The remedial gymnastics are directed by a senior sergeant instructor of the Army Physical Training Corps, released for the purpose from a military convalescent depot.

Provision is made for entertainment, and particular attention is paid to the proper use of leisure

The course is of six to eight weeks duration and is active in character. It is therefore not suitable for men in the earlier convalescent stages. On completing the course the men go either directly to employment in a previously held or some other occupation or are transferred to a vocational training center for a course in the new occupation chosen for them. The disabled man is in need of guidance in the choice of his future career, for his previous occupation may have been unsuitable for him. He requires the advice of a physician versed in the many sided aspects of rehabilitation and of an expert conversant with the demands of different industries. The man may regard his disability as the end of all his hope and, left to himself, may drift into unsuitable employment. The psychological factor is therefore important, and the atmosphere and expert advice of the center are directed toward restoring confidence.

#### Profits of Proprietary Pills

At the sixteenth ordinary general meeting of Beechams Pills, Limited, it was announced that profits for the year ended March 31 earned by the companies of the group operating in the British Empire and in almost all parts of the world other than Europe amounted to \$7,000,000, as compared with \$6,000,000 in the previous year. The overseas trade was most satisfactory the announcement said, and provides encouraging hope for the postwar period. The business commenced over one hundred years ago with the sale of the proprietary pill which gives its name to the company. During the past four years much time has been devoted to the development of overseas trade, it was stated.

#### PALESTINE

(From Our Special Correspondent)

TEL AVIV, July 14, 1944

#### Epidemic of Louse Borne Typhus at the Dead Sea

In November 1943 an epidemic of louse borne typhus broke out among workers employed by the Palestine Potash Ltd (Arabs from Hedjaz, Transjordan and neighboring countries). Following a positive Weil Felix reaction in the first 2 cases, all suspected persons were sent to the hospital. All those who had been in contact with them were vaccinated their personal effects were burned and the whole camp was disinfected. The energetic measures taken by Kupat Holim (the Workers' Sick Fund of the General Federation of Jewish Labor in Palestine), in cooperation with the Hebrew University and the government of Palestine, proved successful. In all, 10 persons occupying tents in the vicinity of the first victims contracted the disease. The last case occurred on Dec 20, 1943. All the patients were in an undernourished condition and their standards of hygiene were at a low level. Two of the patients died.

#### Allergy in Palestine

Dr I Gutman of Jerusalem gives a survey of the condition of allergy in Palestine in the *Palestine and Near East Medical Journal* of December 1943 as follows:

About 3 per cent of the Jewish population of Palestine suffer from allergic diseases (major allergy), a figure far short of 10 per cent of the number submitted by American authors for America and somewhat lower than in Europe. In the Arab section of the population as well allergic diseases are of widespread occurrence. The most impressive factor which distinguishes Palestinian from European observations is the high proportion of susceptible children, the percentage in the pre-school age group in Palestine is more than twice as high as in Europe.

The distribution of allergic diseases in the various organs shows that bronchial asthma and vasomotor rhinitis account alike here and in Europe for more than 50 per cent of all

allergic patients. The main causative factors are "climate allergens," i.e. molds and fungi, in the humid warm atmosphere of the coastal regions. Skin diseases amount to about 25 per cent, excluding scrofula of infants. Allergic intestinal disturbances appear twice as often as in Europe, even without the colitis. This number is certainly still higher, considering that there are about three times as many sufferers from colitis in Palestine as from asthma. Hay fever appears less frequently, but then this illness is still little known here. Conjunctivitis vernalis (spring catarrh) is often encountered.

#### Extension of Hospital Accommodation in Haifa

Palestine has for many years suffered from a severe shortage of hospital accommodation, particularly in the Haifa district.

For every thousand persons in the Jewish section of the population of the country the available bed strength in the various districts of the country is as follows:

|  | Beds |
|--|------|
| In Jerusalem and vicinity              | 51   |
| In Tel Aviv and the south of Palestine | 14   |
| In Haifa and vicinity                  | 09   |
| In the plain of Esdraelon and Galilee  | 27   |

Haifa is a port town and the center of heavy industry, as well as the gathering place of large numbers of new immigrants. The hospital which serves the Jewish community of Haifa has only small departments for surgery, maternity and children. For Haifa and its vicinity, which has a Jewish population of over 70,000, not a single hospital bed is available for internal diseases. In view of this situation the Kupat Holim (Sick Fund of the General Federation of Jewish Labor in Palestine) felt bound to purchase a building and adapt it as a small hospital, containing 40 beds. The cost of this building, with its renovation and equipment, will amount to \$125,000. Most of the beds will be devoted to cases of internal diseases. In accordance with an agreement arrived at with the Jewish Community Council of Haifa, it will admit Haifa residents even though they may not be members of Kupat Holim.

#### Medical Aid to the Red Army

The executive committee of the General Federation of Jewish Labor in Palestine, through its representative in London, has presented to the Russian ambassador, Mr Maisky, the sum of £P 10,000 for the purchase of two fully equipped ambulances for the Red Army. At present a new shipment is being prepared of medically equipped field boxes, which, as the Soviet medical institutions have requested, contain medical instruments and materials for the use of doctors at the front. The nearer the Red armies approach the great day of victory, the more efficient becomes the service of the doctor who is equipped with a field box containing all the required appliances and instruments to render first aid to the wounded soldiers on the front.

## Marriages

JOE LEE FRANK JR., Richmond, Va., to Miss Barbara Olive Bloom of Roxboro, N. C., in Fayetteville, N. C., July 14.

EDWARD ARTHUR SHORTEN, Youngstown, Ohio, to Miss Mary Virginia Wilhams of Albion, Ill., July 8.

JOHN KELLER GRIFFITH JR., Shidell, La., to Miss Elizabeth Theriot of Gueydon in New Orleans, July 6.

WILLIAM E. SANDERS, Long Beach, Calif., to Miss Blanche Calvert of Des Moines in Pasadena, July 16.

ARTHUR SELDON MANN Alton Ill., to Lieut Mildred Wiles of Seattle in England, July 14.

JOHN C. GLENN JR., Durham, N. C., to Miss Mary Eliza Ezzell of Rose Hill, July 7.

JAMES R. DWYER, Renovo, Pa., to Miss Anne Norton of Baltimore, July 24.

JOHN P. CREWS, Inverness Miss., to Miss Nancy Curry in Knoxville, July 4.



## Deaths

**Willis Elliott Bowen** \* Rochester, N. Y., Cornell University Medical College, New York, 1902, also a pharmacist, past president of the Rochester Academy of Medicine, member of the Rochester Hospital Council, Inc., and the Rochester Hospital Service Corporation, fellow of the American College of Surgeons, served during World War I, formerly on the staff of the Rochester City Hospital, now known as the Rochester General Hospital, a founder, one of the original board of directors, which he had served as president since March 1934 member of its executive committee and formerly chief of the surgical staff, Park Avenue Hospital, where he died July 11, aged 72, of Parkinson's disease, gallstones and diabetes mellitus.

**Robert Lee Russell**, Weaverville, N. C., Columbian University Medical Department, Washington, D. C., 1901, joined the U. S. Indian Service, serving as agency and field physician at Rosebud, S. D., as agency physician at Anadarko, Okla., and as superintendent of the Sac and Fox Sanatorium, Toledo, Iowa, later chief of health in the Indian Service, stationed at Washington, D. C., transferred to the Veterans Administration in 1920, from which he retired in 1940, formerly chief of the tuberculosis and general medical service at the Veterans Administration Facility in Oteen, served on the staffs of the U. S. Veterans hospitals in Fort Bayard, N. M., and Fort Lyon, Colo., died in Asheville, June 28, aged 73.

**Richard Fenner Yarborough**, Lenoir, N. C., Columbian University Medical Department, Washington, D. C., 1898, honorary member of the Medical Society of the State of North Carolina, past president and secretary of the Franklin County Medical Society, a captain in the medical corps of the U. S. Army during World War I, formerly physician to the North Carolina State College for Agriculture and Engineering and member of the board of directors of the State Hospital in Raleigh, served as a member of the board of health of Franklin County and as county health officer, died June 22, aged 72, of coronary occlusion.

**Percy Daniel Moulton** \* Colonel, U. S. Army, retired, Los Angeles, Jefferson Medical College of Philadelphia, 1907, graduated from the School for Flight Surgeons in 1921 and the Air Service Primary Flying School in 1925, served during World War I, entered the medical corps of the U. S. Army as a captain on Sept. 14, 1920 and later promoted to major, lieutenant colonel and colonel, retired Dec. 31, 1939, at one time instructor in pediatrics at his alma mater and on the staff of the Jefferson Hospital, Philadelphia, died in the Hoff General Hospital, Santa Barbara, Calif., Dec. 24, 1942, aged 61, of myocardial infarction.

**William J. Blackburn** \* Dayton, Ohio, Pulte Medical College, Homeopathic Cincinnati, 1900, University of Michigan Homeopathic Medical School, Ann Arbor, 1915, member of the American Academy of Ophthalmology and Otolaryngology, past president of the Ohio State Homeopathic Medical Society, Southern Homeopathic Medical Society and the Dayton Ophthalmological and Laryngological Society, fellow of the American College of Surgeons, for many years a member of the staff and of the board of trustees of Miami Valley Hospital and a lecturer at the hospital's school of nursing, died July 16, aged 75.

**John Joseph Sweeney**, Doylestown, Pa., Hahnemann Medical College and Hospital of Philadelphia, 1911, member of the Medical Society of the State of Pennsylvania, served overseas during World War I in the medical corps of the U. S. Army and was honorably discharged with the rank of major, for many years Bucks County coroner, chief Burgess of Doylestown, president of the city board of health, past president of the Kiwanis Club of Doylestown and president of the Second World War Memorial Committee, physician at the Bucks County Prison, died June 27, aged 57.

**Leonard Francis Logiodice**, Belchertown, Mass., College of Physicians and Surgeons, Boston, 1920, member of the American Association on Mental Deficiency, served on the staffs of the Grafton State Hospital, North Grafton and the Boston Psychopathic Hospital, received by the Pope in 1933, awarded two certificates of appreciation from the President for services rendered in the administration of the Selective Service System, local board number 34, Massachusetts, assistant physician on the staff of the Belchertown State School, died August 1, aged 56.

**Frank Newton Wells**, Pittsfield, Ill., Chicago Homeopathic Medical College, 1895, member of the Illinois State Medical Society, served during World War I, lieutenant colonel in the medical reserve corps, not on active duty, past president and secretary of the Pike-Calhoun Counties Medical Society, at one time president of the school board of Cortland and Kirkland, Ill., served as alderman and mayor of Pittsfield, for many years city and county physician, honorary member of the staff of the Illinois Community Hospital, died June 27, aged 75.

**Roy Wood Adkins**, Fort Lauderdale, Fla., Starling-Olino Medical College, Columbus, 1911, member of the Ohio State Medical Association, died May 27, aged 57, of coronary heart disease.

**Elias Marion Akins**, Etowah, Tenn., Chattanooga Medical College, 1903, died in Asheville, N. C., June 22, aged 70, of pulmonary tuberculosis.

**James Ulysses Allen**, Benton Harbor, Mich., Rush Medical College, Chicago, 1923, member of the Michigan State Medical Society, served with Hospital Corps, 370th Infantry, American Expeditionary Forces, during World War I, served on the staff of St. Joseph Sanitarium, St. Joseph, and on the courtesy staff of the Mercy Hospital, died in the Provident Hospital, Chicago, July 4, aged 52, of cardiorenal disease.

**Elsworth Frederick Arble**, Carrolltown, Pa., Baltimore Medical College, 1898, member of the Medical Society of the State of Pennsylvania, at one time first vice president of the Cambria County Medical Society, formerly a member of the board of health of Carrolltown and the school board, served during World War I, an organizer, former president of the board and staff member of the Miners' Hospital, Spangler, where he died July 5, aged 71, of hypertensive heart disease.

**Wesley Lewis Boyden**, Brillion, Wis., College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1911, served overseas with the Thirty-Second Division, 127th Infantry Medical Unit, during World War I, for many years city physician of Brillion, formerly chief of staff, St. Mary's Hospital, Green Bay, where he died June 26, aged 56, of acute myocarditis and acute cholecystitis.

**Arthur Mario Brianza**, Chicago, College of Physicians and Surgeons of Chicago, 1892, at one time member of the city board of health, formerly on the staff of the Cook County Hospital, died at his home in Oak Park, Ill., July 11, aged 76, of angina pectoris.

**Alfred William Brinham**, Windber, Pa., College of Physicians and Surgeons, Baltimore, 1905, member of the Medical Society of the State of Pennsylvania, for many years member of the board of health of Scalp Level, served as vice president of the Scalp Level Merchants and Miners Bank until it merged with the Windber Trust Company, died June 22, aged 63, of acute nephritis.

**Elias Harry Brubaker** \* Flora, Ind., Medical College of Indiana, Indianapolis, 1905, past president and secretary of the Carroll County Medical Society, died in the Home Hospital, Lafayette, June 28, aged 63, of a ruptured bladder following a prostatectomy.

**John Thomas Burns** \* Kalamazoo, Mich., University of Michigan Medical School, Ann Arbor, 1917, served overseas during World War I, on the staff of the Borgess and Bronson hospitals, died at his summer home in Gull Lake, June 25, aged 55, of coronary disease.

**David Clark Cather** \* Medical Director, Rear Admiral, U. S. Navy, retired, Herndon, Va., University of Pennsylvania Department of Medicine, Philadelphia, 1903, commissioned a lieutenant (jg) in the medical corps of the U. S. Navy on June 9, 1904, later a lieutenant, lieutenant commander, commander, captain and rear admiral, retired Dec. 1, 1942, for incapacity incident to service, fellow of the American College of Surgeons, died in the U. S. Naval Hospital, Corona, Calif., June 25, aged 64, of pulmonary tuberculosis.

**John Edward Curtis** \* Lemmon, S. D., University of Louisville (Ky.) Medical Department, 1909, superintendent of the Perkins County Board of Health, president of the South Dakota State Public Health Association, died in an Aberdeen hospital May 6, aged 68, of coronary occlusion.

**Floren Fred Davis**, Claxton, Ill., College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1905, member of the Illinois State Medical Society, died June 21, aged 64, of coronary heart disease.

**Wirt Adams Duvall**, Baltimore, University of Maryland School of Medicine, Baltimore, 1888, formerly chief surgeon



of the state police department and member of the state board of education died June 17, aged 80 of chronic nephritis, arteriosclerosis and coronary occlusion

**William T Easley**, Houston, Texas, St Louis College of Physicians and Surgeons, 1883, member of the Illinois State Medical Society and its "Fifty Year Club" served as president, secretary and treasurer of the Bond County (Ill) Medical Society, served as second lieutenant in the Fourth Regiment, Company F Illinois National Guard, when the militia was active in Greenville, formerly coroner of Bond County at one time member of the board of education in Greenville, Ill, died June 20 aged 86 of hypostatic pneumonia following a fall

**Eli A Fisher** ♂ Yorkshire, Ohio, Medical College of Ohio Cincinnati, 1888, past president of the Darke County Medical Society died in the Wayne Hospital, Greenville, June 28 aged 80 of carcinoma of the stomach

**Samuel Watson Fox**, Breton Woods, N J, Jefferson Medical College of Philadelphia, 1910, died June 22, aged 66, of cirrhosis of the liver

**Frank Joseph Gallagher**, Tucson, Ariz, University of Wooster Medical Department, Cleveland 1912, fellow of the American College of Surgeons served in the medical corps of the U S Army during World War I, served on the staffs of St John's St Ann's Maternity and St Alexis hospitals in Cleveland and St Mary's Hospital, died June 22, aged 55, of pulmonary tuberculosis

**Pietro Giacchella**, Altoona Pa, Regia Università di Torino Facoltà di Medicina e Chirurgia, Italy, 1896, one of the founders and member of the staff of the Mercy Hospital, died June 28 aged 79, of cerebral hemorrhage

**Edward Winchester Goodenough**, Waterbury Conn, Yale University School of Medicine, New Haven, 1893 for many years clinical assistant in pediatrics at his alma mater, member of the Connecticut State Medical Society, formerly commissioner of education in Waterbury, medical inspector of schools city supervisor and milk and food inspector served on the staff of the Waterbury Hospital, died in the Masonic Home, Wallingford July 10, aged 78

**Haynie Melvin Grace** ♂ Chillicothe, Mo Missouri Medical College St Louis 1891, a member of the chamber of commerce, formerly physician and surgeon to the State Industrial Home for Girls died in the Major Clinic, Kansas City, June 13 aged 78, of cerebral thrombosis

**John Morton Greene**, Falls City, Neb, University of Louisville (Ky) Medical Department, 1902, member of the Nebraska State Medical Association, served as president of the Richardson County Medical Society, on the staff of Our Lady of Perpetual Help Hospital, division surgeon for the Missouri Pacific Railroad, died June 10, aged 69, of coronary thrombosis

**Charles Wesley Hall**, Mount Vernon, Ill Vanderbilt University School of Medicine Nashville Tenn, 1900, University and Bellevue Hospital Medical College, New York, 1901 member of the Illinois State Medical Society, served as president of the Southern Illinois Medical Society, a major in the medical corps of the U S Army and in charge of an evacuation hospital in France during World War I, died June 21, aged 63 of coronary occlusion

**Helen Willard Ham**, Middleboro, Mass, Tufts College Medical School, Boston 1906, died April 30, aged 69

**Arthur Graham Harris**, Fairfield, N C, University of the South Medical Department, Sewanee, Tenn, 1905, died in the Riverside Hospital, Newport News, Va, June 28, aged 67, of cirrhosis of the liver and arteriosclerosis

**Pleasant L Henderson**, Morristown Tenn, Bellevue Hospital Medical College, New York, 1896 member of the Tennessee State Medical Association, died June 18, aged 78, of complications attributed to injuries received in an automobile accident

**Edward Herbert** ♂ Fall River Mass, Columbia University College of Physicians and Surgeons, New York, 1902, formerly district physician for the city of Fall River, died in a local hospital June 26, aged 69, of diabetes mellitus

**Stewart Felteau Hill**, Macon Miss, University of Alabama School of Medicine, 1912, served during World War I, member of the board of aldermen of Macon died June 14, aged 57, of carcinoma of the right lung

**Charles Edwin Homan Jr**, New Orleans, Johns Hopkins University School of Medicine, Baltimore, 1923, member of the Louisiana State Medical Society fellow of the American College of Physicians formerly practiced in Chattanooga Tenn, at one time assistant medical director of the Connec-

ticut Mutual Life Insurance Company, Hartford, since January 1943 medical director of the Ochsenr Clinic, died July 25, aged 46, of coronary thrombosis

**Robert Pearson Hooper**, Kosciusko, Miss, Memphis (Tenn) Hospital Medical College, 1913, member of the Mississippi State Medical Association, served during World War I, died in Durant May 20, aged 56

**Arthur West Hopper**, Washington, Pa, University of Pennsylvania Department of Medicine, Philadelphia, 1909, member of the Medical Society of the State of Pennsylvania, medical director of Washington and Green counties, died in the Western Pennsylvania Hospital, Pittsburgh, June 20, aged 62, of acute myocardial failure

**Mathew Marshall Hulung**, Winchester, Tenn Tennessee Medical College, Knoxville, 1902, for many years chairman of the Republican executive committee of Franklin County, secretary of the Franklin County Election Commission, formerly postmaster of Winchester killed June 14, aged 71, when the automobile in which he was driving was struck by a truck

**Logan M Kifer**, McKeesport, Pa, Jefferson Medical College of Philadelphia, 1878 member of the Medical Society of the State of Pennsylvania, died June 8, aged 90, of heart disease

**Adolph Frederick Konther** ♂ Brooklyn, Long Island College Hospital, Brooklyn 1902 consulting physician, Lutheran Hospital, died June 19, aged 78 of coronary thrombosis

**Francis Ferdinand Kramer** ♂ Cincinnati, Medical College of Ohio, Cincinnati, 1905, a lieutenant in the medical corps of the U S Army during World War I, on the staffs of St Mary's and St Francis hospitals, died June 14, aged 62, of diabetes mellitus

**Nelson Egbert Laidacker**, China Texas, Medical College of Indiana Indianapolis, 1903, member of the State Medical Association of Texas, veteran of the Spanish-American War, died May 25 aged 75

**Jefferson Brown Latta**, Fort Bayard N M Columbia University College of Physicians and Surgeons, New York, 1905 veteran of the Spanish American War and World War I, formerly a surgeon in the U S Public Health Service reserve, served on the staffs of various U S Veterans hospitals, pathologist at the Veterans Administration Facility, where he died June 8, aged 63, of carcinoma of the liver

**John Russell Leadsworth**, Anaheim Calif College of Physicians and Surgeons of San Francisco, 1897, died in a hospital at Fullerton June 4, aged 78, of Parkinson's disease

**Bedford E Love**, Roxboro, N C, University of Maryland School of Medicine, Baltimore, 1904, honorary member of the Medical Society of the State of North Carolina, past president of the Person County Medical Society, physician for the Norfolk and Western Railway, served as state highway and public works physician and county physician, on the staff of the Community Hospital, died June 15, aged 71, of cerebral hemorrhage

**Frank Benson Lucas**, Yreka, Calif College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1898, at one time on the staffs of the Los Angeles County Hospital and the Hilts Hospital, Hilts, served with the Civilian Conservation Corps and the Indian Service, died at his country home in Hornbrook June 26, aged 76 of heart disease

**George W MacMillan**, Lakewood N J, College of Physicians and Surgeons, Baltimore, 1890, died June 1, aged 81, of acute myocarditis and carcinoma of the lower lip

**James Patrick Magner**, Bayonne N J Fordham University School of Medicine, New York, 1912, for many years police surgeon, president of the medical staff of St Francis Hospital where he had been a member of the staff for thirty years, died June 27, aged 54, of coronary occlusion

**Lucy Agnes Marraffino** ♂ New York, Columbia University College of Physicians and Surgeons, New York, 1931, diplomate of the National Board of Medical Examiners associate visiting physician, Misericordia Hospital assistant visiting physician at the Gouverneur Hospital, where she was examining physician for the draft board, died in the New York Post-Graduate Medical School and Hospital June 6, aged 37 of postoperative embolus following cholecystectomy for cholelithiasis

**Irvin Hollis McDaniel**, Alto, Texas Chattanooga (Tenn) Medical College 1897, died May 15, aged 75, of Hodgkin's disease

**Onis Oliver Melton**, Lowell, Ind, University of Louisville (Ky) Medical Department, 1910, served during World

War I, on the staff of St Margaret Hospital, Hammond, died June 4, aged 59 of coronary thrombosis

James Monroe Middleton, Many La Vanderbilt University School of Medicine, Nashville, Tenn, 1890, served as a member of the first town council, one of the organizers of the first local bank, acting as vice president, chairman of the local school board for many years, president of the Sabine Parish Board of Health died June 5, aged 77

Elliott D Moore, New Philadelphia, Ohio, Western Reserve University Medical Department, Cleveland, 1888, charter member of the New Philadelphia Rotary Club, formerly director of the Tuscarawas Savings and Loan Company, once president of the board of education, died June 15, aged 80

John Marshall Mozley, Johnston City, Ill, St Louis College of Physicians and Surgeons, 1891, for many years city health officer, died June 26, aged 81, of carcinoma of the lungs

Paul Nichols, New York, Friedrich-Wilhelms-Universität Medizinische Fakultät, Berlin Prussia Germany, 1929 member of the Medical Society of the State of New York, died in the Mount Sinai Hospital June 29, aged 44, of acute leukemia

Clarence Edgerton Owens, Columbia, S C, Medical College of the State of South Carolina, Charleston, 1910, member of the South Carolina Medical Association, died in the South Carolina Baptist Hospital May 27, aged 57

Joseph N Palt, Kenosha, Wis, Illinois Medical College, Chicago, 1905 died in St Catherine's Hospital May 31, aged 63, of cerebral hemorrhage

Henry May Pond, Alameda, Calif, University of California Medical Department, San Francisco 1880, died in the Alameda Hospital June 6 aged 88, of arteriosclerotic heart disease

Joseph Aloysius Richardson, Washington, D C, Medical College of the State of South Carolina, Charleston, 1917, died June 15, aged 55

George J Sabatier @ New Iberia, La, Medical Department of Tulane University of Louisiana, New Orleans, 1889, served on the staff of the Dauterive Hospital, a director of the New Iberia State National Bank, died June 17, aged 81, of coronary thrombosis

Norman A Saylor, Philadelphia, Hahnemann Medical College of Philadelphia, 1880, died in the Philadelphia State Hospital, June 6, aged 86, of cardiac decompensation and chronic myocarditis

James W Scott, Detroit, Michigan College of Medicine and Surgery Detroit, 1896 member of the Michigan State Medical Society, formerly on the staff of Michigan Home and Training School, Lapeer, Mich, died in the Mount Carmel Mercy Hospital June 25, aged 75, of myocarditis

Frank Winfred Shelton @ Independence, Kan, Kansas City (Mo) Medical College 1904, served during World War I colonel, medical reserve corps, U S Army, not on active duty, died May 15, aged 68 of coronary occlusion

John H Shelton, Mayfield, Ky University of Louisville Medical Department 1892 member of the Kentucky State Medical Association, president of the Graves County Medical Society, on the staff of the Mayfield Hospital, died June 2 while on a fishing trip, aged 79, of coronary occlusion

Horace Watson Sherwood, Doland, S D, University of Michigan Department of Medicine and Surgery, Ann Arbor, 1896, member of the South Dakota State Medical Association and for many years councilor of the Second District,

past president of the Watertown District Medical Society, died in Madison August 5, aged 78 of cerebral hemorrhage

Hugh P Skiles, Chicago the Hahnemann Medical College and Hospital, Chicago, 1880 died June 2 aged 92, of cerebral and cardiac arteriosclerosis, uremia and hypostatic pneumonia

Clarence Luverne Smith @ Seattle, State University of Iowa College of Medicine, Iowa City, 1923, specialist certified by the American Board of Pediatrics Inc, member of the American Academy of Pediatrics served during World War I, chief of pediatric service Children's Orthopedic Hospital on the staffs of the Maynard and Seattle General hospitals died April 23 aged 46

Edward Elmer Smith, Columbus Ohio, Starling-Ohio Medical College, Columbus, 1910 member of the Ohio State Medical Association, coroner of Franklin County since 1930 during World War I served in France with the 146th Ambulance Company, 112th Sanitary Train 37th Division active in the Ohio National Guard and had been commissioned a lieutenant colonel in the Ohio State Guard, member of the city board of health from 1925 to 1937, serving as president in 1932, died in the Grant Hospital June 18, aged 58

William Henry Steers @ Brooklyn, Bellevue Hospital Medical College, New York, 1890, during World War I a

lieutenant colonel in the medical corps with the twenty-seventh division in France, and later with the Army of Occupation on the Rhine, served on the staffs of the Gouverneur Hospital, New York, and Brooklyn Eye and Ear Hospital died May 31 aged 74

Harry Bennett Weinburgh @ Lansing, Mich College of Physicians and Surgeons of Chicago School of Medicine of the University of Illinois, 1909, served during World War I past National Commander of the Military Order of the Purple Heart on the staffs of Edward W Sparrow Hospital and St Lawrence Hospital where he died June 29, aged 62, of cerebral hemorrhage

Fred C Wood, Madison, Wis, College of Physicians and Surgeons, Chicago, 1892, assistant physician, student health, University of Wisconsin, died June 4, aged 75, of coronary arterial disease



LT COL BERNARD E BULLOCK  
M R C, U S A, 1912-1944



LT (JG) CHARLES H HENDERSON JR  
(MC) USNR, 1918-1944

## KILLED IN ACTION

Bernard Eugene Bullock, Clinton, Okla, Baylor University College of Medicine, Dallas, Texas, 1938 member of the Oklahoma State Medical Association, served an internship at the Kansas City General Hospital Kansas City, Mo, for two years city health officer commissioned a first lieutenant in the medical reserve corps of the U S Army on June 6, 1938, later promoted to major and lieutenant colonel, died in the European theater of operations June 10, aged 32, of wounds received in action

Charles Herbert Henderson Jr, Bonny Blue, Va, University of Virginia Department of Medicine Charlottesville, 1943 intern at the Emory University Hospital Emory University, Ga, commissioned a lieutenant (jg) medical corps U S Naval Reserve on Nov 8 1943 awarded Purple Heart posthumously killed in action off the coast of France June 12, aged 25

## Bureau of Investigation

### STIPULATIONS

#### Agreements Between Federal Trade Commission and Promoters of Various Products

Following are abstracts of stipulations in which promoters of 'patent medicines,' medical devices and cosmetics have agreed following action by the Federal Trade Commission, to discontinue certain misrepresentations in their advertising. These stipulations differ from the 'Cease and Desist Orders' of the Commission in that such orders definitely direct the discontinuance of misrepresentations. The abstracts that follow are presented primarily to illustrate the effects of the provisions of the Wheeler-Lea Amendment to the Federal Trade Commission Act on the promotion of such products.

**Ache Knock Tablets**—In a stipulation entered into with the Federal Trade Commission in October 1943 Robert A. Stewart and Marie Phillips Stewart trading as the Ache Knock Company Honolulu T. H. agreed to discontinue the following advertising misrepresentations. That these tablets will relieve or cure rheumatism sciatica lumbago or neuritis cure or prevent the recurrence of headache or toothache relieve all pain or excessive acidity and produce no ill effects. The respondents further stipulated that they would discontinue any claim to the effect that the product is superior to aspirin unless in immediate conjunction therewith they would make appropriate comparison of the relative liability to adverse effects following the use of Ache Knock Tablets.

**Alfamint Minrich and Pretorius Liquefier**—In October 1943 Martin W. and Marie Pretorius trading as Pretorius Approved Products Glendale Calif. stipulated with the Federal Trade Commission to discontinue the following misrepresentations in the sale of these products. That either Alfamint or Minrich can be depended on to give the user renewed vitality or purge the tissues of accumulated waste that Alfamint in either tea or tablet form has any diuretic action which causes it to benefit the kidneys or that it will increase the alkalinity of the blood in neutralizing body acids or in adding needed minerals to the body that Minrich improves digestion supplies all the minerals lacking in the diet or in any way helps to prevent or lessen the tendency of such conditions as loss of teeth irregular heart action rickets nervousness indigestion anemia infections thyroid disturbances low vitality or minor skin diseases or that the use of liquid foods prepared by means of the Pretorius Liquefier in electric mixing device enables one suffering from nutritional deficiencies caused by an impaired digestive system to obtain necessary vitamins and minerals from raw vegetables fruit and other food with resultant regeneration of sick parts of the body.

**Farrand Formulas**—These were sold by A. W. Farrand trading as the Farrand Chemical Company Tyrone Pa. who in October 1943 stipulated with the Federal Trade Commission that he would discontinue the following misrepresentations about the products made from his formulas. That Cornox would eliminate the pain of a corn as soon as applied that Machineless Heatless Permanent Wave Fluid would be harmless to the hair that Waterless Shave Cream was capable of healing facial cuts and could not be purchased elsewhere for less than \$5 that his Inhalants would relieve or check colds and give instant aid in nasal congestion and infections or that his Asthma Remedies and Hay Fever Remedies would cure or permanently correct the ailments for which they were recommended. Farrand further agreed to discontinue any advertisements for or instructions pertaining to his formulas for the foregoing products which failed to reveal that the preparations compounded from them might be dangerous to health.

**Pow O Lin**—This has been advertised as a treatment for indigestion gas pains headache nervousness dizzy spells and other ailments by the Herb Vase Penol Company Inc. Danville Va. In October 1943 that concern stipulated with the Federal Trade Commission that in future advertising it would reveal that Pow O Lin should not be used in cases of abdominal pain or other symptoms of appendicitis. It was provided however that the advertisements need contain only the statement: Caution Use only as directed if the directions on the labeling include a warning to the same effect. It is worth noting that in December 1947 the Pow O Lin concern had entered into a stipulation with the Commission to cease advertising the product as being 'Capable of relieving biliousness nervousness indigestion and countless ills due to constipation unless these as errors are limited to temporary relief from constipation and that in June 1940 the Commission definitely ordered the Pow O Lin concern to desist from making certain unwarranted implications in its advertising such as that Pow O Lin is a cure or remedy for constipation and faulty elimination characterized by and associated with symptoms such as biliousness indigestion gas pains headache dizziness pains in the back or chest stiffness of the joints swollen feet or ankles nervousness in omnia loss of appetite or lack of energy. These two earlier actions of the Commission were dealt with in The Journal for June 21 1941 page 2811.

**Seborol Scalp Lotion and Seborol Scalp Ointment**—These are put out by the Dermatological Products Corporation Hoboken N. J. which stipulated with the Federal Trade Commission in October 1943 that it would cease representing that the name Seborol is a registered trade mark in the United States Patent Office unless it is so registered.

**Vanco Ointment**—This was represented by N. Edwards and Bertha Edwards trading as Vanco Company Brady Neb. as a product that would prevent cure or penetrate to the source of a cold draw out congestion or pain or correct a sinus condition aggravated by a cold or be beneficial in pneumonia or influenza. In September 1943 the promoters entered into a stipulation with the Federal Trade Commission agreeing to discontinue the foregoing misrepresentations.

**Vita Rex Capsules**—These are put out by one Joseph Giannatelli trading as Alba Bio Products Company Chicago who entered into a stipulation with the Federal Trade Commission in October 1943 in which he agreed to discontinue the following misrepresentations. That this product has any value in the treatment of poor assimilation constipation indigestion gaseous conditions of the stomach or intestines functional weakness or nerve disorders that it will enrich the blood improve the appetite correct gastrointestinal disorders increase systemic resistance or produce better health that it will protect individuals against colds aches or a tired out feeling supply the body with ample nutritional substances and possesses value as an iron preparation.

**Yog A Lax**—That this laxative is a stomach or bowel corrective and is not habit forming were misrepresentations which the Yoghurt Products Inc. of Seattle agreed to eliminate from their advertising in a stipulation that they entered into with the Federal Trade Commission in October 1943. They further agreed to discontinue any advertisement which failed to reveal that the product should not be used when abdominal pains or other symptoms of appendicitis are present provided however that such advertisements need contain only the statement: Caution Use only as directed if the directions for use on the label contain a warning to the same effect.

### MISBRANDED PRODUCTS

#### Abstracts of Notices of Judgment Issued by the Food and Drug Administration of the Federal Security Agency

[EDITORIAL NOTE—These Notices of Judgment are issued under the Food, Drug and Cosmetic Act, and in cases in which they refer to drugs and devices they are designated DDNJ and foods FNJ. The abstracts that follow are given in the briefest possible form: (1) the name of the product, (2) the name of the manufacturer, shipper or consigner, (3) the date of shipment, (4) the composition, (5) the type of nostrum, (6) the reason for the charge of misbranding and (7) the date of issuance of the Notice of Judgment.]

**Arnold Garlic Tablets**—Melrose Drug Company Cleveland Shipped Jan. 21 1942. Composition essentially starch and garlic. Misbranded because statement on carton 'May be of Value in Reduction of Hypertension' was false and misleading since product contained no ingredients to justify the statement.—[DDNJ FDC 779 September 1943]

**Davis Formula No. 7895**—E. R. Davis Prescription Company Bellingham Wash. Shipped Dec. 17 1941 and June 23 1942. Composition essentially water alcohol potassium iodide chloroform sugar and an extract of a plant drug such as lobelia. Supplementarily bottle contained a solution of vitamin A. Misbranded because labeling falsely represented that this combination was an adequate treatment for asthma hay fever eczema or rheumatic neuritic or arthritic pains.—[DDNJ FDC 780 September 1943]

**Fermax**—Moon Winn Drug Company Inc. Athens Ga. Shipped March 11 1942. Composition essentially sodium bicarbonate magnesium and calcium carbonates bismuth subnitrate and rhubarb. Misbranded because label directions provided for continuous administration whereas product was a laxative and should not be used continuously and because directions failed to give the dosage for children of different ages. Further misbranded because labeling failed to warn that a laxative should not be taken in case of nausea vomiting abdominal pain or other symptoms of appendicitis and that frequent or continued use of a laxative might result in dependence on it to move the bowels. Also misbranded because label failed to declare an accurate statement of quantity of contents.—[DDNJ FDC 760 September 1943]

**Ramsdell's Sulphur Cream**—E. Fougere & Company Inc. New York Shipped April 22 1942. Composition not reported. Adulterated because strength differed from that which it was represented to possess, namely Contains 10% Precipitated Sulphur. Misbranded because of false label representations that it would be efficacious in treating scabies eczema ringworm itching simple acne acne rosacea burning and soreness in eczema and water rash as well as bald spots and falling hair.—[DDNJ FDC 772 September 1943]

**Vita Might Capsules**—Vital Foods Corporation Chicago Shipped Feb. 28 1942. Composition (black capsules) dicalcium phosphate peptonized iron magnesium sulfate manganese hypophosphite copper pentonate zinc sulfate and potassium iodide (red capsules) shown by vitamin assays to contain per capsule 10,000 U. S. P. units of vitamin A and 1,000 U. S. P. units each of vitamins B<sub>1</sub> and D. Misbranded because black capsules contained smaller amounts of minerals than those declared and labeling of both kinds bore false and misleading claims as to their supposed benefits in many disorders such as lessened strength poor sleep aches pains nervous strain and some other things.—[DDNJ FDC 786 September 1943]

## Correspondence

### FACTS ABOUT CHILDREN'S BUREAU CONFERENCE ON CHILD CARE

*To the Editor*—My attention has been called to the Washington letter in *THE JOURNAL*, August 12, headed "American Academy of Pediatrics Withdraws Support from Children's Bureau" In this letter the following statement is made

Last month a conference of child specialists and social workers here took a stand against the bureau's group care of children asserting that group care was damaging to child welfare and actually more expensive than a foster family system of care which the conferees advocated

This statement is false The Children's Bureau does not conduct group care of children We have consistently taken a position against group care of children under the age of 2 years

On July 30 and Aug 1, 1941 the Children's Bureau held a conference on day care of children of working mothers which adopted certain recommendations including the following "Infants should be given individual care, preferably in their own homes and by their own mothers" The Standards for Day Care of Children of Working Mothers, published in February 1942, contains the following statement

If it is necessary to provide for children under 2 years of age provision should be made for care in the children's own homes through supervised homemaker service or in carefully selected and supervised foster homes Infants should not be cared for in groups

This has been the policy of the Children's Bureau throughout the war period

The only federal funds now available for day care services are Lanham Act funds administered by the Federal Works Agency This summer, for the first time, applications for funds to conduct group care services for children under 2 years of age came to the Federal Works Agency and, in accordance with agreed policies were referred to the Children's Bureau for its review I took the position that we could not pass upon these policies for group care of infants under 2 without having the advice of the most competent experts from the fields of health, child development and social service Accordingly I called a conference, which met on July 10 1944 Among others attending the conference were Dr Marian C Putnam, director, Children's Center, Roxbury, Mass Dr Milton Senn, assistant professor of pediatrics and psychiatry, Cornell University Medical College, Dr Benjamin Spock, assistant attending pediatrician, New York Hospital (now Lieutenant Commander in the Navy), and Dr Arnold Gesell, director of the Clinic of Child Development and Attending Pediatrician New Haven Hospital

The conference upheld the policy of the Children's Bureau with reference to infants and recommended against group care of infants under the age of 2 years This recommendation was transmitted by the Children's Bureau to the Federal Works Agency, and the Children's Bureau is now cooperating with the Federal Works Agency in the review of an application for funds for group care of infants in San Diego, Calif with a view to determining whether it would not be possible to provide for infants in foster families

KATHARINE F LENKOOT, Washington D C  
Chief of the Children's Bureau

## TREATMENT OF POLIOMYELITIS

*To the Editor*—I feel that physicians should be warned against the use of sulfonamide drugs in the treatment of poliomyelitis

It has been noticed clinically that when paralyses of the intestine and urinary bladder persist there are apt to be extensions of the somatic paralyses When urinary retention was produced in animals (monkeys) by the use of sulfonamide compounds drugs which produced urethritis and blockage of the ureters a more massive disease was produced two or three days sooner than that which appeared in controls simultaneously injected with poliomyelitis virus

Rosenow had the same experience with sulfapyridine at the Mayo Clinic and reported that this drug produced an additive neurotoxic effect

Recently an explosive epidemic of poliomyelitis occurred in a small town of northern Ohio The number of patients that developed severe paralysis seemed out of proportion to the normal expectancy Most of these patients had received sulfonamide drugs (information received from Mrs Louise Bowers health officer, Perrysburg, Ohio)

Recently a 12 year old girl had signs of meningeal irritation but no sign of any muscle involvement save in one leaf of the soft palate The reflexes were hyperactive, the child was not acutely ill The spinal fluid checked twice, contained 220 cells all of which were polymorphonuclears Gram negative organisms had been reported The prognosis seemed good whether the condition was poliomyelitis or meningitis Sulfadiazine was started Twelve hours later and after 12 Gm of sulfadiazine had been given, a massive extension of paralysis suddenly developed the throat muscles and intercostals all becoming affected within an hour This sudden explosive extension in an otherwise nearly normal patient had not been our previous experience in this type of case

The sulfonamide drugs are of no value in poliomyelitis Nor does penicillin help much in our experience, although we have not noticed that it does harm

JOHN A TOOMEY, M D,  
Department of Contagious Diseases,  
City Hospital, Cleveland

## Medical Examinations and Licensure

### COMING EXAMINATIONS AND MEETINGS

#### BOARDS OF MEDICAL EXAMINERS BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Examinations of boards of medical examiners and boards of examiners in the basic sciences were published in *THE JOURNAL* Aug 19 page 115

#### NATIONAL BOARD OF MEDICAL EXAMINERS

AMERICAN BOARD OF MEDICAL EXAMINERS Parts I and II Various centers Nov 13 15 Part III Various centers September or October Exec Sec Mr E S Elwood 225 S 15th St Philadelphia

#### EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF ANESTHESIOLOGY *Written* Part I Various centers Jan 19 Final date for filing application is Oct 21 Sec Dr P M Wood 745 Fifth Ave New York 22

AMERICAN BOARD OF OBSTETRICS & GYNECOLOGY *Written* Part I Various centers February Sec Dr Paul Titus 1015 Highland Bldg, Pittsburgh 6

AMERICAN BOARD OF OPHTHALMOLOGY Los Angeles January Final date for filing application is Oct 1 New York June Chicago October 1945 Final date for filing application is Dec 1 Sec Dr S Judd Beach 56 Ivy Road Cape Cottage Maine

AMERICAN BOARD OF OTOLARYNGOLOGY *Oral* Chicago Oct 47 Sec Dr Dean M Lierle University Hospitals Iowa City Ia

AMERICAN BOARD OF PEDIATRICS *Oral* New York April 14 15 Final date for filing application is Dec 15 Chicago May 19 20 Final date for filing application is Jan 19 Sec Dr C A Aldrich 1157 First Ave S W Rochester Minn

AMERICAN BOARD OF PSYCHIATRY & NEUROLOGY *Oral* New York December Final date for filing application is Sept 30 Sec Dr Walter Freeman 1023 Connecticut Ave N W Washington 6 D C

## Bureau of Legal Medicine and Legislation

### MEDICOLEGAL ABSTRACTS

**Medical Practice Acts Right of Court Reviewing Revocation of License to Receive Evidence in Addition to Evidence Heard by Board Disturbance of Peace as Unprofessional Conduct**—Wyatt, who was licensed to practice medicine in California, was placed on probation in 1940 for five years by the Board of Medical Examiners of California on charges of the nature of which the reported decision makes no mention. In 1942 proceedings were instituted to revoke his license for violating probation on a charge that (1) he had attempted to procure on two named women miscarriages that were not necessary to save their lives and (2) that he had been guilty of an offense involving moral turpitude a cause of revocation, because he had been convicted of disturbing the public peace and quiet by the use of profane and indecent language. At the hearing before the board the physician and the named women denied that the women had been pregnant and that miscarriages had been procured with respect to them. A nurse, however, employed by the physician testified that she assisted the physician in performing the operations in question and that the physician curetted the wombs of both women and removed a fetus from one of them which, she testified, was about a month old. The board found the charges sustained and revoked the physician's license to practice. The physician then instituted mandamus proceedings against the individual members of the board to compel them to cancel the order revoking his license. The trial court heard all the evidence that was adduced before the board and in addition heard the testimony of another physician who stated that a fetus of an age of 4 weeks, the age of the one the nurse testified she had seen removed would be the size of a buckshot and the nature of such a substance could be ascertained only by the use of a microscope. The trial court found the evidence insufficient to sustain the charges preferred with the board and ruled in favor of the physician, and the board appealed to the district court of appeal first district division 2, California.

The board contended first that it was error in a hearing on a petition for writ of mandate for the trial court to hear evidence in addition to that heard by the board. The board argued that evidence additional to that received at its hearing could be considered by a reviewing court only (1) where evidence has been offered and improperly rejected by the administrative agency whose acts are under review, (2) where pertinent evidence was in existence at the time of the hearing before the administrative agency but could not have been at the time produced by the exercise of due diligence and (3) evidence discovered subsequent to the hearing before the administrative agency. The court, however, could not agree with this contention, relying on *Laine v California State Board of Optometry*, 19 Cal 2d 831, 123 P 2d 457. In that case the court said

If in the instant case the superior court in the mandate proceeding were limited to the evidence presented before the board or if the findings of fact by the board were conclusive on the court then the board would be exercising the complete judicial power reserved to the enumerated courts and appellant would be deprived of his constitutional right unless he had a right to go into a court of law and question the validity of that order by the introduction of any material evidence to prove that he did not commit the acts alleged.

The board next argued that its action in revoking the physician's license was justified from the evidence before it that the physician had been convicted of disturbing the peace which is an act of moral turpitude. The vice in this contention answered the court, is that it assumes that the offense of disturbing the peace is an act of moral turpitude. That it is an act of turpitude may be conceded. However, it is equally clear that

it is not ipso facto an immoral act. If and when it is claimed that such an act is one of moral turpitude the trial court may inquire into such facts as show or tend to show that the offense complained of was or was not an act of moral turpitude. In the case before us such evidence was produced by the physician. Thereafter the trial court made findings that the offense alleged to have been committed by the physician in disturbing the peace was not one of moral turpitude. That finding is conclusive on an appellate court.

For the reasons stated, the appellate court affirmed the order of the trial court directing, in effect, that the physician's license to practice be restored to him—*Wyatt v Cerf*, 149 P 2d 309 (Calif, 1944).

## Society Proceedings

### COMING MEETINGS

- Aero Medical Association of the United States St Louis Sept 4-6 Dr David S Brachman 5440 Cass Ave Detroit 2 Secretary
- American Academy of Neurological Surgery White Sulphur Springs W Va Sept 7-9 Dr Theodore C Erickson Wisconsin General Hospital Madison Wis Secretary
- American Academy of Ophthalmology and Otolaryngology Chicago Oct 8-12 Dr W L Benedict 102 Second Ave S W Rochester Minn Secretary
- American Association of Obstetricians Gynecologists and Abdominal Surgeons Hot Springs Va Sept 7-9 Dr James R Bloss 418 Eleventh St Huntington W Va Secretary
- American Congress of Physical Therapy Cleveland Sept 6-9 Dr Richard Kovacs 2 East 88th St New York 28 Secretary
- American Hospital Association Cleveland Oct 2-6 Mr George P Bugbee 18 East Division St Chicago Executive Secretary
- American Pediatric Society Atlantic City N J Sept 25-27 Dr Hugh McCulloch 325 N Euclid Ave St Louis 8 Secretary
- American Public Health Association New York Oct 3-5 Dr Reginald M Atwater 1790 Broadway New York 19 Executive Secretary
- American Roentgen Ray Society Chicago Sept 24-29 Dr H Dalncy Kerr University Hospitals Iowa City Secretary
- Association of American Medical College Detroit Oct 23-25 Dr Fred C Zapffe 5 S Wabash Ave Chicago Secretary
- Colorado State Medical Society Denver Sept 27-29 Dr John S Bouslog 537 Republic Bldg Denver 2 Secretary
- Delaware Medical Society of Lewes Sept 11-12 Dr W O La Motte 601 Delaware Avenue Wilmington Secretary
- District of Columbia Medical Society of the Washington Oct 5-7 Mr Theodore Wiprud 1718 M St N W Washington Secretary
- Indiana State Medical Association Indianapolis Oct 3-5 Mr T A Hendricks 23 East Ohio St Indianapolis 4 Executive Secretary
- Inter State Postgraduate Medical Association of North America Chicago Oct 17-20 Dr Arthur G Sullivan 16 N Carroll St Madison Wis Managing Director
- International College of Surgeons U S Chapter Philadelphia Oct 3-5 Dr Desiderio Roman 250 South 17th St Philadelphia Secretary
- Kentucky State Medical Association Lexington September 18-20 Dr P E Blackerby 620 S Third St Louisville Secretary
- Michigan State Medical Society Grand Rapids Sept 27-29 Dr L Fernald Foster 2020 Olds Tower Lansing 8 Secretary
- Mississippi Valley Medical Society Peoria Ill Sept 27-28 Dr Harold Swanberg 510 Maine St Quincy Ill Secretary
- Omaha Mid West Clinical Society Omaha Nebraska Oct 23-27 Dr J D McCarthy 1036 Medical Arts Bldg Omaha 2 Secretary
- Pennsylvania Medical Society of the State of Pittsburgh Sept 19-21 Dr Walter F Donaldson 500 Penn Ave Pittsburgh 22 Secretary
- Radiological Society of North America Chicago Sept 24-29 Dr Donald S Childs 607 Medical Arts Bldg Syracuse N Y Secretary
- Virginia Medical Society of Richmond Oct 23-25 Miss Agnes V Edwards 1200 E Clay St Richmond 19 Secretary
- Wisconsin State Medical Society of Milwaukee Sept 18-20 Mr Charles H Crownhart 110 E Main St Madison 3 Secretary



## Current Medical Literature

### AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1934 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 16 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (\*) are abstracted below.

#### Alabama State Medical Assn Journal, Montgomery

13 381-440 (June) 1944

Value and Limitation of Laboratory Tests in Clinical Medicine T. R. Harrison—p. 381

Intestinal Obstruction E. F. Moody—p. 383

Simplified Chin Support C. J. Thuss—p. 387

14 1-24 (July) 1944

The Nervous Patient G. O. Segrest—p. 1

Treatment of Craniocerebral Wounds C. Pitcher—p. 5

Skin Grafting with Especial Reference to Split Thickness Skin Graft J. L. Carmichael—p. 11

#### American Journal of Medical Sciences, Philadelphia

207 701-832 (June) 1944

Thyroid Storage in Thyroid as Affected by Thyrotropic Hormone and Potassium Iodide R. H. Williams, A. R. Weinglass and Gloria A. Kay—p. 701

Interference Between Inactive and Active Viruses of Influenza I. Incidental Occurrence and Artificial Induction of Phenomenon W. Henle and Gertrude Henle—p. 703

Id. II Factors Influencing the Phenomenon W. Henle and Gertrude Henle—p. 717

One Year Observations of Treatment of Cancer with Avidin (Egg White) I. I. Kaplan—p. 733

Concentration of Red Blood Corpuscles Containing Labeled Phosphorus Compounds in Arterial Blood After Intravenous Injection Preliminary Report G. Nylin and M. Malm—p. 743

\*Evaluation of Alcohol Lumbar Paravertebral Block in Peripheral Vascular Disease G. Saland and C. Klein—p. 749

Ameliasis Analytic Study of Cases Admitted to Philadelphia Hospital During Last Five Decades R. S. Diaz Rivera and E. A. Rasberry—p. 754

\*Trichinella Skin Tests in Patients in General Hospitals and Tuberculosis Sanatoriums S. F. Horne and G. T. Harrell—p. 759

Heart Block Study of 100 Cases with Prolonged PR Interval R. B. Logue and J. F. Hanson—p. 763

Neuropsychiatric Casualties from Guadalcanal I. Persistent Symptoms in 3 Cases A. A. Rosner—p. 770

Tumefaction of Subcutaneous Fat Following Injection of Insulin Chemical and Histologic Study H. T. Engelhardt and V. J. Derbes—p. 776

**Alcohol Lumbar Paravertebral Block in Peripheral Vascular Disease**—Saland and Klein tried to determine objectively (1) exactly how long one may expect vasodilatation effects to last after alcohol paravertebral block in the lumbar region, (2) whether neuritis is produced by such a procedure and if so, how often how severe and how long such neuritis might last, (3) whether the amount of alcohol used was a factor in producing vasodilatation or neuritis, (4) whether the use of procaine hydrochloride in sweet almond oil would reduce the incidence of neuritis and (5) whether claudication time would be altered by such therapy. The patients studied were those who applied to the vascular clinic for relief of symptoms and comprised a total of 16. The types of cases were 1 phlebitis, 1 scleroderma, 1 thromboangitis obliterans and 13 arteriosclerosis obliterans. These cases were chosen because it was determined previously by peripheral nerve block with procaine hydrochloride that the extremity to be treated could vasodilate up completely. In 6 cases the authors used 2 per cent procaine hydrochloride followed by 5 per cent procaine hydrochloride in sweet almond oil and this in turn by 1 cc of 100 per cent alcohol, in 4 cases 2 per cent procaine hydrochloride followed by 1 cc of 100 per cent alcohol, in 6 cases 2 per cent procaine hydrochloride followed by 3 cc of 100 per cent alcohol. The authors arrive at the following conclusions: 1. The use of 100 per cent alcohol in lumbar paravertebral block is of definite value in producing peripheral vasodilatation. This vasodilatation may be complete and may last for varying periods of time even up to two years and perhaps longer. 2. The neuritis occurs more often when larger amounts of alcohol are injected; it is not too severe and in no instance has lasted more than forty-five days. 3. The use of procaine hydrochloride in sweet almond oil did not reduce the incidence of neuritis. 4. Vasodilatation occurred more often when larger amounts of alcohol were used but the amount of alcohol was not the factor that determined how long this vasodilatation lasted. 5. There was no correlation between claudication time and the degree or duration of vasodilatation.

**Trichinella Skin Tests**—Horne and Harrell used a 1:10,000 trichinella extract to perform skin tests on 700 patients, namely on 278 consecutive admissions to the North Carolina Baptist Hospital, 144 patients at the Forsyth County Hospital, 120 patients at the Guilford County Tuberculosis Sanatorium and 158 patients at the Western North Carolina Tuberculosis Sanatorium. Seventy or 10 per cent of the 700 patients gave positive skin reactions. This is lower than similar studies have shown in some other areas of the United States. The incidence found by skin tests was greater than that found in routine necropsies in the same geographic area. The incidence was greater among Negroes and in males but was not statistically significant in either. The incidence of positive tests was essentially the same in urban and rural groups. Patients with active tuberculosis in two sanatoriums gave a higher proportion of positive reactions (143 per cent) than did those without tuberculosis (71 per cent) in two general hospitals. Almost all of the patients with tuberculosis were in two sanatoriums; it is possible that these findings represent the result of two local unrecognized or subclinical epidemics. Other possible explanations are that patients with tuberculosis develop skin sensitivity with much lighter infestations or retain sensitivity longer than do nontuberculous patients or that their skin is more reactive to intradermal tests in general. However, personal communications from men with experience in treating tuberculosis indicate that, in general, they have not found their patients more reactive to intradermal tests than nontuberculous persons.

#### American Journal of Ophthalmology, Cincinnati

27 589-686 (June) 1944

Exophthalmos of Hyperthyroidism Differentiation in Mechanism Pathology Symptomatology and Treatment of Two Varieties Part I J. H. Mulvaney—p. 589

Sugar Content of Cataractous Human Lenses P. W. Salit—p. 612

Pneumoencephalocoele Secondary to Puncture Wound of Lid II Shuglister and B. Y. Aris—p. 617

Ophthalmoplegia and Retinal Degeneration Ruth I. Barnard and R. O. Sebolt—p. 621

Use of Dorsal in Glaucoma J. F. Hardevy—p. 625

Keratoconjunctivitis Caused by Manzanillo Tree R. D. Harley—p. 628

\*Active Keratoconjunctivitis R. G. Scobee and E. W. Grifey—p. 632

Correction of External Rectus Paralysis with Contracture of Opposing Internus P. H. Reinhardt—p. 636

**Active Keratoconjunctivitis**—Scobee and Grifey found the following treatment highly satisfactory for keratoconjunctivitis or flash burn. Once the diagnosis is made, the patient is rendered comfortable by the instillation of a corneal anesthetic. 0.5 per cent pontocaine is a good quick acting one. Following anesthesia, three instillations of 1:1,000 epinephrine at five minute intervals are made, if the patient is seen soon after the onset of ocular pain and before vascular congestion has reached a maximum this is all that is necessary. Usually such patients gain immediate and frequently permanent relief enabling them to return to work at once. If vasodilatation is severe the aforementioned routine is followed and in addition the patient is given holocaine and epinephrine ophthalmic ointment to be used in the eye every three hours. One early sign of a severe burn is a miotic pupil. One per cent atropine ophthalmic ointment is instilled but several repetitions may be necessary before mydriasis is secured. In the more severe burns or in those which are not seen until forty-eight to ninety-six hours after the burn has occurred, more drastic therapy may be indicated. Chemoisis and a mucopurulent secretion in addition to palpebral edema are all a part of the entity of flash burn and are not on an infective basis. Cold packs and holocaine and epinephrine ointment are usually sufficient. Occasionally a seda-



tive is necessary. Either corneal or conjunctival ulceration or both must be dealt with apart from flash burn. Corneal ulcers thus formed are indolent. Chemical cauterization, intravenous typhoid, vitamin therapy (riboflavin and ascorbic acid), ethylmorphine hydrochloride and methylene blue powder may be tried. As long as corneal staining persists, the eye should be kept closed with an eye pad.

### American Journal of Physiology, Baltimore

141 439-612 (June) 1944 Partial Index

- Estimation of Platelet Fragility M E Muhrer R Bogart and A G Hogan—p 449  
Effect of Caffeine on Gastric Secretion in Dog Cat and Man J A Roth and A C Ivy—p 454  
Influence of Agents Affecting Autonomic Nervous System on Motility of Small Intestine E J Van Liere D W Northup and J C Stickney—p 462  
Effect of Adrenal Medullectomy on Hereditary Diabetes of Strain of Rats G Sayers M Sayers J D Plehler A U Orten and J M Orten—p 466  
Excretion of Urea by Normal Subjects Under Basal Conditions R S Hubbard and F R Griffith Jr—p 469  
Effect of Intrahepatic Pressure on Bile Resorption During Obstructive Jaundice B G P Shafiroff H Doubilet I S Barcham and Co Tui—p 480  
Acoustic Alterations of Postcontraction Hypertonus in Limb Muscles of Normal Man H S Wells—p 486  
Sodium Ion Movement Between Intestinal Lumen and Blood M B Visscher R H Varco C W Carr R B Dean and Dorothy Erickson—p 488  
Pepsin Content of Gastric Juice Secreted in Response to Hormonal Stimulation M Grossman J R Woolley and A C Ivy—p 506  
Enzyme Content of Pancreatic Secretion Following Various Stimulants H Greengard M I Grossman R A Roback and A C Ivy—p 509  
Blood Flow Peripheral Resistance and Vascular Tonus with Observations on Relationship Between Blood Flow and Cutaneous Temperature H D Green R N Lewis N D Nickerson and A L Heller—p 518  
Effect of Histamine and Hydrochloric Acid on Gastric Secretion and Potential W S Rehm—p 537  
Hypophyseal Eosinophil Cell and Insulin Sensitivity P Heinbecker and Doris Rolf—p 566  
Local Loss of Fluid and Protein in Experimental Shock Relation to Decrease of Plasma Volume and Total Circulating Proteins C T Ashworth A W Jester and E L Guy—p 571  
Factors Influencing Chloride Concentration in Human Sweat R E Johnson G C Pitts and F C Consolazio—p 575  
Adrenalectomy Gonadectomy and Insulin Content of Pancreas R E Haist and H J Bell—p 606

### American Journal of Psychiatry, New York

100 727-870 (May) 1944 Partial Index

- Electroencephalogram in Post Traumatic Epilepsy F A Gibbs W R Wegner and E L Gibbs—p 738  
Post Traumatic Epilepsy W Penfield—p 750  
Experiment in Postgraduate Education C A Rymer and F G Ebaugh—p 752  
Historical Sidelights on Problem of Delinquency G Zilboorg—p 757  
Psychiatric Study of 250 Sex Offenders B Apfelberg C Sugar and A Z Pfeffer—p 762  
Comparative Statistical Study of Male and Female Drug Addicts M J Pescor—p 771  
Neurology and Psychiatry in Palestine L Halpern—p 775  
Measurement of Remembering I Feldman and D E Cameron—p 788  
Four Years Experience with Music as Therapeutic Agent at Eloise Hospital I M Altschuler—p 792  
Etiology of Mental Disease Changing Concept G S Sprague—p 795  
\*Amphetamine Sulfate in Aborting Acute Alcoholic Cycle M M Miller—p 800  
Schizophrenia in 4 Year Old Boy H R Blank O C Smith and H Bruch—p 805  
Study of Prodromal Factors in Mental Illness with Special Reference to Schizophrenia Mary Phyllis Witman and D L Stenberg—p 811  
Neuropsychiatry in General Hospital T J Heldt—p 817  
Rapid Changes in Oxygen Tension of Cerebral Cortex During Induced Convulsions E W Davis W S McCulloch and E Roseman—p 825  
Clinical and Electroencephalographic Studies in Obsessive-Compulsive States B L Pacelli P Polatin and S H Nagler—p 830

**Amphetamine Sulfate in Aborting Acute Alcoholic Cycle**—To test the effects of amphetamine sulfate Miller made studies on 30 persons with suspended sentences referred from the Cleveland Municipal Court and 26 private patients. All were nonpsychotic, chronic alcoholic addicts treated during the acute postintoxication period. The average duration of alcoholism was sixteen years. The procedure consisted of amphetamine sulfate 10 mg administered orally twice daily after breakfast

and after lunch, phenobarbital 1½ grains (0.1 Gm) at bedtime and thiamine hydrochloride 30-40 mg daily. The patients were told to include large amounts of sugar in their diet. Tepid reclining baths were ordered mornings and evenings and bed rest was recommended when indicated. In 8 control patients placebos were substituted for amphetamine sulfate, otherwise the treatment was identical. The acute drinking cycle was interrupted in 49 of the 56 patients, with subsequent periods of abstinence ranging from one to eighteen months or longer. Seven patients failed to respond satisfactorily. The cycle was not interrupted in the control group treated with placebos. It was found that physical and mental "hangover effects" were much reduced by amphetamine sulfate. Improvement in awareness sensory perception and activity drive was observed soon after treatment. Mood and rapport were improved patients demonstrating greater cooperation, increased accessibility and decreased negativism, thus facilitating the initiation of a rehabilitative program.

### American Journal of Public Health, New York

34 567-692 (June) 1944

- Epidemic Keratoconjunctivitis Correlation of Epidemiologic Data and Results of Serum Virus Neutralization Tests R F Korns M Sanders and R C Alexander—p 567  
Epidemic Keratoconjunctivitis—Detroit Experience J G Molner and E L Cooper—p 572  
Current Progress in Sterilization of Air S Mudd—p 578  
Nutritive Value of Canned and Dehydrated Meat and Meat Products E E Rice and H E Robinson—p 587  
Nutritive Values of Canned Fruits and Vegetables J F Feaster—p 593  
Sanitary Engineering in Latin America H B Gotaas—p 598  
Case Method in Teaching Public Health Administration H D Chope—p 605  
Epidemiology of Cancer from Viewpoint of Health Officer M L Levin—p 611  
Serologic Identification of Dysentery Bacilli K M Wheeler—p 621  
Nutrition Factor Important for Industrial Hygiene G R Cowgill—p 630  
Chest X-Ray Survey Methods in Practice A B Robins—p 637  
Gonococcus Cultures—State Laboratory Service Margaret W Higginbotham—p 643  
Block Organization for Health Education H V McCluskey—p 648  
Preparing High School Students for Community Service G L Davis—p 652

### American Journal of Surgery, New York

64 297-434 (June) 1944

- Paralytic Scoliosis Analysis of 51 Cases S Kleinberg—p 301  
Efficacy of Ultraviolet Blood Irradiation Therapy in Control of Staphylococci G Miley—p 313  
Synergistic Mixture of Azochloramide Urea and Sulfanilamide Experimental and Clinical Study J A Dingwall III—p 323  
Osteochondritis Dissecans G H Stein R G Ikins and F C Lowry—p 328  
Pilonidal Cyst Postoperative Problem L A Barnett—p 338  
Carcinoma of Rectum Conservative Surgery in Certain Instances D R Keller—p 346  
Cationic Detergents as Antiseptics E D W Hauser and W W Cutter—p 352  
\*New Coagulum Contact Method of Skin Grafting Further Simplifications in Technique Machteld E Sano—p 359  
Burn Therapy Consideration of Burns in Industry Alma Dea Morani—p 361  
Method of Treating Nerve Ends in Amputation Stumps J T Bate—p 373  
Treatment of Fractured Femur in Children L F Bush—p 375  
Castilian Malva M Marks—p 379  
\*Essential Hypertension Surgical Treatment W P E Berwald and K D Devine—p 382  
Simultaneous Performance of Rubin Test and Endometrial Biopsy S S Rosenfeld—p 385

**Coagulum Contact Method of Skin Grafting**—Sano had suggested the use of heparinized autogenous plasma and cell extract from the buffy coat alone or from the buffy coat admixed with erythrocytes as a means of promoting the immediate fixation of the graft and subsequent union by stimulation of cellular growth. When grafts are applied after heparinized autogenous plasma has been painted on the recipient area and cellular extract on the undersurface of the graft, a coagulum forms within a few minutes which fastens the graft in place, rendering unnecessary either sutures or special retention dressings. As a rule, vascularization of the graft follows within forty-eight hours. Thin, medium and thick split grafts as well

as full thickness grafts may all be used successfully with the method. Originally the author prepared the plasma and cell extract immediately before grafting. A modification of the original method consists in using pooled heparinized dried plasma and dried cell extract instead of fresh autogenous plasma and cell extract in experimental skin grafting in guinea pigs. This method has all the advantages of the previously described method plus the convenience of having the plasma and cell extract immediately available for use anywhere at any time.

**Surgical Treatment of Essential Hypertension.**—In the past three years Berwald and Devine have employed extensive sympathectomy in the treatment of 29 patients with essential hypertension. In 24 of these Adson's subdiaphragmatic approach was used, 4 were operated on using Smithwick's dorsolumbar approach and the remaining patient had the Smithwick operation on the right side and the Adson operation on the left side. Kidney biopsies were taken from 14 patients. All but 2 patients are alive. A careful follow-up was made on the surviving patients. The surgeon realizes that except in the most ideal cases he cannot cure hypertension but he can effect partial cure, temporary alleviation and great subjective improvement in a large percentage of properly selected cases. The authors are enthusiastic about their results. Most of the patients were referred by clinicians who had exhausted the medical armamentarium in attempting to relieve them. Objective improvement was secured by sympathectomy in 64 per cent and subjective improvement in over 92 per cent of these cases. Sympathectomy, therefore, appears to have a real value and is here to stay until a better method is discovered. The criticism that the operation is too dangerous and strenuous for the patient compared to the relief obtained is not true. Few operations are attended with as little risk and postoperative discomfort as extensive sympathectomy.

### American Journal of Tropical Medicine, Baltimore

24 157-220 (May) 1944

- Age Level for Peak of Acquired Immunity to Malaria as Reflected by Labor Forces H C Clark—p 159  
Quinine Inhibition of Bacterial Luminescence F H Johnson and L Schnever—p 163  
Cysticidal Effects of Chlorine and Ozone on Cysts of *Endamoeba histolytica* Together with Comparative Study of Several Eneyments Media J F Kessel D K Ali on Martha Kaime Maria Quiros and A Gloeckner—p 177  
Amebiasis of Uterus D de Rivas—p 182  
Influence of Cholesterol and Certain Vitamins on Growth of *Endamoeba histolytica* with a Single Species of Bacteria C W Rees J Bozicevich Lucy A Reardon and F S Daft—p 189  
Incidence and Significance of *Trichomonas vaginalis* Infection in Male L G Fee—p 193  
Intradermal Reactions Following Use of *Dirofilaria immitis* Antigen in Persons Infected with *Onchocerca volvulus* W H Wright and J R Murdock—p 199  
Intradermal and Serologic Tests with *Dirofilaria immitis* Antigen in Cases of Human Filariasis J Bozicevich and A M Hutter—p 203  
Report on Program for Improving Teaching of Tropical Medicine in Medical Curriculum H E Meleney—p 209  
Financial Support of Tropical Medicine A R Crawford—p 213

**Trichomonas Infection in Men.**—According to recent accurate statistics are not available as to the frequency of *Trichomonas vaginalis* infection in men but it is the opinion of many that the incidence of infection is higher than the literature would lead one to believe. The opportunity to examine a large series of men who had the provisional diagnosis of urethral discharge was afforded the author while assigned to the genitourinary section of the station hospital at Fort George G Meade, Maryland. His studies were made on inductees found to have a urethral discharge or suspected of having one. Their ages varied from 18 to 43 years with the mean falling between 20 and 30 years. The men were examined on arising in the morning before attending the latrine. The urethra was stripped and the resulting discharge collected on a cotton swab previously moistened with isotonic solution or sodium chloride. This was then mixed in 2 or 3 cc. of isotonic solution or sodium chloride. The organisms were sought by the microscopic examination of the moist films. This study revealed 144 of 926 men positive for *Trichomonas vaginalis* a percentage incidence of 15.5. Separating this group into white and Negro men the percentage incidence was 12 and 16.5 respectively. Of the 926 men examined, 246 were classed as having nonspecific urethritis.

The percentage incidence of non-specific urethritis cases which may be attributable to *Trichomonas vaginalis* was 36.9. The entire group of *Trichomonas vaginalis* positive men was relatively free from all symptoms. A discharge may be noted which is characteristically small in amount thin in consistency and of a dirty white color. Microscopically this discharge showed few epithelial cells and a moderate number of pus cells and trichomonads. Some of the stained smears were similar to vaginal ones from cases of *Trichomonas vaginalis* vaginitis as to number of trichomonads and types of bacteria. The male is the important transmitter of *Trichomonas vaginalis* infection while the female eventually becomes a reservoir of infection.

### Annals of Internal Medicine, Lancaster, Pa.

20 881-1046 (June) 1944

- The Internist at War Glance at the Record H J Morgan—p 831  
Observations on Atypical Pneumonias of Influenza Virus Type E A Brethauer Jr and R T Thompson—p 884  
Primary Atypical Pneumonia Etiology Unknown Average Clinical Picture Based on 37 Original Cases R H Smith—p 899  
Causes of Death in 30 Cases of Rheumatoid Arthritis E F Rosenberg A H Baggenstoss and P S Herch—p 903  
Bacteroides Infections of Central Nervous System W E Smith R E McCall and T J Blake—p 920  
Gallbladder Disease in Elderly Patients J Rosenthal—p 931  
Pancreatic Lithiasis T C Jaleski—p 940  
Nutritional Role of Cholesterol in Human Coronary Arteriosclerosis C F Shaffer—p 948  
Electrocardiographic Studies in Old Age L M Taran and M Kaye—p 954  
Aneurysm of Aorta Rupturing into Right Ventricle W H Harris Jr and H J Schattenberg—p 961  
Source of Sulfathiazole Hematuria Induced in Rabbits G I Trevett and S S Blackman Jr—p 971

**Causes of Death in Rheumatoid Arthritis.**—Rosenberg and his co-workers reviewed data on cases of rheumatoid arthritis in which necropsies were done at the Mayo Clinic. Their aim was to establish the manner in which death occurred. The series comprises 30 cases. The 30 deaths in this series are listed under three headings: (1) those which seemingly resulted from the rheumatoid arthritis itself (10 cases); (2) those which were related to treatment of the arthritis (8 cases); and (3) those from causes unrelated to the arthritis or its treatment (12 cases). An unexpectedly high incidence of rheumatic heart disease was discovered. This condition was present in 16 of the 30 patients. It was often serious and was responsible for the deaths of 7 patients. In the other 9 of the 16 cases in which rheumatic heart disease was present it was no responsible for death. Pulmonary diseases were the most common causes of death in this series. These were of varying character including pneumonia, chronic suppurative pulmonary embolism, fat embolism and massive collapse. Renal lesions were responsible for 3 deaths. Acute pyelonephritis with oliguria was present in 2 cases and fatal amyloid degeneration in 1. Prolonged diarrhea of an unknown origin was responsible for 2 of the deaths. In 5 of the 30 cases death resulted from miscellaneous causes. These included cinchophen hepatitis, carcinoma and violence. In 2 cases the exact manner of death was unknown.

**Cholesterol in Coronary Arteriosclerosis.**—Observations on experimental animals indicated that hypercholesterolemia or nutritional origin is a factor in the development of atherosclerosis. Shaffer attempted to determine the effect of the nutritional factor in persons without manifest endocrine disturbances on the incidence of coronary arteriosclerosis as diagnosed by clinical methods. Records of over 1000 patients with duodenal ulcer were reviewed and 100 patients were selected for study. The 100 patients were in the age period of 45 to 65. 95 of these were men. All of them had been under treatment for an ulcer for not less than five years. The majority had been treated intermittently and periodically for ten to fifteen years. Treatment consisted of the use of milk and cream and antacids, no patient being selected for study who had not relied on the use of milk and cream for the relief of discomfort. It was considered that prolonged intermittent use of milk implied an abnormal increase in cholesterol in the diet and met the requirement of a nutritional factor. Five hundred patients were used as a control. These were also consecutively selected from hospital admissions and were in the same age period, 45 to 65, with the same sex ratio, 475 males and 25 females. None had received peptic ulcer treatment or had any manifest endocrine

disturbance The incidence of coronary arteriosclerosis was identical in the two groups The author concludes that the nutritional role of cholesterol in the genesis of human atherosclerosis is of doubtful significance unless there is an associated endocrinopathy

### Archives of Ophthalmology, Chicago

31 367-452 (May) 1944

- Intracapsular Cataract Extraction Statistical Survey of 500 Consecutive Cases F A Davis—p 367  
 \*Changes in Fundus of Eye in Various Forms of Arterial Hypertension H Elwyn—p 376  
 Nervous Factor in Origin of Simple Glaucoma O Lowenstein and M J Schoenberg—p 384  
 Pupillary Reactions of Seemingly Unaffected Eye in Clinically Unilateral Simple Glaucoma Pupilographic Contributions to Diagnosis of Glaucoma in Iretchnical Stage O Lowenstein and M J Schoenberg—p 392  
 Causes of Impaired Vision in Recently Inducted Soldiers F H Theodore R M Johnson N E Miles and W H Bonser—p 399  
 Conjunctivitis and Keratitis of Allergic Origin Analysis of 54 Cases W O Linhart—p 403  
 Cornea VI Permeability Characteristics of Excised Cornea D G Cogan E O Hirsch and V E Kinsey—p 408  
 Experimental Studies of Ocular Tuberculosis VIII Study of Increased Resistance to Reinoculation After Recovery from Ocular Tuberculosis Shown by Immune Allergic Rabbit A C Woods and E L Burky—p 413  
 Leptotrichosis Conjunctivae A Further Report S R Gifford and A A Day—p 423  
 \*Fundus Oculi in Urologic Diseases Associated with Systemic Hypertension M Cohen—p 42

**Changes in Fundus of Eye in Arterial Hypertension—** Elwyn lists the changes in the fundus of the eye that may be observed during hypertension and says that the pathologic basis of these changes may be described as follows (1) for the edema, transudation of fluid from the capillaries into the substance of the retina (2) for the cotton wool patches, accumulations of precipitated fibrin and serum (3) for the hemorrhages, the presence of blood in the various layers of the retina especially in the inner layers (4) for the sharply defined white spots, deposits of hyalin, mixed with lipids and with lipid containing fat granule cells in the deeper layers of the retina, and for some of the more superficial white spots, a gangliiform swelling of segments of nerve fibers in the nerve fiber layer (5) for the glistening white spots deposits of lipid and lipid containing fat granule cells and for the star shaped figure in the macular area deposits of hyalin and lipids along the fibers of the layer of Henle which radiate from the macula The changes in the retinal vessels are either functional resulting in contraction of the arteries or organic The organic changes are due to either aging of the vessels or to arteriosclerosis Only some cases of hypertension show all of the enumerated changes in others some of them are present and again, in other cases perhaps none at all In uncomplicated essential hypertension in its benign form the retinal arteries are not contracted The changes in the fundus of the eye are only those of aging and sclerosis of the retinal vessels In the later stages occur complications, such as a few hemorrhages, occasionally a few white spots and occlusion of branches of the central vein and artery, occasionally of the main vessels as well A more important complication is temporary arteriospastic retinitis as part of a temporary arterial contraction in many organs In malignant renal sclerosis or the malignant phase of hypertension all the signs of arteriospastic retinitis are apparent that is narrowed arteries edema cotton wool patches hemorrhages hyaline and lipid deposits and the star shaped figure in the macular area Edema of the optic disks is also present Because the malignant stage of essential hypertension is preceded by a long period of high blood pressure, aging and sclerosis of the retinal vessels are also seen, with angular tortuosity of the vessels, irregularity of the lumen and apparent arteriovenous compression The sub-endothelial hyalinosis is also observed in some of the arteries of the retina and gives the vessels their white 'silver wire' appearance In hypertension associated with eclampsia the changes in the fundus of the eye indicate the severity of the arterial contraction As a guide to the advisability of artificial termination of the pregnancy the ocular changes are of less importance than the continuous observation of the state of the blood pressure The arteriospastic retinitis produced in the presence of adrenal or pituitary tumors may resemble that of malignant renal sclerosis

**Fundus Oculi in Urologic Diseases with Hypertension—**Cohen presents a case of pyelonephritis in which examination of the fundus resulted in the diagnosis of neuroretinopathy Nephrectomy and absolute rest of seven months had no beneficial effect on the secondary hypertension The increased lesions in the fundus and the impairment of renal function indicated progression of the underlying disease Sympathectomy improved the renal function and reduced the hypertension as well as the edema of the disk The author also presents a case of hydronephrosis and a case of polycystic kidney In both cases he describes and illustrates the fundus changes The patient with hydronephrosis like the one with pyelonephritis had a neuroretinopathy of inflammatory origin, while in the case of polycystic kidney the diagnosis was bilateral chorioretinal arteriosclerosis of noninflammatory origin The author concludes that urologic disease, accompanied by persistent high blood pressure, usually lead to lesions of the fundus The changes in the fundus are indicative of the severity of the underlying hypertensive vascular disease A report on the examination of the fundus should accompany the records of cases of urologic diseases with persistent hypertension, as it is an additional aid to the diagnosis and prognosis of the disease

### Arizona Medicine, Phoenix

1 101-164 (May-June) 1944

- Medicine on the March D L Mahoney—p 117  
 Air Evacuation P Holbrook—p 119  
 Modern Attitudes in Hemolytic Anemia G Carpenter—p 121  
 History and Causes of Silicosis J W Flynn—p 125  
 Nurses and the War Frieda Braun Erhardt—p 127

### Cancer Research, Baltimore

4 337-400 (June) 1944

- Studies in Cancer VIII Stilbestrol and Certain Steroids in Relation to Tumor Growth Resistance J W Howard L T Janzen and W T Salter—p 337  
 Id Y Oxidative Capacity of Tumors Nelicia Myer—p 345  
 Atypical Cell Proliferation in Anterior Lobe Adenomas of Estradiol Treated Rats H Selye—p 349  
 \*Heterologous Transplantation of Human Cancers II S N Greene and P A Lund—p 352  
 Immunity Reactions Obtained with Transmissible Fowl Tumor (Olson) B R Burmester and C O Prickett—p 364  
 Effect of Aromatic Compounds on Ascorbic Acid Content of Liver in Mice E L Kennaway N M Kennaway and F L Warren—p 367  
 On Role of Thymus Spleen and Gonads in Development of Leukemia in High Leukemia Stock of Mice D P McEndy M C Boon and J Furth—p 377  
 Effect of Adrenalectomy on Susceptibility of Rats to Transplantable Leukemia E Sturm and J B Murphy—p 384

**Heterologous Transplantation of Human Cancers—**Greene and Lund direct attention to the capacity of some human tumors to survive and to grow in the anterior chambers of the eyes of animals The failure of later attempts to transplant benign tumors in this manner suggested that heterotransplantability might be a characteristic property of cancer Accordingly a series of experiments was instituted in an attempt to investigate this suggestion and, although the results to date are confirmatory, the group of benign tumors tested is not yet sufficiently inclusive to allow generalization However, a fairly comprehensive group of cancers has been successfully transplanted Since previous experience had shown the superiority of the guinea pig over the rabbit as a host for human tissue, this species was used exclusively in the present series of experiments A series of 10 human cancers, including a fibrosarcoma of the chest wall, an adenocarcinoma of salivary gland tissue, a chondromyxosarcoma of the larynx, a malignant melanoma, an epidermoid carcinoma of the buccal mucosa, an adenocarcinoma of the urethra, a mammary fibrosarcoma, an undifferentiated carcinoma of the lung, an epidermoid carcinoma of the lung and a chordoma have been successfully transferred to the anterior chamber of the eyes of guinea pigs The transplants grow progressively in the alien host and bear a close histologic resemblance to the original tumors The authors suggest that the ability to grow cancer in lower animals affords an approach to many other problems associated with human tumors After successful primary transplantation the cancer can be carried by serial passage to new generations of animals and subjected to a variety of investigations not permissible during residence in the human host After preliminary growth in the anterior chamber, transfer to other body regions is readily effected

## Gastroenterology, Baltimore

2 307-384 (May) 1944

Volvulus and Incarceration of Stomach in Diaphragmatic Hernia with Complete Acute Gastric Obstruction. Operative Recovery with Obliteration of Hermal Sac by Tamponade. M G Vorbaus and DeW Stetten—p 307

Gastroscopic Picture of Hypertrophic and Atrophic Gastritis. R Schindler—p 316

\*Level of Vitamin B Complex in Diet at Which Detectable Symptoms of Deficiency Occur in Man. E E Foltz, C J Barborka and A C Ivy—p 323

Duodenal Ulcer Developing in Man Following 'Histamine Desensitization'. G McHardy and D C Browne—p 345

\*Further Studies on Effect of Sodium Alkyl Sulfate on Peptic Activity. J B Kirsner and E H Spitzer—p 348

Excretion of Ingested Succinylsulfathiazole in Material Drained from Human Biliary Tract. A H Aaron and R S Hubbard—p 354

**Level of Vitamin B Complex in Diet Deficiency Level**  
—Foltz and his associates present data which indicate the level of thiamine and riboflavin, especially the former, in the diet at which evidence of deficiency was detectable by a decrease in work output and the manifestation of subjective symptoms. Four subjects residing in a hospital and receiving a diet containing measured quantities of thiamine and riboflavin were trained during a period of from nine to twelve months on a bicycle ergometer their work output during a double work period of rapidly exhausting work being recorded. During this control and training period the daily diet contained 0.43 to 0.59 mg of thiamine per thousand calories of food, or a total daily average intake of thiamine of 1.44 mg. The urinary excretion of thiamine and riboflavin and the thiamine blood level was measured in addition the blood pyruvic acid values were determined between seven and eight minutes after the conclusion of the last work period. The subjective complaints of the subjects were recorded as well as leg muscle tenderness and pain. A decrease in appetite occurred within three weeks in all subjects when the thiamine intake was reduced to from 0.33 to 0.38 mg per thousand calories. A decided decrease in appetite and work output and increase in muscle tenderness and pain and desire for sleep, or fatigue, and a deterioration in mental attitude nervous stability and alertness did not occur until four weeks after the thiamine intake had been reduced to from 0.17 to 0.21 mg per thousand calories. The daily thiamine excretion in the urine ranged from 5 to 20 micrograms, but the riboflavin excretion except for a brief period in 1 subject did not fall below 200 micrograms. The signs and symptoms of deficiency disappeared promptly after the addition of a yeast concentrate to the diet which yielded a total daily intake of 155 mg of thiamine and 615 mg of riboflavin. The blood pyruvic acid values remained relatively constant and yielded no unequivocal information. In confirmation of the observations of others, the authors conclude that a daily dietary intake of approximately 0.20 mg per thousand calories of thiamine (a total daily intake of about 0.6 mg) results in signs and symptoms of a dietary deficiency within eight weeks. They think that the minimum daily requirement of thiamine of young men ranges from 0.33 to 0.45 mg per thousand calories.

**Effect of Sodium Alkyl Sulfate on Peptic Activity**  
—Kirsner and Spitzer present additional data concerning the action in vitro of sodium alkyl sulfate on the peptic activity of human gastric juice and of a standard pepsin solution. Peptic activity and  $pH$  were determined by methods previously indicated. The standard pepsin solution was prepared by transferring 625 mg of granula pepsin (Pfannstiehl) to a 500 cc volumetric flask and dissolving in 1/20 molar hydrochloric acid. The solution was then diluted to volume with 1/20 molar hydrochloric acid. The results are expressed in terms of the degree of inhibition of peptic activity as compared with the control values and are recorded in tables. On the basis of their observations the authors arrive at the following conclusions: 1 Sodium alkyl sulfate greatly inhibits in vitro the peptic activity of human gastric juice and of a standard pepsin solution. 2 Optimum inhibition of the peptic activity of a standard pepsin solution at  $pH$  1.70 is obtained with about two and one-half minutes incubation at a temperature of approximately 30 to 38 C. 3 The inhibition of peptic activity by sodium alkyl sulfate is apparently an irreversible effect. 4 Lactic acid in

0.2 cc quantities exerts a slight protective action against the inhibiting effect of sodium alkyl sulfate. Similar amounts of formic, caprylic and acetic acids are ineffective in this respect. 5 Triacetin ethyl butyrate, ethyl caprylate, ethyl laurate, ethyl myristate and sodium taurocholate in 0.1 cc quantities exert a moderate protective action against the inhibiting effect of sodium alkyl sulfate.

## Journal of Allergy, St Louis

15 163-244 (May) 1944

Studies in Hypersensitiveness of Mucous Membrane. A Comparative Study of Skin and Ophthalmic Reactions in Hay Fever Patients Presenting Constitutional Reactions. H Sherman and Berie Baron—p 163

Arthus Type of Sensitivity to Liver Extract. S E Rines and L M Tocantins—p 173

Causes of Hay Fever Occurring Between Cress and Ragweed Seasons. R Chobot and H D Dundy—p 182

Contact Dermatitis Resulting from Manufacture of Synthetic Resins and Methods of Control. S D Lockey—p 188

Disposition of Soldiers with Bronchial Asthma. R I Alford—p 196

Consideration of Some Allergy Problems. I Allergic Dermatitis (Eczema). R A Cooke—p 203

Id II Serologic Studies of Skin Reacting Allergies (Hay Fever Type). R A Cooke—p 212

Volumetric Incidence of Atmospheric Allergens. II Simultaneous Measurements by Volumetric and Gravity Slide Methods. Results with Ragweed Pollen and Alternaria Spores. O C Durham—p 226

Clinical Evaluation of Ascorbic Acid in Treatment of Hay Fever. S Hehld—p 236

## Journal of Lab and Clinical Medicine, St Louis

29 561-672 (June) 1944

Acute and Chronic Toxicity of Isopropyl Alcohol. A J Ichman and H T Chase—p 561

Treatment of Pneumococcal Pneumonia with Sulfamethazine. Preliminary Report. E H Loughlin, R H Bennett and Mary E Flaungin—p 568

Pathologic Changes Produced by Prolonged Administration of Sulfapyrazine and Sulfamethyldiazine (Sulfamerazine) in Kidneys of Rabbits as Compared with Sulfathiazole and Sulfadiazine. I T Callomon with technical assistance of Loraine Groshin Linton—p 574

Diagnosis and Treatment of Epidemic Cerebrospinal Meningitis. J L Bohan and F B Lusk—p 585

Association of Acute Interstitial Pancreatitis with Acute Pneumococcal Mural Endocarditis. A Trusoff and D R Meranze—p 590

Nodal Rhythm and Bundle Branch Block Following Aspirin Hypersensitivity. N Bloom and H Walker—p 595

Transient T Wave Inversion Following Paroxysmal Tachycardia. S L Zimmerman—p 598

\*Cotton Hose as Vehicle for Fungicide in Treatment of Athlete's Foot. Phoebe J Crittenden and Luella S Joiner—p 606

Effect of Heat Produced by Short Wave Diathermy on Activity of Muscle. W W Tuttle and Luella Tutts—p 609

Effect of Artificially Induced Fever on Anaphylactic Shock in Actively Sensitized Guinea Pigs. R A Gottschall, P deKruif, H E Cope and D Laurent in collaboration with W M Simpson, H W Kendall and D L Rose—p 614

Clumping of Erythrocytes in Hayem's Diluting Fluid. Grave Prognostic Sign. E D Angelis and Mildred Huntsinger—p 624

Reactions in Blood and Organs of Dogs on Intravenous Injection of Solution of Hemoglobin. W C Hueper—p 628

Assay of Renin Substrate by Low Temperature Incubation with Renin. L A Sapirstein, Rachael K Reed and F D Southard Jr—p 633

**Cotton Hose Impregnated with Fungicide in Treatment of Ringworm**  
—The good results in the treatment of fungous infections of the hands and feet with copper sulfate driven into the skin by iontophoresis gave Crittenden and Joiner the idea of impregnating cotton hose with a fungicide for use in the treatment of ringworm not only because hose are in close contact with the foot during waking hours but also because treated hose bring the fungicide in contact with the shoe lining, which frequently is a source of reinfection. The experimental work was begun using solution of copper sulfate for impregnating the cotton hose. Later copper acetate was substituted for copper sulfate in cases not responding satisfactorily. Clean dry cotton socks of good grade were soaked for thirty minutes in the solution of copper salts at 40 C. After drying the hose were ready for wear. The subjects cooperating in the study were 17 men and 1 woman each of whom was afflicted with ringworm. They wore cotton hose impregnated with copper sulfate or acetate for periods of from one and one-half to ten months. The skin of 6 appeared normal, 11 showed improvement and 1 was worse at the end of the experiment. The acetate seemed to be more beneficial than the sulfate.

## New England Journal of Medicine, Boston

230 595-624 (May 18) 1944

- History of Discovery and Isolation of Female Sex Hormones G J Newerla —p 595  
Sweat as Culture Medium for Fungi T Cornbleet and Esther Meyer —p 604  
Gynecology: Carcinoma of Cervix J V Meigs —p 607

230 625-656 (May 25) 1944

- Surgical Treatment of Esophageal Atresia and Tracheoesophageal Fistulas W E Ladd —p 626  
W E Ladd —p 626  
\*Hereditary Hemorrhagic Telangiectasia: Analysis of Capillary Heredopathies K Singer and W Q Wolfson —p 637  
Endoscopy E B Benedict —p 642

**Hereditary Hemorrhagic Telangiectasia** —Singer and Wolfson report a family in which typical lesions of hereditary hemorrhagic telangiectasia were present together with a positive tourniquet test. The first patient was a woman aged 80 who came under observation because of repeated spontaneous epistaxis for a period of forty years. Investigation revealed a strong hereditary tendency to telangiectasia. The woman's father had had telangiectasia and epistaxis. Reports are available on 66 members of the family, 16 of whom present telangiectasia. Telangiectasia was present in the first generation in one line but not in the second or third, and it reappeared in the fourth generation. A diagram of the family tree shows that the 2 cases described by the authors concerned nieces of the woman mentioned in the first case report. In comparing case 2 with case 1 it was noted that the tendency to bleed from the telangiectases and the tendency to easy bruising were more severe in the former. Epistaxis was more severe and the tourniquet test was more strongly positive in the latter. In case 3 the tendency to easy bruising was even more prominent and the tourniquet test was the most strongly positive of the 3 cases. A positive tourniquet test in a syndrome in which a negative tourniquet test is ordinarily considered a diagnostic criterion is noteworthy. Although only 3 members of the family could be examined the occurrence of the unusual combination of a positive tourniquet test with telangiectasia in all of them makes it likely that both abnormal capillary manifestations were present on a hereditary basis. Whether the association of a positive tourniquet test with hereditary telangiectasia is fortuitous or is indicative of a more fundamental capillary disturbance presents a problem that necessitates analysis of the clinical pathology of capillary heredopathies. An abnormal contractility response of a capillary to injury as expressed by a prolonged bleeding time and an abnormal capillary fragility to pressure as seen by a positive tourniquet test represent independent variables that may be singly or simultaneously involved. Pseudohemophilia is characterized by a prolonged bleeding time but a negative tourniquet test, and hereditary purpura simplex by a normal bleeding time but a positive tourniquet test. Combinations of the two types exist. Hereditary hemorrhagic telangiectasia is a localized gross abnormality of capillaries usually not accompanied by systemic capillary dysfunction. The family reported here represents such a combination of localized gross deviation of capillary structure and increased capillary fragility. The diagnosis of hereditary capillary syndromes should depend on physiologic analysis and not on rigidly demarcated types of disorders.

230 657-684 (June 1) 1944

- Thiouracil in Treatment of Thyrotoxicosis: Report of 72 Cases R H Williams and H M Clute —p 657  
Fetus in Massachusetts: Report of 2 Cases G E Morris —p 667  
Endoscopy (concluded) E B Benedict —p 669

**Thiouracil in Treatment of Thyrotoxicosis** —Williams and Clute used thiouracil in the treatment of 72 patients with thyrotoxicosis. The 59 patients who had not had iodide therapy for one month or more were divided into three groups according to the basal metabolic rate. The decline in the basal rate was more rapid in the severe cases (basal metabolic rate +55 to 89 per cent) than in the others but required an average of five weeks to become normal, whereas in the moderately severe cases (+35 to 55 per cent) only four weeks was necessary and in the mild ones (+15 to 35 per cent) only three weeks. The lowering of the basal metabolic rate of patients who had taken iodide until the thiouracil treatment was started was slower

All patients, however, regardless of the type of thyrotoxicity or of previous treatment, eventually attained a normal metabolic rate and a remission of the disorder. Thirty-five patients were treated with thiouracil for more than four months and 16 for more than six months. Patients maintained a normal basal metabolism, though in 4 who discontinued therapy a relapse occurred, but a remission was again obtained with thiouracil treatment. Although a transient increase in the size of the thyroid occurred in several cases, in the majority a decrease in size resulted. A few patients with malignant exophthalmos experienced an exacerbation in this process under thiouracil therapy, but with a decrease in the dosage of thiouracil and the use of desiccated thyroid an improvement resulted. One patient developed agranulocytosis, other complications consisted of a morbilliform rash, urticaria, allergic arthritis, edema of the legs, vomiting and enlargement of the submaxillary salivary glands. In the first 30 patients treated the initial daily dosage of thiouracil was usually 1 Gm, but with subsequent patients it was 0.6 Gm daily or 0.4 Gm. In most cases, however, the dose was reduced to 0.2 Gm daily over a period of about six weeks. Single doses usually consisted of 0.2 Gm, although they were sometimes only 0.1 Gm. When several doses were given daily they were spaced evenly. With the range of dosage employed, the drug has not been found to accumulate appreciably in the blood in spite of the presence of severe disease of the kidneys and liver. For reasons other than an unsatisfactory response in the toxic manifestations of the disease, 22 patients were subjected to thyroidectomy. The operative and postoperative course was relatively smooth, particularly in the patients treated with thiouracil for three weeks or longer preceding operation. A chemical analysis of these glands showed a great variation in the amount of drug present. There was no correlation of the therapeutic response with the level of the drug in the gland. The pathologic alterations in the thyroid gland resulting from thiouracil treatment are quite unlike the changes found after iodide therapy.

## United States Naval Med Bulletin, Washington, D C

42 1233-1476 (June) 1944 Partial Index

- \*Dengue: Analysis of Clinical Syndrome at South Pacific Advance Base F H Stewart —p 1233  
Eosinophilia in South Pacific H C Allen —p 1241  
Function of Medical Officer in Battle Zones L K Ferguson —p 1269  
Concentrations of Sulfonamides in Wound Exudates Following Oral Administration: Experimental Study W W Sager and R H Pudenz —p 1275  
\*Advantages and Limitations of Intravenous Sodium Sulfathiazole G Miles —p 1283  
Laboratory and Field Studies of Glycols and Floor Oiling in Control of Air Borne Bacteria A P Krueger and others —p 1288  
\*Sprained Ankles J M Wright L O Parker and T R Lehan —p 1309  
Arthrotomy of Knee: Review of 50 Cases E M Anderson —p 1314  
Myotomy in Repair of Divided Flexor Tendons L Blum —p 1317  
Reconstruction of External Ear: Conservation of Avulsed Portion P W Greeley —p 1323  
Marsupialization of Pilonidal Cysts R J Coffey —p 1326  
Pilonidal Cyst Removal by Transverse Incision—Preliminary Report F H Johnson and S J Gorham —p 1330  
Acute Appendicitis Afloat: Clinical Study C N Cooper —p 1334  
Nonspecific Infective Granuloma of Appendix: Review of Literature, with Case Report J I Anton and M Wentrob —p 1337  
Lesions of Male Breast H Eichert —p 1350  
Postconcussion Syndrome: Pathogenesis and Prophylaxis J H Siris —p 1357  
Corneal Graft or Tattooing with Iridectomy? With Brief Report on Corneal Studies After Electrocution A A Knapp —p 1366  
Postvaccinal (Yellow Fever) Jaundice: Report of Fatal Case J A deVeer and M J Matzner —p 1381

**Dengue at a South Pacific Advance Base** —Stewart says that over 25 per cent of the military population of an island contracted dengue. There were no deaths, but the disease caused 80,000 sick days. Mosquitoes of the *Aedes* group were found in abundance on the island. Frontal headache and pain in or behind the eyes and pain low in the back are characteristic early symptoms. Chilly sensations make the sufferer use a blanket on a hot day; the chill is a true teeth-chattering chill which lasts several minutes. There may be aches and pains in or about several joints and in the muscles of the legs, arms and neck. A chain of pea size lymph nodes is felt at the base of the neck over the posterior scalenus muscles. These nodes



are not tender, vary in size and are not found in the suboccipital region as is the case in German measles. The pulse is moderately rapid during the first day, but later it becomes slow and in spite of high fever there is bradycardia. The temperature curve and the discomfort run parallel, but the pulse remains slow. During the first day or two the fever is high, but often on about the third day the temperature falls to a normal level for from several hours to two days. During this lull the patient feels better. Usually on the fourth or fifth day the fever returns. This second spike of fever is often higher than the first. Recovery is by crisis. Other types of temperature curves occur, but regardless of the type of curve the fever will not last beyond seven days and more often is over by the fifth day. This is a disease of one week's duration. The various skin manifestations are classified as rash A and rash B. Dengue must be differentiated from infectious jaundice, German measles, scarlet fever, mononucleosis, malaria, bacillary dysentery, appendicitis, mumps, meningitis, influenza, virus pneumonia and catarrhal fever. Treatment of dengue is entirely symptomatic. Reassurance, rest in bed and sedatives are important. Acetylsalicylic acid seems to control the discomfort but has the disadvantage of causing excessive sweating. Phenobarbital  $1\frac{1}{2}$  grains (0.1 Gm) at bedtime is often not sufficient. Codeine  $\frac{1}{2}$  grain (32 mg) combined with acetylsalicylic acid is required in most cases. For several days after discharge there is a feeling of fatigue and inability to carry on usual duty. This rarely lasts longer than a week. Despondency and irritability are often accompanying symptoms but almost never last longer than two weeks. The incubation period is as short as five days. No proved recurrences have been observed in a period of six months.

**Intravenous Sodium Sulfathiazole**—Miles points out that conjugation of sulfathiazole to the acetylated form occurs chiefly in the liver. Taken by mouth, the drug is absorbed into the portal circulation and passes through the liver in its entirety, exposing it to acetylation before it reaches the general circulation. Administered intravenously, little of the drug reaches the liver until it has traversed the peripheral circuit, thereby exposing the tissues to the peak concentration of the drug in its original form. The author reviews observations on patients treated intravenously with sodium sulfathiazole. The drug was administered by syringe in from 5 to 20 per cent solution, the maximum dose was 3 Gm. Local tissue irritation was not noted. The daily urinary output was measured and in those who were given the drug only intravenously was examined microscopically for blood and crystals on one or more occasions. In previous observations, levels of approximately 20 mg per hundred cubic centimeters of blood were obtained immediately after the intravenous administration of 3 Gm of sodium sulfathiazole, falling to less than 1 mg at the end of twenty-four hours. Observations on 46 patients who received single or multiple doses of sulfathiazole intravenously, some of whom also received sulfonamides orally, are recorded in tables. Hematuria without crystalluria occurred in 1 instance, suggesting a direct toxic effect of the drug on the kidneys. Vomiting occurred during or shortly after the administration of the drug in 3 instances. It was very likely due to the speed with which the solution was injected. Headache occurred in 1 subject who had noted the same symptom when the drug was administered orally. One patient who displayed intolerance to the drug when administered orally, as indicated by fever and vomiting, tolerated the drug intravenously without the slightest reaction. Crystalluria was not noted in any instance. There were 15 in which the drug achieved good clinical results with a total dose smaller than would be expected to be effective orally. In 9 cases the drug achieved good clinical results when administered intravenously after sulfathiazole had apparently failed when given by mouth. The drug was ineffective in 5 cases, and there were 16 cases in which the results were equivocal. The author does not deprecate the use of sulfonamides orally or locally. He urges that in those diseases and injuries in which there is a time race with infection the drug should be used intravenously initially. As in all sulfonamide therapy, regardless of the route by which the drug is administered the fluid intake must be maintained, the urinary output must be measured and recorded, the blood picture must be studied if the drug is continued for more than forty-eight hours.

**Sprained Ankles**—Wright and his associates say that in an injured ankle is x-rayed and no fracture or dislocation found a diagnosis of sprain is usually made. They show that the pathologic changes in sprained ankles are of two types: (a) complete ligamentous rupture, (b) hematoma with slight ligamentous damage. The differential diagnosis can be made only by careful physical examination or by anteroposterior x-ray inspection during manipulation under anesthesia. The best treatment for complete ligamentous rupture is the application of a walking cast for at least six weeks. Reconstructive surgery may be required in chronic cases. The essential treatment for the simple sprained ankle without serious ligamentous injury is (a) early pressure bandage, (b) limitation of the hematoma and swelling by procaine injection with massage and early use, (c) contrast baths or intermittent traction and massage for persistent swelling and stiffness.

**Postvaccinal (Yellow Fever) Jaundice**—An increased incidence of jaundice was observed by deVeer and Matzner at a naval hospital in the spring of 1942. Thirty patients with jaundice were studied within a period of two months. All but 1 recovered and, with this exception, presented a clinical picture indistinguishable from the commonly termed "acute catarrhal" or "infective jaundice" of unknown etiology. The patient who died was a seaman aged 20 who was admitted to the hospital with the complaint of anorexia, vomiting, jaundice, malaise and abdominal discomfort. His past history was irrelevant. About four months prior to the onset of illness he had been immunized with yellow fever vaccine. He appeared to improve during the first few days of hospitalization under a regimen similar to that employed for other icteric patients, but then suddenly, without warning, he became very drowsy and unresponsive to questioning. The jaundice rapidly increased, the icterus index rising to 250. There was no further response to treatment, and the patient's condition became progressively more grave until he died on the eighteenth day of hospitalization (the twenty-sixth day of illness). The necropsy revealed an acute yellow atrophy of the liver in a stage at which both advanced necrosis and regeneration were present, a picture apparently identical in type with that reported in the recent outbreak of jaundice in the Army. The authors review the probable relationship of jaundice to yellow fever immunization by vaccine containing human serum. The risk of postvaccinal (yellow fever) jaundice appears to have been removed by the elimination of the human serum component formerly employed in the preparation of yellow fever vaccine. In the event of future outbreak of jaundice, it is recommended that any possible relationship to the administration of yellow fever vaccine, whole blood, plasma or related biologic products be investigated in the hope of discovering the presence of some as yet unrecognizable icterogenic agent.

## Western J Surg, Obst & Gynecology, Portland, Ore 52 245-286 (June) 1944

- Formation of Artificial Vagina: Experiences with Three Different Corrective Procedures. H. K. Marshall—p. 245  
Final Domicile of Appendicular Stump Following Invagination with Purse String Suture. W. M. Hayes—p. 256  
Mammary Poot or Mycetoma: Report of 2 Cases. A. Gottlieb—p. 264  
Accelerated Postpartum Involution of Uterus with Vitamin B Complex Therapy. L. H. Biskind and M. S. Biskind—p. 266  
Use of Sodium Pentothal and Local Anesthesia in Cesarean Section. R. D. Dunn—p. 271  
Factors Influencing Lactation. J. C. Brougher—p. 274  
Emergency Maternity and Infant Care Program: Administration in State of Oregon. J. F. Belz—p. 279

## West Virginia Medical Journal, Charleston 40 169-208 (June) 1944

- Shotgun Wounds of Abdomen. W. M. Warman—p. 169  
Direct Blood Transfusion in Modern Surgical Practice. C. D. Hershey—p. 173  
Ambulatory Treatment for Sprained Ankles. J. T. Webber—p. 176  
Deafness. F. V. Gammage—p. 179

## 40 209-244 (July) 1944

- Beyond the Blue Horizon. R. J. Reed Jr.—p. 209  
Newer Trends in Management of Upper Respiratory Tract Infections. A. R. Hollender—p. 215  
Growing Children—Our Responsibility. A. E. Amick—p. 221  
Doctor-Hospital Partnership in Public Relations. C. F. Runyon and R. J. Wilkin on Jr.—p. 231



## FOREIGN

An asterisk (\*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

## British Medical Journal, London

1 643-676 (May 13) 1944

- National Health Service. Report of Council of B. M. A.—p. 643  
 Head Injuries Involving Air Sinuses. D. McKenzie—p. 652  
 \*Use of Crude Penicillium Filtrate for Local Treatment. J. M. Alston—p. 654  
 Autolysed Yeast in Treatment of Nutritional Microcytic Anemia. G. R. Sippe—p. 656  
 Famine Edema in Prisoners of War. D. S. Stevenson—p. 658

1 677-708 (May 20) 1944

- Course of Death Rate from Peptic Ulcer in Great Britain 1912-1938. H. Tidy—p. 677  
 Treatment of Gas Gangrene. I. D. MacLennan and M. G. MacFarlane—p. 683  
 Fracture of Carpal Scaphoid. J. M. Robertson and R. D. Wilkins—p. 685  
 Epidemic Infective Hepatitis in Gloucestershire. J. S. Cookson—p. 687  
 Experiments on Scabies Prophylaxis. K. Mellanby—p. 689

**Crude Penicillium Filtrate for Local Treatment.**—Alston reports results with local use of untreated filtrate of penicillium in 24 patients. The medium in which *Penicillium notatum* was grown contained 3 Gm. of sodium nitrate, 0.5 Gm. of potassium chloride, 0.5 Gm. of magnesium sulfate, 0.01 Gm. of ferrous sulfate, 6.5 Gm. of potassium dihydrogen phosphate, 33.5 Gm. of disodium hydrogen phosphate, 40 Gm. of glucose and distilled water to 1000 Gm. This is sterilized in free steam for one and one half hours in 200 cc. amounts in 1 liter conical flasks. 5 cc. of a 10 per cent solution of sterile calcium carbonate is added to every 200 cc. of medium before inoculating. The medium should form a depth of not more than 1.5 to 2 cm. in order to expose to air a large surface relative to the volume. Incubation is at a temperature of 24 C. for eight to ten days. The mold forms a thick firm pellicle, and the culture medium below is clear. The fluid medium, after growth, is passed through a Seitz filter and is tested to make sure that the reaction is nearly neutral and that less than 0.1 per cent glucose is left. The filtrate is applied to superficial lesions by gauze soaked in it, by a cream or by portions of the recently grown mold after the fluid medium had been drained away from it. Cavities in bone which are accessible to the surface are packed lightly with gauze soaked in the filtrate and sealed. Deep sinuses in muscle and subcutaneous tissues are treated with indwelling catheters, which are carefully shortened as the sinuses heal from the bottom. Cavities and sinuses are washed out with saline solution before fresh filtrate is left in them. In 19 of the 24 patients treated the filtrate has been successful, in the other 5 success was partial, doubtful or absent. The author concludes that crude penicillium filtrate containing 4 to 10 units of penicillin per cubic centimeter may be used successfully for treating many acute and chronic inflammations by local application.

1 709-738 (May 27) 1944

- With the Eighth Army in the Field. C. Donald—p. 709  
 Sensitivity to Liver Extract. J. G. McSorley and L. S. P. Davidson—p. 714  
 Experimental Traumatic Shock. J. Charnley—p. 716  
 \*Dicumarin in Treatment of Puerperal Thrombosis. A. Davis and Margaret Porter—p. 718  
 \*Effect of Nicotinic Acid on Postoperative Vomiting. W. W. Mushin and Helen M. Wood—p. 719

**Dicumarol in Treatment of Puerperal Thrombosis.**—Davis and Porter report results of an investigation into the possible value of the anticoagulant principle dicumarol in obstetrics. In all, 43 cases of postpartum thrombosis were treated. They were of every degree of severity, from small saphenous lesions to bilateral femoral blockage. The cases varied so widely in severity that it was impossible to find an exact parallel series for purposes of control, but comparison with the same number of untreated cases showed a great improvement after dicumarol. There were slight but definite amelioration of pain, a fairly rapid diminution of the edema and a shortened average stay in hospital—nineteen as against twenty-eight days. In addition the incidence of pulmonary embolism was lowered from 9 to 4 per cent and in only 1 case was this of any degree of severity. The drug was well tolerated, and there were no untoward complications and no suggestion of spontaneous

hemorrhage. The authors conclude that dicumarol is of value in the particular type of patient they investigated, and in these cases of established thrombosis it would appear to be fairly safe. The freedom from hemorrhagic complications may be due to the normal increase in the coagulability of the blood during the puerperium.

**Nicotinic Acid in Postoperative Vomiting.**—Mushin and Wood studied the effect of nicotinic acid on postoperative vomiting in two groups of patients. In one group it was given both preoperatively and postoperatively, and in the other as postoperative treatment alone. The doses were 50 mg. two-hourly. A control series was studied. In all three groups as many factors as possible were kept constant. No statistically significant effect on the incidence of postoperative vomiting was observed as a result of administering nicotinic acid.

## Lancet, London

1 587-618 (May 6) 1944

- State of Men Severely Wounded in Battle. W. C. Wilson—p. 587  
 \*Sulfathiazole-Proflavine Powder in Wounds. J. McIntosh, F. R. Selbie, R. V. Hudson, T. Parkes, D. H. Patey, H. L. McMullen and G. C. L. Pile—p. 591  
 \*Sulfathiazole-Proflavine Powder in War Wounds. G. Y. Feggetter—p. 593  
 Control of Sepsis in Hospital in North Africa with Observations on Sulfathiazole-Proflavine Powder in Surgical Wounds. P. B. Ascroft—p. 594  
 Carcinoma of Prostate Treated with Stilbestrol. J. D. Fergusson—p. 595  
 Pentothal Anesthesia in Bronchoscopy. L. Fatti and H. J. V. Morton—p. 597  
 Delayed Rupture of Spleen. H. Bell and G. H. Steele—p. 598

**Sulfathiazole-Proflavine Powder in Wounds.**—According to McIntosh and his collaborators data from experiments, both in vitro and in vivo, indicate that the most effective antiseptic mixture now available for wound disinfection is a powder consisting of 1 part of proflavine and 99 parts of sulfathiazole. In addition to its powerful action on pyogenic cocci this mixture has a high grade of activity against *Clostridium welchii*, *Clostridium oedematis* and *Clostridium septicum*, the three most frequent causal organisms of gas gangrene. The proflavine enhances the antistaphylococcus action of the sulfathiazole and at the same time affords protection against gram negative organisms. It has also the advantage of being active in serum. The value of the powder could be increased by addition of that ideal wound antiseptic penicillin. In contaminated wounds a thorough surgical toilet must be done before the powder is dusted over the surface of the wound, preferably by insufflating with a blower. The amount used should be just sufficient to give a slight coating on the surface—equivalent to 0.5 Gm. to 4 square inches. Good results have been obtained by treating on alternate days. Wounds usually become dry in four to five days, coinciding with the suppression of the infection. The part of this paper which reviews the clinical application of the sulfathiazole-proflavine powder presents comments on results obtained by Hudson and Parkes, by Patey and McMullen and by Pile. These reports demonstrate the preventive and curative action of the powder in wounds.

**Sulfathiazole-Proflavine Powder in War Wounds.**—Feggetter describes the results of treating a variety of war wounds with sulfathiazole-proflavine powder. In fresh wounds thorough surgical treatment was carried out, the powder was insufflated and most wounds were sutured completely, some had a small drainage tube inserted into potential dead space for four to seven days. The sutured wounds healed by first intention. In the others a small area of granulation remained around the site of the drainage tube which healed within a week. Older wounds in patients who arrived without preliminary treatment, two to three days after wounding, were already infected and the surgical treatment here consisted of incision of skin, fascia and muscle, removal of foreign matter and insufflation of sulfathiazole-proflavine powder, the wounds were left open without sutures, and large wounds with or without fractures were encased in plaster. These wounds healed well. There were 8 patients with gas gangrene. Of 4 treated elsewhere 3 had amputation and died and 1 recovered. The other 4 were treated by incision, excision of muscle and insufflation of sulfathiazole-proflavine powder; of these, 3 healed locally and 1 required amputation later for sepsis, the gas gangrene being controlled.

In 50 wounds treated elsewhere the indication for operation was spreading inflammation or persistent suppuration. Following enlarging of the entry wound, removal of foreign bodies and debris, and insufflation of sulfathiazole-proflavine powder, the wound was left open. In all 50 cases the spread of infection was arrested and the wounds quickly healed. In 7 amputations, in some of which the amputation site had to be approached through edematous or frankly purulent muscle flaps were fashioned, sulfathiazole-proflavine powder was insufflated and wounds were loosely sutured with or without tube drainage, these wounds healed well. Four second degree burns of moderate extent have been treated with sulfathiazole-proflavine powder. There seemed to be much less local infection than in the cases treated with other powders and cream. Complete bacteriologic investigations could not be arranged during the treatment but sulfathiazole-proflavine powder is certainly the best wound antiseptic that the author used. The local use of sulfathiazole-proflavine powder should enable many wounds to be sutured with safety.

1 619-648 (May 13) 1944

Reflection on Reform in Medical Education T Lewis—p 619

Injuries to Main Bile Ducts G G Turner—p 621

\*Homologous Serum Jaundice: Transmission Experiments with Human Volunteers F O MacCallum and D J Bauer—p 622

Marfan's and Marfan's Pronephritis G A G Mitchell W S Rees and C N Robinson—p 627

Two Cases of Leprosy in London H Hyber—p 629

Nomenclature of Malnutrition L Nichols—p 630

Pharmacology of Thiorurea D Campbell F W Landgrebe and T N Morgan—p 630

**Homologous Serum Jaundice**—MacCallum and Bauer describe attempts to isolate an icterogenic agent from cases of serum jaundice and from a known icterogenic serum obtained from a blood transfusion depot. Experiments were made on animals and on human volunteers. Although the number of subjects used in each group was small, the following tentative conclusions can be drawn: 1 Serum from a presumed case of homologous serum jaundice was icterogenic on the seventh day after the onset of jaundice but not fifty-nine and one hundred and thirty-four days later. 2 A batch of yellow fever vaccine containing pooled human serum obtained from a blood bank produced jaundice in from 30 to 40 per cent of those inoculated with it. Inoculation of the same serum by itself produced hepatitis and jaundice in a similar percentage of volunteers. 3 The icterogenic agent survived heating at 56 C for one hour and was still very active after storage for fourteen months in the dried state. 4 A number of those inoculated with icterogenic serums showed evidence of liver damage of insufficient severity to produce jaundice. 5 Results obtained on 2 volunteers are not inconsistent with the view that the icterogenic agent present in the blood in homologous serum jaundice is capable of multiplying in tissue culture.

### Medical Journal of Australia, Sydney

1 309-332 (April 8) 1944

The Tongue in Medical Diagnosis D Anderson—p 309

Plea for Standardization of Lepromin Test J W Fielding and R G Cochrane—p 311

Treatment During Convalescence After Head Injury J E Hughes—p 316

Brief Report on Value of Selective Medium of Wilson and Blair for Isolation of Dysentery Bacilli T S Gregory—p 319

Meningitis Due to Haemophilus Influenzae: Review of Treatment A G Nicholson—p 320

1 381-404 (April 29) 1944

Use of Thiorurea in Thyrotoxicosis: Report of 8 Cases F I Ritchie and B L Geddes—p 381

Cerebrospinal Fluid Protein and Intracranial Tumors G Phillips and G Goswell—p 390

Lead Content of Normal Urine L A Meston—p 392

1 405-428 (May 6) 1944

Preventive Medicine: Point of View G C Willcocks—p 405

\*Further Observations on Congenital Defects in Infants Following Infectious Diseases During Pregnancy with Special Reference to Rubella C Swan A L Tostevin Helen Mayo and G H B Black—p 409

Training of Medical Officers for War M A Rees—p 413

**Congenital Defects in Infants Following Rubella During Pregnancy**—Maternal rubella in the early months of pregnancy may be followed by congenital defects (cataract, heart disease, deaf mutism, microcephaly and glomerular sclerosis) in the infants born subsequently. This had been pointed out by Swan and his collaborators in the *Medical Journal of Australia*

(2 201 [Sept. 11] 1943 abstr THE JOURNAL Dec 25 1943, p 1144). Since then the authors have had the opportunity of studying a further series of cases. They report 12 cases of rubella (German measles) during pregnancy. Ten of the subsequently born infants exhibited congenital defects such as cataract, deaf-mutism, heart disease, microcephaly and obliteration of the bile ducts. All of the 10 mothers with congenitally defective children had contracted rubella within the first three months of pregnancy. The mother of an infant with congenital cataract, heart disease and microcephaly was unaware of any disease during pregnancy. One woman who had mumps and rubella at a late stage of pregnancy gave birth to a normal infant. Every effort should be made to acquaint the general public with the possibility that maternal rubella early in pregnancy may be followed by congenital abnormalities in the infant born subsequently. Their reasons are as follows: 1 German measles is looked on as such a mild disease that many patients fail to see a medical attendant. 2 If they were aware of the danger pregnant women would take every care to avoid contact with patients suffering from rubella. 3 If the disease was prevalent, such women could report to their medical attendants with a view to receiving prophylactic inoculations of serum.

### Proceedings of Royal Society of Medicine, London

37 241-308 (April) 1944

Lavoisier and History of Respiration E A Underwood—p 247

Audibility of Radio Voice T B Jolson—p 263

Clinical Observations on Acute Catarrhal Otitis Media G D Hoople and I H Blaisdell—p 270

Relative Importance of Periosteum and Endosteum in Bone Healing and Relationship of Vitamin C to Their Activities G H Bourne—p 275

Ossifying Chondroma Replacing Infrapatellar Pad of Fat P B Roth—p 279

Posterior Dislocations of Hip Associated with Fracture G Hammond—p 281

Hypermobile Ankle J G Bonnin—p 282

### Schweizerische medizinische Wochenschrift, Basel

73 865-888 (July 10) 1943 Partial Index

\*Dextrose Tolerance Test After Cranial Trauma H Roth—p 865

Studies on Sympathetic Nervous System in Persons who Stutter R Luchsinger—p 868

Observations on Breast Fed Infants I A Alntar—p 870

Perlingual Administration of Ovarian Hormones H von Wattenwyl—p 871

Vitamins and Conserved Milk M von der Muhl—p 874

Clinical Aspects and Therapy of B Hypovitaminosis—A Kappert—p 874

**Dextrose Tolerance Test After Cranial Trauma**—Roth performed sugar tolerance tests on 45 patients with cranial injuries. The usual number of tests made was three or four. All patients with commotio cerebri or with injuries associated with it showed elevated values in dextrose tolerance tests. This disturbance in the carbohydrate metabolism is manifestation of an impairment of the corresponding sympathetic centers. A normal blood sugar tolerance curve, provided the tolerance test is made not later than the third day, rules out a traumatic lesion of the brain. The degree of elevation of the blood sugar values and of the derangement of the blood sugar curve does not parallel the severity of the cerebral lesion. Repetition of tolerance tests at intervals of from four to eight days are more valuable than a single test. The blood sugar curve becomes normalized the sooner, the milder the cerebral commotion. The severity of the commotion is indicated not by the maximal height of the curve but rather by the time that elapses before normalization of the curve. The tolerance test is a more precise indicator of the disturbances caused by the commotio cerebri than are the complaints of the patient. In the majority of cases the blood sugar curve still reveals elevated sugar values when the subjective symptoms have already subsided. In only 2 cases did subjective complaints persist after the sugar curve was normal again, and 1 of the patients was a psychopath. The tolerance curve is positive even in mild cases in which subjective symptoms are absent or obscure. Thus it is of value when the history is inaccurate or unreliable, and even more important from the prognostic and therapeutic points of view. The author allows the patients to get up as soon as the tolerance test curve is normal unless other symptoms contraindicate it. It is no longer necessary to keep patients in bed for three or four weeks. Another advantage is that the test is

objective and an aid in possible medicolegal questions. It is a valuable addition to the classic symptoms but should not be overemphasized to their detriment.

### 73 913-936 (July 24) 1943

Effects of Sounds Particularly Damaging Effects of Sounds on Ear L. Ruedi—p 913

Late Results After Surgical Treatment of Fractures of Leg H. G. Bodmer—p 917

Degenerative and Regenerative Action of Sex Hormones on Gonads and Hypophysis of Mature Male Albino Rats C. A. Joel—p 921

Pneumococcal Meningitis and Chemotherapy P. Silberschmidt—p 922

\*Plasmatic Activator of Prothrombin R. Feissly—p 925

**Plasmatic Activator of Prothrombin**—Feissly says that if a clear plasma is prepared by centrifugation from blood that has been rendered noncoagulable and if then the fibrinogen is extracted, a plasma rest is obtained which contains a thrombin forming system. Plasma rests are capable of producing an active thrombin. The author is concerned with the question: Is the plasmatic activator of prothrombin a protease or does the plasma contain an autonomous thermolabile thrombokinase, independent of the plasmatic proteases which are also thermolabile? He presents records of the results of experiments which were carried out to solve this problem. These lead him to the conclusions that (1) an autonomous plasmatic thrombokinase exists, (2) this thrombokinase does not possess proteolytic properties and (3) the plasmatic proteases cannot be considered as activators of prothrombin. The author lists observations which demonstrate the independence of the proteases and of the plasmatic thrombokinase. The proteases are inactivated at 56°C, but a temperature of 60°C is necessary to inactivate the plasmatic thrombokinase. An "absorbed plasma," free of proteases but with the thrombokinase function still preserved, can be obtained by submitting an ovalated plasma to the action of certain mineral absorbents. A solution containing prothrombin and the proteases of plasma can be obtained by elution of the precipitated absorbent. These and other observations recounted in this report seem to oppose the notion according to which a proteolytic enzyme must be considered as the plasmatic activator of prothrombin. On the contrary, this activator appears to be a substance devoid of proteolytic properties and probably a thermolabile phosphatidoproteic link.

### Archivos de Medicina Infantil, Havana

#### 13 3-70 (Jan-Feb-March) 1944 Partial Index

\*Rheumatic Fever in Cuban Children R. Perez de los Reyes H. de la Torre J. Labourdette and J. A. Junco—p 3

Typhoid Osteitis Case J. G. Cabrera Calderin R. Pereiras and J. M. Labourdette Scull—p 40

**Rheumatic Fever in Cuban Children**—Perez de los Reyes and his collaborators reviewed the clinical electrocardiographic and orthographic records of 100 children with rheumatic fever observed in the Department of Heart Diseases of a Municipal Hospital for Children in Havana. The incidence was 30 per cent higher in girls than in boys. It was greater for children between the ages of 5 and 11 than in either younger or older children. The disease was rare in children belonging to well-to-do families. It was more frequent in white children than in either mulattos or Negroes. The hyperacute form with death within one or two weeks was observed in 2 girls. The acute form of the disease was observed in 10 boys and 3 girls, the subacute form in 4 boys and 4 girls and the chronic form in 33 boys and 30 girls. Myocarditis occurred in 28 boys and 34 girls, pancarditis in 2 boys and 4 girls, valvulitis in 43 boys and 47 girls and pericarditis in 1 boy and 2 girls. The electrocardiogram was normal in only 8 cases (in 5 boys and 3 girls). There were the following electrocardiographic changes: sinus arrhythmia 6 per cent, complete arrhythmia 1 per cent, right deviation of the axis 20 per cent, left deviation of the axis 6 per cent, a P wave either widened or high 9 per cent, a P wave either bifid or biphasic 23 per cent, an increased PR space 20 per cent, a "notched 2-R-5 complex" 15 per cent, bundle-branch heart block 1 per cent, an unlevelled ST space 2 per cent, a low voltage T wave 18 per cent, a negative T wave in two leads 7 per cent and auriculoventricular dissociation 3 per cent. Orthodiagram examinations were carried out on 32 boys and 32 girls. The size and form of the cardiac area was normal in 3 boys. It was greatly increased in 14 boys and 5 girls, moderately increased in 13 boys and in 17 girls and

slightly increased in 2 boys and 10 girls. Half the number of patients in each group had anemia of either the first or the second degree. In none of the cases had a tonsillectomy been previously performed. Sixteen boys and 18 girls suffered with chronic tonsillitis and 3 boys and 6 girls with local infection in the mouth. Adenoids were observed in 1 boy and 2 girls. One boy had sinusitis and another boy had chronic otitis media. The basic therapy consisted of sodium salicylate, which should be administered at proper doses early in the course of the disease and for as long as it is necessary. Rest of the patients for long periods, removal of focal infection, administration of a proper diet, vitamins, and sojourn of the patients in proper climate are useful adjuvant measures.

### Prensa Medica Argentina, Buenos Aires

#### 31 859-906 (May 10) 1944 Partial Index

\*Weil's Disease Without Jaundice Case H. R. Rugiero and L. Charosky—p 885

New Method for Control of Hypoglycemic Coma in Prevention of Irreversible Coma C. R. Pereyra—p 887

Tribulular Left Lung Pleuroscopic Diagnosis O. A. Garre and J. A. Marti—p 893

**Weil's Disease Without Jaundice**—Rugiero and Charosky urge agglutination tests for leptospiras as a routine for the diagnosis of atypical forms of Weil's disease. The authors observed 5 cases of the disease at the Penna Institute. The disease was atypical in 1 of the patients. Neither nervous symptoms nor jaundice accompanied the disease. Otherwise the clinical symptoms were typical. The patient lived in a region in which contaminated dogs and rats had been previously found. The agglutination test for *Leptospira canicola* was strongly positive (1/200).

### The Chinese Medical Journal, Chengtu

#### 61 No 2 (Jan) 1943 Partial Index

\*Changing Concepts Regarding Etiology and Treatment of Peptic Ulcer A. E. Best—p 47

Studies on Control of Fecal Borne Diseases in North China XIV Approach to Quantitative Study of House Frequenting Fly Population D. The Breeding Habits of Common North China Flies C. H. Meng and G. F. Winfield—p 54

\*Scarlet Fever in Tsinan An Analysis of 309 Cases P. L. Fan and C. C. Pi—p 56

Evaluation of Pickled Vegetables in Dissemination of Ascaris Lumbricoides K. Chang and H. T. Chin—p 63

Incidence of Convulsions in Childhood Study of 4386 Families Y. En Kao—p 70

Ya Tan Tzu Treatment of Amebic Dysentery C. C. Wu—p 74

Pa Pin (Transient Paralysis Simulating Family Periodic Paralysis) H. Keh Wei—p 82

Report of Case of Canine Leishmaniasis J. M. Clow—p 92

**Changing Concepts in Etiology and Treatment of Peptic Ulcer**—Best reviews the etiology of peptic ulcer and favors the vascular theory. The formerly popular antacid method of treatment is going out of favor. From observations on 37 cases a regimen is offered which consists of frequent bland meals, sufficient exercise, emotional control, adequate warmth and minimal or preferably no medication.

**Scarlet Fever**—Fan and Pi say that during the past seven years two epidemics of scarlet fever occurred in Tsinan. This report deals with an analysis of 309 patients with scarlet fever observed in the Cheeloo Pediatric Division between 1928 and 1937. Scarlet fever was rare in infants of less than 1 year. Most of the patients were from 2 to 6 years of age. A single throat culture revealed *Streptococcus haemolyticus* in 80 per cent of the cases. The onset was abrupt. Fever, sore throat, vomiting and skin rash were the common early symptoms. Convulsions, abdominal pains, chills and delirium were uncommon. Complications such as tonsillitis, cervical abscesses, otitis media and nephritis were fewer in the serum treated group. There was 1 girl who had two attacks of scarlet fever within four years. Five patients with nephritis completely recovered. The mortality rate for serum treated patients was 13.9 per cent and for non serum treated patients 24.6 per cent. Serum sickness occurred in 33 1/3 per cent of the 72 serum treated patients. The source of infection could be determined for 70 patients. Fifty of these contracted the disease from their family members and 20 from their school mates or neighbors. Of 95 adults exposed to scarlet fever 28 contracted the infection and 5 died. Of 233 children exposed to scarlet fever 95 contracted the disease, and of these 32 died.

## Book Notices

**Medicine and the War** Edited by William H. Talliaferro. Cloth. Price \$2. Pp. 193 with illustrations. Chicago: University of Chicago Press, 1944.

This book owes its origin to a series of lectures given by members of the Division of the Biological Sciences of the University of Chicago in the spring of 1943 under the sponsorship of the Charles R. Walgreen Foundation for the Study of American Institutions. The various subjects (historical background, food, chemotherapy, malaria insect carriers, shock and blood substitutes, aviation medicine, cerebral injuries, psychiatry and chemical warfare) are well chosen and arranged in a logical sequence. The result is a well rounded picture of medical advances important in modern warfare and, on the other hand, of the many problems modern warfare poses to medicine. However, if the reader expects the title of the book to refer to the present conflict exclusively he will be somewhat disappointed. The desire to make the audience understand the matter under discussion (the book anticipates lay readers) often shifts the emphasis to outlines of physiologic, pharmacologic and pathologic theories. Moreover, in a good many cases such facts and documentation as are given relate to experiences of the last war and the prewar period. The connection with the present war thus tends to be loose and, as a whole, the book has a decidedly academic character. There is, on the other hand, a wise restriction to relatively few but illustrative examples. The chapter on neurologic and psychologic effects of cerebral injuries, which is mainly devoted to the consequences of lesions of the frontal lobes, may be cited as an instance of lucid presentation.

The book has an advantage over similar popular publications in avoiding exaggeration and overdramatization. The calm and dignified tone that was to be expected from the distinguished contributors does not allow the reader to forget that war is an evil, however necessary it may be and however great a stimulus to medical progress.

**Mitosis: The Movements of Chromosomes in Cell Division** By Franz Schrader. Professor of Zoology, Columbia University, New York. Cloth. Price \$2. Pp. 110 with 15 illustrations. New York: Columbia University Press, 1944.

This monograph reviews critically the work on the mechanisms of cell division. The distribution of chromosomes to new cells is a complicated but well ordered process, a thorough understanding of which is essential to advance in the study of problems of cell behavior. A number of hypotheses have been advanced to explain the movements of chromosomes, but to the author no final solution is in sight. The trouble seems to be "that nearly all the hypotheses have been built around the idea that a certain, single type of force underlies all mitotic activity." It now seems clear that 'mitosis is comprised of a great complex of different mechanisms'. The review ends constructively in the recommendation that at present research better be concentrated on single, limited phases of mitosis in favorable species rather than directed to the immediate complete analysis of the whole mitotic cycle.

**Absence from Work: Prevention of Fatigue** Conditions for Industrial Health and Efficiency. Pamphlet No. 2. Issued by the Industrial Health Research Board of the Medical Research Council. Paper. Price 3d. Pp. 20 with 4 illustrations. London: His Majesty's Stationery Office, 1944.

This pamphlet is the second in a series issued by the Industrial Health Research Board of the Medical Research Council intended to improve and safeguard industrial health and efficiency. It states at the outset that industrial productivity is dependent on the health efficiency and enthusiasm of the workers. The factors leading to absence from work as they relate to conditions inside the factory, outside influences and the status of the workers' minds and bodies are all succinctly listed. In this last connection, certain measures calculated to relieve boredom and indifference are described, such as rest periods, judicious use of music, the introduction of competition and a definite knowledge of what the process means to the finished product. Individual workers' joint productive committees and

works councils all must contribute to improve attitude, work environment and interest in healthful living. The effect of fatigue on productivity expresses itself in lowered output, lowered quality of work, more accidents and behavior of workers. Causes of fatigue are the length and intensity of the work period, working conditions, lack of suitable incentive and improper rest and relaxation away from the plant. Each suggests a remedy, and the remedies are sensibly presented.

**Psychiatry for Nurses** By Louis J. Karnosh, B.S., Sc.D., M.D., Associate Clinical Professor of Nervous Diseases, School of Medicine, Western Reserve University, Cleveland, and Edith B. Gage, R.N., in collaboration with Dorothy Mereness, A.B., M.N., R.N., Instructor of Psychiatric Nursing, Neuropsychiatric Division, City Hospital, Cleveland. Second edition. Cloth. Price \$2.75. Pp. 339 with 38 illustrations. St. Louis: C.V. Mosby Company, 1944.

This is one of the most practical textbooks on psychiatry for nurses. Here is a book that is written clearly and simply. The authors fully realize that their subject must be presented concisely and with utmost simplicity because of the many other subjects the nurse must take during the course of her training. With this point of view the reviewer heartily agrees. After each of the twenty-nine chapters there is a list of questions which can be used to good advantage. There is also a bibliography. This book is highly recommended to all nurses, both undergraduate and graduate, and also to general practitioners of medicine.

**A Manual of Physical Therapy** By Richard Kovacs, M.D., Professor of Physical Therapy, New York Polyclinic Medical School and Hospital, New York. Third edition of Physical Therapy for Nurses. Cloth. Price \$3.25. Pp. 309 with 118 illustrations. Philadelphia: Lea & Febiger, 1944.

This is the third revised edition of a book formerly published under the title "Physical Therapy for Nurses." It is divided into six parts. Part I is an introduction dealing with physical forces and the history of physical therapy; part II deals with heat and light; part III with electricity; part IV with hydrotherapy; part V with massage and exercise; and part VI with applied physical therapy. The sections on heat and light and on electrotherapy have been considerably revised, and new illustrations have been added in this edition. The section dealing with massage and exercise has been amplified, and a new final chapter on "Physical Therapy in War" is a timely addition. This textbook should continue to serve as a valuable manual for teaching physical therapy to nurses, and it can also be considered a useful volume for the physician who is unfamiliar with physical medicine and who desires a rapid survey of the elementary aspects of the field. The revisions which have been made are distinctly worth while. Kovacs's facile pen has made another valuable contribution to the broad field of physical medicine.

**The Psychology of Women: A Psychoanalytic Interpretation** By Helene Deutsch, M.D., Associate Psychiatrist, Massachusetts General Hospital, Boston. Foreword by Stanley Cobb, M.D., Bullard Professor of Neuropathology, Harvard University, Boston. Volume I. Cloth. Price \$4.50. Pp. 399. New York: Grune & Stratton, Inc., 1944.

Those who are familiar with the writings of Helene Deutsch have come to expect from her publications sound, carefully studied and clinically illustrated scientific observations. The present volume lives up to such expectations in every particular. The author states in the preface that "the purpose of this book is to explain the normal conflicts. We know that the degree of psychic health is not determined by the absence of conflicts but by the adequacy of the methods used to solve and master them." Exhaustive case material is presented to illustrate the validity of conclusions reached from psychoanalytic investigation into problems of feminine development. In the present work, which is the first of two volumes, the author discusses the individual development and personality of women. This volume contains ten chapters, on prepuberty, early puberty, puberty and adolescence, menstruation, eroticism, the feminine woman, feminine passivity, feminine masochism, the "active" woman, the masculinity complex, homosexuality and the influence of the environment. The bibliography and the index are excellent. This book not only will interest the psychiatrist, the psychologist, the physician and the student but may be read with understanding and profit by mothers and young women who hope to be mothers.

## Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT HOWEVER REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS BUT THESE WILL BE OMITTED ON REQUEST.

### REFRACTORY EDEMA OF LEGS

To the Editor—A patient complains of swelling and pain in the legs, dyspnea and thirst at night. She has had these complaints for about six months. The history is essentially normal. The patient is a woman aged 60 weighing 190 pounds (86 Kg). The heart sounds are poor, no murmur is audible. The blood pressure is 140/78, the pulse rate 90. The lungs are clear and the abdomen is normal. The legs show a number of large varicose veins and are edematous. There are on each leg a number of bright red areas varying in size from 0.5 cm to 1 inch. They are tender, superficial and on palpation feel like thrombotic veins. These areas are found between the knees and the ankles. The blood sugar is 104 mg, urine blood and electrocardiogram are normal. Digitalization has not improved the legs although it has helped the dyspnea and reduced the pulse rate to 78. Mercupurin, foreign protein therapy and aminophylline have also been tried. What additional therapeutic measures may be suggested?

M D Pennsylvania

ANSWER—The stubbornness and resistance to treatment in this case at once suggest Quincke's disease or angioneurotic edema. This condition is characterized by such swelling as is described together with the itching. It is assumed in this diagnosis that the red areas are in the nature of urticarial wheals. If these areas come and go rapidly they are almost sure to be allergic in origin. The dyspnea and thirst may represent swelling about the throat and palate. Has such swelling been observed in this case? The treatment of this disease is quite unsatisfactory. An allergen must be sought and the usual measures that are employed against allergic disorders are used but much is left to be desired.

Other circulatory disturbance in the lower part of the legs must be considered. Circulatory disturbance in the lower part of the legs will not explain dyspnea but the improvement of the dyspnea under digitalis administration suggests the presence of an associated deficiency of the coronary circulation. Dyspnea due to congestive heart failure is not likely with clear lungs. The presence of varicose veins, swelling and pain suggests acute thrombophlebitis. If the red and tender areas are really thrombosed veins, support is given to this diagnosis. At any rate if the red and tender areas are inflammatory and not allergic they should be treated by rest and elevation of the legs. The use of a sulfonamide might hasten the control of the active infection. The addition of ammonium chloride to the therapeutic measures already used might be helpful. After the subsidence of the acute inflammatory process the circulation should be restored as far as possible.

### SYPHILITIC RELAPSE OR REINFECTION

To the Editor—A diagnosis of primary syphilis was made on a Negro soldier aged 18 by means of a positive darkfield examination of penile ulcer. Blood serologic tests were negative at this time. Treatment was begun immediately and followed the routine mapharsen injections twice weekly for ten weeks with bismuth weekly the first five weeks. The chancre healed rapidly and completely. Treatment was started on Jan 12 1944. Because the patient neglected to take his treatment promptly on every occasion the number of mapharsen injections was increased to twenty-five and completed April 24. Three days later the first of a series of six weekly bismuth injections was begun. The next day the patient noticed a lesion on his penis in a different location from the original one. Darkfield examination revealed the lesion to be teeming with spirochetes. Would you kindly interpret this case for me and suggest a course of treatment?

Lieutenant M C A U S

ANSWER—In this case the question of differential diagnosis between reinfection and monorecurrence would have to be considered. Ordinarily with a monorecurrence the process returns on the site of the old primary lesion. That is not necessary, however. Nothing is said as to the condition of the draining lymph nodes and whether the same chain of nodes is involved in the second infection that was involved in the first.

As the patient in question was irregular in his treatment, the chances are that he has a relapse type of syphilis. In an early relapse like this, one would find spirochetes locally just as with a chancre.

A condition like this should be treated as acute syphilis. There should be no difficulty in getting treatment with penicillin, hospitalization and intramuscular injections in the buttocks as is recommended for this disease when penicillin is employed.

### INTERMITTENT BURNING OF PALATE

To the Editor—A woman aged 32 the mother of 2 children for the past four years has complained of an intermittent burning in the hard palate. At times she insists that small blisters and cracks appear but I have never been able to identify them. Diet is adequate and careful blood study has not revealed any abnormalities. There has been no response to treatment with adequate amounts of vitamin B complex and multivitamin preparations. The burning is bilateral and involves the anterior portion of the palate. The complaint began following a cervical amputation for severe erosion and laceration. Preceding the operation the patient complained of numbness and tingling in the fingers which cleared up following the operative procedure. The patient otherwise is neurotic and of poor emotional control with frequent outbursts against children and husband. When situations arise which provoke emotional response on her part, the burning in the mouth becomes worse. However she refuses to accept the idea of psychogenicity or permit psychotherapy. The burning is somewhat relieved by application of topical anesthesia. An oral surgeon has advocated alcohol injection of the palatine nerves. Although it is probable that this patient's complaint is largely hysterical in nature in view of the relief with topical anesthesia and rejection of a more fundamental approach via psychotherapy do you think alcohol injection may prove beneficial? Are any harmful sequelae likely to ensue? Any other suggestions will be welcomed.

M D, New York

ANSWER—Does the patient have any trigger zones in the tonsillar regions? Has she free acid in her stomach contents? From the description the patient is not afflicted with a neuralgia but with a neurosis. It is doubtful that an injection of alcohol into the foramen rotundum or in the gasserian ganglion would have an anesthetizing effect. Although the palatine nerves are branches of the maxillary division of the trigeminal nerves they are supposed to be related to the 7th and 9th cranial nerves. In this case it is bilateral and both sides would have to be injected. Harmful sequelae are not likely to ensue. Sight must not be lost of the fact that if this patient is neurotic and does get a permanent anesthesia she may be quite disturbed about the numbness. The topical applications might be continued. If the burning becomes uncontrollable, one side may be injected. Before it is done, however, the patient should be fully acquainted with the fact that her palate may become numb.

### PHOTOELECTRIC COLORIMETERS

To the Editor—What is the present status of photoelectric colorimeters? Which is the best make at the present time for general laboratory use?

M D Ohio

ANSWER—The amount of a substance in solution is measured in a visual type of colorimeter by matching the brightness of two adjacent fields. The accuracy of the determination depends on the sensitivity of the eye as well as other factors, such as fatigue and after images and individual variation. It is often difficult to check readings satisfactorily, especially with different observers. In a photoelectric colorimeter most of these sources of error are eliminated. Here the concentration of a substance in solution is measured by the amount of deflection of the pointer of a sensitive electric meter. If the instrument meets certain requirements (see Bureau of Standards Letter Circular LC 473), readings are rapid and accurate. All good photoelectric colorimeters provide also for the use of color filters. These add to the usefulness of the instrument by limiting the transmitted light to a relatively narrow spectral region in which there is the greatest change in transmission with a change in concentration of the substance to be determined. Photoelectric colorimeters are rapidly replacing the visual type in most laboratories. The main problem is expense but accurate and well constructed instruments are now available at moderate prices. The Klett-Summerson and the Cenco instruments are both satisfactory and can be highly recommended for routine clinical laboratory use.

### TRAUMATIC FRACTURE WITH INTACT PERIOSTEUM

To the Editor—Is it possible to have a fracture due to external trauma without loss of continuity of the periosteum?

Lieutenant M C A U S

ANSWER—It is possible to have a fracture due to external violence without loss of continuity of the periosteum. This membrane in youths, adolescents or young adults is highly vascularized pliable and elastic. The bone beneath, therefore may be fractured across or in a spiral from external twisting violence permitting the periosteum to escape tear. This does not often happen. There may be only small tears in many cases. When the periosteum remains intact a hematoma forming between it and the underlying cortex is confined and after organization forms the basis for late developing callus formation. This mechanism is illustrated in so called march fractures or "pied force" in which at first the fracture plane does not appear in the roentgenogram but comes out three to six weeks later with callus formed beneath the raised periosteum.



# The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL 126, No 2

CHICAGO, ILLINOIS  
COPYRIGHT 1944 BY AMERICAN MEDICAL ASSOCIATION

SEPTEMBER 9 1944

## PENICILLIN TREATMENT OF EARLY SYPHILIS II

J F MAHONEY, MD  
R C ARNOLD, MD  
BURTON L STERNER, MD  
AD HARRIS  
Serologist  
AND  
M R ZWALLY, MA  
U S Public Health Service  
STATEN ISLAND, N Y

In a preliminary report<sup>1</sup> the influence of penicillin therapy on the clinical manifestations and serologic reactions of patients with early syphilis was presented. The report was based on the results of a curtailed period of observation of a group of 4 patients. It is our purpose in the present paper to record the findings of post-treatment observation of the original group for periods in excess of three hundred days. It is also desired to record certain items of information which have resulted from the treatment of an additional 100 patients.

### REVIEW OF ORIGINAL GROUP

Of the group of 4 patients the records of whom formed the basis for the preliminary report,<sup>1</sup> all have been maintained under observation. It will be recalled that these patients displayed dark field positive lesions of early syphilis at the time of treatment. The therapy consisted of an intramuscular injection of 25,000 units of penicillin administered at four hour intervals for forty-eight injections. The total amount of the product utilized was 1,200,000 units and the total time of therapy was about eight days. No other antisyphilitic medication has been employed. The post-treatment observation has consisted of a clinical and serologic examination at weekly intervals for the first six months and monthly observations thereafter. A spinal fluid examination was carried out at the completion of six months post-treatment observation.

Three members of the original group experienced a rapid healing of penile ulcerations and attained seronegativity within the initial three months of observation. These patients have remained clinically and serologically negative up to the present. The remaining patient has displayed circumstances which warrant discussion.

In this patient the penile lesion healed promptly and the serologic tests were recorded as negative on the

71st day. This situation maintained until the 286th day of observation at which time strongly positive reactions were recorded in all test procedures. At that time the patient was under treatment for specific urethritis in a distant clinic. After some delay the patient was again made available for study and was found to have a single ulcerative lesion on an indurated base, located on the inner surface of the lower lip. The regional lymph glands were enlarged and firm. There was no other evidence of involvement of skin or mucous membranes or of general adenopathy. Dark field examination of secretions secured from the lesion, after all precautions had been taken to avoid the contamination of the specimen by mouth spirochetes, was considered to be positive for *Treponema pallidum*.

Although this patient is being classed as a treatment failure, the probability of reinfection is mescapable. Retreatment with penicillin has been carried out.

Table 1 shows the serologic record of the first patient treated with penicillin for early syphilis. Table 2 shows the complete serologic record of patient 4 including serologic relapse or serologic upstroke accompanying reinfection.

In continuing the general study a series of approximately 100 patients have been treated in essentially the same manner as was employed in the original group. Although the post-treatment period of observation has not been of sufficient duration in a large enough group to warrant the drawing of conclusions, some interesting observations may be presented at this time. These are presented as informative material only and with the understanding that they may or may not be substantiated by more complete data.

The principal clinical features of the study may be summarized in the following manner.

The therapy has consisted of an intramuscular injection of 20,000 units of penicillin administered at three hour intervals, night and day, for sixty injections. The total amount of penicillin employed was 1,200,000 units. No other antisyphilitic medication has been used. All patients have been managed in a uniform manner and it has not been necessary to decrease dosage or abandon the therapy in any instance. With three exceptions (acute arsenical intoxications) all the patients have displayed lesions characteristic of early syphilis (primary and/or secondary).

Hershheimer-like reactions, or therapeutic shock, of varying degrees of severity were observed during the first day of treatment in 86 patients. Ulcerations and cutaneous lesions manifested a tendency toward prompt recession. All uncomplicated ulcers were completely epithelized at the time of completion of treatment. No severe toxic reactions have been encountered. There were 2 instances of exfoliative dermatitis, 1 mild in character and of short duration, the second more severe

From the Venereal Disease Research Laboratory and the United States Marine Hospital.

Read in a panel discussion on Penicillin in the Treatment of Syphilis before the Section on Dermatology and Syphilology at the Ninety-fourth Annual Session of the American Medical Association, Chicago, June 15, 1944.

1 Mahoney J F, Arnold R C and Harris A. Penicillin Treatment of Early Syphilis. A Preliminary Report. Ven Dis Inform 24:355-357 (Dec) 1943.



and requiring about three weeks for return to normal. The two patients had been treated with the same manufacturer's lot of material. As other irritative qualities were attributed to this particular product, the possibility of impurities being accountable for the skin reaction is present.

consideration of this phase the records of patients who have had in excess of seventy-five days satisfactory follow-up observation have been selected for scrutiny. It may be well to state that the serologic routine which has been utilized in this study represents as complete a coverage as is practical, a total of seven

TABLE 1—Results of Serologic Tests in Case 1  
Duration of Disease Nine Days

| Time<br>After<br>Start<br>of<br>Therapy<br>Days | Qualitative Methods                      |                         |                     |                  |        |       |  | Quantitative Methods    |             |                                  |
|---|--|-------------------------|---------------------|------------------|--------|-------|--|-------------------------|-------------|----------------------------------|
|   | Super<br>sensitive<br>Kline<br>Exclusion | Diagnostic Flocculation |                     |                  |        |       | Com<br>plement<br>Fixation<br>Kolmer<br>Simplified | Diagnostic Flocculation |             | Complement<br>Fixation<br>Kolmer |
|   |  | Mazzini                 | Kline<br>Diagnostic | Kahn<br>Standard | Hinton | Eagle |  | Mazzini                 | Kahn        |                                  |
|   |  |                         |                     |                  |        |       |  |                         |             |                                  |
| 0   |  | 4                       |                     | 4                | Pos    | Pos   | 4  | 4 4 4 2 1 -             | 4 4 4 2 ± - | 4 4 4 4 4 1                      |
| 1   |  | 4                       |                     | 4                | Pos    | Pos   | 4  | 4 4 4 2 1 -             | 4 4 4 2 ± - | 4 4 4 4 4 0                      |
| 9   | 4  | 4                       | 4                   | 4                | Pos    | Pos   | 4  | 4 4 4 4 2 -             | 4 4 4 4 1 - | 4 4 4 4 2 -                      |
| 23  |  | 4                       |                     | 3                | Pos    | Pos   | 4  | 4 3 2 - - -             | 4 4 1 - - - | 4 4 4 3 ± -                      |
| 30  | 4  | 4                       | 3                   | 3                | Pos    | -     | 4  | 4 4 4 2 - -             | 4 4 3 1 - - | 4 4 4 2 ± -                      |
| 37  | 4  | 4                       | 1 Dbt               | 3                | Dbt    | -     | 3  | 4 4 2 1 - -             | 4 1 - - - - | 3 3 2 ± -                        |
| 44  | 3  | '                       |                     | 1 Dbt            | -      | -     | 4  | 4 3 2 - - -             | 4 ± - - - - | 4 4 3 ± -                        |
| 51  | 1 Dbt                                    | 4                       | -                   | -                | -      | -     | 4  | 4 2 - - - -             | 1 - - - - - | 4 4 4 1 ± -                      |
| 55  | 1 Dbt                                    | 4                       | -                   | -                | -      | -     | -  | 4 3 - - - -             | 1 - - - - - | - - - - -                        |
| 60  | 2  | 2 Dbt                   | -                   | -                | -      | -     | -  | 2 1 - - - -             | - - - - -   | - - - - -                        |
| 70  | 1 Dbt                                    | 2 Dbt                   | -                   | -                | -      | -     | -  | 2 1 - - - -             | - - - - -   | - - - - -                        |
| 80  | -  | 2 Dbt                   | -                   | -                | -      | -     | -  | 2 ± - - - -             | ± - - - -   | - - - - -                        |
| 86  | -  | 2 Dbt                   | -                   | -                | -      | -     | -  | 2 - - - - -             | - - - - -   | - - - - -                        |
| 93  | -  | 1 Dbt                   | -                   | -                | -      | -     | -  | 1 - - - - -             | - - - - -   | - - - - -                        |
| Months  |  |                         |                     |                  |        |       |  |                         |             |                                  |
| 4   | -  | -                       | -                   | -                | -      | -     | -  |                         |             |                                  |
| 5   | -  | -                       | -                   | -                | -      | -     | -  |                         |             |                                  |
| 6   | -  | 1 Dbt                   | -                   | -                | -      | -     | -  |                         |             |                                  |
| 7   | -  | -                       | -                   | -                | -      | -     | -  |                         |             |                                  |
| 8   | -  | -                       | -                   | -                | -      | -     | -  |                         |             |                                  |
| 9   | -  | -                       | -                   | -                | -      | -     | -  |                         |             |                                  |
| 11  | -  | 1 Dbt                   | -                   | -                | -      | -     | -  |                         |             |                                  |

TABLE 2—Results of Serologic Tests in Case 4  
Duration of Disease Eight Days

| Time After Start of Therapy | Qualitative Methods             |                         |                  |               |        |       |                                       | Quantitative Methods    |                 |                            |
|-----------------------------|---------------------------------|-------------------------|------------------|---------------|--------|-------|---------------------------------------|-------------------------|-----------------|----------------------------|
|                             | Super sensitive Kline Exclusion | Diagnostic Flocculation |                  |               |        |       | Complement Fixation Kolmer Simplified | Diagnostic Flocculation |                 | Complement Fixation Kolmer |
|                             |                                 | Mazzini                 | Kline Diagnostic | Kahn Standard | Hinton | Eagle |                                       | Mazzini                 | Kahn            |                            |
|                             |                                 |                         |                  |               |        |       |                                       |                         |                 |                            |
| Days                        |                                 |                         |                  |               |        |       |                                       |                         |                 |                            |
| 0                           |                                 | 1 Dbt                   |                  |               |        |       |                                       |                         |                 |                            |
| 1                           | 4                               | 4                       | ± Dbt            | 1 Dbt         |        | Pos   |                                       | 2 1                     | 3 ±             | ± ± ±                      |
| 8                           |                                 | 4                       |                  | 3             |        | Pos   | 4                                     | 3 2                     | 4 4 ±           | 4 4 4 2 ±                  |
| 10                          | 4                               | 4                       | 1 Dbt            | 3             | Pos    | Pos   | ± Dbt                                 | 4 3 2 1                 | 4 3 1           | ± ± ± ±                    |
| 22                          | 4                               | 3                       | ± Dbt            | 3             | Pos    | Dbt   | ± Dbt                                 | 4 1                     | 4 1 ±           | ± 1 ±                      |
| 30                          | 1 Dbt                           | 2 Dbt                   | ± Dbt            |               | Dbt    |       | ± Dbt                                 | 2 1                     | 1               | ± ± 1 ±                    |
| 36                          | ± Dbt                           | 2 Dbt                   |                  |               |        |       |                                       | 2                       | ±               | - - ± ± ±                  |
| 40                          |                                 | 2 Dbt                   |                  |               |        |       |                                       | 2 1                     | ±               | - - - -                    |
| 50                          | ± Dbt                           | 1 Dbt                   |                  |               |        |       |                                       | 1                       | ±               | - - - -                    |
| 57                          |                                 | 1 Dbt                   |                  |               |        |       |                                       | 1                       |                 | - - - -                    |
| 64                          | ± Dbt                           | 1 Dbt                   |                  |               |        |       |                                       | 1                       | ±               | - - - -                    |
| 71                          |                                 |                         |                  |               |        |       |                                       | 1                       |                 | - - - -                    |
| 86                          |                                 |                         |                  |               |        |       |                                       |                         |                 | - - - -                    |
| 93                          |                                 |                         |                  |               |        |       |                                       |                         |                 | - - - -                    |
| Months                      |                                 |                         |                  |               |        |       |                                       |                         |                 |                            |
| 4                           |                                 |                         |                  |               |        |       |                                       |                         |                 |                            |
| 5                           |                                 |                         |                  |               |        |       |                                       |                         |                 |                            |
| 6                           | ± Dbt                           |                         |                  |               |        |       |                                       |                         |                 |                            |
| 7                           |                                 | 1 Dbt                   |                  |               |        |       |                                       |                         |                 |                            |
| 8                           |                                 |                         |                  |               |        |       |                                       |                         |                 |                            |
| Days                        |                                 |                         |                  |               |        |       |                                       |                         |                 |                            |
| 280                         | 4                               | 4                       | 2                | 4             |        |       | 4                                     |                         |                 | 4 4 4 ± - - - -            |
| 290                         | 4                               | 4                       | 4                | 4             |        | Pos   | 4                                     | 4 4 4 2 1               | 4 4 1 ± - - - - | 4 4 4 4 1 - - - -          |
| 315                         | 4                               | 4                       | 4                | 4             | Pos    | Pos   | 4                                     | 4 4 4 4 4 1             | 4 4 4 4 4 3     | 4 4 4 4 4 4 ± - -          |
| 326                         | 4                               | 4                       | 4                | 4             | Pos    | Pos   | 4                                     | 4 4 4 4 4 4 1           | 4 4 4 4 4 4 1   | 4 4 4 4 4 4 4 ± -          |

Because of the rapid disappearance of lesions the main reliance in evaluating the therapy has been placed on the serologic tests. On the reasonable assumption that the trend of the serologic reactions may be considered as an index to the progress of early syphilis in the human being, the treated patients may be placed into several rather well defined groupings. For a

accredited methods representing supersensitive and diagnostic flocculation methods, one diagnostic complement fixation technic and three methods with which the reagin content of each positive blood specimen has been quantitated. On the basis of an arbitrary minimum of seventy-five days of satisfactory post-treatment observation, the

records of 52 patients become available for scrutiny. The average duration of observation is one hundred and thirty-five days.

Of this group of 52 patients, 6 with dark field positive lesions were in the seronegative phase of the disease at the time of treatment and passed through the observation period without positive findings being recorded.

tendency toward a return of the high titer reactions which were recorded at the time of treatment, and it is anticipated that complete reversal will be accomplished with the passage of time. However, there is no assurance of this contingency. There is the possibility that these patients eventually will be added to the favorably reacting groups.

TABLE 3—Results of Serologic Tests in Case 10 Pattern Considered to Be Favorable

Duration of Disease Twenty One Days

| Time<br>After<br>Start<br>of<br>Therapy<br><br>Days | Qualitative Methods                      |                         |                     |                  |        |       |  | Quantitative Methods    |           |                                  |
|---|--|-------------------------|---------------------|------------------|--------|-------|--|-------------------------|-----------|----------------------------------|
|   | Super<br>sensitive<br>Kline<br>Exclusion | Diagnostic Flocculation |                     |                  |        |       | Com<br>plement<br>Fixation<br>Kolmer<br>Simplified | Diagnostic Flocculation |           | Complement<br>Fixation<br>Kolmer |
|   |  | Mazzini                 | Kline<br>Diagnostic | Kahn<br>Standard | Hinton | Eagle |  | Mazzini                 | Kahn      |                                  |
|   |  |                         |                     |                  |        |       |  |                         |           |                                  |
| 0   | ± Dbt                                    | 1 Dbt                   | —                   | —                | Pos    | —     | —  | 1 1 1                   | —         | —                                |
| 1   | 1 Dbt                                    | 3                       | —                   | 2                | Pos    | —     | —  | 3 3 2 1                 | 2 ±       | —                                |
| 3   | 1 Dbt                                    | 3                       | —                   | 2                | Pos    | Pos   | 3  | 3 3 2 1                 | 2 ±       | 3 4 4 3 2 ±                      |
| 8   | 4  | 4                       | 4                   | 4                | Pos    | Pos   | 4  | 4 4 3 2 2 1             | 4 4 2 1 ± | 4 4 4 4 4                        |
| 14  | 4  | 4                       | 4                   | 4                | Pos    | Pos   | 4  | 4 4 4 3 2               | 4 4 2 ±   | 4 4 4 4 3 ±                      |
| 20  | 4  | 4                       | 1 Dbt               | 4                | Pos    | Pos   | ± Dbt  | 4 4 3 2 1               | 4 3 ±     | ± ± 1 1                          |
| 28  | 2  | 4                       | ± Dbt               | 3                | Pos    | —     | ± Dbt  | 4 3 2 1 1               | 4 ±       | ± ± ± ±                          |
| 35  | 1 Dbt                                    | 2 Dbt                   | ± Dbt               | 1 Dbt            | Pos    | —     | —  | 2 2 1 1                 | 3 ±       | —                                |
| 42  | ± Dbt                                    | 2 Dbt                   | —                   | —                | Pos    | —     | ± Dbt  | 2 1 1                   | 1         | ± ±                              |
| 48  | ± Dbt                                    | —                       | —                   | —                | —      | —     | —  | —                       | —         | —                                |
| 56  | ± Dbt                                    | 1 Dbt                   | —                   | —                | —      | —     | —  | 1                       | —         | ± ± ±                            |
| 63  | —  | 1 Dbt                   | —                   | —                | —      | —     | —  | 1                       | —         | —                                |
| 70  | —  | 1 Dbt                   | —                   | —                | —      | —     | —  | 1                       | —         | —                                |
| 77  | —  | 1 Dbt                   | —                   | —                | —      | —     | —  | 1                       | —         | —                                |
| 85  | —  | —                       | —                   | —                | —      | —     | —  | —                       | —         | —                                |
| 91  | —  | —                       | —                   | —                | —      | —     | —  | —                       | —         | ± ± ±                            |
| Months  |  |                         |                     |                  |        |       |  |                         |           |                                  |
| 4   | —  | —                       | —                   | —                | Dbt    | —     | —  | —                       | —         | —                                |
| 5   | ± Dbt                                    | —                       | —                   | —                | —      | —     | —  | —                       | —         | —                                |
| 6   | —  | —                       | —                   | —                | —      | —     | —  | —                       | —         | —                                |
| 7   | —  | —                       | —                   | —                | —      | —     | —  | —                       | —         | —                                |

Pattern showing low reading reactions at the beginning of therapy with an increase in titer during treatment and a rapid reversal to negative.

TABLE 4—Results of Serologic Tests in Case 35 High Titer Reactions at Onset of Therapy

Duration of Disease Sixty Nine Days

| Time After Start of Therapy Days | Qualitative Methods             |                         |                  |               |        |       |                                       | Quantitative Methods    |                |                            |
|----------------------------------|---------------------------------|-------------------------|------------------|---------------|--------|-------|---------------------------------------|-------------------------|----------------|----------------------------|
|                                  | Super sensitive Kline Exclusion | Diagnostic Flocculation |                  |               |        |       | Complement Fixation Kolmer Simplified | Diagnostic Flocculation |                | Complement Fixation Kolmer |
|                                  |                                 | Mazzini                 | Kline Diagnostic | Kahn Standard | Hinton | Eagle |                                       | Mazzini                 | Kahn           |                            |
|                                  |                                 |                         |                  |               |        |       |                                       |                         |                |                            |
| -1                               | 4                               | 4                       | 4                | 4             | Pos    | Pos   | 4                                     | 4 4 4 4 3 1 --          | 3 4 4 4 4 1 -- | 4 4 4 4 4 1 --             |
| 1                                | 4                               | 4                       | 4                | 4             | Pos    | Pos   | 4                                     | 4 4 4 4 3 1 --          | 4 4 4 4 3 ± -- | 4 4 4 4 4 2 ± --           |
| 8                                | 4                               | 4                       | 4                | 4             | Pos    | Pos   | 4                                     | 4 4 4 4 2 1 --          | 4 4 4 4 2 --   | 4 4 4 4 4 3 ± --           |
| 13                               | 4                               | 4                       | 4                | 4             | Pos    | Pos   | 4                                     | 4 4 4 4 1 --            | 4 4 4 4 3 ± -- | 4 4 4 4 4 2 --             |
| 20                               | 4                               | 4                       | 4                | 4             | Pos    | Pos   | 4                                     | 4 4 4 4 3 1 --          | 4 4 4 4 2 1 -- | 4 4 4 4 4 1 ± --           |
| 27                               | 4                               | 4                       | 4                | 4             | Pos    | Pos   | 4                                     | 4 4 4 3 ± --            | 4 4 3 2 ± --   | 4 4 4 4 1 ± --             |
| 34                               | 4                               | 4                       | 4                | 4             | Pos    | Pos   | 4                                     | 4 4 3 2 --              | 4 3 2 1 --     | 4 4 4 1 --                 |
| 41                               | 4                               | 4                       | 2                | 2             | Pos    | Pos   | 4                                     | 4 3 2 1 --              | 4 3 ± --       | 4 4 4 1 --                 |
| 49                               | 4                               | 4                       | 4                | 2             | Pos    | Dbt   | 4                                     | 4 2 2 1 --              | 4 ± --         | 4 4 4 ± --                 |
| 56                               | 4                               | 3                       | 2                | ± Dbt         | --     | --    | 3                                     | 3 2 1 --                | 4 ± --         | 3 3 1 --                   |
| 63                               | 4                               | 2 Dbt                   | 1 Dbt            | ± Dbt         | --     | --    | 1                                     | 2 2 --                  | 2 --           | 1 ± --                     |
| 69                               | 3                               | 2 Dbt                   | 1 Dbt            | --            | --     | --    | 1                                     | 2 1 --                  | 1 --           | 1 ± --                     |
| 91                               | 1 Dbt                           | 1 Dbt                   | --               | --            | --     | --    | --                                    | --                      | --             | --                         |
| 99                               | 2                               | 1 Dbt                   | --               | --            | Dbt    | --    | --                                    | --                      | --             | --                         |
| 112                              | 1 Dbt                           | 1 Dbt                   | --               | --            | --     | --    | ± Dbt                                 | --                      | --             | --                         |
| 119                              | 1 Dbt                           | 1 Dbt                   | --               | --            | --     | --    | ± Dbt                                 | --                      | --             | --                         |
| 126                              | ± Dbt                           | --                      | --               | --            | --     | --    | --                                    | --                      | --             | --                         |
| 153                              | ± Dbt                           | --                      | --               | --            | --     | --    | --                                    | --                      | --             | --                         |

A representative pattern of patients with secondary syphilis. High titer reactions show a consistent and progressive trend toward reversal to negative.

The records of 25 additional patients display positive serologic reactions in some or all test methods, with a reversal to negative findings during the observation period. The average time for reversal in this group was seventy days. Thus 31 patients may be considered as having responded in a favorable manner up to the present.

In 7 patients there has been a progressive decline in the serologic titer, and although complete reversal in all tests has not been accomplished there has not been a

In an additional group of 7 patients the records display an initial post-treatment trend toward seronegativity with subsequent unmistakable evidence of a return to the high titer reactions. These are considered to be instances of serologic relapse.

The remaining 7 patients have displayed serologic patterns which render difficult the making of a favorable or unfavorable classification at this time. Some pessimism is felt as to the effectiveness of the therapy in this group.

If the patients are grouped in accordance with the stage of the disease at the time of treatment, some items of potential interest become discernible. Of the 52 patients 30 may be classed as having dark field positive primary syphilis. Of this number 1 patient, previously mentioned, developed a clinical relapse nine

at this time. The remaining 25 patients are at this time clinically and serologically negative. Therefore there is a possibility of there being twenty-seven satisfactory responses.

Of the 22 patients who displayed evidence of secondary syphilis and who were well into the seropositive

TABLE 5—Results of Serologic Tests in Case 8 Relapse Following Initial Favorable Trend

Duration of Disease Forty Six Days

| Time After Start of Therapy<br>Days | Qualitative Methods             |                         |                  |               |        |                                       |       | Quantitative Methods    |                   |                            |
|-------------------------------------|---------------------------------|-------------------------|------------------|---------------|--------|---------------------------------------|-------|-------------------------|-------------------|----------------------------|
|                                     | Super sensitive Kline Exclusion | Diagnostic Flocculation |                  |               |        | Complement Fixation Kolmer Simplified |       | Diagnostic Flocculation |                   | Complement Fixation Kolmer |
|                                     |                                 | Mazzini                 | Kline Diagnostic | Kahn Standard | Hinton | Eagle                                 |       | Mazzini                 | Kahn              |                            |
| 0                                   | 4                               | 4                       | 4                | 4             | Pos    | Pos                                   | 4     | 4 4 4 4 4 3 1 -         | 4 4 4 4 4 4 4 ± - | 4 4 4 4 4 4 4 ± -          |
| 1                                   | 4                               | 4                       | 4                | 4             | Pos    | Pos                                   | 4     | 4 4 4 4 4 3 1 -         | 4 4 4 4 4 4 3 ± - | 4 4 4 4 4 4 3 ± -          |
| 8                                   | 4                               | 4                       | 4                | 4             | Pos    | Pos                                   | 4     | 4 4 4 4 4 3 2 -         | 4 4 4 4 4 4 1 -   | 4 4 4 4 4 4 3 -            |
| 12                                  | 4                               | 4                       | 4                | 4             | Pos    | Pos                                   | 4     | 4 4 4 4 4 4 2 -         | 4 4 4 4 4 4 1 -   | 4 4 4 4 4 4 1 -            |
| 19                                  | 4                               | 4                       | 4                | 4             | Pos    | Pos                                   | 4     | 4 4 4 4 4 3 1 -         | 4 4 4 4 4 2 ± -   | 4 4 4 4 4 4 2 -            |
| 26                                  | 4                               | 4                       | 4                | 4             | Pos    | Pos                                   | 4     | 4 4 4 4 4 3 -           | 4 4 4 4 2 ± -     | 4 4 4 4 4 3 ± -            |
| 33                                  | 4                               | 4                       | 4                | 4             | Dbt    | Pos                                   | 4     | 4 4 4 4 4 1 -           | 4 4 4 1 ± -       | 4 4 4 4 4 ± -              |
| 40                                  | 4                               | 4                       | 4                | 4             | Dbt    | Pos                                   | 4     | 4 4 4 4 3 1 -           | 4 4 2 1 -         | 4 4 4 3 ± -                |
| 47                                  | 4                               | 4                       | 4                | 4             | Dbt    | Dbt                                   | 4     | 4 4 4 3 -               | 4 4 3 ± -         | 4 4 1 ± -                  |
| 54                                  | 4                               | 3                       | 2                | 3             | Dbt    | —                                     | 4     | 3 2 2 -                 | 4 3 1 ± -         | 4 4 3 1 -                  |
| 61                                  | 4                               | 3                       | 3                | 3             | Dbt    | —                                     | 4     | 4 4 3 2 -               | 4 2 ± -           | 4 4 4 4 ± -                |
| 68                                  | 4                               | 4                       | 3                | 3             | Pos    | —                                     | 4     | 4 4 3 2 -               | 4 2 ± -           | 4 4 4 2 ± -                |
| 75                                  | 4                               | 4                       | 4                | 4             | Pos    | Pos                                   | 4     | 4 4 4 2 -               | 4 4 3 ± -         | 4 4 4 2 ± -                |
| 82                                  | 4                               | 4                       | 4                | 4             | Pos    | Pos                                   | 4     | 4 4 4 4 3 1 -           | 4 4 4 4 1 -       | 4 4 4 4 ± -                |
| 90                                  | 4                               | 4                       | 4                | 4             | Pos    | Pos                                   | 4     | 4 4 4 4 2 1 -           | 4 4 4 4 2 -       | 4 4 4 4 ± -                |
| 93                                  | 4                               | 4                       | 4                | 4             | Pos    | Pos                                   | 4     | 4 4 4 4 4 2 -           | 4 4 4 4 2 -       | 4 4 4 4 4 4 3              |
| 103                                 | 4                               | 4                       | 4                | 4             | Pos    | Pos                                   | 4     | 4 4 4 4 4 3 1 -         | 4 4 4 4 4 2 -     | 4 4 4 4 4 -                |
| 110                                 | 4                               | 4                       | 4                | 4             | Pos    | Pos                                   | 4     | 4 4 4 4 4 3 -           | 4 4 4 4 4 ± -     | 4 4 4 4 4 ± -              |
| 117                                 | 4                               | 4                       | 4                | 4             | Pos    | Pos                                   | 4     | 4 4 4 4 4 -             | 4 4 4 4 4 -       | 4 4 4 4 4 -                |
| 124                                 | 4                               | 4                       | 4                | 4             | Pos    | Pos                                   | 4     | 4 4 4 4 4 1 -           | 4 4 4 3 1 -       | 4 4 4 4 3 -                |
| 131                                 | 4                               | 4                       | 4                | 4             | Pos    | Pos                                   | 4     | 4 4 4 3 -               | 4 4 2 ± -         | 4 4 4 2 ± -                |
| 138                                 | 4                               | 4                       | 4                | 4             | Pos    | Pos                                   | 4     | 4 4 4 1 -               | 4 4 4 2 -         | 4 4 4 4 4 1 -              |
| 157                                 | 4                               | 4                       | 3                | 4             | Pos    | Pos                                   | 4     | 4 2 1 -                 | 4 4 3 -           | 4 4 3 -                    |
| 166                                 | 4                               | 2 Dbt                   | 1 Dbt            | 3             | Pos    | Pos                                   | 4     |                         |                   | 4 4 1 ± -                  |
| 183                                 | 4                               | 2 Dbt                   | ± Dbt            | ± Dbt         | Pos    | Dbt                                   | ± Dbt |                         |                   | ± ± -                      |
| 194                                 | 4                               | 4                       | 2                | —             | Dbt    | Dbt                                   | 4     |                         |                   | 4 3 -                      |
| 201                                 | 4                               | 4                       | 2                | 2             | Pos    | Dbt                                   | 4     | 4 3 2 2 -               |                   | 4 3 2 ± -                  |
| 208                                 | 4                               | 4                       | 3                | 3             | Pos    | Pos                                   | 4     | 4 4 3 2 -               |                   | 4 4 4 3 ± -                |

TABLE 6—Results of Serologic Tests in Case 68

Duration of Disease Thirty Days

| Time After Start of Therapy<br>Days | Qualitative Methods             |                         |                  |               |        |                                       |   | Quantitative Methods    |                 |                            |
|-------------------------------------|---------------------------------|-------------------------|------------------|---------------|--------|---------------------------------------|---|-------------------------|-----------------|----------------------------|
|                                     | Super sensitive Kline Exclusion | Diagnostic Flocculation |                  |               |        | Complement Fixation Kolmer Simplified |   | Diagnostic Flocculation |                 | Complement Fixation Kolmer |
|                                     |                                 | Mazzini                 | Kline Diagnostic | Kahn Standard | Hinton | Eagle                                 |   | Mazzini                 | Kahn            |                            |
| 0                                   | 4                               | 4                       | 4                | 4             | Pos    | Pos                                   | 4 | 4 4 4 4 4 3 3 1 -       | ± ± 2 4 2 1 ± - | 4 4 4 4 4 4 ±              |
| 1                                   | 4                               | 4                       | 4                | 4             | Pos    | Pos                                   | 4 | 4 4 4 4 4 4 2 -         | 2 4 4 4 2 -     | 4 4 4 4 4 4 ±              |
| 7                                   | 4                               | 4                       | 4                | 4             | Pos    | Pos                                   | 4 | 4 4 4 4 4 4 2 1 -       | 2 2 2 2 2 2 ± - | 4 4 4 4 4 4 ±              |
| 11                                  | 4                               | 4                       | 4                | 4             | Pos    | Pos                                   | 4 | 4 4 4 4 4 4 2 -         | 2 4 4 4 4 1 ± - | 4 4 4 4 4 4 ±              |
| 18                                  | 4                               | 4                       | 4                | 4             | Pos    | Pos                                   | 4 | 4 4 4 4 4 3 1 -         | ± 4 4 3 2 ± -   | 4 4 4 4 4 4 ±              |
| 25                                  | 4                               | 4                       | 2                | 4             | Pos    | Pos                                   | 4 | 4 4 4 4 4 4 2 -         | 2 4 4 3 -       | 4 4 4 4 4 4 ±              |
| 32                                  | 4                               | 4                       | 4                | 4             | Pos    | Pos                                   | 4 | 4 4 4 4 4 4 2 -         | 4 4 4 4 3 1 -   | 4 4 4 4 4 3 ±              |
| 39                                  | 4                               | 4                       | 4                | 4             | Pos    | Pos                                   | 4 | 4 4 4 4 4 4 2 -         | 2 4 4 4 4 3 ± - | 4 4 4 4 4 4 ±              |
| 46                                  | 4                               | 4                       | 4                | 4             | Pos    | Pos                                   | 4 | 4 4 4 4 4 3 1 -         | 2 4 4 2 ± -     | 4 4 4 4 4 4 ±              |
| 53                                  | 4                               | 4                       | 4                | 4             | Pos    | Pos                                   | 4 | 4 4 4 4 2 1 -           | ± ± 1 1 ± -     | 4 4 4 4 4 3 ±              |
| 60                                  | 4                               | 4                       | 4                | 4             | Pos    | Pos                                   | 4 | 4 4 4 4 4 3 2 -         | 4 4 4 2 ± -     | 4 4 4 4 4 3 -              |
| 66                                  | 4                               | 4                       | 4                | 4             | Pos    | Pos                                   | 4 | 4 4 4 4 3 2 1 -         | 3 4 4 3 ± -     | 4 4 4 4 4 3 -              |
| 74                                  | 4                               | 4                       | 4                | 4             | Pos    | Pos                                   | 4 | 4 4 4 4 4 4 2 -         | 3 3 4 4 ± -     | 4 4 4 4 4 4 -              |
| 86                                  | 4                               | 4                       | 4                | 4             | Dbt    | Pos                                   | 4 | 4 4 4 3 2 -             | 4 4 4 ± -       | 4 4 4 4 1 -                |
| 93                                  | 4                               | 4                       | 4                | 4             | Pos    | Pos                                   | 4 | 4 4 4 4 3 1 -           | 4 4 4 3 ± -     | 4 4 4 4 4 ±                |
| 109                                 | 4                               | 4                       | 4                | 4             | Pos    | Pos                                   | 4 | 4 4 4 4 4 3 1 -         | 4 4 4 4 4 2 -   | 4 4 4 4 4 4 ±              |

Pattern displayed by patient with early syphilis in which the therapy failed to influence the serologic picture

months following treatment. A second patient displayed a well defined serorelapse after an initial favorable serologic trend for one hundred and twelve days after treatment. An additional member of the group experienced a clinical relapse after eighty-four days of practically unchanged high titer positive serologic reactions. Two patients who have displayed a progressive but protracted trend toward reversal cannot be readily classified

phase of the disease at the time of treatment, 11 have progressed to seronegativity or have displayed a consistently satisfactory trend in that direction. Four patients have shown a distinct tendency toward a recurrence of high titer reactions and must be classed as serologic relapses or as treatment failures. Two additional patients are looked on as probable failures and 5 are displaying a serologic trend which, although

favorable at the moment, displays a protracted decline which presages an unfavorable outcome

The remaining tables represent serologic patterns which are considered to be representative of groups of patients

#### COMMENT

The contrast which is displayed in the groups of treated patients rather indicates that (1) very early infections respond in the most favorable manner and (2) the increase in probable failures in patients with secondary syphilis indicates the need of a more vigorous therapy than that used in this study

In evaluating the effectiveness of arsenic therapy in syphilis and of sulfonamide therapy in gonorrhea, it has been noted that a certain proportion of individuals fail to experience the same curative response which may be demonstrable in the majority of patients. A similar characteristic seems to be emerging in penicillin therapy of syphilis

A majority of patients with early syphilis appear to respond to treatment in a satisfactory manner, as judged by the clinical course, and the trend of the serologic reactions. A small group in the present series (7 definitely and 2 probably) appear to have derived a minimum of permanent benefit and must be considered as treatment failures

In sulfonamide therapy of gonorrhea, failures of this type are classed as sulfonamide resistant and much has been written in regard to the drug resistance of strains of *Neisseria gonorrhoeae*. While accepting as possible that strain characteristics may play a role in determining the effectiveness of a therapy, it is felt that certain host factors are largely responsible for determining whether or not an agent, as penicillin, will be effective in infections which are amenable, as a rule, to treatment. It is felt that one of the most important problems in chemotherapy is a delineation of this essential factor and the development of means through which it may be favorably influenced

In all the patients who have been classed as failures an observation period in excess of eighty-four days was required before an adverse decision as to treatment status was considered warranted. The data in these instances and in those which may occur among patients treated in the future will be scrutinized in an effort to determine a reliable basis for a more prompt decision predicated on clinical response and serologic pattern

The making available of a pure or reasonably pure penicillin might effect a distinct change in the treatment picture both as to results produced and as to the duration of treatment dosage and the interval between injections. Equally important will be the development of an assay method which gives assurance that the spirocheticidal activity of a product is consistently proportional to the antibacterial activity on which the present Oxford unit is based

#### CONCLUSION

It is desired to recall that the disease syphilis is one which is characterized by chronicity, with long periods of latency and a distinct tendency to clinical and serologic recurrence. The evaluation of any therapy will require a prolonged trial utilizing a wide variety of treatment schedules and a carefully controlled follow-up system. The combined experience available at this time has served to illuminate only a few of the important aspects. The remainder must await the passage of time

## THE TREATMENT OF EARLY SYPHILIS WITH PENICILLIN

A PRELIMINARY REPORT OF 1418 CASES

JOSEPH EARLE MOORE, MD

BALTIMORE

J F MAHONEY MD

Medical Director U S Public Health Service  
STAPLETON, STATEN ISLAND, N Y

COMMANDER WALTER SCHWARTZ (MC), USN

LIEUTENANT COLONEL THOMAS STERNBERG

MEDICAL CORPS ARMY OF THE UNITED STATES

AND

W BARRY WOOD MD

ST LOUIS

In December 1943 Mahoney, Arnold and Harris<sup>1</sup> reported briefly on the effect of penicillin in experimental syphilis of rabbits and in 4 human patients with sero-positive primary syphilis. As a result of these observations and of further experimental studies carried out in the laboratories of Mahoney<sup>2</sup> and Eagle<sup>3</sup> there was organized, about Sept 1 1943 under the general auspices of the Committee on Medical Research of the Office of Scientific Research and Development and under the specific direction of the Subcommittee on Venereal Diseases National Research Council a cooperative study of the effect of penicillin in syphilis in human beings. A Penicillin Panel was appointed by this subcommittee, with membership including the authors of this paper.<sup>4</sup> Because of the special problems confronting the armed forces particular emphasis has been laid on early syphilis and on neurosyphilis, though other forms of late syphilis have also been studied. The preliminary results obtained to date are here presented in two papers, this dealing with early syphilis, the other with Stokes as spokesman for the group with late syphilis

The penicillin employed has been derived from Army, Navy, Public Health Service and Office of Scientific Research and Development sources. Only the sodium salt has been employed in these studies. Penicillin allocated to the Office of Scientific Research and Development for research purposes has been distributed by the Committee on Chemotherapeutic and Other Agents, National Research Council, Dr Chester Keefer chairman. This committee has allocated gradually increasing amounts of the drug to the Subcommittee on Venereal Diseases which in turn has apportioned it among those civilian clinics selected for participation in the study

Early syphilis is at present under investigation in twenty-three clinics or research centers. These, with the names of the responsible investigators, are as follows: U S Army (Fort Bragg, North Carolina, Capt William Leifer, Camp Howze, Texas Major Franklin Grauer), U S Navy (Naval Medical Center Bethesda Md Lieut Comdr E C Burksdale), United

The authors are members of the Penicillin Panel of the Subcommittee on Venereal Diseases National Research Council

The work described in this paper was done under several contracts recommended by the Committee on Medical Research of the Office of Scientific Research and Development

Read in a panel discussion on Penicillin in the Treatment of Syphilis before the Section on Dermatology and Syphilology at the Ninety Fourth Annual Session of the American Medical Association Chicago June 15 1944

<sup>1</sup> Mahoney J F Arnold D C and Harris A Penicillin Treatment of Early Syphilis A Preliminary Report Ven Dis Inform 24 300 1943

<sup>2</sup> Mahoney J F and others Unpublished data

<sup>3</sup> Eagle H Unpublished data

<sup>4</sup> Dr J R Heller Jr medical director in charge Venereal Disease Division United States Public Health Service was later added to the membership of the panel

States Public Health Service (Marine Hospital, Stapleton, S I, Dr J F Mahoney), Massachusetts Memorial Hospital, Boston (Dr Oscar Cox), Bellevue Hospital, New York (Dr Evan Thomas), Chicago Intensive Treatment Center (Dr S W Becker), Cleveland City Hospital and University Hospitals (Dr Harold Cole), University of Pennsylvania Hospital (Dr J H Stokes), University of Texas (Dr Chester Frazier), Washington University St Louis (Dr W Barry Wood Jr), Yale University (Dr Francis Blake), Dallas Venereal Disease Clinic (Dr Arthur Schoch), Leland Stanford Jr University Hospital (Dr C W Barnett), Duke University Hospital (Dr C L Callo-way), Vanderbilt University Hospital (Dr R H Kampmeier), Johns Hopkins Hospital (Drs J E

uniform manner. The immediate results of treatment were to be reported to the Penicillin Panel on specially devised forms (figs 1 and 2), susceptible of coding, punch carding and machine statistical analysis.

TABLE 1—Four Treatment Schedules

| Duration of Treatment | Interval Between Injections | Route of Administration | Single Dose  | No of Injections | Total Dose      |
|-----------------------|-----------------------------|-------------------------|--------------|------------------|-----------------|
| 7½ days               | 3 hours                     | Intramuscular           | 1 000 units  | 60               | 60 000 units    |
| 7½ days               | 3 hours                     | Intramuscular           | 5 000 units  | 60               | 300 000 units   |
| 7½ days               | 3 hours                     | Intramuscular           | 10 000 units | 60               | 600 000 units   |
| 7½ days               | 3 hours                     | Intramuscular           | 20 000 units | 60               | 1,200 000 units |

On the basis of the very preliminary studies of Mahoney and his associates, there appeared to be five variables requiring study. These were (1) the route of administration, originally chosen<sup>1</sup> as intramuscular for the sake of slightly delayed absorption and excretion as compared to the intravenous route, (2) the interval between injections, at first selected<sup>1</sup> as every three hours day and night on the basis of known data as to the rate of absorption and excretion, (3) the duration of treatment, originally arbitrarily selected as eight days,<sup>1</sup> (4) the total dosage, again arbitrarily selected as 1,200,000 units,<sup>1</sup> and (5) possible combinations of penicillin with other drugs, e g mapharsen.

At the outset it was decided by the Penicillin Panel to hold the first three of these variables constant, i e, all cases were to be treated by the intramuscular route every three hours day and night to a total of sixty injections given in seven and one-half days. The first effort was to be to define the minimum effective dose so given within this time period. Four treatment schedules were accordingly drawn up (table 1).

These covered a twenty fold dosage range up to and including the original maximum arbitrarily chosen by Mahoney and his co-workers. In addition there were originally planned (but subsequently temporarily dropped) two other groups, to test the combined effect of penicillin plus mapharsen. These two groups comprised a total penicillin dosage of 60,000 and 300,000 units respectively plus a total of 320 mg of mapharsen given in eight divided doses of 40 mg each daily for eight days. This mapharsen dosage was deliberately selected as a relatively safe and known subcurative dose from which a high rate of relapse might be expected.

Later, as material accumulated, the variable of time was brought under study, and three additional treatment groups were established with a total dosage of penicillin of 300,000, 600,000 and 1,200,000 units respectively given in thirty intramuscular injections every three hours day and night over a four day period. The latter groups have been so recently started as not

TABLE 2—Duration of Follow-Up from Start of Treatment in 1,418 Patients with Early Syphilis (June 1, 1944)

| Duration of Follow Up Weeks | No of Patients Followed |
|-----------------------------|-------------------------|
| 1 to 4                      | 671                     |
| 5 to 8                      | 307                     |
| 9 to 16                     | 327                     |
| 17 to 24                    | 107                     |
| 25 to 48                    | 6                       |

to justify consideration in this paper, which is devoted entirely to the eight day treatment schedule. The only exception to the statement lies in 25 cases treated by the intravenous route before the present organized study began, in them the dosage was variable and the duration of treatment four to eight days.

FORM A  
PENICILLIN THERAPY STUDY—EARLY SYPHILIS  
IDENTIFICATION

Line No. 1 St dy h Ad D te  
2 Cl e Cl e III t No  
3 Race Se Ag Wt (kg) D  
4 Chancr Pre Ala N d t Dk P h p h d o  
5 Duration of disease (da) Pre P  
6 Skin lesions—type Dkf Pos Neg ND  
Bl co membrane Dkf Pos Neg ND  
7 Other secondary lesions—type P moist (fem le) (other) (other)  
8 Serology (record only last test im ed t type t g re timent)  
D te Techni Q a t a t e  
9 Spinal FL d (f ePa) T tal P Date C H dal G H (last) C mpt. Fix (test q e) (res ti)  
10 Date Cells  
11 Oth

TREATMENT

Pen c illin M ufact rec Check this square if irregular ty in Rx  
Lot N \_\_\_\_\_ scheduled occurs ☒ IS  
Pe te f dm (ration (oth than 100) — IV \_\_\_\_\_ H d ip SC IS  
12 P icill dat started \_\_\_\_\_ Mapharsen dat started \_\_\_\_\_  
13 L to pe f f Mgm per in T L No  
14 Int. betw doses Int. in Inj  
15 N. injection N. injection total D ratio Maph. T tal Drug  
16 D rat Rx (d. yr) Hersh mer (type & grade) Oth p a tions type & severity  
17 T tal drug P marks (not affect f pe c illin if ny on associated dose se ne cal or oth r)  
18 N. rx use (type & grade)  
19 Oth re lions (type & severity)  
20 Disapp time T tal (hours)  
21 Learn at ad f l (check o e) h led healing h re po  
22 Other P's if any

Fig 1—Obverse of form for reporting early syphilis by participating clinics

Moore and C F Mohr), Tulane University (Dr R V Platou), Presbyterian Hospital, New York (Dr A B Cannon), University of Virginia Hospital (Dr D C Smith), New York Hospital (Dr Walsh McDermott) and the Detroit Health Department (Dr Loren Shaffer). This report is based on the work of these investigators and of many of their associates and assistants, too numerous to name.

These clinics and centers agreed (1) to treat patients with early syphilis on assigned treatment schedules in an effort to define as promptly as possible the all important time-dose relationship and (2) to pool their results under the Penicillin Panel of the Subcommittee on Venereal Diseases. Only those patients in whom the diagnosis of early syphilis was indubitable, on the basis of actual demonstration of treponemes, were to be acceptable. All patients were to be originally examined and subsequently followed in as nearly as possible a

For the purposes of this report, the books of the Penicillin Panel have been temporarily closed as of May 25, 1944. To that date there had been received 1,587 case reports of early syphilis, of which 1,418 were suitable for analysis as to various points. Of these 177 had seronegative primary, 379 seropositive primary, 698 uncomplicated and 67 complicated<sup>6</sup> early secondary syphilis and 97 various types of recurrent (usually previously treated) secondary syphilis. Of the patients 461 were white, 950 Negro and 7 of other races, 791 were male and 627 female, of whom 58 were pregnant at the time of treatment.

The preliminary nature of this report is indicated by table 2, in which the duration of follow-up after treatment is shown. The majority of patients have so far been observed for less than two months, only 113 of the entire number for four months or longer. This fact must be repeatedly emphasized as a matter of caution, the results here presented are subject to major revision after further observation. It is planned to report further information as it develops at three to six month intervals.

THE IMMEDIATE RESULTS OF TREATMENT

**Disappearance Time of *Treponema Pallidum* from Open Lesions**—Data are available on this point from 663 cases treated with penicillin alone (excluding those cases treated with penicillin plus mapharsen).

Regardless of the single or total dose of penicillin, organisms have promptly disappeared from open lesions in every case within a range of six to sixty hours. At the two extremes of dosage, 1,000 and 40,000 units, the average disappearance time varied only from twenty-one to fourteen hours. Whether the apparent trend toward shortening of disappearance time is significant is open to question because of the varying intervals at which dark field examinations were done in the several clinics. Not shown in the table is the fact that the intravenous holds no advantage over the intramuscular route in this respect.

**Healing of Lesions**—This is difficult to measure in statistical terms. There has been no observed instance of failure of lesions to heal, regardless of the single or total dose. With a total dosage of 60,000 units in eight days, healing is less prompt than with arsenical therapy, with larger total dosage, 300,000 units and up, it is as rapid as with standard chemotherapy or more so.

**Serologic Response**—In figure 3 is shown the median blood serologic response,<sup>7</sup> in terms of quantitative titer, of four groups of patients treated with penicillin alone (excluding those treated with penicillin plus mapharsen). Included are both seropositive primary and secondary syphilis. Regardless of the total dosage, whether 60,000, 300,000, 600,000 or 1,200,000 units, there is apparent a trend toward serologic reversal within a period of about twenty days after the start of treatment. Within the range of 300,000 to 1,200,000 units this trend is approximately uniform, regardless of

dosage, with 60,000 units it is a little slower and less pronounced. Parenthetically, this rate of serologic reversal is identical with that observed after arsenical chemotherapy, whether with an arsphenamine at weekly

TABLE 3—Average Disappearance Time of *Treponema Pallidum* from Open Lesions of Early Syphilis After 1 Aving Treatment Schedules (June 1, 1944)

| Size of Individual Dose Given Every Three Hours Units | Cases | Average Disappearance Time of <i>Treponema Pallidum</i> Hours |
|---|-------|---|
| 1 000   | 52    | 21  |
| 5 000   | 201   | 20  |
| 10 000  | 337   | 19  |
| 20 000  | 135   | 15  |
| 40,000  | 38    | 14  |

intervals or mapharsen given by various intensive methods.

Further data are shown in tables 4 and 5. In table 4 is summarized the blood serologic response of 48

Follow-up Observation (not to be filled in by Clinic)

Patient Name \_\_\_\_\_

| No. | Obs. Period Days after Start of Tx | Clinical Status | STS (technique employed) | W. B. Quant. t. |
|-----|------------------------------------|-----------------|--------------------------|-----------------|
| 1   | 6-7                                |                 |                          |                 |
| 2   | 8-14                               |                 |                          |                 |
| 3   | 15-21                              |                 |                          |                 |
| 4   | 22-28                              |                 |                          |                 |
| 5   | 29-35                              |                 |                          |                 |
| 6   | 36-42                              |                 |                          |                 |
| 7   | 43-49                              |                 |                          |                 |
| 8   | 50-56                              |                 |                          |                 |
| 9   | 57-63                              |                 |                          |                 |
| 10  | 64-70                              |                 |                          |                 |
| 11  | 71-77                              |                 |                          |                 |
| 12  | 78-84                              |                 |                          |                 |
| 13  | 85-91                              |                 |                          |                 |
| 14  | 92-98                              |                 |                          |                 |
| 15  | 99-105                             |                 |                          |                 |
| 16  | 106-112                            |                 |                          |                 |
| 17  | 113-119                            |                 |                          |                 |

Time required from onset of treatment to seronegativity (first) \_\_\_\_\_ (permanent) \_\_\_\_\_

Final Classification \_\_\_\_\_

| Delivery (days after start of Rx) | Cerebrospinal Fluid (Follow-up examination) |       |                 |  |           |       |
|-----------------------------------|---|-------|-----------------|--|-----------|-------|
|                                   | D. L.                                       | Cells | Tot. Prot. mgm. | Complete 1 fix (smallest amt. given & pos. res. R) | Colloidal | Other |
| 1                                 |   |       |                 |  |           |       |
| 2                                 |   |       |                 |  |           |       |
| 3                                 |   |       |                 |  |           |       |
| 4                                 |   |       |                 |  |           |       |
| 5                                 |   |       |                 |  |           |       |
| 6                                 |   |       |                 |  |           |       |

Clinical and serologic status child \_\_\_\_\_

Fig. 2—Reverse of form for reporting early syphilis by participating clinics

patients with seronegative primary syphilis observed for nine or more weeks after the start of treatment. These are not broken down by total dosage since regardless of the range of 60,000 to 1,200,000 units, the response was identical. In 28 patients the serologic test for syphilis, originally negative, remained so

TABLE 4—Blood Serologic Response in Seronegative Primary Syphilis, Patients Followed More Than Nine Weeks from Start of Treatment, All Treatment Schedules Combined (June 1, 1944)

| Cases Followed | Serologic Test for Syphilis |  |                   |
|----------------|-----------------------------|--|-------------------|
|                | Negative, Remained Negative | Negative, Became Positive Later Negative | Serologic Relapse |
| 48             | 28                          | 18                                       | 2                 |

throughout the period of observation, in 18 it became temporarily positive, then reverted to negative, and in 2 only there was a subsequent serologic relapse. From the serologic standpoint, therefore, and during the very brief observation period so far available, the results may be said to be satisfactory in 95.8 per cent of the cases.

<sup>6</sup> Complicated by asymptomatic neurosyphilis, syphilitic meningitis or ocular, osseous or visceral lesions.  
<sup>7</sup> This has been determined by a statistical device which assigns to the initial quantitative titer, regardless of the actual number of units, the numerical value of 100. All subsequent observations are expressed in terms of per cent of the original titer.



In seropositive early syphilis (combining seropositive primary and secondary syphilis) the results, now broken down by treatment schedule, are shown in table 5 (limited to patients observed for nine or more weeks after the start of treatment). Here there is a direct relationship between "satisfactory" and "unsatisfactory" immediate serologic results and total dosage of penicillin, the larger the dose, the better the result. The only and perhaps a major exception to this is in the group of patients who received 300,000 units of penicillin plus 320 mg of mapharsen in seven and one-half days. This group shows as good initial results as were shown by patients receiving four times as much penicillin without mapharsen.

So far it is clear that the minimum effective dose of penicillin in early syphilis in man cannot be determined on the bases of disappearance time of surface organisms, healing of lesions or (except very roughly) serologic

relapse or apparently reinfection, has been classified as clinical relapse. Serologic relapse includes not only those who, originally seronegative or rendered so by treatment, subsequently became seropositive but also those who, still seropositive in low titer, subsequently develop high titer tests.<sup>8</sup> An effort has been made to

TABLE 6—Incidence of Relapse in Seronegative Primary Syphilis Treated by Varying Schedules in Eight Days, Patients Observed for More Than Thirty-Eight Days (June 1, 1944)

| Treatment Schedule<br>Total Dose Units | Cases<br>Followed | Relapse  |           |                 | %   |
|--|-------------------|----------|-----------|-----------------|-----|
|  |                   | Clinical | Serologic | Total<br>Number |     |
| 60 000                                 | 1                 |          |           |                 |     |
| 200 000                                |                   |          |           |                 |     |
| 300 000                                | 14                | 1        |           | 1               | 7.2 |
| 600 000                                | 21                | 1        | 1         | 2               | 9.5 |
| 1 200 000                              | 52                |          |           |                 |     |
| Intravenous (see text)                 | 4                 |          |           |                 |     |
| Total                                  | 92                | 2        | 1         | 3               | 3.2 |

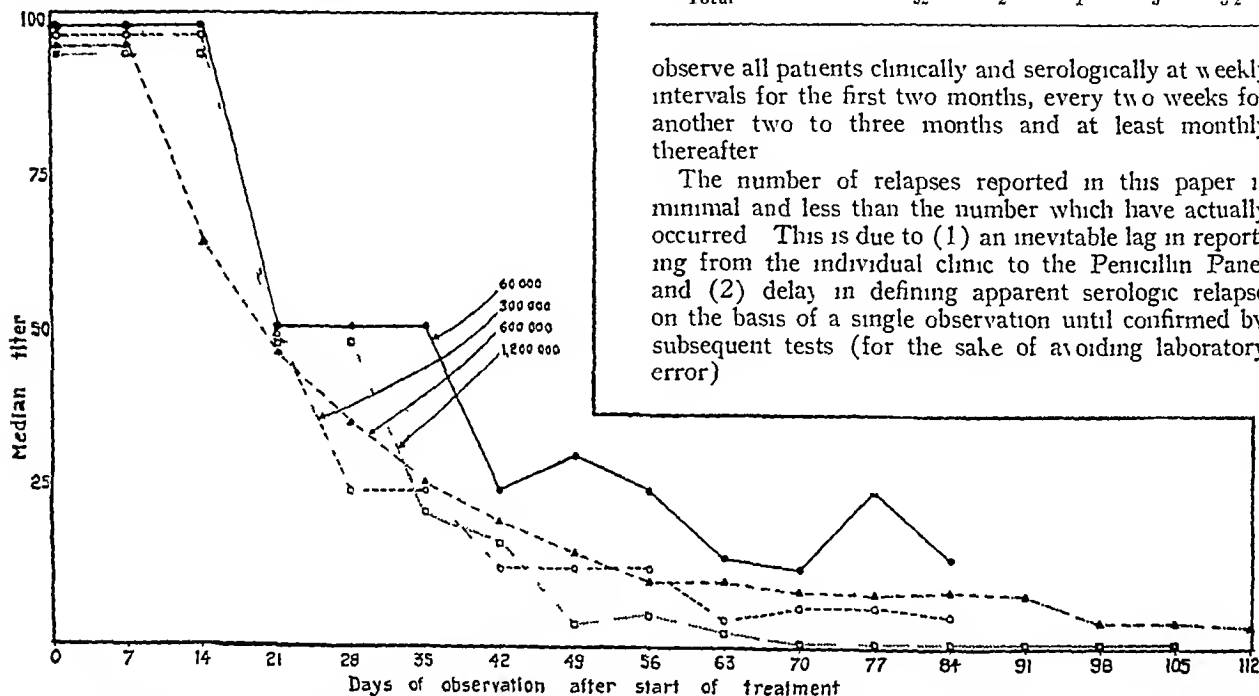


Fig. 3—Median serologic response of seropositive early syphilis to penicillin with four treatment schedules ranging from 60 000 to 1 200 000 units total dose in eight days. June 1, 1944.

response since, regardless of total dose, within the range employed the drug is effective in all of these respects. The only available criterion lies, therefore, in the incidence of relapse.

TABLE 5—Blood Serologic Response in Seropositive Early Syphilis According to Treatment Schedule, Patients Followed More Than Nine Weeks from Start of Treatment (June 1, 1944)

| Treatment Schedule<br>Units | Cases<br>Followed | Serologic Test for Syphilis Response               |  |
|-----------------------------|-------------------|--|--|
|                             |                   | Satisfactory<br>(Revered or<br>Titer Falling)<br>% | Unsatisfactory<br>(No Significant<br>Change or<br>Relapse) % |
| 60 000                      | 38                | 57.8   | 42.1   |
| 60 000 + mapharsen          | 26                | 76.9   | 23.0   |
| 300 000                     | 79                | 82.1   | 17.7   |
| 300 000 + mapharsen         | 24                | 91.6   | 8.3  |
| 600 000                     | 109               | 88.0   | 12.0   |
| 1 200 000                   | 67                | 90.3   | 9.6  |

**Relapse After Penicillin Treatment**—In this material relapse has been rigidly defined. Any subsequent clinical manifestation of the disease, whether obviously

observe all patients clinically and serologically at weekly intervals for the first two months, every two weeks for another two to three months and at least monthly thereafter.

The number of relapses reported in this paper is minimal and less than the number which have actually occurred. This is due to (1) an inevitable lag in reporting from the individual clinic to the Penicillin Panel and (2) delay in defining apparent serologic relapse on the basis of a single observation until confirmed by subsequent tests (for the sake of avoiding laboratory error).

The method of statistical reporting here adopted is recognizedly inaccurate in that the incidence of relapse is related to the total number of patients observed for a period of time greater than that of the earliest observed relapse. In the tables to follow all patients are included who were observed for thirty-eight days or longer after the start of treatment, since this was the shortest interval at which relapse was observed. The brief interval available for study prevents the adoption of the statistical method used by Eagle,<sup>9</sup> which will, however, be utilized in later more definitive analyses. Preliminary rough test of this method of appraisal suggests that the eventual incidence of relapse will probably be from four to five times as great as that reported here. In table 6 is shown the incidence of relapse, clinical and serologic, in 92 patients with sero-

<sup>8</sup> Not yet classified as relapse or unsatisfactory result are those patients whose serologic tests have shown no improvement. Twelve months after treatment will be allowed to elapse before such patients are classified as seroresistant.

<sup>9</sup> Eagle, H. The Treatment of Early and Latent Syphilis in Nine to Twelve Weeks with Triweekly Injections of Mapharsen. A Preliminary Analysis of the First 4,823 Cases to be published.

negative primary syphilis The numbers, broken down by treatment schedule, are too small to be significant though the total observed relapse rate, 32 per cent, is low

Similar data for seropositive primary syphilis are shown in table 7 and for secondary syphilis in table 8

TABLE 7—Incidence of Relapse in Seropositive Primary Syphilis Treated by Varying Schedules in Eight Days, Patients Observed for More Than Thirty-Eight Days (June 1, 1944)

| Treatment Schedule,<br>Total Dose, Units | Cases<br>Followed | Relapse  |           |                 | %    |
|--|-------------------|----------|-----------|-----------------|------|
|  |                   | Clinical | Serologic | Total<br>Number |      |
| 60 000                                   | 8                 | 2        |           | 2               | 25.0 |
| 200 000                                  | 3                 |          |           |                 |      |
| 300 000                                  | 30                | 2        | 1         | 3               | 10.0 |
| 600 000                                  | 37                |          |           |                 |      |
| 1 200 000                                | 75                | 1        | 1         | 2               | 2.6  |
| Intravenous (see text)                   | 5                 | 1        |           | 1               | 20.0 |
| Total                                    | 153               | 6        | 2         | 8               | 5.0  |

TABLE 8—Incidence of Relapse in Secondary Syphilis Treated by Varying Schedules in Eight Days, Patients Followed for More Than Thirty-Eight Days (June 1, 1944)

| Treatment Schedule,<br>Total Dose, Units | Cases<br>Followed | Relapse  |           |                 | %    |
|--|-------------------|----------|-----------|-----------------|------|
|  |                   | Clinical | Serologic | Total<br>Number |      |
| 60 000                                   | 37                | 9        | 2         | 11              | 29.6 |
| 200 000                                  | 8                 | 3        |           | 3               | 37.5 |
| 300 000                                  | 94                | 6        | 4         | 10              | 10.6 |
| 600 000                                  | 136               | 4        | 3         | 7               | 5.0  |
| 1,200 000                                | 64                |          | 2         | 2               | 3.1  |
| Intravenous (see text)                   | 16                | 1        | 1         | 2               | 12.5 |
| Total                                    | 355               | 23       | 12        | 35              | 9.8  |

These relate to patients treated with penicillin alone (excluding the combined penicillin with mapharsen groups) Here there is obvious a direct correlation between total dose and relapse incidence

The data of tables 6, 7 and 8 are combined in table 9 for all patients with early syphilis, and here is added information concerning the patients treated with penicillin plus 320 mg of mapharsen (two groups, 60,000 and 300,000 units respectively) and also concerning a small group of patients (25 in number) treated by the intravenous route before the present organized study was begun In patients treated with penicillin by the intramuscular route the incidence of relapse, even in the brief observation period available, is in direct proportion to total dosage (nearly 30 per cent with 60,000 units, only 2 per cent with 1,200,000 units) In the small group who received large doses intravenously, ranging from 600,000 to 1,200,000 units, and whether by multiple injections or continuous drip, the observed relapses are five to six times as great as in patients treated with comparable doses by the intramuscular route, suggesting that the intravenous route not only holds no advantage over the intramuscular route but is actually less effective

In table 10 the incidence of relapse is related to the stage of disease at the start of treatment in patients treated with penicillin alone (omitting the groups combined with mapharsen, among which only 1 relapse has so far occurred) and without regard to total dosage In conformity with Eagle's report<sup>9</sup> as to semi-intensive arsenotherapy, and in contrast to the older Cooperative Clinical Group and other data<sup>10</sup> as to "standard" prolonged arsenical chemotherapy, there seems to be here a direct relationship between the stage of the disease at

the time of starting treatment and the incidence of relapse The proportions in patients treated with penicillin alone are 32 per cent for seronegative primary 50 per cent for seropositive primary and nearly 10 per cent for early secondary syphilis

Table 11 shows the average and extreme intervals between the start of treatment and observed relapse Here there is no direct correlation as to total dose Relapses have occurred as early as thirty-eight days and as late as two hundred and ninety-four days after the start of treatment Considering the short periods of observation so far available for all groups treated further relapses in all may be confidently anticipated

*The Optimum Time-Dose Relationship for Penicillin in Early Syphilis*—The available data indicate that within the twentyfold dosage range employed in a period of seven and one-half days penicillin has a profound immediate effect in terms of disappearance of surface organisms, healing of lesions and serologic reversal In seronegative primary syphilis no statements as to minimum effective dose are as yet justifiable In seropositive primary and early secondary syphilis any dose less than 600 000 units in seven and one-half days is clearly ineffective A total dose of 600 000 units provides a minimum relapse rate of nearly 5 per cent, of 1,200,000 units a rate of 2 per cent, within the short period for which such patients have so far been followed The intravenous route appears to be less effective, even in large doses than the intramuscular

The possibility that even 1,200,000 units in a four to eight day period will prove to be efficacious after further observation has led the Penicillin Panel to inaugurate the study of two additional treatment groups

TABLE 9—Incidence of Relapse in All Types of Early Syphilis Treated by Varying Schedules, Patients Observed for More Than Thirty-Eight Days (June 1, 1944)

| Treatment Schedule<br>Total Dose, Units<br>(Route Intramuscular<br>Unless Specified) | Cases<br>Followed | Relapse  |           |                 | %    |
|--|-------------------|----------|-----------|-----------------|------|
|  |                   | Clinical | Serologic | Total<br>Number |      |
| 60 000   | 46                | 11       | 2         | 13              | 28.2 |
| 60 000 + 320 mg mapharsen  | 96                |          |           |                 |      |
| 200 000  | 11                | 3        |           | 3               | 27.2 |
| 300 000  | 158               | 9        | 5         | 14              | 10.1 |
| 300 000 + 320 mg mapharsen   | 68                | 1        |           | 1               | 1.4  |
| 600 000  | 194               | 5        | 4         | 9               | 4.6  |
| 1 200 000  | 191               | 1        | 3         | 4               | 2.0  |
| Various Intravenous Schedules *  | 25                | 2        | 1         | 3               | 12.0 |

\* Dosage range 600 000 to 1 200 000 (all but 3 cases 1 million +) single intravenous injections, intravenous drip or both in 4 to 8 days

TABLE 10—Incidence of Relapse by Stage of Disease All Treatment Schedules\* Combined, Patients Followed More Than Thirty-Eight Days (June 1, 1944)

| Stage of Disease     | Cases<br>Followed | Relapse  |           |                 | %   |
|----------------------|-------------------|----------|-----------|-----------------|-----|
|                      |                   | Clinical | Serologic | Total<br>Number |     |
| Primary seronegative | 92                | 2        | 1         | 3               | 3.2 |
| Primary seropositive | 158               | 6        | 2         | 8               | 5.0 |
| Secondary            | 255               | 23       | 12        | 35              | 9.8 |

\* Omitting 94 patients treated with penicillin + mapharsen

given a total of 2 400 000 units in thirty and sixty intramuscular injections in four and seven and one-half days respectively These patients are being treated in the United States Army and eight selected United States Public Health Service rapid treatment centers

The results obtained to date in the two small groups of patients given 60 000 and 300 000 units of penicillin respectively in each case plus the known subcurative

10 Stokes J H and others Cooperative Clinical Studies in the Treatment of Syphilis Early Syphilis Ven Dis Inform 13 165 207 and 253 1932

total dose of 320 mg of mapharsen in eight days, are worth emphasizing. In 94 such patients followed for thirty-eight days or more only one relapse has occurred. It is perhaps to be expected that certain patients with early syphilis will prove to be resistant to penicillin exactly as a relatively standard proportion of 5 to 15 per cent of patients has proved to be resistant to arsenic heavy metal chemotherapy. But, in view of what is already known concerning the probable modes of action of penicillin and of arsenic and bismuth in syphilis (considerations too lengthy for discussion here) it is possible that those patients resistant to penicillin will not be the same ones resistant to metal chemotherapy and that a combination of the two forms of treatment will eventually prove to be more effective than any method of use of either one alone.

It should also be emphasized that penicillin, as so far employed in early syphilis is not suitable for mass application. Injections every three hours day and night over whatever period of time demand hospitalization and trained nursing or professional care. However available these may be for the armed forces, facilities are inadequate in civilian practice to meet the enormous demand. The eventual general use of the drug depends

TABLE 11—Average and Extreme Intervals from Start of Treatment to Relapse According to Treatment Schedule (June 1, 1944)

| Treatment Schedule  | Units | Average Interval<br>Days | Extreme Intervals,<br>Days |
|---------------------|-------|--------------------------|----------------------------|
| 60,000              |       | 104                      | 64 to 154                  |
| 60,000 — mapharsen  |       | No relapses observed     |                            |
| 600,000             |       | 116                      | 83 to 135                  |
| 300,000             |       | 90                       | 38 to 166                  |
| 600,000 — mapharsen |       |                          | 53*                        |
| 600,000             |       | 93                       | 73 to 113                  |
| 1,200,000           |       | 132                      | 6 to 294                   |
| Intravenous         |       | 74                       | 56 to 126                  |

\* One relapse only

on the development of methods which will permit its administration on an ambulatory basis.

As with arsenical chemotherapy, it is probable that the optimum time-dose relationship for the treatment of early syphilis in man with penicillin alone and its relative efficacy when administered alone or in combination with other forms of treatment will be guided by data from the experimental laboratory not as yet available but shortly to be expected.

In man further immediate studies should be directed to (1) determination of the relative effectiveness of 1,200,000 units versus much larger doses in four and eight days respectively, (2) variation of the time interval between individual dosage within the range of three to twenty-four hours, (3) more exact definition of the merits of intravenous versus intramuscular administration and (4) an expansion of the combinations penicillin plus arsenic and penicillin plus bismuth.

**Results of Treatment of Special Forms of Early Syphilis**—Thirteen patients with early syphilis in this series had positive spinal fluids before treatment (11 of them group 2, 2 group 3). Of these, the fluid abnormalities disappeared or improved under penicillin treatment alone in 10 within time period ranging from ten to fifty days, 3 were unimproved.

**Acute Syphilitic Meningitis**—Ten patients with this complication of early syphilis have been treated, the majority with 1,200,000 units in seven and one-half days. Symptomatic relief has been dramatically prompt in all and in the majority spinal fluid abnormalities have disappeared or are rapidly improving.

**Treatment Resistant Early Syphilis**—Eight patients, most of them with dark field positive psoriasiform syphilids, persisting in spite of or recurring during metal chemotherapy, have been treated with penicillin, with prompt healing in all and with subsequent serologic behavior similar to that of previously untreated early syphilis.

**Infantile Congenital Syphilis**—Not included in the tabular presentations are some 20 infants with early congenital syphilis. The majority of them have been treated with a total dose of penicillin of 20,000 units per kilogram of body weight, corresponding to a total dose of 1,200,000 units in the adult. Their behavior in terms of symptomatic improvement and serologic response is analogous to that of early acquired syphilis in the adult.

**The Outcome of Pregnancy**—Though 58 pregnant women with early syphilis have so far been treated, it is too early to speak of any results as to the outcome in the child.

#### REACTIONS TO PENICILLIN

**Hervheimer Reactions**—Of 1,418 patients treated, 846 (59 per cent) have had Hervheimer reactions within the first twenty-four hours. This consists usually of fever alone (685 cases), in the others, exacerbation of secondary skin lesions with or without fever. The fever is usually mild (less than 102 F), though in 174 cases (12 per cent) the febrile rise has been higher than this level. In no case has the reaction been alarming, nor has it interfered with subsequent treatment.

**Other Reactions**—Only 59 patients (41 per cent of the total treated) have had other reactions attributable to penicillin. In 15 there were cutaneous eruptions (8 urticaria, 7 other types of skin rashes, none severe). Seven had mild gastrointestinal reactions, 33 secondary fever, 2 abscessed buttocks and 2 miscellaneous mild disturbances. In no case has penicillin treatment had to be suspended because of reactions from the drug.

#### SUMMARY

1 An organized study of the effect of penicillin in early syphilis is in progress in an effort to determine the optimum method of use of the drug. The results so far available are preliminary.

2 Penicillin has a profound immediate effect in early syphilis in terms of (a) disappearance of surface organisms from open lesions, (b) healing of lesions and (c) a trend toward serologic reversal.

3 These immediate effects are in general identical within a twentyfold dosage range of 60,000 to 1,200,000 units administered by the intramuscular route every three hours day and night to a total of sixty injections in seven and one-half days.

4 The same immediate effects are apparent within the dosage range of 300,000 to 1,200,000 units given by the intramuscular route every three hours day and night to a total of thirty injections in four days.

5 These immediate effects cannot be utilized to determine the optimum time-dose relationship, which, in man, depends on the incidence of relapse.

6 The incidence of relapse, when penicillin is administered alone, is in direct relationship to the total dosage given by the intramuscular route in a seven and one-half day period, greatest with 60,000 units and least with 1,200,000 units.

7 Relapse appears to be more frequent after intravenous than after intramuscular administration of comparable doses.

8 The lowest incidence of relapse—and the most favorable serologic response—was in small groups of patients treated with 60,000 and 300,000 units respectively of penicillin plus a known subcurative dose of mapharsen

9 Penicillin has a favorable effect in early asymptomatic neurosyphilis, acute syphilitic meningitis, early syphilis treatment resistant to arsenic and bismuth and infantile congenital syphilis

10 No opinion can be as yet expressed as to the effect of penicillin in the prevention of prenatal syphilis

11 The optimum time-dose relationship of penicillin in early syphilis is not yet established. Certainly the minimum dose, especially in secondary syphilis, should not be less than 1,200,000 units, probably it should be more

12 Herxheimer reactions after the penicillin treatment of early syphilis are frequent but not serious, other reactions, due to penicillin itself, are negligible

13 Further avenues of study are suggested

## THE ACTION OF PENICILLIN IN LATE SYPHILIS

INCLUDING NEUROSYPHILIS, BENIGN LATE SYPHILIS  
AND LATE CONGENITAL SYPHILIS  
PRELIMINARY REPORT

JOHN H. STOKES, M.D.  
PHILADELPHIA

LIEUTENANT COLONEL THOMAS H. STERNBERG  
MEDICAL CORPS ARMY OF THE UNITED STATES

COMMANDER WALTER H. SCHWARTZ (MC), U.S.N.

JOHN F. MAHONEY, M.D.  
Senior Surgeon U. S. Public Health Service  
STAPLETON, STATEN ISLAND, N. Y.

J. E. MOORE, M.D.  
BALTIMORE  
AND

W. BARRY WOOD, JR., M.D.  
ST. LOUIS

These cases are drawn from eight clinics at present engaged in a study of the effect of penicillin on late syphilis, under the general auspices of the Committee on Medical Research of the office of Scientific Research and Development. These, with the names of the responsible investigators, are as follows: University of Pennsylvania (John H. Stokes, M.D.), Cornell University (Walsh McDermott, M.D.), Mayo Clinic (Paul A. O'Leary, M.D.), Boston Psychopathic Hospital (Harry P. Solomon, M.D.), University of Michigan (Udo J. Wile, M.D.), Bellevue Hospital (Evan Thomas, M.D.) and Johns Hopkins University (J. E. Moore, M.D.). Associated with each of them are various co-workers and assistants too numerous to mention here, but to whom due credit will subsequently be given.

Penicillin has distinctly beneficial serologic and clinical effects on neurosyphilis, including early and late manifestations, not excepting tabes and paresis, and including asymptomatic neurosyphilis. Its action on gummatous manifestations of skin, mucosae and bones

is so striking and complete that it seems unnecessary to collect further cases merely to demonstrate it as such. In ocular syphilis, simple inflammatory processes respond, later and more complicated lesions such as the optic neuritides and interstitial keratitis recover, relapse, present resistance and residues proportional to damage already done. This statement is probably true of visceral syphilis and of special localized processes and eighth nerve involvement.

These categorical statements are based on a material collected from 182 cases, observed for periods ranging from eight to two hundred and fourteen days after the institution of treatment. The preliminary conclusions are sharply limited by qualifications involving not only duration of observation and small numbers in individual breakdown items but by wide variation in time-dose relationships and little uniformity as to time and type of test and recheck procedure. No precedents existing, each investigator groped his way into his problem. A considerable part of the material collected from nonuniform records was of such short observation and so "mixed" in therapeutic procedure that it furnished little evaluative worth. The distribution by source, duration of observation and diagnosis is given in table 1. Paresis, a crucial tester of therapeutic effect, heads the list (56 cases) and neurosyphilis totals 122 cases. Observation of sixty days or more was maintained in 44 Pennsylvania, 20 Johns Hopkins, 11 Mayo, 1 Bellevue, 5 New York Hospital and 1 Michigan case—a total of 82 cases.

Notwithstanding the limitations described, the material furnished the basis for demonstrating by both symptoms and laboratory tests (quantitative serologic spinal fluid examination) the incontestable reality of the effect of penicillin treatment in syphilis. It permits an exploratory breakdown into grades of treatment effect as such, in relation to previous standard treatment, by at least two grades of intensity of penicillin treatment—low intensity (type A) 600,000 to 1,200,000 units of the sodium salt at 10,000 to 25,000 units intramuscularly every three to four hours and high intensity (type B) 2,400,000 to 4,000,000 units at 25,000 to 50,000 units intramuscularly every two to four hours. It was not possible from this material to estimate the difference in effect of hourly variations or unit dose variations, or of intravenous or intraspinal medication.

### EFFECT OF PENICILLIN ON THE REAGIN TITER OF THE BLOOD

Irrespective of the system used and in all types of late (excluding latent) syphilis, penicillin causes improvement (reduction) of reagin titer in from about 50 to 60 per cent of 96 late cases in which such data were available (table 2). An initial Herxheimer-like rise or "provocative" effect is observable in about 20 per cent of late cases. Within the period of observation 10 per cent of late cases became completely negative.

In 5 cases of seroresistant syphilis, 1 became negative (low titer to start with) and 4 improved. Herxheimer effect occurred in 1.

In 32 cases of general paresis disregarding treatment system employed, 16 were serologically improved, 2 reduced to negative.

### EFFECT OF PENICILLIN ON THE SPINAL FLUID IN NEUROSYPHILIS

This furnishes probably the most graphic demonstration of the effect of penicillin, because of its multiple quantitative approach. Seven grades of change were

The authors are members of the Penicillin Panel of the Subcommittee on Venereal Diseases, National Research Council.

The work described in this paper was done under contract recommended by the Committee on Medical Research between the Office of Scientific Research and Development and several universities.

Read in a panel discussion on Penicillin in the Treatment of Syphilis before the Section on Dermatology and Syphilology at the Ninety-Fourth Annual Session of the American Medical Association, Chicago, June 1, 1944.

deteriorated cases (10) made less response, 1 improving 50 per cent, 2 75 per cent and 7 showing no change. The 1 patient with progressive or galloping paresis in Solomon's service died and 1 of Moore's simple demented patients died thirteen weeks after penicillin.

We know of no record of spontaneous remission under the good effects of hospitalization which can

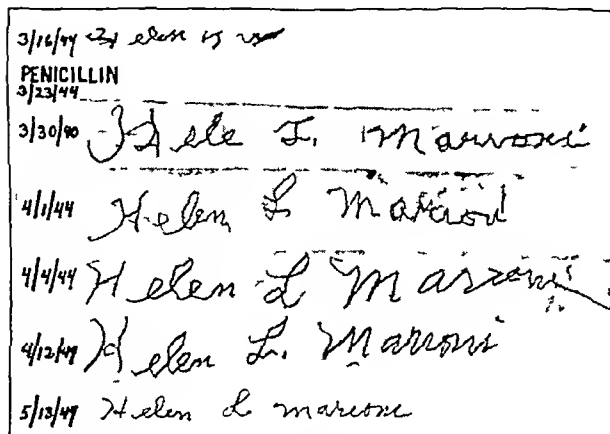


Fig 1—Improvement in handwriting of a simple demented parietic patient approximately six weeks after penicillin treatment. The signature before treatment is given above the word penicillin (courtesy of George D Gammon, M.D.).

approach this. The transformations in orientation, speech, handwriting and encephalographic findings will be more fully presented from the University of Pennsylvania material in objective form by George D Gammon, M.D., in a forthcoming paper. From the collected records, however, two brief summaries are given.

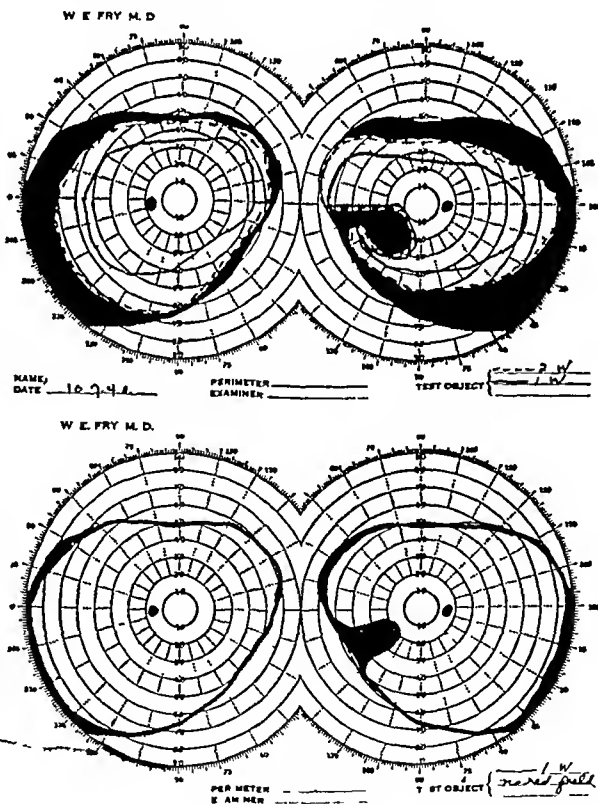
A white woman aged 34 with symptomatic paresis, grade 4 cerebrospinal fluid, could not write or do housework. She had auditory hallucinations, personality changes, disorientation, tremor of the tongue, hands and mouth, and slurred speech. On the second day of penicillin therapy she had a Herxheimer reaction with right-sided convulsions becoming generalized. After twenty-four hours penicillin was reinstituted at half dose to a total of 1,200,000 units without untoward effect. By the sixteenth day the patient was completely oriented, with memory, speech, tremor and electroencephalogram improved. In four months the patient was tremor free, speech and writing were normal (fig 1), she was well oriented and hallucination free and was satisfactorily performing housework including marketing with points and driving a car. Clinical improvement was not accompanied by improvement in the spinal fluid.

A white man aged 42 with symptomatic paresis developed mispronouncing of words, garbled speech, uncertain gait, tremor of hands and difficulty in writing in August 1943, when a shell exploded near him. Forty-eight arm and hip injections were given. He became boastful, speech rambling and tremors were more pronounced, handwriting was worse and calculation poor. His condition was unimproved during hospitalization after 50,000 Oxford units per dose of penicillin to a total of 4,000,000 units. Clinical improvement occurred three weeks after penicillin with loss of tremors, improved handwriting and speech. He passed an examination as a pipe-fitter. The cerebrospinal fluid did not

3 with lightning pains of unusual severity plus 4 taboparetic patients with lightning pains who were grouped together with respect to this symptom. Of the 14 tabetic patients 3 improved to the extent of 50 per cent or more, and 2 of them with lightning pains were relieved completely. Eleven tabetic patients showed no change. Of the patients with primary optic atrophy none were made worse, and 1 whose visual fields are shown (fig 2) improved slightly but definitely in both fields and visual acuity, with concomitant improvement in the spinal fluid. There is some question as to whether the sector defect in the left field is not a residue of a retrobulbar neuritic process. Of the total of 7 patients with lightning pains, 2 were completely relieved, 1 improved 50 per cent, 2 improved 25 per cent, 1 was unchanged and 1 became worse.

Of 16 patients with various forms of meningovascular neurosyphilis, 6 presented no data on clinical improvement. Of the remaining 10, clinical improvements of 75 per cent were observed in 2, 50 per cent in 2 and 25 per cent in 2, with 3 showing no change and 1 becoming worse.

It is of course difficult to evaluate symptomatology into which elements of the subjective and the influence of suggestion, rest, practice (as in eye and station and gait tests) enter. The intervention of trifling or routine medication (as in the eye, for example) with improvement found to have begun before penicillin, and hence



Pennsylvania Penicillin Series showing defect

fluids and completely achieve them on retreat-  
similar dosage, a steplike method of  
applications of treatment as distin-  
massive session would seem to  
ing the patient over the  
re is a recognized  
late neuro-

ed in 45 per  
ment cases, and  
B cases Longer  
cases would probably

# IN RELATION TO ACTIVITY

and the spinal fluid as a guide  
low, 21 to 60 as medium and 61  
ll counts, an attempt was made to  
ement was greater in cases showing  
is an index of definite inflammatory  
ison to those showing low cell counts  
rated as high, improvement occurred

small Dose)  
nt

| response |         |    |           |    |       |    |
|----------|---------|----|-----------|----|-------|----|
| 1        | Grade 5 |    | No Change |    | Worse |    |
|          | A       | B  | A         | B  | A     | B  |
| 1        | 0       | 0  | 1         | 3  | 1     | 2  |
| 2        | 0       | 0  | 0         | 0  | 1     | 0  |
| 0        | 0       | 0  | 0         | 0  | 0     | 1  |
| 5        | 1       | 0  | 2         | 3  | 6     | 0  |
| 8        | 1       | 0  | 4         | 11 | 8*    | 3  |
| 60       | 36      | 60 | 36        | 60 | 36    | 60 |

inadequate dosage for neurosyphilis—less than 600 000 units  
of type B cases  
on type A treatment and 10 of 60 cases (27.4 per cent) on  
60 per cent of the type B cases. The periods of observation  
days in type A less than sixty days in all but 6 in type B cases

of 31 cases, with those rated as medium, in 13 of  
ises, in those rated as low, in 7 of 45 cases. It  
ars that the proportion of improvement is highest  
patients with medium and high cell counts in the  
ler named and lowest in patients with low cell counts.  
all cell counts above 20 are rated as high, improve-  
ment occurs in 24 of 59 cases in the higher cell count  
rackets (40.6 per cent) and in 7 of 45 in the low cell  
count bracket (15.5 per cent). Considering the small  
numbers of cases and the arbitrary division lines the  
figures cannot be more than suggestive that as has been  
previously indicated, a low cell count has a less favor-  
able prognosis under penicillin treatment than a high  
cell count.

## INFLUENCE OF PREVIOUS (ARSENIC, HEAVY METAL) TREATMENT ON PENICILLIN RESPONSE

An analysis of 100 cases of neurosyphilis with data  
on this matter yielded the results shown in table 16.  
The results in this case included grade 1 as well as  
grades 2, 3, 4 and 5. The type of previous treatment  
approximated the captions given, the first numeral rep-  
resenting arsenical the second heavy metal injections.  
Almost equally good results in the spinal fluid were  
achieved by penicillin after no previous treatment and  
intensive (40-80) routine treatment. There is at least  
no intimation that previous fever therapy prepared the

benamine and 102 injections of b...  
tween with penicillin are shown in table 11...  
Asz 64 (Pennsylvania)—A man aged 37...  
bilis early paresis ("), showed sluggish...  
d reflexes and loss of memory. Previous treat...  
twenty-two mapharsen injections and anti...  
on.

**SYMPTOMATIC RESULTS IN NEUROSYPHILIS**  
Since there is a well recognized disparity...  
symptomatic and serologic response in neu...  
and the symptomatic often outweighs th...  
aspect in importance for the patient...  
responses secured by penicillin in neu...  
next examined. Here it is important...  
misinterpretations due to Herxheimer...  
apeutic paradoxical effects from...  
ment. It is notable that...  
at the start improved late...  
matic gains followed in...  
cases.

Penicillin also...  
sis. Three...  
(...  
point that...  
paresis...  
1, 2...  
and...



considered worse, no change and five grades of improvement as follows: grade 1, reduction in cell count or total protein, grade 2, reduction in both cell count and total protein, grade 3, reduction of cell count, total protein and intensity of colloidal test, grade 4,

TABLE 1—*Penicillin Investigation Late and Miscellaneous Syphilis Distribution of Material by Source Duration of Observation and Diagnosis*

| Diagnosis   | Immediate<br>Less Than<br>20 Days | Duration of Observation |               |                 |                 |  | Total<br>Cases |
|---|-----------------------------------|-------------------------|---------------|-----------------|-----------------|--|----------------|
|   |                                   | 20-59<br>Days           | 60-99<br>Days | 100-139<br>Days | 140-214<br>Days |  |                |
| Paresis and taboparesis<br>tabes including primary<br>optic atrophy | 11                                | 22                      | 15            | 4               | 4               |  | 56             |
| Meningovascular neuro-<br>syphilis                                  | 6                                 | 3                       | 3             | 3               | 1               |  | 16             |
| Asymptomatic neuro-<br>syphilis                                     | 2                                 | 13                      | 8             | 1               | 4               |  | 28             |
| Benign late skin and bone   | 4                                 | 8                       | 3             | 0               | 6               |  | 21             |
| Interstitial keratitis  | 0                                 | 0                       | 3             | 3               | 2               |  | 13             |
| Iritis  | 0                                 | 2                       | 1             | 0               | 1               |  | 4              |
| Miscellaneous   | 4                                 | 6                       | 5             | 6               | 1               |  | 22             |
| <b>Total</b>  |                                   |                         |               |                 |                 |  | <b>182</b>     |
| <b> clinic sources</b>  |                                   |                         |               |                 |                 |  |                |
| Bellevue  | 1                                 | 3                       | 1             | 0               | 0               |  | 5              |
| Boston  | 8                                 | 8                       | 0             | 0               | 0               |  | 16             |
| Johns Hopkins   | 9                                 | 20                      | 10            | 2               | 8               |  | 59             |
| Mayo  | 7                                 | 3                       | 6             | 1               | 4               |  | 21             |
| Michigan  | 6                                 | 2                       | 1             | 0               | 0               |  | 9              |
| New York Hospital   | 1                                 | 10                      | 0             | 0               | 0               |  | 16             |
| Pennsylvania  | 1                                 | 18                      | 0             | 16              | 8               |  | 63             |
| <b>Totals</b>   | <b>33</b>                         | <b>67</b>               | <b>43</b>     | <b>19</b>       | <b>30</b>       |  | <b>182</b>     |

reduction in cells and protein and in intensity of both colloidal and complement fixation tests, grade 5, return to normal

In grouped improvements, grades 1 and 2 together were rated as slight grades 3, 4 and 5 together as definite improvement. Improvement as a whole, however, included grades 2, 3, 4 and 5

TABLE 2—*Blood Serologic Response to Penicillin*

| Type of Syphilis | Herrhelmer or Provoctive Effect | Improved But Not to Negative | Reduced to Negative | Improvement Temporary | No Change |
|------------------|---------------------------------|------------------------------|---------------------|-----------------------|-----------|
| Late (96 cases)  | 20                              | 33                           | 10                  | 10                    | 20        |

TABLE 3—*Cerebrospinal Fluid Changes Following Penicillin in 107 Cases in Which Repeated Spinal Fluid Examinations Here Available at Some Time After Treatment*

| Diagnosis                            | Slight Improvement               |                                   | Definite Improvement                  |  | Grade 5 Return to Normal | No Change | Worse     |
|--------------------------------------|----------------------------------|-----------------------------------|---------------------------------------|--|--------------------------|-----------|-----------|
|                                      | Grade 1 Cells or Protein Reduced | Grade 2 Cells and Protein Reduced | Grade 3 Cells Protein Colloid Reduced | Grade 4 Cells Protein Colloid and Wassermann Reduced |                          |           |           |
| Paresis and taboparesis (4 cases)    | 6                                | 19                                | 4                                     | 4  | 0                        | 0         | 1         |
| Tabes and meningovascular (20 cases) | 4                                | 2                                 | 4                                     | 7  | 0                        | 0         | 3         |
| Asymptomatic (40 cases)              | 7                                | 0                                 | 6                                     | 3  | 1                        | 6         | 6         |
| <b>Total (107 cases)</b>             | <b>17</b>                        | <b>20</b>                         | <b>14</b>                             | <b>20</b>  | <b>1</b>                 | <b>16</b> | <b>10</b> |

In a total of 107 cases which had had one or more spinal fluid examinations after completion of penicillin therapy, it appears that 78 cases showed some degree of improvement in spinal fluid findings: 43 slight and

35 definite. The commonest change is a reduction in cells and total protein, but grade 4 improvement is remarkably common, including all four items of the fluid examination. This response is, as would be expected, evident in a higher proportion (1/4) in asymptomatic neurosyphilis than in paresis (1/9). Some of the cases rated as "worse" are, we believe, to be regarded as Herrhelmer or flare effects and would probably improve on longer observation. It is interesting that 4 asymptomatic cases accompanied by gummatous benign syphilis were among the 6 asymptomatic cases in which the condition became "worse."

In order to carry the specific touch of conviction to the doubter as to the effect of penicillin on the blood and spinal fluid, we reproduce here serial spinal fluid and blood observations of 6 patients, 3 with late con-

TABLE 4—*Penicillin Treatment Series 1 in Case 3, Total Dose 1,200,000 Units*

| After Penicillin Days | Quantitative Kline (Blood) | Cerebrospinal Fluid |                           |         |            |
|-----------------------|----------------------------|---------------------|---------------------------|---------|------------|
|                       |                            | Cells               | C S F Wassermann (Kolmer) | Protein | Mastic     |
| 0                     | 16 units                   | 29                  | 0123                      | 3 plus  | 4102210000 |
| 10                    |                            | 12                  | 0012                      | 2 plus  | 2211000000 |
| 76                    | 2                          | 10                  | 0112                      | 1 plus  | 3211000000 |

TABLE 5—*Penicillin Treatment Series 2 in Case 3, Total Additional Dose 1,200,000 Units*

| After Penicillin Days | Quantitative Kline (Blood) | Cerebrospinal Fluid |                           |         |            |
|-----------------------|----------------------------|---------------------|---------------------------|---------|------------|
|                       |                            | Cells               | C S F Wassermann (Kolmer) | Protein | Mastic     |
| 104                   | 16 units                   | 11                  | 0112                      | 20 mg   | 2211000000 |
| 161                   | Less than 1                | 5                   | 0012                      | 20 mg   | 2211000000 |

TABLE 6—*Penicillin Treatment Series 1 in Case 5, Total Dose 1,200,000 Units*

| After Penicillin Days | Quantitative Kline (Blood) | Cerebrospinal Fluid |                           |            |            |
|-----------------------|----------------------------|---------------------|---------------------------|------------|------------|
|                       |                            | Cells               | C S F Wassermann (Kolmer) | Protein    | Mastic     |
| 0                     | 178 units                  | 22                  | 1244                      | 4 plus     | 1333320000 |
| 19                    | 16                         | 8                   | 1244                      | 3 plus     | 4431100000 |
| 30                    | 32                         | 1                   | 0012                      | Plus minus | 0021000000 |
| 86                    | 64                         | 3                   | 0193                      | 30         | 2221000000 |
| 111                   | 64                         | 1                   | 0124                      | 50         | 2211000000 |

genital syphilis and 3 with acquired neurosyphilis. It is notable that these effects were secured with low intensity (type A) treatment in all but 1 case.

#### CASE HISTORIES

CASE 3 (Pennsylvania).—A man aged 38, with acquired syphilis. Primary optic atrophy in tabes, with euphoria, possible taboparesis. Fields (fig. 2) showed sector defect suggesting arachnoiditic or retrobulbar neuritic episode. Original spinal fluid cells 122 Kolmer Wassermann reaction 4444 Pandey 4 plus, mastic 4442110000, improved to cells 29, Kolmer Wassermann reaction 0123, Pandey 3 plus, mastic 4432210000 by two Swift Ellis treatments. After the first series of treatments with penicillin (table 4) the patient began to lose ground visually, with slight confusion and increased euphoria. The second series of treatments (table 5) resulted in definite improvement in fields acuity and mental state.

CASE 5 (Pennsylvania).—A man aged 24 with congenital syphilis with typical stigmas asymptomatic neurosyphilis, previously treated with forty arsenical and forty bismuth injections was given the treatment outlined in table 6. He was retreated twenty eight days later with the results shown in table 7.

CASE 11 (Pennsylvania)—A man aged 18 with congenital syphilis discovered at age 6 and treated with thirty neoarsphenamine injections a year for eleven years showed typical stigmas, neurologic signs, including Argyll Robertson pupils, anisocoria, partial ptosis of the left eyelid, weakness of the left seventh nerve and sluggish reflexes. He was given the treatment outlined in table 8. The ptosis disappeared under penicillin.

CASE 8 (Pennsylvania)—A woman aged 41 with acquired asymptomatic neurosyphilis discovered in blood donation, without symptoms or previous treatment, was given penicillin with the results shown in table 9.

CASE 29 (Pennsylvania)—A woman aged 29 with acquired neurosyphilis experienced sudden diminution of vision, advanced primary optic atrophy. Previous treatment, 1935-1939, consisted of eighteen arsphenamine and thirty-six bismuth injections. Treatment with penicillin (table 10) resulted in no improvement in fields or acuity: right eye 20/400, left eye 20/300.

CASE 50 (Pennsylvania)—A man aged 25 with congenital syphilis, showing typical stigmas and asymptomatic neurosyphilis, had been treated with sixty-two injections of neo-

100 per cent, the last representing practically complete restoration to normality.

Of 56 cases of paresis and taboparesis 10 presented no adequate classification data. Of the 46 remaining cases 30 were classified as simple demented, of which

TABLE 9—*Penicillin Treatment Series 1 in Case 8, Total Dose 1,200,000 Units*

| After<br>Penicillin,<br>Days | Quantitative<br>Kline<br>(Blood) | Cerebrospinal Fluid |          |         |            |
|------------------------------|----------------------------------|---------------------|----------|---------|------------|
|                              |                                  | C S F<br>Wassermann |          |         | Mastix     |
|                              |                                  | Cells               | (Kolmer) | Protein |            |
| 0                            | 64 units                         | 103                 | 4444     | 4 plus  | 2444110000 |
| 17                           | 8                                | 20                  | 1944     | 2 plus  | 2221100000 |
| 46                           | 3'                               | 11                  | 0012     | 1 plus  | 2110000000 |
| 74                           | 3'                               | 6                   | 0112     | 50      | 1111000000 |
| 102                          | 32                               | 6                   | 0112     | 40      | 2110000000 |
| 129                          | 8                                | 4                   | 0011     | 50      | 1111000000 |
| 159                          | 32                               | 8                   | 0122     | 50      | 2211000000 |
| 178                          | 16                               | 6                   | 0012     | 50      | 2221100000 |

TABLE 10—*Penicillin Treatment Series 1 in Case 29, Total Dose 1,200,000 Units*

| After<br>Penicillin<br>Days | Quantitative<br>Kline<br>(Blood) | Cerebrospinal Fluid |                        |         |            |
|-----------------------------|----------------------------------|---------------------|------------------------|---------|------------|
|                             |                                  | Cells               | C S F                  | Protein | Mastix     |
|                             |                                  |                     | Wassermann<br>(Kolmer) |         |            |
| 0                           | 64 units                         | 148                 | 4444                   | 30 mg   | 3331100000 |
| 9                           | 64                               | 16                  | 1244                   | 30 mg   | 2211000000 |
| 30                          | 32                               | 10                  | 0012                   | 30 mg   | 2221000000 |
| 60                          | 64                               | 4                   | 0122                   | 20 mg   | 1111000000 |
| 119                         | 32                               | 0                   | 0011                   | 20 mg   | 1111000000 |

TABLE 11—*Penicillin Treatment Series 1 in Case 50, Total Dose 1,200,000 Units*

| After Penicillin, Days | Quantitative Kline (Blood) | Cerebrospinal Fluid       |         |       |           |
|------------------------|----------------------------|---------------------------|---------|-------|-----------|
|                        |                            | C S F Wassermann (Kolmer) |         |       | Mastix    |
|                        |                            | Cells                     | Protein |       |           |
| 0                      | 16 units                   | 96                        | 4444    | 40 mg | 245533421 |
| 8                      | Negative                   | 21                        | 4444    | 20 mg | 444310000 |
| 36                     | 32                         | 12                        | 0124    | 30 mg | 222100000 |

TABLE 12—*Penicillin Retreatment Series 2 in Case 50, Additional Dose 1,200,000 Units*

| After<br>Penicillin<br>Days | Quantitative<br>Kline<br>(Blood) | Cerebrospinal Fluid             |      |         |           |
|-----------------------------|----------------------------------|---------------------------------|------|---------|-----------|
|                             |                                  | C S F<br>Wassermann<br>(Kolmer) |      | Protein | Mastix    |
|                             |                                  | Cells                           |      |         |           |
| 53                          | Negative                         | 9                               | 0112 | 30 mg   | 221100000 |
| 84                          | 16 units                         | 3                               | 0000 | 20 mg   | 111100000 |

TABLE 13—*Penicillin Treatment Series 1 in Case 64 Total Dose 2,850,000 Units*

| After<br>Penicillin,<br>Days | Quantitative<br>Kline<br>(Blood) | Cerebrospinal Fluid             |         |        |            |
|------------------------------|----------------------------------|---------------------------------|---------|--------|------------|
|                              |                                  | C S F<br>Wassermann<br>(Kolmer) | Protein | Mastix |            |
| 0                            | Less than 1 unit                 | 72                              | 4444    | 40 mg  | 333321000  |
| 22                           | 00                               | 5                               | 0011    | 20 mg  | 1111000000 |
| 56                           | 00                               | 5                               | 0012    | 20 mg  | 1111000000 |

TABLE 7—*Penicillin Retreatment Series 2 in Case 5, Total Additional Dose 1,200,000 Units*

| After Penicillin, Days | Quantitative Kline (Blood) | Cerebrospinal Fluid |                           |         |            |
|------------------------|----------------------------|---------------------|---------------------------|---------|------------|
|                        |                            | Cells               | C S F Wassermann (Kolmer) | Protein | Mastix     |
| 139                    | 64 units                   | 2                   | 0011                      | 40      | 2211000000 |
| 164                    | 64                         | 4                   | 0011                      | 20      | 1110000000 |

TABLE 8—*Penicillin Treatment Series 1 in Case 11, Total Dose 1,200,000 Units*

| After Penicillin, Days | Quantitative Kline (Blood) | Cerebrospinal Fluid       |         |            |            |
|------------------------|----------------------------|---------------------------|---------|------------|------------|
|                        |                            | C S F Wassermann (Kolmer) | Protein | Mastix     |            |
| 0                      | 16 units                   | 32                        | 1244    | 4 plus     | 3332210000 |
| 13                     | 4                          | 10                        | 0122    | 1 plus     | 2111000000 |
| 32                     | 4                          | 8                         | 0011    | Plus minus | 1111000000 |
| 140                    | Less than 1                | 1                         | 0000    | 30 mg      | 1110000000 |

arsphenamine and 102 injections of bismuth. Results of treatment with penicillin are shown in tables 11 and 12.

CASE 64 (Pennsylvania)—A man aged 37 with acquired syphilis, early paresis (?), showed sluggish pupils and lower cord reflexes and loss of memory. Previous treatment consisted of twenty-two mapharsen injections and nineteen bismuth injections.

#### SYMPTOMATIC RESULTS IN NEUROSYPHILIS

Since there is a well recognized disparity between symptomatic and serologic response in neurosyphilis, and the symptomatic often outweighs the serologic aspect in importance for the patient, symptomatic responses secured by penicillin in neurosyphilis were next examined. Here it is important to give warning of misinterpretations due to Herxheimer and possibly therapeutic paradoxical effects from overintense initial treatment. It is notable that some patients who did badly at the start improved later and that top notch symptomatic gains followed a low intensity system in some cases.

Penicillin also has a favorable effect in general paresis. Three groups were made up from the material (conceding the inadequacy from the psychiatric standpoint due to record deficiencies): simple demented paresis (grades 1, 2, 3), deteriorated paresis (grades 1, 2, 3), progressive paresis (galloping and so on) and symptomatic exacerbation suggesting Herxheimer effect. Improvement was graded 25, 50 and 75 and

only 6 (20 per cent) failed to improve and 1 grew worse. Thirteen, or nearly half, improved 50 per cent or more, including 8 which improved 75 per cent and 1 restored symptomatically to normal. Ten cases improved only 25 per cent. As might be expected,

deteriorated cases (10) made less response, 1 improving 50 per cent, 2 75 per cent and 7 showing no change. The 1 patient with progressive or galloping paresis in Solomon's service died and 1 of Moore's simple demented patients died thirteen weeks after penicillin.

We know of no record of spontaneous remission under the good effects of hospitalization which can

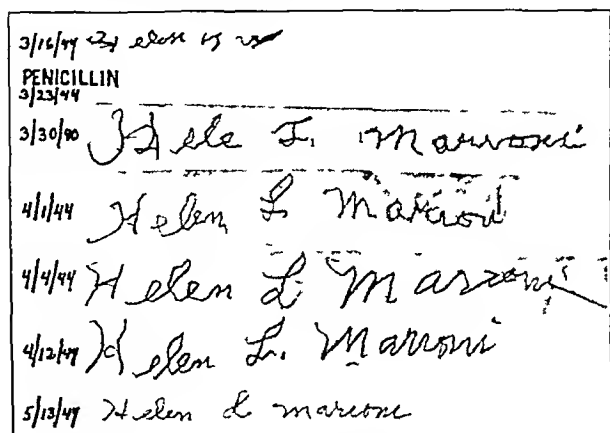


Fig 1—Improvement in handwriting of a simple demented parietic patient approximately six weeks after penicillin treatment. The signature before treatment is given above the word penicillin (courtesy of George D. Gammon, M.D.).

approach this. The transformations in orientation, speech, handwriting and encephalographic findings will be more fully presented from the University of Pennsylvania material in objective form by George D. Gammon, M.D., in a forthcoming paper. From the collected records, however, two brief summaries are given.

A white woman aged 34 with symptomatic paresis, grade 4 cerebrospinal fluid, could not write or do housework. She had auditory hallucinations, personality changes, disorientation, tremor of the tongue, hands and mouth, and slurred speech. On the second day of penicillin therapy she had a Herxheimer reaction with right sided convulsions becoming generalized. After twenty-four hours penicillin was reinstituted at half dose to a total of 1,200,000 units without untoward effect. By the sixteenth day the patient was completely oriented, with memory, speech, tremor and electroencephalogram improved. In four months the patient was tremor free, speech and writing were normal (fig 1), she was well oriented and hallucination free and was satisfactorily performing housework including marketing with points and driving a car. Clinical improvement was not accompanied by improvement in the spinal fluid.

A white man aged 42 with symptomatic paresis developed mispronouncing of words, garbled speech, uncertain gait, tremor of hands and difficulty in writing in August 1943, when a shell exploded near him. Forty eight arm and hip injections were given. He became boastful, speech rambling and tremors were more pronounced, handwriting was worse and calculation poor. His condition was unimproved during hospitalization after 50,000 Oxford units per dose of penicillin to a total of 4,000,000 units. Clinical improvement occurred three weeks after penicillin with loss of tremors, improved handwriting and speech. He passed an examination as a pipe fitter. Improvement in the cerebrospinal fluid did not accompany clinical improvement. The neurologist considered him mentally improved but not to the original level.

Combining all types of clinically diagnosed paresis and taboparesis, exclusive of 10 patients treated with intraspinal or intravenous penicillin or malaria and thus totaling 46 cases, 15 failed to improve, 12 improved 25 per cent, 6 improved 50 per cent, 10 improved 75 per cent, 1 recovered and 2 died. Of 22 patients with tabes dorsalis, 14 presented data sufficient for interpretation, including 7 with primary optic atrophy and

3 with lightning pains of unusual severity plus 4 taboparetic patients with lightning pains who were grouped together with respect to this symptom. Of the 14 tabetic patients 3 improved to the extent of 50 per cent or more, and 2 of them with lightning pains were relieved completely. Eleven tabetic patients showed no change. Of the patients with primary optic atrophy none were made worse, and 1 whose visual fields are shown (fig 2) improved slightly but definitely in both fields and visual acuity, with concomitant improvement in the spinal fluid. There is some question as to whether the sector defect in the left field is not a residue of a retrobulbar neuritic process. Of the total of 7 patients with lightning pains, 2 were completely relieved, 1 improved 50 per cent, 2 improved 25 per cent, 1 was unchanged and 1 became worse.

Of 16 patients with various forms of meningovascular neurosyphilis, 6 presented no data on clinical improvement. Of the remaining 10, clinical improvements of 75 per cent were observed in 2, 50 per cent in 2 and 25 per cent in 2, with 3 showing no change and 1 becoming worse.

It is of course difficult to evaluate symptomatology into which elements of the subjective and the influence of suggestion, rest practice (as in eye and station and gait tests) enter. The intervention of trifling or routine medication (as in the eye, for example) with improvement found to have begun before penicillin, and hence

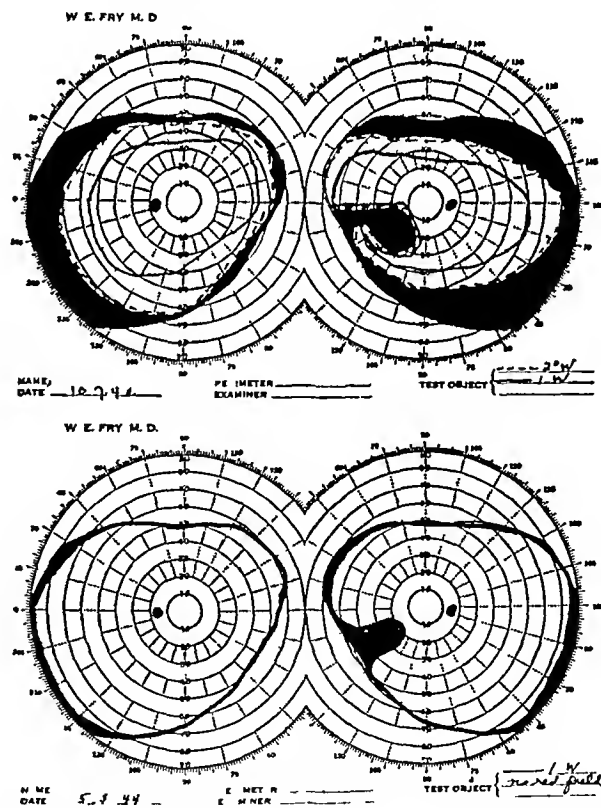


Fig 2—Visual fields in case 3, Pennsylvania Penicillin Series, showing improvement with decrease in sector defect.

perhaps merely spontaneous or progressive, must be interpreted by long periods of observation. Symptomatology which is highly complex and of uncertain origin, such as lightning pains, in which the influence of the penicillin on other infective backgrounds may play a part, must be interpreted at this stage with reserve. There seems, however, to be a favorable trend in the

evidence pointing to genuine and indeed rapid good effect on the disease process, supported by such objective detail as handwriting change, encephalograms, disappearance of ptosis and of violent headache associated with meningitis. Coupled with the objective changes in the spinal fluid, such evidence would seem to deserve great weight. It is, however, unreasonable to expect penicillin to restore degenerations and replace neurons

EFFECT OF TREATMENT SYSTEM

In this material the lack of system in dosage and time intervals reduced the number of cases per recognizable system below statistically usable levels, especially when viewed in relation to duration of observation. Some cases were jumbles of methods and had to be discarded. There were no blood level determinations, and in 3 Mayo Clinic cases spinal fluid penicillin determinations were repeatedly negative. Accordingly, only a study of type A versus type B treatment was attempted, type A representing 1,200,000 units or less, usually at 25,000 units every three to four hours, and type B 2,400,000 units to 4,000,000 units or more at 25,000 to 50,000 units every two to four hours. Offhand there was no strik-

spinal fluids and completely achieve them on retreatment with a similar dosage a steplike method of successive moderate applications of treatment as distinguished from a single massive session would seem to deserve further study. Pushing the patient over the hump, so to speak, to a partial self cure is a recognized principle in dealing with some aspects of late neurosyphilis.

Serologic response on the blood occurred in 45 per cent of the type A or smaller dose treatment cases, and in 43 per cent of the larger dose or type B cases. Longer observation periods for the type B cases would probably demonstrate a superior effect.

PENICILLIN RESPONSE IN RELATION TO  
INFLAMMATORY ACTIVITY

Using the cell count and the spinal fluid as a guide and rating 0 to 20 as low, 21 to 60 as medium and 61 and above as high cell counts, an attempt was made to see whether improvement was greater in cases showing a high cell count as an index of definite inflammatory activity in comparison to those showing low cell counts. With cell counts rated as high, improvement occurred

TABLE 14—Effect on Spinal Fluid of Type A (Small Dose)  
Versus Type B (Larger Dose) Treatment

| Type of Neurosyphilis   | Grade of Response |    |         |    |         |    |         |    |         |    |           |    |       |    |
|-------------------------|-------------------|----|---------|----|---------|----|---------|----|---------|----|-----------|----|-------|----|
|                         | Grade 1           |    | Grade 2 |    | Grade 3 |    | Grade 4 |    | Grade 5 |    | No Change |    | Worse |    |
|                         | A                 | B  | A       | B  | A       | B  | A       | B  | A       | B  | A         | B  | A     | B  |
|                         |                   |    |         |    |         |    |         |    |         |    |           |    |       |    |
| Paresis and taboparesis | 1                 | 5  | 2       | 15 | 1       | 2  | 3       | 1  | 0       | 0  | 1         | 3  | 1     | 2  |
| Tabs                    | 1                 | 3  | 0       | 1  | 0       | 1  | 2       | 2  | 0       | 0  | 0         | 0  | 1     | 0  |
| Meningovascular         | 0                 | 2  | 1       | 1  | 1       | 3  | 3       | 0  | 0       | 0  | 0         | 0  | 0     | 1  |
| Asymptomatic            | 1                 | 6  | 2       | 3  | 1       | 5  | 4       | 5  | 1       | 0  | 3         | 3  | 6     | 0  |
| Grade totals            | 3                 | 10 | 5       | 20 | 3       | 11 | 12      | 8  | 1       | 0  | 4         | 11 | 8     | 3  |
| Total type A            | 36                |    | 30      |    | 36      |    | 36      |    | 36      |    | 36        |    | 36    |    |
| Total type B            |                   | 69 |         | 69 |         | 69 |         | 69 |         | 69 |           | 69 |       | 69 |

\* Four of these patients had benign gummas healing under penicillin at a wholly inadequate dosage for neurosyphilis—less than 600,000 units. Grade 1 and 2 (slight) improvements occurred in 22 per cent of type A and 31 per cent of type B cases. Grades 3, 4 and 5 (definite) improvement occurred in 16 of 36 cases (44 per cent) on type A treatment and 19 of 69 cases (27.4 per cent) on type B treatment. Grades 2, 3, 4 and 5 improvement occurred in 60 per cent of the type A and 56 per cent of the type B cases. The periods of observation, however, were longer in the smaller dose treatment cases—e. g. paresis over sixty days in type A, less than sixty days in all but 6 in type B cases.

ing difference recognizable between the effect of shorter time intervals or larger doses except the induction of Herxheimer reactions, which could be avoided by reduction in the dosage of the first twenty-four to forty-eight hours. The analysis of the case material on which treatment information was sufficiently complete for classification, comprising 105 cases, is given in tables 14 and 15.

It must be clearly recognized that such figures as these do not provide for trustworthy therapeutic inter-

pretations. It is particularly in point that the observation periods on the type B (larger dose) treated cases are shorter than those of type A and that a longer observation period may demonstrate a greater efficiency of larger dosage. On the other hand, it is also suggested that in late neurosyphilis good effects may be secured by less than the maximum dosage so far employed. If patients treated with 1,200,000 units in asymptomatic neurosyphilis can achieve almost normal in 11 of 31 cases, with those rated as medium, in 13 of 28 cases, in those rated as low, in 7 of 45 cases. It appears that the proportion of improvement is highest in patients with medium and high cell counts in the order named and lowest in patients with low cell counts. If all cell counts above 20 are rated as high, improvement occurs in 24 of 59 cases in the higher cell count brackets (40.6 per cent) and in 7 of 45 in the low cell count bracket (15.5 per cent). Considering the small numbers of cases and the arbitrary division lines the figures cannot be more than suggestive that as has been previously indicated, a low cell count has a less favorable prognosis under penicillin treatment than a high cell count.

INFLUENCE OF PREVIOUS (ARSENIC, HEAVY METAL)  
TREATMENT ON PENICILLIN RESPONSE

An analysis of 100 cases of neurosyphilis with data on this matter yielded the results shown in table 16. The results in this case included grade 1 as well as grades 2, 3, 4 and 5. The type of previous treatment approximated the captions given the first numeral representing arsenical, the second heavy metal injections.

Almost equally good results in the spinal fluid were achieved by penicillin after no previous treatment and intensive (40-80) routine treatment. There is at least no intimation that previous fever therapy prepared the

TABLE 15—Degree of Cerebrospinal Fluid Improvement

| Type of Treatment | Number of Cases | Slight Grade 1, 2 | Moderate to Definite Grade 3, 4, 5 | No Change or Worse |
|-------------------|-----------------|-------------------|------------------------------------|--------------------|
| Type A            | 36              | 8 (22.2%)         | 16 (44.4%)                         | 12 (33.3%)         |
| Type B            | 69              | 35 (50.7%)        | 19 (27.4%)                         | 14 (20.3%)         |

pretations. It is particularly in point that the observation periods on the type B (larger dose) treated cases are shorter than those of type A and that a longer observation period may demonstrate a greater efficiency of larger dosage. On the other hand, it is also suggested that in late neurosyphilis good effects may be secured by less than the maximum dosage so far employed. If patients treated with 1,200,000 units in asymptomatic neurosyphilis can achieve almost normal

patients for striking penicillin results. The many qualifications on such an analysis with regard to selection, time of observation and so on must be recalled, but there is at least no strong evidence that in the aggregate previous standard treatment adds anything to the penicillin result.

#### PENICILLIN IN OTHER ASPECTS OF LATE SYPHILIS

Gummatous lesions of skin and bones (21 cases) respond so invariably and completely, with 13 results rated 100 per cent, 2 at 75 per cent, 4 questionable and only 2 failing of improvement (thirty-six and sixty-eight days), that little further clinical interest attaches to the group beyond speculation as to the part played by penicillin in clearing the secondary, usually hemolytic pyogenic infective invasion as distinguished from the syphilis as such. The control of destructive lesions of the palate and septum seems satisfactory. The failures include one suspected gumma of the orbit, diagnosis not established. The dosage required for symptomatic improvement ranges about 300,000 units, the time for healing from twelve to forty-six days. Carcinoma as a complication or a diagnosis must be watched for

TABLE 16—*Spinal Fluid and Clinical Improvement in Neurosyphilis After Penicillin Treatment in Relation to Previous Treatment*

| Type of Previous Treatment  | Clinical Improvement Grade 1 and Over Occurred in | Spinal Fluid Grades 1, 2, 3, 4, 5 Occurred in |
|-----------------------------|---|---|
| No treatment                | 16 of 32 or 50 per cent                           | 25 of 39 or 64 per cent                       |
| Little treatment            | 9 of 23 or 39 per cent                            | 16 of 23 or 69 per cent                       |
| 20 or more "0 heavy" metal  | 7 of 16 or 44 per cent                            | 9 of 16 or 56 per cent                        |
| 40 arsenic "80 heavy" metal | 5 of 16 or 30 per cent                            | 13 of 16 or 81 per cent                       |
| Fever therapy               | 1 of 13 or 7 per cent                             | 2 of 13 or 16 per cent                        |

even if improvement occurs. Concomitant neurosyphilis was identified in 12 of the 21 cases. Serologic improvement (titer reduction) in the blood occurred in 14 of 21 cases.

The paradox of gummatous skin and bone lesions healing as the spinal fluid became "worse" (possible Herxheimer effect?) was noted in 3 of 10 cases.

#### LATE CONGENITAL SYPHILIS

The interest in this group centers on interstitial keratitis. The neurosyphilitic involvements were reviewed with neurosyphilis (see cases 5, 11 and 50). The complexity of interstitial keratitis and the eccentricities of its behavior are apparent under penicillin as under standard treatment. It was difficult to dissuade those in charge of some patients to withhold fever and other treatment if the patient did not immediately and strikingly improve. Patients with pronounced corneal and other ocular damage were included and too much was expected in the way of results. Of 14 cases 6 showed improvement, 3 of grade 4 on a scale of 1, 2, 3, 4, 1 of grade 3 and 2 of grade 2. Six showed no improvement and in 2 the condition was definitely worse. When improvement occurred it was apt to be dramatic. One patient previously given chemotherapy and fever energetically without result was given 1,200,000 units in eight days. He was relieved of photophobia by the third day and returned to work a week after penicillin for the first time in many months. He has remained well, improvement continuing up to the stage of stationary residue. Another improved grade 4 and one hundred and four days after penicillin flared and recovered again without further treatment. A persistently seronegative congenital syphilitic patient with characteristic stigmas made no response and in fact became worse

under 1,200,000 units. One of McDermott's patients, a fever failure, received a total of 4,845,000 units in two courses without results. Thomas secured improvement in a case on 4,000,000 units over twenty-five days, 20,000 units every three hours. Moore has excellent serial color photographs of a favorable case. One of his cases likewise improved on 3,970,000 units in twenty-one days, observed for one hundred and fifty-nine days.

#### OTHER EYE LESIONS

Two cases of optic neuritis on 2,000,000 and 3,000,000 units both showed improvement. O'Leary's case improved 100 per cent on retreatment. Two cases of iritis improved 100 per cent, but 1 relapsed and required an iridectomy for beginning glaucoma, after failing to respond to retreatment.

#### EIGHTH NERVE DEAFNESS

Eighth nerve deafness, beginning in a woman of 31 with undoubted stigmas of congenital infection, improved somewhat though not definitely on 1,200,000 units. There was a suggestion of Herxheimer-like drop in hearing at the outset followed by improvement, but the interpretations are complex. Two other cases, already far advanced, failed to improve.

#### MISCELLANEOUS CASES

A scattered group of cases, on which information is incomplete, includes bone-liver combinations, hepatosplenic complexes, seroresistance (Wassermann fastness) already discussed, Charcot hip and gangrenous balanitis in a syphilitic patient. The Charcot hip did not improve, and a suspected Charcot ankle is developing since penicillin. The gangrenous balanitis healed with the loss of less than a third of the corpus spongiosum on 300,000 units at about the rate to be expected of a late syphilid. The patient became seronegative. The livers of 2 patients undoubtedly enlarged (late cases) after treatment and the blood bilirubin increased in 1, then subsided.

#### REACTIONS TO PENICILLIN

Penicillin is not a reactionless drug. The disposition to pour it about like water in syphilis may lead to serious trouble, especially from therapeutic shock and possibly also from therapeutic paradoxical effects. The former is important under the usual rule that an active syphilitic process in a vital structure may be gravely and even fatally damaged by the impact of a large dose or series of doses at the start of treatment. Most Herxheimer effects, however, seem controllable by reduction in dosage for the first twenty-four to forty-eight hours of an eight day series without loss of ultimate effect. There is some question whether there are not delayed Herxheimer effects such as are suggested by spinal fluid and blood serologic curves and the initially unfavorable but ultimately favorable course of some lesions (eye, nervous system, for example).

Of 182 cases 43 (24 per cent) had reported reactions interpretable as Herxheimer or therapeutic shock effects. Of these 23 were fever, highest 105.5 F. The blood reagin titer increased definitely and then subsided in 7 cases. In 4 Pennsylvania cases symptoms interpreted as Herxheimer effects in the nervous system included transverse myelitic symptoms in 1 case, jacksonian convulsions lasting twelve hours in another, exacerbation of lightning pains, mania and hallucinations.

Other reactions to penicillin included urticaria (2 cases) and 1 each of 'allergic reaction,' "id" reaction, burning of the skin, profuse sweating and phlebitis (intravenous injection). Two patients had sharp gastrointestinal reactions.

#### SUMMARY

From a material of 182 cases of late syphilis preponderantly neurosyphilis (122 cases) and including benign gummatous syphilis, ocular and other forms of syphilis and late congenital syphilis observed from eight to two hundred and fourteen days after the penicillin therapy was begun on a wide range of time-dosage schedules the following tentative observations are summarized.

1 The lesions of benign gummatous syphilis of skin and bones heal under a dosage of approximately 300,000 units in twelve to forty-six days.

2 Irrespective of the system used, and in all types of syphilis, penicillin causes reduction of syphilitic reagin titer in the blood in from 50 to 60 per cent of late cases. An initial "Hermann" like or provocative rise is observed in about 20 per cent of cases. Only 5 sero-resistant cases were treated, 1 made negative, 4 improved.

3 The abnormal spinal fluid in neurosyphilis is improved in 74 per cent to some degree, definitely in 33 per cent. The commonest change is a drop in cell count and total protein (grade 2 improvement on a scale of 5) occurring in 67 per cent of cases. One spinal fluid was rendered normal within the observation period. All four fluid findings improved in 25 per cent of the cases of asymptomatic neurosyphilis, 10 per cent in paresis and taboparesis.

4 Symptoms improved in neurosyphilis as follows. Simple demented paresis. In 30 cases on which data were adequate for classification, 80 per cent improved to some degree, nearly half improved 50 per cent or more, including 8 who improved 75 per cent and 1 restored to normal. Deteriorated paresis. Two of 10 improved 75 per cent, 1 50 per cent, 7 no change. Tabes dorsalis. One fifth of 14 cases improved 50 per cent or more. Of 7 with lightning pains, 2 were completely relieved, 1 improved 50 per cent, 2 improved 25 per cent, 1 unchanged and 1 worse. Of 7 cases of primary (?) optic atrophy, mostly advanced none were made worse, 1 improved. In meningovascular neurosyphilis 40 per cent improved 50 to 75 per cent.

5 Two attempts at statistical evaluation were made. One, of the influences of smaller dose as contrasted with larger dose treatment and the other, of the response under penicillin of spinal fluids with low as contrasted with relatively high cell counts because of small numbers of cases and unavoidable disparities in observation period, cannot be accepted as beyond challenge. They suggest respectively that in late syphilis, especially neurosyphilis, smaller doses, if not grossly inadequate, have good effects which may perhaps be improved by repetition as compared with the effects of initial larger dosage, the effect being due perhaps to stimulation or utilization of the patient's resistance and defensive responses. The figures on response in relation to cell count suggest that moderate and high cell count cases tend to react somewhat better than cases giving low cell counts.

6 Previous treatment for syphilis by older methods in neurosyphilis including fever therapy, does not appear to prepare patients for superior results with penicillin.

7 In late congenital syphilis, interstitial keratitis presents rather equivocal though at times dramatically favorable results, not as yet interpretable in relation to a time-dosage system. Of 14 cases 6 improved 3 to 100 per cent, 1 to 75 per cent, 2 to 50 per cent. Two were made definitely worse.

8 Optic neuritis included 2 cases both improved, the second 100 per cent on retreatment. Two cases of iritis improved 100 per cent at the start but 1 relapsed and did not respond to retreatment (glaucoma).

9 Two cases of eighth nerve deafness gave equivocal results.

10 Of miscellaneous cases Charcot joint was unaffected (a new one developing), gangrenous balanitis was cured by low dosage.

11 Therapeutic shock (Herrnheimer) effects are undoubted, may be serious in late syphilis and should be guarded against by reduced dosage during the first twenty-four to forty-eight hours. Severe cerebral and cord symptoms may develop in neurosyphilis.

Reactions to penicillin as such are few and not serious, urticaria, itching, allergic skin reactions and a sharp gastrointestinal reaction following the course.

12 It is suggested that, because of the great difficulty in developing uniform records for statistical or punch machine evaluation in late syphilis, further investigation of its behavior under penicillin therapy be committed to individual competent investigators who can apply the principles of uniformity of treatment and record evaluation simultaneously with appropriate individualization of the particular case. The durability of the good effects thus far observed, the possibility of complications from induced allergic response and disturbance of the immunity balance of the individual in latent and late syphilis remain to be explored by larger experience and longer periods of observation.

#### ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. MAHONEY, ARNOLD AND STERNER AND MESSRS. HARRIS AND ZWALLY, OF DRS. MOORE AND MAHONEY, COMMANDER SCHWARTZ, LIEUTENANT COLONEL STERNBERG AND DR. WOOD, AND OF DR. STOKES, LIEUTENANT COLONEL STERNBERG, COMMANDER SCHWARTZ AND DRS. MAHONEY, MOORE AND WOOD.

LIEUTENANT COMMANDER E. E. BARKSDALE, MC-V(S), USNR. As of June 1, 1944 we have treated 161 cases of syphilis with penicillin. Twenty-nine were seronegative, dark field positive, primary syphilis, clinically cured and are still seronegative to date. Eighty were seropositive, dark field positive primaries. Of this group 2 relapsed within approximately three weeks after treatment was started. The lesions recurred in the same location and again became dark field positive. One of this group healed, becoming seronegative, and then acquired a new infection with a dark field positive chancre in a different location from the previous one. We have treated 31 cases of secondary syphilis. All the cases were treated on a dosage of 12 million units intramuscularly i. e. 20,000 units every three hours for sixty injections. By determining quantitative blood penicillin levels on these patients treated with intramuscular injections every three hours we found that it was impossible to maintain a constant penicillin level and indeed for one third of the time there was no penicillin detected in the blood by the test used. This made us think that the continuous intravenous drip method might be the procedure of choice. To date we have treated 11 cases of syphilis by this method giving a total of 2,080,000 units of penicillin in nine days. With this we were able to maintain a more or less constant blood penicillin level approximately ten times higher than that which could be obtained by the intramuscular route. We have had no



relapses, no central nervous system involvement and no case has retained a positive serologic reaction as yet beyond the fourteenth week. To date we have treated 7 cases of syphilis with the usual routine of fever therapy but substituting for mapharsen 60,000 units of penicillin intravenously each time they were in the fever cabinet. In addition and over the same period of time we gave each patient 20,000 units of penicillin intramuscularly every three hours until a total of  $3\frac{1}{2}$  to 4 million units had been given. It is our impression that this method is superior to the one which we had formerly used. I am of the opinion at the present time that penicillin is the best drug we have ever had for the treatment of syphilis. I think that it is possible that the intravenous method of administration may be superior. We have had 1 case of primary syphilis treated intramuscularly with 12 million units, which ended fatally ten days after the completion of treatment, of a subdural hemorrhage which was not related to either the syphilis or the treatment. Pathologic examination of body tissues with special stains failed to reveal any spirochetes. At autopsy therefore this 1 case within ten days after treatment gave no pathologic evidence of syphilis.

CAPTAIN WILLIAM LEIFER M. C., U. S. The experience at Fort Bragg now comprises 116 patients treated for syphilis with penicillin. One hundred received 1,200,000 units and 16 received 2,400,000 units in seven and one-half days (technic sixty consecutive intramuscular injections of 20,000 or 40,000 units at three hour intervals). Reactions were infrequent and inconsequential; there were 3 instances of urticaria, 1 of erythema multiforme, 2 of generalized pruritus and 7 of herpes simplex. Focal and systemic Herxheimer reactions appeared on the first day of treatment in 87 per cent of the patients. Only those who received 1,200,000 units and who have been followed at least three months are being reported. Ten patients began treatment in the seronegative primary phase and 12 in the seropositive primary phase. Four have been observed over six months of whom 3 are seronegative, while the fourth has a doubtful Kahn reaction. All 4 had negative spinal fluids at six months. The remaining 18 patients have been followed from three to six months, and all but 1 are seronegative. Thus, 20 of the 22 cases of primary syphilis have achieved or maintained seronegativity. Twenty-five patients began treatment in the secondary stage of syphilis. Two have exceeded six months of observation, 1 is seronegative and the other has a doubtful Kahn reaction. Both had negative spinal fluids at six months. The remaining 23 patients have been followed between three and six months, of these, 11 are seronegative, 9 still have some degree of positivity of the blood and 3 are definitive failures. Two failures appeared as neurologic relapses (1 with monoplegia, the other with acute syphilitic meningitis) with strongly positive spinal fluid, the spinal fluid had been negative in both of these immediately before administration of penicillin. The third failure was a cutaneous and serologic relapse. Thus, of 25 cases of secondary syphilis 12 are seronegative, 10 are still seropositive and 3 are outright failures. It would seem best to use higher doses than might now appear necessary in the treatment of syphilis. The future may reveal the need not only for an increase dosage but also for prolongation of the treatment period beyond the present seven and one-half days. Thus far the results have been extremely encouraging but mass treatment of syphilis with penicillin should be delayed until the optimal treatment schedule is determined.

COMMANDER FRANK A. ELLIS, Corpus Christi, Texas. I should like to give you some of the highlights of the experience with penicillin starting in New Zealand in Wellington and extending up to Corpus Christi. An enlisted man with acute infectious jaundice, after being in the hospital five days developed an acute gonococcal urethritis. His icterus index was 45, and we gave him penicillin; it cured his gonorrhea, and his icterus index was brought down to 0.5. Penicillin might cure acute jaundice or acute infectious jaundice, as we designate it in the Navy. Our results in probably 450 cases of acute gonococcal urethritis have been 100 per cent effective with this exception. We had 2 cases in which acute epididymitis developed three days after administration of 100,000 units of penicillin. On those we immediately repeated the therapy and gave them 200,000 units until the smears, urine culture and prostatic

cultures were negative. My impression is that it certainly shortens the course of acute epididymitis. Our results have been most disappointing in penicillin therapy for nonspecific urethritis. With syphilis I have had no experience whatever except this, that I want to caution you about intraurethral chancre being masked in acute gonorrhea. If patients are given 100,000 units, the dosage will be inadequate.

COLONEL UDO J. WHE, U. S. P. H. S. It is too much to expect of penicillin at this time more than has been graphically told by the authors. We should accept these facts with the possibility that in time the organisms may elaborate for themselves a certain degree of resistance to penicillin. When we can speak in terms of thousands instead of terms of hundreds, we may have more relapses and more recurrences and possibly more reactions. It is, however, a great relief to those of us who have for years felt that we were using dangerous drugs in the treatment of syphilis to find something at least that departs from heavy metals that gives a high index of therapeutic effectiveness and apparently a low toxicity.

DR. JOSEPH E. MOORE, Baltimore. I close on the same restrained note of optimism which has been voiced to you here. I don't think that penicillin is ready for mass application. I do feel that our attitude ought to be one of hopefulness, but with complete understanding that we are still in the process of learning how to use the drug. We don't know yet, and it is going to be some time before we are sure.

## SOME HARMFUL EFFECTS OF RECUMBENCY IN THE TREATMENT OF HEART DISEASE

SAMUEL A. LEVINE, M.D.  
BOSTON

Rest of the affected part is a fundamental form of treatment in many diseases. When a bone is fractured, splints are applied and the involved parts are immobilized. This not only diminishes pain but speeds repair and healing. When a lung is actively affected with tuberculosis, attempts are made to diminish the movements of the diseased lung. The phrenic nerve may be sectioned, pneumothorax produced or thoracoplasty performed, the purpose of these procedures being to rest the affected organ. In a similar way when the heart is diseased, rest in bed has been urged as a means of diminishing its work. Not so long ago the relative value of rest and exercise was much debated and was summarized by Pratt,<sup>1</sup> who strongly advocated prolonged rest in bed for heart failure. At present all students and physicians have been forcefully impressed with the great importance of rest in bed, although in practice one finds great variations in the degree to which the principle is applied. Under similar circumstances one physician may keep a patient in bed a few days, another a few weeks and a third a few months. What should be our guide and what are the hazards, if any, of strict bed rest?

At the outset, a clear distinction must be drawn between the function and dynamics of the heart and the conditions that obtain in other organs. One important peculiarity of the heart is that it has two sides, right and left, and that serious difficulties may ensue if an imbalance develops between the two. If the right ventricle expels one drop of blood less than the left ventricle, within a few hours there will be increased

From the Medical Clinic of the Peter Bent Brigham Hospital and the Department of Medicine, Harvard Medical School.  
Read at the dedication of the National Institute of Cardiology, Mexico City, Mexico, April 20, 1944.  
<sup>1</sup> Pratt, J. H. Rest and Exercise in the Treatment of Heart Disease. South M. J. 13: 481, 1920.

venous pressure and pronounced engorgement of the liver. Contrariwise, if the right ventricle expels one drop more than the left ventricle there will result pronounced pulmonary edema. In each instance 250 to 500 cc of blood would be trapped either in the systemic venous system or in the pulmonary circuit. Similarly it follows that, when there is definite pulmonary congestion, those measures that reduce the return flow to the right side of the heart, and therefore the output of the right ventricle, relieve pulmonary congestion and help to restore the balance between the two sides. We are all familiar with the beneficial effects of phlebotomy or the application of tourniquets to the extremities in this regard.

With the foregoing considerations in mind it is well to analyze the effects of putting a cardiac patient to bed. In general, rest obtained in this way decreases the total bodily demands or basal metabolism, slows the heart rate and may lower the blood pressure. All this decreases the work of the heart. The one factor that has been overlooked, for the most part, is that the effect of recumbency is also to encourage venous return. As the lower part of the legs remain elevated and approximate the level of the right side of the heart, tissue edema more readily disappears through the lymphatics, capillaries and venules. The result of this mechanism is to increase rather than to decrease the work of the right side of the heart. When this effect is considerable and the left ventricle is so weak that it cannot keep pace with the increased output of the right ventricle during the hours or days of recumbency, pulmonary congestion and resultant breathlessness may actually increase. In other words bed rest, for a while, may impose greater rather than less work on the heart.

All physicians are familiar with the clinical events that take place during an acute attack of nocturnal cardiac dyspnea or so-called cardiac asthma. A patient, generally with hypertension, coronary or aortic valvular disease goes to bed feeling fairly well and about 2 o'clock in the morning is awakened with breathlessness, suffocation and possibly cough and wheezing. He generally jumps out of bed, walks around the floor in his agitation, goes to a window for air or sits up in bed with his feet hanging down. In fifteen minutes or a half hour the attack may be over and he falls back to sleep. Some find that they can sleep the remainder of the night only if they sit in a chair. The surprising thing is that, although our patients have long been aware of the harmful effects of the bed and have dreaded the nights, we as physicians would generally insist that they be put on a strict bed regimen. Many of our patients would emphatically state that they felt quite well while they were up and about some of them even being able to do quite a bit of work during the day but had all their trouble in bed. With equal persuasion we would maintain that they had to go to bed.

It is true, however, that in most cases when we put such patients to bed no harm resulted. In fact, they generally improved. Often the nocturnal dyspnea disappeared and both the patients and the physician became convinced that bed rest was valuable. Nevertheless a closer analysis will reveal, I believe, that some temporary ill effects were produced but that in most instances the various methods of treatment employed were effective enough to counterbalance and mask them. Only when the entire program of treatment is ineffective do we see gross evidence of the deleterious results that

are produced by bed rest. I recall, as many physicians will on close reflection frequent instances in which shortly after ordering an ambulatory cardiac patient to bed pulmonary rales and hydrothorax previously absent quickly appeared. Such a patient may have complained of nocturnal dyspnea and shown no peripheral edema or slight pitting of the legs. The lung bases were clear of rales at that time. Ordinarily with complete bed rest the nights are made comfortable by the use of hypodermics of morphine until the effects of digitalis diuretics, diet phlebotomy and other measures have improved the situation so that pulmonary congestion clears and breathing becomes normal. But in the type of case mentioned, for one reason or another the progress is down hill because the customary treatment is not effective enough to undo the harm done by the recumbent posture. Such a patient often shows complete disappearance of peripheral edema but now needs a thoracentesis for a right hydrothorax. Even if no pitting is apparent we must realize that patients may have several liters of latent edema without pitting. It also must be borne in mind that fluid in the legs may be unsightly but does comparatively little harm, whereas fluid in the lungs is a dangerous handicap.

Another illustration of the shift of fluid from the lower to the higher portions of the body in decompensated cardiac patients is the disappearance of pitting edema of the ankles while extensive edema of the lower part of the back develops. Physicians often seem pleased that the ankles have returned to normal size in their cardiac patients who are confined to bed and overlook the fact that the same fluid is still within the body, only now is distributed in its upper portions.

One might ask what evidence there is that it is the bed rest that causes these changes. First, it is the experience of our patients (just cited), who often are our best teachers. Then it is the clinical detection of increasing signs of pulmonary congestion in some cases (while the peripheral signs decrease) coming during the first few days after bed rest has been instituted. Finally, certain laboratory data afford convincing proof to support these clinical impressions. It is known<sup>2</sup> that normally there is a decrease in the total lung volume of over 300 cc and a decrease in the vital capacity of the lungs of about 200 cc in the recumbent position. These changes may possibly be greater in patients already suffering from congestive failure. Several years ago<sup>3</sup> I made a few casual observations on the vital capacity of the lung and the velocity of blood flow just before putting cardiac patients to bed and one or two days later. The former was found to decrease slightly and the latter to slow before real improvement began. More recently a systematic study was made by Perera and Berliner<sup>4</sup> on the effect of posture on the dynamics of the circulation in normal individuals and in patients with paroxysmal nocturnal dyspnea. They found that the assumption of the horizontal position caused a decrease in serum concentration and slight increase in venous pressure in both groups. The serum protein was also found to rise toward the normal levels in patients about fifteen minutes after the attacks of dyspnea were over. The

<sup>2</sup> McMichael J and McGibbon J P. Postural Changes in the Lung. *Volume Clin Sc* 4: 175, 1939.

<sup>3</sup> Levine S A. The Management of Patients with Heart Failure. *JAMA* 115: 1715 (Nov. 16) 1940.

<sup>4</sup> Perera G A and Berliner R W. The Relation of Postural Hemodilation to Paroxysmal Dyspnea. *J Clin Investigation* 23: 25, 1943.

only reasonable interpretation that can be made from these observations, and the conclusion drawn by these authors, is that with recumbency hemodilution and increased blood volume occur as a result of the flow of fluid from the tissue spaces into the blood stream. This obviously is deleterious to cardiac patients, and when there is a tendency to dyspnea from left ventricular weakness or from serious mechanical obstruction of mitral stenosis serious pulmonary edema may result.

An increase in blood volume is one of the most constant findings in congestive heart failure, and effective treatment is always concomitant with a decrease of blood volume toward normal. The observations cited show that recumbency produces, at least temporarily exactly the effect that is undesirable by increasing the total volume of blood and as a result the work of the heart. It is clear therefore that although the fundamental principle that rest is beneficial for the heart remains undisputed the recumbent position in some cardiac patients may actually increase the work of the heart. To be sure, this effect is often temporary, for when sufficient improvement has occurred the left ventricle is able to expel its quota of blood or the right ventricle no longer delivers an excess into the pulmonary circuit and a proper balance has been established. From then on rest in bed does accomplish its purpose in diminishing the total work of the heart.

There are other difficulties that may follow prolonged bed rest both in cardiac and in noncardiac patients. In some elderly men urinary retention from an atonic bladder and prostatic obstruction may first develop after confinement to bed. This may necessitate catheterization with the occasional development of infection and its complications. Many others may develop hypostatic pneumonia, which used to be so often fatal to chronic cardiac patients.

What we have learned to be much more important is the frequent occurrence of thrombophlebitis of the legs with subsequent pulmonary embolism. The medical profession has only in the past few years become aware of the extent and seriousness of this problem. Williams and Rainey<sup>5</sup> even suggested that the initial period of complete bed rest should be reduced, because in a large number of their cardiac patients pulmonary infarction and pneumonia were found to be the cause of death.

In Boston in large measure as a result of the clinical studies of diseases of the veins by John Homans<sup>6</sup> and the pioneer work on acute cor pulmonale by P. D. White and his associates,<sup>7</sup> we are recognizing more and more cases of pulmonary embolism. As we all know, this is a common cause of death following operations in any surgical clinic. It is equally frequent in the medical wards in hospitals, especially in patients confined to bed for any appreciable time. Immobility of the legs, abdominal distention with its inevitable pressure on the iliac veins, and the sluggishness of the circulation in cardiac patients all result in slowing of the blood flow through the legs, which is conducive to venous thrombosis. This is particularly true of very obese and orthopneic individuals, for in a sitting position there is added constriction of the pelvic veins.

When cardiac patients are examined post mortem and pulmonary emboli or pulmonary infarction are

found, one is too ready to explain them on the basis of emboli from the right side of the heart or as a result of local thrombosis of the pulmonary vessels. Only a careful search of the veins of the legs or pelvis will reveal the great frequency of thrombosis, which proves to be the actual origin of these pulmonary complications. This entire situation is serious and in many cases the medical profession is to blame. I know I have been directly responsible for needless fatalities from pulmonary embolism in patients who would have done well had I not put them to bed. As a corollary to the foregoing we should be quick to detect any phlebitis of the leg, especially the deep type of thrombophlebitis. This often starts in the calf and is not manifested by gross swelling of the leg but rather by early pain in the calf on dorsiflexion of the foot. Certainly, if a patient with such phlebitis has one pulmonary embolism or some obscure sudden respiratory episode, ligation of the vein should be performed immediately. In fact, my fear of a fatal pulmonary embolism has become so great that I advise immediate femoral vein ligation just as soon as a deep phlebitis is recognized.

The following case reports will illustrate some of the preceding points.

**CASE 1**—A shopkeeper aged 58 had a typical attack of acute coronary thrombosis April 10, 1937. Severe and increasing breathlessness developed during the following three weeks. At this time (May 3 1937) I first saw him and found him to be irrational and considerably orthopneic, with Cheyne-Stokes breathing. The lungs were full of rales, but there was no pitting edema of the legs. The heart sounds were distant, regular and rapid. He had been in bed under an oxygen tent most of the time. I advised omitting the various medications he was receiving, such as aminophylline, digitalis and caffeine, and had him placed in a chair with his feet hanging down. Within a few hours his condition began to improve. Two days later he showed edema of the legs, but the orthopnea was practically gone and he was rational. He then received digitalis and mercurpurin had a satisfactory diuresis and gradually recovered compensation. He was still ambulatory and in fairly good health three years later. The turning point in this patient's condition occurred directly after getting him out of bed into a chair. The edema lessened in the lungs as it increased in the legs.

**CASE 2**—G. H., a business executive aged 66, seen in my office Feb. 1, 1934, had been slightly short of breath for a few years but carried on his work fairly well. Since August 1933 he had frequent smothering attacks waking him up from sleep. He would have to sit up in bed and get into a chair for relief. During the day, while he was up and about, he was comfortable.

Physical examination showed considerable cardiac enlargement, a grade 2 aortic systolic murmur, a definite gallop rhythm and a definite pulsus alternans. The rhythm was regular, with a rare extrasystole. The breath sounds were much decreased, the liver was slightly enlarged and there was moderate pitting edema of the legs.

He was put on complete bed rest in the Peter Bent Brigham Hospital and assured that he would be made comfortable, though he insisted that he feared the bed. The first few nights were in fact quite comfortable, because he was given hypodermic injections of morphine, which he had never received before. He was also started on digitalis therapy by mouth. Two days after admission, edema of the legs had entirely disappeared but now a right hydrothorax was present, which was not there when I first put him to bed. The breathing became more labored and of the Cheyne-Stokes type. A right thoracentesis was performed, removing 1,200 cc of clear fluid on the fourth day, and from then on, with the help of mercurial diuretics, his condition improved. As compensation was regained, the basal systolic murmur became more prominent, an aortic systolic thrill was felt, and x-ray examination showed definite calcific aortic stenosis. After several weeks he became ambulatory and free from dyspnea and edema.

<sup>5</sup> Williams R. H. and Rainey J. The Causes of Death in Patients with Congestive Heart Failure. *Am Heart J* 15: 385, 1938.

<sup>6</sup> Homans J. Thrombosis of the Deep Veins of the Lower Leg Causing Pulmonary Embolism. *New England J Med* 211: 993, 1934.

<sup>7</sup> McGinn S. and White P. D. Acute Cor Pulmonale Resulting from Pulmonary Embolism. Its Clinical Recognition. *J A M A* 104: 1473 (April 27) 1935.

This is a striking instance of a shift of fluid from the periphery to the chest on putting a cardiac patient to bed. The patient did become worse as a result of the position in bed and showed improvement only when active cardiac therapy caught up with and undid the harm done by recumbency. This might have been avoided if he had been treated in a more upright position or in a chair during the first week.

**CASE 3—**E G B, a housewife aged 58, came to my office Nov. 27, 1936 complaining of weakness, dizzy spells and inability to lie flat because of shortness of breath and choking feelings. These symptoms began only a few months before she was first seen.

The patient was obese, weighed 98 Kg and was 61 inches (155 cm) in height. The heart was entirely normal, the lungs showed a few basal rales, the abdomen was prominent but otherwise not remarkable, and there was slight puffiness of the legs. The blood pressure was 180/105. The urine was normal. The vital capacity of the lungs was much decreased (1,400 cc). The electrocardiograms were normal.

She was sent to the hospital with a diagnosis of obesity and slight hypertensive heart disease. She was put on a 600 calory diet, kept in bed and given digitalis. She lost about 6 Kg, though there was no diuresis. There was no change in her clinical condition and there was never any evidence of phlebitis of the legs. On December 26 she suddenly developed severe dyspnea. This was erroneously regarded as left ventricular failure, and digitalis, which had previously been omitted, was reinstituted. She remained dyspneic thereafter and died suddenly on Jan. 1, 1937.

Postmortem examination showed some cardiac hypertrophy and dilatation but no cardiac thrombi or significant coronary artery disease. There were numerous pulmonary infarcts and large adherent antemortem clots in each pulmonary artery. A large fresh red friable thrombus was present in the right common iliac vein.

This is an instance of acute fatal pulmonary embolism coming during the course of bed care in an obese hypertensive woman. It seems more than reasonable that this would not have occurred if she had remained ambulatory. Both the immobility of the legs during her period in bed and the pressure of the large abdomen on the pelvic veins, which was accentuated by the sitting position in bed, must have been precipitating factors in the production of thrombosis of the veins of the legs, which led to the pulmonary embolism.

**CASE 4—**D W, a hotel manager aged 52, entered the Peter Bent Brigham Hospital Feb. 10, 1944 complaining of frequent attacks of pain in the midchest. Beginning in February 1941 he had had attacks of pressing pain in the midsternum, radiating into both shoulders and arms. These came on effort, especially walking, and would make him stop whereupon the attack would let up. The attacks were relieved promptly by glyceryl trinitrate. Despite this he got along quite well until the fall of 1943, when attacks became frequent, even at rest, so that finally he used 10 to 15 glyceryl trinitrate pills daily.

The patient was very obese, weighing 100 Kg. There was no enlargement of the heart, the rhythm was regular and there were no murmurs. The lungs were clear and the abdomen was negative except for prominence due to obesity. No pitting edema was present. The urine was normal. The electrocardiograms showed slight rounding and inversion of T<sub>1</sub>, flat T<sub>2</sub> and sharply inverted T<sub>3</sub>.

He was put to bed in the hospital because of the frequent attacks of classic angina pectoris. Studies of the blood and other laboratory procedures were not remarkable. He was put on a diet of 1,000 calories, and promptly the attacks disappeared, so that he used only a few glyceryl trinitrate pills during his entire hospital stay, losing 10 Kg in weight.

Because he had a stout abdomen he found it uncomfortable to lie perfectly flat. He also believed that attacks were more likely to come if he was recumbent. The result was that he

sat up in bed most of the time. We were quite encouraged at the quick disappearance of the anginal attacks, when on the twelfth hospital day he developed a slight fever of 101 F and complained of feeling hot and cold and sweaty. Nothing abnormal could be found on physical examination until two days later, when he had definite pain in the gastrocnemius muscle on dorsiflexion of the left foot. He also had some mild pain in the left calf. The diagnosis of definite thrombophlebitis was made and because of the fear of pulmonary embolism a left femoral vein ligation was performed that very morning. From then on the leg did well, though a slight fever persisted for about ten days. He was ambulatory and much improved when he was discharged March 5, 1944.

This is a clear instance in which putting an obese patient to bed appeared to be directly responsible for the development of a deep phlebitis. Although the anginal state improved the possibility of a fatal pulmonary embolism was averted only by the prompt ligation of the femoral vein. On retrospect one wonders whether it would not have been better to have him walk around. It certainly was unwise to allow this obese patient to sit in bed with the protuberant abdomen pressing on the veins of the groin a good part of the day.

#### COMMENT

Evidence has been presented to show that putting cardiac patients on a strict bed rest regimen entails certain hazards. When cardiac congestion is present, recumbency shifts fluid from the lower to the upper parts of the body. Edema fluid leaves the tissue spaces, enters the venous system, increases blood volume and increases venous pressure. These effects are probably temporary and transient in most cases and therefore do not appear to have any deleterious effects on the ultimate progress of the case. Not infrequently, however, this results in an aggravation rather than an improvement in pulmonary congestion, as the return flow to the right heart is enhanced, thereby increasing the output of blood from the right ventricle into the pulmonary vessels. When the left ventricle is still unable to meet this increase in work, as may happen in cases of hypertension, aortic valvular disease or coronary artery disease, dyspnea may grow worse. The same ill effects may be observed in some cases of mitral stenosis in which the mechanical narrowing of the valve does not permit the added flow to reach the left ventricle. The situation is quite different if there is peripheral edema and engorged liver and there is no important threat of pulmonary congestion or dyspnea. In such cases recumbency will aid in diminishing right sided failure. These considerations do not vitiate the fundamental principle that rest is beneficial for heart failure. In fact, they actually substantiate this principle, because under certain circumstances recumbency is shown to increase rather than to decrease the work of the heart.

It has also become alarmingly apparent that many cardiac patients, after prolonged periods in bed, develop thrombosis of the veins of the legs with serious or fatal pulmonary emboli.<sup>8</sup> This is explained partly on the immobility of the legs and partly as a result of pressure of the abdomen on the pelvic veins. The latter mechanism is very likely of considerable importance in obese individuals or in those suffering from orthopnea who have to sit up in bed. The sitting position assumed

<sup>8</sup> Since this article was written William Dock has published a paper emphasizing this same point, suggesting that pressure of the lower legs on the bed may play a role in causing thrombophlebitis in the gastrocnemius muscles (*The Use and Abuse of Bed Rest*, New York State J. Med. 44: 724 [April] 1944).

by such patients must produce added pressure on these veins and thereby slows the circulation in the leg veins.

There are obvious therapeutic implications that follow from the foregoing observations. Some severely ill cardiac patients, especially those with nocturnal dyspnea, should not be kept flat in bed until active cardiac treatment has been well advanced in improving the circulation. During these early days they may sit in a chair and should be urged to exercise their legs or take short walks in their room several times daily. The bed in which they sleep should slant downward from head to foot. This can be accomplished by placing 9 inch wooden blocks under the head posts of the bed. In addition, the required number of pillows under the head should be used. Pillows alone do not meet the difficulty, as the purpose is to have the back and hips higher than the feet. Often it is best to have these patients sleep in beds raised in this fashion the rest of their lives. This may tend to prevent nocturnal dyspnea from returning. At times it is even wise to take a critically sick cardiac patient with severe pulmonary edema deliberately out of bed and place him in a chair with his feet hanging down. The purpose is to shift the fluid from the lungs to the legs. It would be better still if beds that embody this simple principle were generally available for cardiac patients at home and in hospitals.

The second precaution concerning bed care that is applicable to all patients, noncardiac as well as cardiac, who are to stay at rest for any considerable time is to have them exercise their legs frequently during the day. This is a practice that has already come into use to some extent. For the same reason, daily massage to the legs is desirable. The purpose is to prevent thrombosis of the veins of the legs and possible subsequent pulmonary emboli. In this regard, very obese individuals who are inclined to sit up in bed, or orthopedic patients who have to sit in the upright or semirecumbent position, need to be watched with particular care. The sitting position tends to produce pressure on the pelvic veins with slowing of the circulation in the veins of the legs, thus encouraging thrombus formation. It is believed that if attention is paid to the bodily position of the patient while instituting rest treatment our therapeutic results will be improved.

#### CONCLUSIONS

Rest in bed, which has been the backbone of our treatment of heart failure, needs reconsideration in the light of some possible harmful effects.

There is both clinical and laboratory evidence to show that recumbency may be very harmful for certain patients with heart failure. The heart may be made to work more rather than less, and pulmonary congestion may be made worse rather than better at certain stages of heart failure by placing the patient in bed. Making the bed slant downward by placing 9 inch blocks of wood under the head posts is a simple method of minimizing this undesirable effect. At times it is wise to treat patients with heart disease in a chair rather than in bed.

Cardiac as well as noncardiac patients who are confined to bed for any appreciable length of time should be instructed to exercise their legs frequently or to have massage of the legs to prevent venous thrombosis of the legs and pulmonary emboli.

## THE ARMY AIR FORCES RHEUMATIC FEVER CONTROL PROGRAM

COLONEL W. PAUL HOLBROOK  
MEDICAL CORPS, UNITED STATES ARMY

Rheumatic fever and its sequelae are of far greater significance in civilian life than is generally appreciated. Swift<sup>1</sup> indicates in his survey of New York State for 1938 that there were more than five times as many deaths from rheumatic heart disease as from whooping cough, measles, epidemic meningitis and anterior poliomyelitis combined. He also estimated that there were in excess of 460,000 individuals in the United States with rheumatic heart disease. Acute rheumatic fever has been considered as essentially a disease of childhood, but it has become a very serious problem among adults in the armed forces.

Under the supervision of the Air Surgeon, a program for the control of rheumatic fever and streptococcal infections has been established in the Army Air Forces. Credit for the success of the program belongs to the commanding general of the Army Air Forces, whose cooperation made it possible, and to the many medical and laboratory officers of the AAF hospitals, who have carried on these studies. The basic study was inaugurated in the spring of 1943, with forty of the larger AAF hospitals selected to cooperate in the investigation, representing approximately 25,000 beds and 800,000 troops. The posts chosen for the study were in areas of high incidence of rheumatic fever, areas of low incidence and intermediate areas. The geographic distribution of the areas studied is shown in figure 1. These hospitals, in addition to the usual laboratory facilities present at each, are served by ten strategically located and specially equipped laboratories for the grouping and typing of hemolytic streptococci.<sup>2</sup> Six hospitals located in the areas of lowest incidence were selected to receive patients with rheumatic fever for convalescence. The transfer to these hospitals is usually accomplished by air and can be carried out at a very early stage of the disease. For comparison, control groups are retained in the area in which the rheumatic fever was contracted.

At some air bases the incidence rates for the year 1943 were in excess of 25 per thousand troops involved (figs 2 and 3). During the peak of the rheumatic fever season one large post experienced rates in excess of 100 per thousand annually. Other geographic areas showed a very low incidence. The total number of new cases for 1943 is large, but statistical data cannot be released at this time.

A consideration of the days lost from duty by this group, the long hospitalization, the large percentage of the group who will be permanently incapacitated, the inevitable compensation for disability and the future necessary medical care by veterans' facilities will indicate to some extent the magnitude of this problem.

The exact etiology and pathogenesis of rheumatic fever is still unknown. Whether it is a sequela disease

<sup>1</sup> Read before the joint meeting of the Section on Practice of Medicine and the Section on Experimental Medicine and Therapeutics at the Ninety-Fourth Annual Session of the American Medical Association, Chicago, June 16, 1944.

<sup>2</sup> Swift H. F. Features Which Suggest Public Health Consideration of Rheumatic Fever. *Bull. New York Acad. Med.* 16: 501-513 (Aug.) 1940.

<sup>3</sup> The special laboratory studies were made possible through the assistance of the Rockefeller Institute, the Josiah Macy, Jr. Foundation and the Presbyterian Hospital, New York.



to a group A hemolytic streptococcus infection, the result of a congenital susceptibility, the result of climatic and meteorological factors, a combination of these or due to an agent as yet undiscovered remains for further studies to determine. Our experience and that of others indicates that in the majority of instances the development of the acute rheumatic fever syndrome is related to a preceding hemolytic streptococcus infection. At least it is certain that we have not seen an epidemic incidence of rheumatic fever without a preceding high incidence of hemolytic streptococcus infections. It therefore appears logical to attempt prophylaxis of rheumatic fever in those areas of high incidence by reducing or preventing the hemolytic streptococcus infections and the associated respiratory diseases.

This paper will deal only with one phase of the AAF Rheumatic Fever Control Program and will be limited to a report on the use of sulfadiazine prophylaxis. In March 1943 Pantton<sup>3</sup> at the Greensboro Army Air Base, while using sulfadiazine for the prophylaxis of meningococcic meningitis, obtained incidental evidence that scarlet fever could be controlled by this method

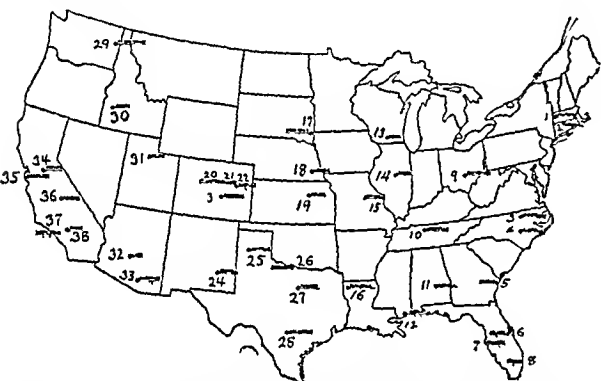


Fig 1—Army Air Forces hospitals cooperating in the Rheumatic Fever Control Program with a notation of special facilities: 1 Westover Mass; 2 Bradley Conn; 3 Greensboro N C; 4 Seymour Johnson N C; 5 Hunter Ala; 6 Orlando Fla (convalescent); 7 Drew Fla (laboratory); 8 Miami Fla (convalescent); 9 Patterson Ohio; 10 Nashville Tenn; 11 Maxwell Miss (laboratory); 12 Keesler Ala (laboratory and convalescent); 13 Truax Wis; 14 Chanute Ill; 15 Jefferson Barracks Mo; 16 Barksdale La; 17 Sioux Falls S D; 18 Lincoln Neb (laboratory); 19 Salina Kan; 20 Fort Logan Colo; 21 Lowry Colo; 22 Buckley Colo (laboratory); 23 Peterson Colo; 24 Roswell N M; 25 Amarillo Texas (laboratory); 26 Sheppard Texas; 27 Tarrant Texas; 28 San Antonio Texas (laboratory); 29 Fort George Wright Washington; 30 Gowen Idaho; 31 Kearns Utah (laboratory); 32 Luke Ariz; 33 Davis Monthan (laboratory and convalescent); 34 Mather Calif; 35 Hamilton Calif; 36 Hammer Calif; 37 Santa Ana Calif (laboratory and convalescent); 38 March Calif.

The control of a scarlet fever epidemic among Navy personnel by the use of sulfonamides was similarly demonstrated by Watson and his associates<sup>4</sup> at the same time. Others<sup>5</sup> have reported favorable effects by the use of small doses of sulfonamides in preventing recurrences of rheumatic fever. Our studies of sulfonamide prophylaxis have been directed toward the determination of optimal dosage, the most effective method of mass

administration and an evaluation of the potential danger of the method. In our experience sulfadiazine, because of its low toxicity and availability, has been the drug of choice.

#### SULFADIAZINE PROPHYLAXIS

A number of carefully controlled studies were conducted, in which different methods of administration

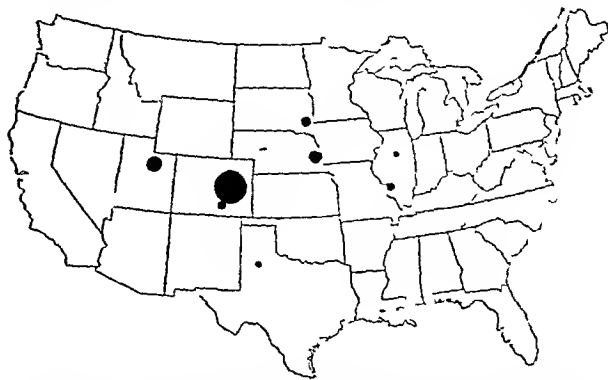


Fig 2—Distribution of rheumatic fever in Army Air Forces installations for 1943. The open circles represent posts with rates less than one per thousand annually. The diameter of solid circles is proportional to rates at posts exceeding 1 per thousand annually.

were used and the amount of the drug given was varied. The treated groups and control groups were approximately the same size and represented as nearly as possible identical epidemiologic units. Most of the graphs shown are based on reduction of hospital admissions for respiratory disease and at these posts, approximately 50 per cent of the admissions for respiratory disease showed clinical and laboratory evidence of significant hemolytic streptococcus infection.

Four grams of sulfadiazine given in a forty-eight hour period produces a definite but very brief reduction in hospital admissions for respiratory disease (figure 4)

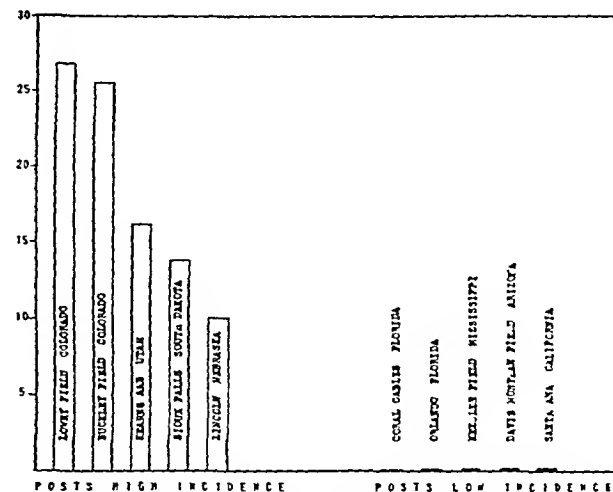


Fig 3—A comparison of yearly incidence rates for rheumatic fever in two selected groups of AAF installations.

3 Pantton J F. Personal communication to the author.  
4 Watson R G, Schwentker F F, Fetherston J E and Rothbard S. Sulfadiazine Prophylaxis in an Epidemic of Scarlet Fever. *J A M A* 122: 730-733 (July 10) 1943.  
5 Hansen A E, Platon R V and Dwan P F. The Prolonged Use of a Sulfonamide Compound in the Prevention of Rheumatic Recurrences in Children. Evaluation Based on a Four Year Study on Sixty Four Children. *Am J Dis Child* 64: 963-976 (Dec) 1942. Kuttner A G. The Prevention of Rheumatic Recurrences. *New York State J Med* 43: 1941-1947 (Oct 15) 1943. Coburn A F and Moore L V. Prophylactic Use of Sulfonamides in Streptococcal Respiratory Infections with Especial Reference to Rheumatic Fever. *J Clin Investigation* 18: 147-155 (Jan) 1939. Thomas C B. The Prophylactic Treatment of Rheumatic Fever by Sulfanilamide. *Bull New York Acad Med* 18: 508-526 (Aug) 1942.

group B approximately 5 000 troops). Six grams given over a period of three days promptly reduces the hospital admissions approximately 75 per cent for a period of about twelve days (fig 4, group A approximately 5,000 troops). One gram daily effects a continuous reduction in hospital admissions for respiratory disease and is somewhat more effective than the intermittent method if it is not properly timed (fig 5, 5,000



troops in each group) The efficacy of 1 Gm daily is clearly shown in relation to the control group in figure 6 (9,000 troops)

Striking reductions are obtained for total dispensary admissions by the same method (fig 7, 9,000 troops) At two large bases almost identically satisfactory results

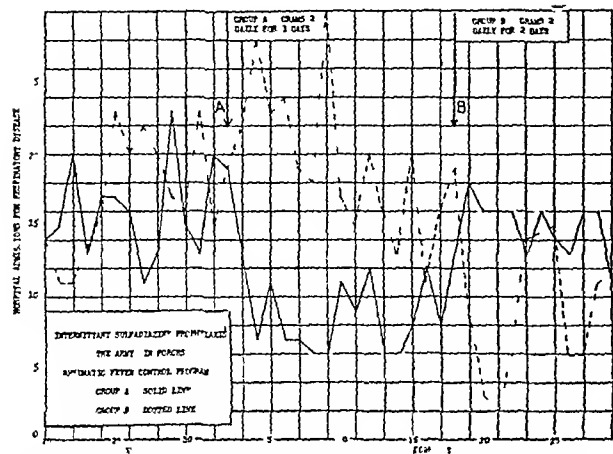


Fig. 4—Sulfadiazine prophylaxis. A comparison of the effect of varying total dosage in control groups each containing 4,800 troops. Group A—solid line 2 Gm daily for three days. Group B—broken line 2 Gm daily for two days.

have been obtained in the reduction of the number of admissions to hospitals and dispensaries by the use of 0.5 Gm daily.

When the effects of sulfadiazine prophylaxis are considered only in relation to streptococcal infections, the prophylactic value is even more dramatic, as might be expected (fig 8, 4,800 troops in each group). This experience also indicates that intermittent and continuous dosage may be equally effective if properly timed. It further points out that, after a lapse of considerable time prophylaxis when repeated on the same groups is fully as effective as the first time. Another post experience is shown in figure 9.

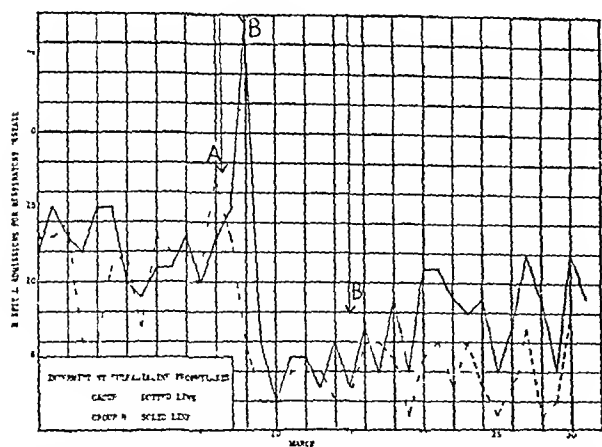


Fig. 5—Sulfadiazine prophylaxis. A comparison of daily and intermittent dosage in two epidemiologically similar groups of 4,800 troops. Group A—broken line 1 Gm daily for twenty-two days. Group B—solid line 2 Gm daily for two days.

With regard to the reduction in rheumatic fever, total figures are not yet available, but it appears from considerable data at hand that the reduction in rheumatic fever parallels the reduction in respiratory diseases and streptococcal infections.

## DRUG REACTIONS

Panton<sup>3</sup> at Greensboro Army Air Base in March 1943 gave each of 18,000 troops 4 Gm of sulfadiazine in twenty-four hours without serious reactions.

Lee<sup>6</sup> at Santa Ana Army Air Base gave each of 25,000 troops 2 Gm in one dose and observed thirteen severe reactions. No deaths occurred. Seven had fever and all 13 had skin reactions. There were 15 additional cases of mild skin reactions. The very severe reactions occurred in individuals subsequently found to have a previous history of sulfonamide reactions that were not reported. Our special study of reactions has been limited to approximately 40,000 troops on which full reports are available. There were no deaths. Thirteen individuals lost some days of duty and 33 had mild manifestations not resulting in loss of time from duty. There were no renal complications and no evidence of neutrophilic leukopenia. The major disabilities were skin lesions occurring between the first and sixteenth days of administration of the drug. These disappeared when the drug was discontinued. In the only 2 indi-

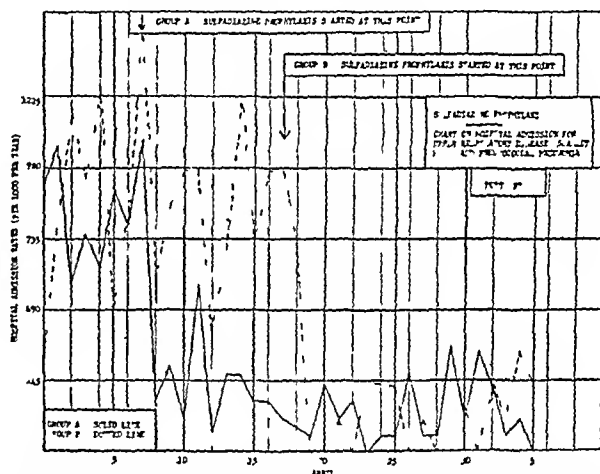


Fig. 6—Sulfadiazine prophylaxis. The effect of a daily dose of 1 Gm on hospital admissions for upper respiratory disease, scarlet fever, and pneumococcal pneumonia. The two control groups represent 9,000 men. Group A—solid line. Group B—broken line.

viduals who developed high febrile reactions there was a history of previous sulfonamide reactions which had not been reported. One patient developed anemia, hemolytic in type, with prompt recovery following transfusions.

Of the 40,000 in this group, only 0.03 per cent lost time from duty and only 0.12 per cent had any type of reaction. Panton's experience with larger doses was similar. The reason for the increased incidence and severity of reactions observed by Lee at Santa Ana is not clear. Larger single doses have been used at a number of AAF installations for prophylactic purposes without a similar result. It is, of course, possible that by chance twice as many reactors were present in his group. However, the possibility of more sunburn at Santa Ana in consideration of the photosensitizing properties of sulfadiazine should be considered. At any rate it is quite obvious that the total hazard is very small and that, if known sulfonamide reactors are eliminated, doses of 0.5 to 1 Gm daily can be given with almost complete lack of risk.

## COMMENT

Our army of seven million troops spent in excess of fourteen million days in the hospital last year because of common respiratory diseases. In addition to this time there were the inevitable number of complications and deaths as well as additional millions of man days lost from duty. If our experience with sulfadiazine prophylaxis holds true, it is a conservative estimate that 50 to 75 per cent of this tremendous loss could be avoided.

One question that will immediately present itself concerns the possibility of producing dangerous strains of sulfonamide resistant organisms. The answer cannot be given with complete certainty at this time. However it is well known that patients who have had prophylaxis in the past respond equally well to sulfadiazine when an acute illness develops. Furthermore, as shown in figure 8, approximately ten thousand troops responded as well to a second period of prophylaxis as to the first. If sulfadiazine prophylaxis is to result in the production of dangerous sulfonamide resistant

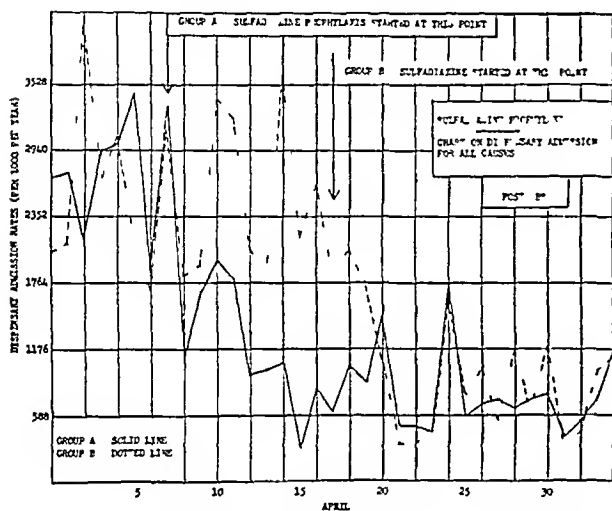


Fig. 7—Sulfadiazine prophylaxis. The effect of a daily dose of 1 Gm on dispensary admissions for the same group shown in figure 6. Group A solid line; group B broken line.

strains, it would seem reasonable to expect that some evidence of this would already have appeared in our repeated experience on thousands of troops. To the best of our knowledge, such evidence has not yet appeared. Further bacteriologic studies are being directed toward this phase of the investigation.

The possibility of individuals becoming sensitized to the drug on a mass scale has been considered. Repeated periods of prophylaxis on the same groups have failed to demonstrate any developing sensitivity. Following the feeding of sulfonamides, late lesions developing in rats have been reported.<sup>7</sup> Prophylactic doses used clinically are so minute when considering body weight that similar findings in human beings appear extremely unlikely. Further studies on animals, using comparable amounts of the drug based on body weights or blood levels over varying periods of time, should be undertaken. Three months has been the longest continuous period of prophylaxis used by us.

7 Lindcott K. M., Kornberg A. and Dift F. S. Lesions in Rats Given Sulfathiazole, Sulfadiazine, Sulfanilamide, Sulfamerazine, Sulfapyridine or Acetylsulfadiazine in Purified Diet. Pub. Health Rep. 59:493 (Jan. 14) 1944.

## CONCLUSIONS

1 Acute rheumatic fever shows a striking geographic variation in its distribution, as indicated by the incidence rates per thousand troop population in the various geographic areas.

2 Acute rheumatic fever occurring in high incidence during this study in every instance has been preceded by a high incidence of hemolytic streptococcus infection.

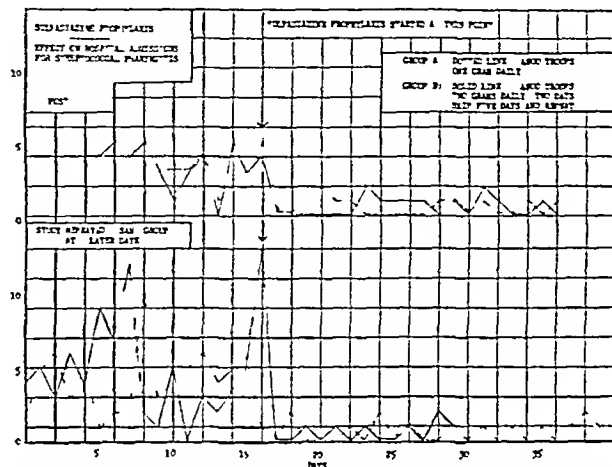


Fig. 8—Sulfadiazine prophylaxis. The effect of continuous and intermittent sulfadiazine administration on hospital admissions for streptococcal pharyngitis. The same group of 9,600 men was used in each of the two studies which were done at an interval of one month.

3 A 50 to 75 per cent reduction in the incidence of respiratory diseases and streptococcal infections has been accomplished by the use of sulfadiazine prophylaxis under carefully controlled conditions and on a significantly large troop population. No serious drug reactions occurred.

4 From the partial data at hand it appears that the reduction in rheumatic fever parallels that of respiratory and streptococcal diseases.

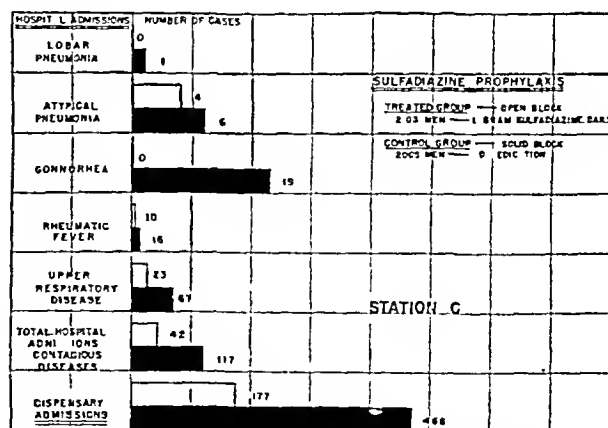


Fig. 9—Sulfadiazine prophylaxis. No total and dispensary admissions for a twenty-one day period from a group of 2,103 men receiving 1 Gm daily as compared with a control group receiving no medication.

5 The possibility of utilizing these prophylactic methods thus saving millions of hospital days, avoiding serious complications and adding millions of effective man days to the war effort, should be given consideration.

Office of the Air Surgeon

## THE PREVENTION OF RESPIRATORY TRACT BACTERIAL INFECTIONS

BY SULFADIAZINE PROPHYLAXIS IN THE UNITED STATES NAVY

COMMANDER ALVIN F COBURN, MC-V(S) USNR  
WASHINGTON, D C

The struggle between bacterial flora and the human host is a continuous one. Survival of the two has been determined by a balanced relationship. In time of war, living conditions of the host are such that this relationship is disturbed and the balance is now already tipped in favor of respiratory pathogens. In the first year of World War II a significant development in the armed forces was the increasing morbidity rate from respiratory infections and in the U S Navy the majority of the important respiratory diseases were caused by the hemolytic streptococcus. At U S naval training centers situated in Northern states these infections have handicapped recruit training. The experiences of one of these stations will illustrate the importance of streptococcal infections in the U S Navy.

Early in 1943 a training center with an average strength of 43,000 had an outbreak of measles. This was followed by many types of respiratory infections including in one year 4,973 cases of scarlet fever, 1,375 cases of rheumatic fever, 1,383 cases of pneumonia, 131 cases of meningitis and at least 50,000 infections of the nasopharynx or tonsils. During the summer months the activity of the meningococcus and the pneumococcus subsided. However, the hemolytic streptococcus maintained its pathogenicity, and late in 1943 this bacterium manifested an increased virulence. It became highly communicable, it produced rather intense scarlet fever, it precipitated severe rheumatic attacks in susceptible subjects, it became invasive. The acquisition of invasiveness by this micro-organism was accompanied by the rapid development of lytic phenomena in the patient, e g. toxemia formation, pericarditis, empyema and other suppurative lesions. Furthermore, strains of this bacterium identified serologically as types 17, 1 and 19 maintained their pathogenicity when transplanted by carriers to other geographic environments and even initiated streptococcal outbreaks at naval activities situated in Southern states.

### ECONOMIC LIABILITIES OF STREPTOCOCCAL INFECTIONS

Each man who is taken up on the sick list with a streptococcal infection becomes a liability to the Navy. Not only are his services lost but, in addition, the services of two well persons are required to care for him. The duration of his time on the sick list is determined by the streptococcal syndrome manifested. The average man-days loss for common diseases induced by the hemolytic streptococcus in 1942 and 1943 is presented in table 1. This table shows that the average time spent on the Sick List for scarlet fever was 21.9 days, for rheumatic fever 92.1, for pneumonia 26.4 and for tonsillitis 5.7 days.

From the Bureau of Medicine and Surgery, Navy Department, U S Navy Epidemiology Units numbers 67 and 89 supplied data used in this report.

Read before the joint meeting of the Section on Practice of Medicine and the Section on Experimental Medicine and Therapeutics at the Ninety-Fourth Annual Session of the American Medical Association, Chicago, June 16, 1944.

This article has been released for publication by the Division of Publications of the Bureau of Medicine and Surgery of the U S Navy. The opinions and views set forth in this article are those of the writer and are not to be considered as reflecting the policies of the Navy Department.

Bacterial respiratory tract infections are costly not only in man-days loss but also in dollars expended. For example, the liability incurred for just four of these diseases at a single training station is conservatively estimated as shown in table 2.

### A PROGRAM FOR THE CONTROL OF STREPTOCOCCAL INFECTIONS

The Navy's enormous loss to *Streptococcus haemolyticus* was only one of the compelling reasons for instituting a streptococcus control program. For military and civilian welfare it became essential to prevent the dissemination of the streptococcus among naval personnel, to prevent the induction of rheumatic fever with the development of incapacitating heart disease, to prevent the invasion of the streptococcus into deep tissues with the formation of suppurative lesions and to prevent the spreading of this highly virulent organism from one naval activity to another. To attain these objectives the U S Navy instituted a long term streptococcus control program in November 1943.

The first objective in this program was to check the dissemination of respiratory pathogens in the winter of 1944. For this purpose the use of prophylactic doses

TABLE 1—Average Days Spent on the Sick List in 1942-1943 for Diseases Initiated by Respiratory Tract Pathogens

| Diagnosis  | Man Days Lost |
|--|---------------|
| Scarlet fever  | 21.9          |
| Tonsillitis acute  | 5.7           |
| Pharyngitis acute  | 5.5           |
| Catarrhal fever acute  | 4.0           |
| Laryngitis acute   | 0.2           |
| Bronchitis, acute  | 8.5           |
| Tracheitis acute   | 0.8           |
| Tracheobronchitis acute  | 10.5          |
| Rhinitis acute   | 5.2           |
| Angina Vincent   | 8.4           |
| Sinusitis acute group (paranasal, sinusitis ethmoidal, frontal, maxillary, sphenoidal) | 15.8          |
| Otitis media acute   | 10.8          |
| Mastoiditis acute  | 60.6          |
| Pneumonia bronchial  | 26.4          |
| Pneumonia lobar  | 20.8          |
| Cerebrospinal fever (meningococcal)  | 39.5          |
| Rheumatic fever  | 92.1          |

of sulfadiazine seemed the method of choice. Other investigators had previously indicated the effectiveness of sulfonamide prophylaxis,<sup>1</sup> nevertheless, it seemed wise to control the administration of sulfadiazine with caution. To test the applicability of mass prophylaxis under controlled conditions and to determine a standard prophylactic dose of sulfadiazine, programs were designed for five large Northern training stations with high respiratory disease rates. Groups of trainees were then selected to receive sulfadiazine prophylaxis and comparable groups to serve as untreated controls. At each station these groups were placed under the surveillance of a Navy epidemiology unit consisting of two to five medical officers and four to ten pharmacist

1. Watson R F, Schwenker F F, Fetherston J E and Rothbard S. Sulfadiazine Prophylaxis in an Epidemic of Scarlet Fever. J A M A 122 730-733 (July 10) 1943. Thomas C B and France R. Preliminary Report of Prophylactic Use of Sulfanilamide in Patients Susceptible to Rheumatic Fever. Bull Johns Hopkins Hosp 64 67-77 (Jan) 1939. Thomas C B, France R and Reichsman F. The Prophylactic Use of Sulfanilamide in Patients Susceptible to Rheumatic Fever. J A M A 116 551-560 (Feb 15) 1941. Hansen A E, Platou R V and Dwan P F. Prolonged Use of a Sulfonamide Compound in Prevention of Rheumatic Recrudescences in Children. Evaluation Based on Four Year Study of 64 Children. Am J Dis Child 64 963-976 (Dec) 1942. Kuttner A G and Reysersbach G. The Prevention of Streptococcal Upper Respiratory Infections and Rheumatic Recrudescences in Rheumatic Children by the Prophylactic Use of Sulfanilamide. J Clin Investigation 22 77-85 (Jan) 1943. Chandler Caroline A and Tausig Helen B. Sulfanilamide as a Prophylactic Agent in Rheumatic Fever. Bull Johns Hopkins Hosp 72 42-53 (Jan) 1943.

mates, all of whom had been trained in epidemiology. The duties of each unit included the following:

(a) To supervise the distribution of sulfadiazine by line officers.

(b) To administer the collection of clinical data on all men reporting to sick bay with respiratory symptoms.

TABLE 2—*Liability Incurred for Four Diseases at One Training Station*

| Disease   | No. of Cases | Estimated Days Lost |
|---|--------------|---------------------|
| Scarlet fever   | 4,973        | 108,908             |
| Rheumatic fever   | 1,379        | 126,637             |
| Pneumonia   | 1,33         | 36,511              |
| Tonsillitis or pharyngitis  | 50,000       | 283,000             |
| Total days lost to four diseases  |              | 557,066             |
| Days consumed by personnel caring for these diseases                                    |              | 1,114,114           |
| Estimated cost in salaries  |              | \$3,000,000         |
| Estimated cost in pensions for disabilities   |              | \$10,000,000        |
| Total cost for four streptococcus manifestations at one naval training station          |              | \$15,000,000        |
| Total man days lost for four streptococcus manifestations at one naval training station |              | 1,671,171           |

(c) To check the diagnoses of all men receiving sulfonamide compounds who were admitted to the sick list with respiratory infections.

(d) To obtain throat cultures on all such individuals and a sample (10 per cent) of individuals contracting respiratory infections in untreated control groups.

(e) To isolate the beta hemolytic streptococcus and ship these organisms in pure culture to the National Naval Medical Center, Bethesda, Md., for grouping, typing and testing of drug fastness.

On Dec. 1, 1943 this controlled program was initiated at five training stations. Data on the incidence of respiratory infections in the "treated" and control groups were collected for three months. With the accumulation of these data the effectiveness of mass prophylaxis was manifest. It was then decided to extend the program to three other naval activities experiencing a high incidence of streptococcal infections.

TABLE 3—*Monthly Morbidity for Certain Diseases Activity A*

Rates per Thousand Men During the Winters of 1943 and 1944

| Diagnosis           | 1943    |          |       | 1944    |          |       |
|---------------------|---------|----------|-------|---------|----------|-------|
|                     | January | February | March | January | February | March |
| Tonsillitis         | 15.1    | 8.6      | 25.8  | 25.0    | 13.0     | 2.9   |
| Catarrhal fever     | 75.1    | 38.2     | 76.3  | 54.2    | 26.6     | 5.6   |
| Scarlet fever       | 0.5     | 2.8      | 9.3   | 16.6    | 4.4      | 0.8   |
| Rheumatic fever     | 3.5     | 3.0      | 3.2   | 8.6     | 4.3      | 1.3   |
| Septic sore throat  | 0.0     | 0.0      | 0.1   | 3.5     | 1.6      | 0.5   |
| Pneumonia bronchial | 0.0     | 0.0      | 0.0   | 1.6     | 3.4      | 0.4   |
| Pneumonia lobar     | 0.5     | 0.0      | 0.6   | 1.3     | 1.7      | 0.2   |
| Pneumonia atypical  | 2.1     | 2.7      | 5.2   | 0.1     | 0.3      | 0.5   |
| Sinusitis           | 3.7     | 3.6      | 5.1   | 6.7     | 5.0      | 1.8   |
| Pharyngitis         | 1.7     | 0.8      | 4.5   | 1.4     | 6.0      | 1.3   |
| Laryngitis          | 0.2     | 0.4      | 0.4   | 0.9     | 0.5      | 0.2   |
| Otitis media acute  | 2.3     | 3.2      | 6.3   | 6.0     | 5.6      | 1.8   |
| Vincent's angina    | 2.5     | 2.0      | 1.8   | 0.1     | 0.0      | 0.5   |
| Bronchitis          | 0.6     | 0.4      | 1.1   | 0.4     | 0.0      | 0.4   |
| Menigitis           | 0.1     | 0.6      | 0.2   | 1.7     | 0.2      | 0.1   |
| Mastoiditis acute   | 0.0     | 0.0      | 0.1   | 0.4     | 0.0      | 0.1   |

and to discontinue the use of untreated controls in the five naval activities at which the sulfadiazine program was already in operation. Continuous mass prophylaxis was accordingly extended to about fifty camps of eight naval activities and this program was continued throughout the spring months. The effectiveness of the overall program will be appraised in a forthcoming monograph.<sup>1a</sup> The present paper is a preliminary report limited to observations on sulfadiazine prophylaxis instituted under three different conditions at three naval training camps.

#### THE EFFECT OF SULFADIAZINE PROPHYLAXIS INITIATED DURING A STREPTOCOCCIC OUTBREAK AT ACTIVITY A

Naval Activity A situated in the city of Chicago had experienced a high rate of infections occasioned by the great expansion of intensive training with a rapid turnover in personnel. Early in the winter its training program was seriously handicapped by a high incidence of streptococcal infections which were subsequently identified as due to types 17, 3 and 30. During December 1943 more than 25 per cent of the station's complement were admitted to the sick list with respiratory infections in all 27,966 man-days or about 10 per cent of the available man power were lost. The incidence of these infections continued to be high in January and a large number of men developed rheumatic fever. By February 1944 the hospital admission rates<sup>2</sup> for respiratory diseases and sequelae had reached extraordinary heights: for catarrhal fever 988, for tonsillitis 426 for scarlet fever 171 and for rheumatic fever 70. The urgency of the situation and the expectancy of an increase in these rates during February and March

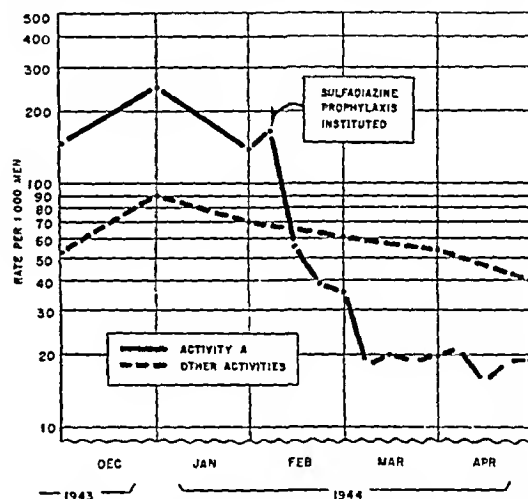


Chart 1—A comparison of the monthly morbidity rates for respiratory tract infections at Activity A with those of other naval activities in the Chicago area.

were cogent reasons for placing all station personnel on sulfadiazine prophylaxis.

**Results of Sulfadiazine Prophylaxis.**—The institution of prophylaxis, 1 Gm of sulfadiazine daily on February 8 was followed by a rapid fall in the incidence of disease. For example, the scarlet fever rate<sup>2</sup> fell weekly to 70, to 45 and to 0 during the third week. The rheumatic fever rate rose during the first week of prophylaxis to 87 and then fell progressively by weeks to 45, 45, 19 and 6. The fall in incidence of respiratory diseases observed in February became even more pronounced in March and April 1944. That this was not to be expected from the experience of 1943 is shown in table 3. And it is seen in table 4 that this phenomenal change was not observed at other naval activities in Chicago during March and April 1944. A comparison of the monthly morbidity rates for respiratory infections at Activity A receiving sulfadiazine prophylaxis after February 8 and for five other naval activities in Chicago receiving no prophylaxis is shown in chart 1.

In summary, the institution of sulfadiazine prophylaxis 1 Gm daily to all hands at Activity A on

February 8 during a severe streptococcic outbreak was accompanied by a precipitous, contraseasonal decline in streptococcic infections and was followed by a striking drop in the incidence of rheumatic fever.

#### EFFECT OF SULFADIAZINE PROPHYLAXIS INSTITUTED IN HALF A CAMP AT THE ONSET OF A SCARLET FEVER OUTBREAK

Camp 1 of a naval training station had served as an untreated control group for the prophylactic program during the early winter months of 1943-1944. The

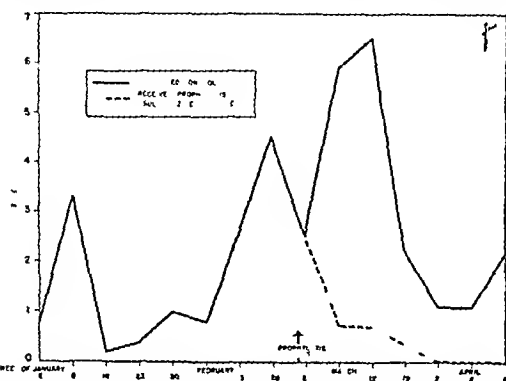


Chart 2—The effectiveness of sulfadiazine prophylaxis as reflected by the incidence of scarlet fever in Camp 1 during the winter and spring months of 1944.

incidence of streptococcic infections among these 5,000 men had been moderate during December and January. About the middle of February the scarlet fever rate began to rise rapidly and this was accompanied by a decided increase in the occurrence of other streptococcic respiratory diseases. Most of these infections, irrespective of the presence or absence of a scarlatinal rash, were caused by hemolytic streptococcus group A, type 19. On February 25 one half of the complement of this camp was placed on a prophylactic dose of 1 Gm of sulfadiazine daily, the other half remained untreated. The effectiveness of sulfadiazine in preventing further

TABLE 4—Acute Respiratory Tract Infections\* at Various Naval Activities in Chicago

Admission Rates per Thousand Strength, Winter of 1943-1944

| Naval Activity in Chicago | 1943     |          |         | 1944     |       |       |  |
|---------------------------|----------|----------|---------|----------|-------|-------|--|
|                           | November | December | January | February | March | April |  |
| A                         | 146      | 254      | 130     | 74       | 19    | 19    |  |
| B                         | 176      | 145      | 210     | 89       | 54    | 54    |  |
| C                         | 64       | 71       | 61      | 49       | 24    | 30    |  |
| D                         | 40       | 71       | 64      | 44       | 33    | 26    |  |
| E                         | 27       | 88       | 61      | 70       | 64    | 43    |  |
| F                         | 17       | 100      | 39      | 52       | 46    | 48    |  |

\* Includes tonsillitis, acute pharyngitis, acute catarrhal fever, acute bronchitis, acute laryngitis, acute Vincent's angina, pneumonia, all forms scarlet fever, septic sore throat, influenza, rheumatic fever.

spread of this highly communicable strain of hemolytic streptococcus in recruits receiving prophylaxis is shown in chart 2.

#### EFFECTIVENESS OF SULFADIAZINE IN PREVENTING IMPLANTATIONS OF HEMOLYTIC STREPTOCOCCUS IN A RECRUIT CAMP

The foregoing observations indicated that 1 Gm of sulfadiazine administered daily was effective in checking a streptococcic outbreak either when well advanced (Activity A) or in its early stage (Camp 1). The following observations will serve to show that as little as 0.5 Gm of sulfadiazine administered daily prevents the implantation of the hemolytic streptococcus in a

recruit group (Camp 2) with a complete turnover of personnel every four to six weeks.

Camp 2 was situated about 1 mile from Camp 1 on the same naval training station. In November 1943, when the incidence of streptococcic infections was low, this camp was divided into two groups for the purpose of this investigation. All even numbered companies were placed in group A, which received no chemo-

TABLE 5—The Incidence of Respiratory Infections (Probably Hemolytic Streptococcus) in Camp 2

| All Respiratory Illness with Positive<br>Hemolytic Streptococcus Cultures |                 |                   |                 |                   |                  |         |
|---|-----------------|-------------------|-----------------|-------------------|------------------|---------|
| Four<br>Week<br>Period<br>Ended   | A Control       |                   | B Treated       |                   | $\bar{x}/\sigma$ | P       |
|   | Number<br>Cases | Rate per<br>1,000 | Number<br>Cases | Rate per<br>1,000 |                  |         |
|   |                 |                   |                 |                   |                  |         |
| 2/6/44  | 77              | 46.88             | 9               | 5.27              | 7.43             | <0.0001 |
| 3/5/44  | 113             | 73.02             | 9               | 6.00              | 9.60             | <0.0001 |
| 4/2/44  |                 |                   | 18              | 6.88              |                  |         |

TABLE 6—The Incidence of Frank Streptococcus Infections in Camp 2

| Four Week<br>Period<br>Ended | Scarlet Fever Tonsillitis<br>and Pharyngitis |                   |                 |                   | x/σ  | P       |
|------------------------------|--|-------------------|-----------------|-------------------|------|---------|
|                              | A Control                                    |                   | B Treated       |                   |      |         |
|                              | Number<br>Cases                              | Rate per<br>1 000 | Number<br>Cases | Rate per<br>1 000 |      |         |
| 2/6/44                       | 20   | 10.53             | 2               | 1.17              | 4.56 | <0.0001 |
| 3/5/44                       | 64   | 44.70             | 2               | 1.34              | 7.68 | <0.0001 |
| 4/2/44                       |  |                   | 3               | 1.15              |      |         |

prophylaxis and all odd numbered companies were placed in group B, which received 0.5 Gm of sulfadiazine daily. On March 1 both groups were placed on a prophylactic regimen of sulfadiazine 1 Gm daily. The incidence of respiratory symptoms and respiratory diseases of groups A and B is shown in chart 3. Data on the incidence of probable and frank hemolytic

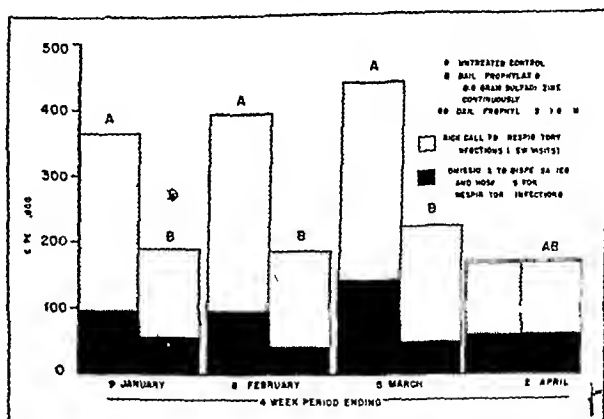


Chart 3—The effectiveness of continuous sulfadiazine prophylaxis in preventing respiratory tract infections in Camp 2.

streptococcus infections of the two groups are summarized in tables 5 and 6.

It is seen in chart 3 and tables 5 and 6 that the group receiving sulfadiazine prophylaxis had a low incidence of respiratory infections. This low incidence in group B was maintained for three months, and perhaps greater protection was afforded during March, when the prophylactic daily dose of sulfadiazine was increased from 0.5 to 1.0 Gm. The incidence of sick call visits for respiratory symptoms in the untreated group was twice

that in the treated group, and the incidence of respiratory diseases requiring bed care in the untreated group was about three times that in the treated group. In both the difference in incidence between untreated and treated groups is statistically significant. This difference is even more striking for streptococcal infections. The incidence of respiratory disease probably caused by the hemolytic streptococcus in the untreated group was eleven times the incidence of the treated group. Frank streptococcal infections in the untreated group had an incidence twenty-four times that of the treated group.

#### EVALUATION OF THE POTENTIAL LIABILITIES AND ASSETS OF SULFADIAZINE PROPHYLAXIS

When this program was initiated, there appeared to be three potential dangers inherent in sulfadiazine prophylaxis: (a) sensitization of patients to sulfonamide compounds, (b) induction of severe, irreversible drug reactions, (c) development of drug fastness by respiratory pathogens.

**Sensitization of Patients**—Mild evanescent dermal drug sensitization phenomena occurred in all three groups receiving sulfadiazine. The incidence of symptoms ascribed to the drug varied between 0.2 and 0.7

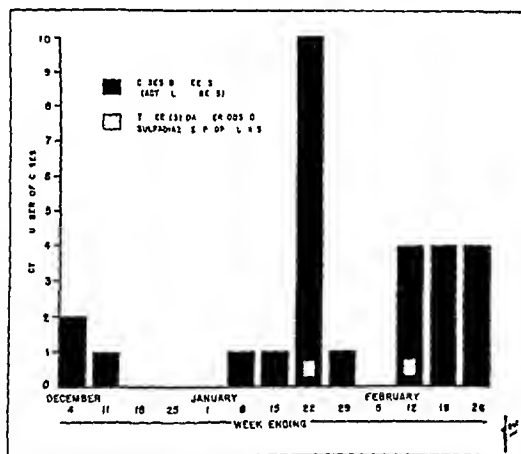


Chart 4—The ineffectiveness of two short courses of sulfadiazine in checking an outbreak of scarlet fever at a small naval activity.

per cent. Approximately half of these reactors when retested had no drug symptoms and were replaced on the prophylactic program. The large majority of all reactions occurred in the second and third weeks of prophylaxis following the total dosage of 7 to 20 Gm of sulfadiazine. The reinstitution of prophylaxis in groups who had been without sulfadiazine for a period of one to four weeks did not increase the incidence of drug reactions. A few individuals who had manifested sensitivity to sulfonamide compounds and who subsequently contracted severe respiratory infections were treated with penicillin. The collected findings indicated that a small percentage of persons have an idiosyncrasy to sulfonamide compounds administered in therapeutic or prophylactic doses and that sulfadiazine prophylaxis per se does not sensitize.

**Severe Irreversible Drug Reactions**—Dangerous untoward reactions occurred in 0.01 per cent of individuals receiving sulfadiazine prophylaxis. These were of two types and about equally divided between exfoliative dermatitis and granulocytopenia. With supportive treatment these disease processes appeared reversible. The administration of therapeutic doses of sulfonamide to one man with a sulfonamide rash and bronchitis was

followed by death. This was the only instance in which death occurred. The autopsy showed lymphadenopathy, which on microscopic examination proved to be leukemia.

**Development of Drug Fastness by Respiratory Pathogens**—Fastness to sulfadiazine was apparently not initiated during the first four months of this prophylactic program. The evidence is:

- 1 There was no increase in the prevalence of any serologic type of hemolytic streptococcus in the groups on prophylaxis.
- 2 There was no increase in the proportion of hemolytic streptococci in the throat flora of individuals throughout the period of prophylaxis.
- 3 There was no increase in streptococcal morbidity throughout the period of prophylaxis.
- 4 There was no difficulty in obtaining a satisfactory therapeutic effect from sulfadiazine in individuals who contracted streptococcal infections while receiving prophylaxis.

In summary, the only liability incurred in this program was the development of a few severe drug reactions, 1 in 10,000 individuals receiving prophylaxis.

The gains from the program included prevention of disabilities, saving in man-days loss and a reduction in the costs for care of the sick and for pensions. The size of these gains was proportional to the incidence of bacterial infections of the respiratory tract. Among recruits with a high incidence of infections it was estimated that 343 man-days were saved per thousand weekly from bacterial infections. Most of these man-days were saved through the prevention of streptococcal infections. Since these infections are prone to cause debilitating sequelae, their prevention obviously created enormous benefits to Naval personnel and to the United States government in a state of war.

#### COMMENT

A number of observers have pointed out the effectiveness of a short course of sulfadiazine prophylaxis in checking outbreaks of meningococcal infections.<sup>3</sup> This measure not only breaks the epidemic process but also eliminates the meningococcus from the throat flora of carriers. Because of this a misconception has arisen in the handling of streptococcal outbreaks. Sulfadiazine administered for a few days, either in prophylactic or in therapeutic doses, does not check a streptococcal outbreak and has little or no effect on the throat flora of individuals in the carrier state. This fact was demonstrated by a small naval activity experiencing an outbreak of scarlet fever. Sulfadiazine was given for three days in January with apparently good results, however the outbreak recurred in February when another three day period of prophylaxis was administered with little effect. All personnel were subsequently placed on a continuous prophylactic program of sulfadiazine 1 Gm daily early in March. The streptococcal outbreak then subsided and only 2 new cases of scarlet fever occurred in the following ten weeks. The ineffectiveness of short courses of sulfadiazine at this activity is shown in chart 4. This experience illustrated that a three day course of prophylaxis which will effectively check a meningococcal outbreak, is not adequate for preventing streptococcal infections. The presence of sulfadiazine on the surface of mucous membranes prevents

3 Cheever F S, Breese B B and Upham H C. The Treatment of Meningococcus Carriers with Sulfadiazine. *Ann Int Med* 10: 602-608 (Oct.) 1943. Thomas H M Jr. Meningococcal Meningitis and Septicemia. Report of Outbreak in Fourth Service Command During Winter and Spring of 1942-1943. *J A M A* 123: 264-272 (Oct. 2) 1943. Kuhns D M, Nelson C J, Feldman H A and Kuhn L R. The Prophylactic Value of Sulfadiazine in the Control of Meningococcal Meningitis. *ibid* 123: 335-339 (Oct. 9) 1943.



implantation of hemolytic streptococci but does not modify the streptococcus flora already implanted

The exact concentration of sulfadiazine in the nasopharyngeal secretions required to prevent implantation of bacterial respiratory pathogens is still unknown. In the course of the present studies it was found that individuals receiving a daily dose of 1 Gm of sulfadiazine had blood values ranging between 2.6 and 1.7 with a median of 2.2 mg per hundred cubic centimeters and that with a daily dose of 0.5 Gm the blood values ranged between 1.8 and 0.8 with a median of 1.4 mg per hundred cubic centimeters. The findings of others<sup>4</sup> have shown that the concentration of sulfadiazine in the secretions of the upper respiratory tract is about 60 per cent of blood levels. The observations made in Camp 2, therefore, indicate that these secretions containing less than 1 mg of sulfadiazine per hundred cubic centimeters were adequate to prevent the implantation of most bacterial respiratory tract pathogens.

#### SUMMARY

1 The United States Navy is engaged in a long term program for the control of streptococcal infections and their disabling sequelae

2 One component of this program involves mass prophylaxis with sulfadiazine

3 Prophylactic doses of this drug were given continuously to about 250,000 naval trainees between December 1943 and April 1944

4 This preliminary report deals with observations on only 30,000 men at three camps

5 These observations indicate that the continuous ingestion of 1 Gm of sulfadiazine daily is adequate (a) to check a well advanced streptococcal epidemic, (b) to check a streptococcal outbreak at its onset and (c) to protect 85 per cent of susceptible recruits from implantation with bacterial respiratory pathogens

6 These observations also suggest that a continuous daily dose of 0.5 Gm of sulfadiazine (affording a mean level of 1.4 mg per hundred cubic centimeters in the blood and perhaps 0.8 mg per hundred cubic centimeters in secretions of the respiratory tract) is almost 85 per cent effective in preventing implantation by *Streptococcus haemolyticus*

7 The only untoward effect of mass sulfadiazine prophylaxis is the occurrence of evanescent rashes in 0.5 per cent and dangerous constitutional disturbances in 0.01 per cent

8 Mass sulfadiazine prophylaxis is effective (a) in checking bacterial infections of the respiratory tract, (b) in preventing the development of disabling sequelae caused by these bacteria and (c) in aiding the economy of a nation at war

#### ABSTRACT OF DISCUSSION

ON PAPERS OF COLONEL HOLBROOK AND  
COMMANDER COBURN

DR T. DUCKETT JONES, Boston. I have no doubt that the general contentions of both speakers are absolutely true. There can be little doubt that sulfadiazine in dosages as indicated and administered as indicated will definitely affect the illness rates, particularly those caused by hemolytic streptococci. I do not think the question of sensitivity to these drugs is yet answered. Sensitivity may not develop until many months after the cessation of the preventive administrations. That is a serious problem, and I wonder if either speaker had any means whereby he might evaluate the question of development

of sensitivity in any of the men receiving the drug. Commander Coburn showed some stations that were control stations. In my experience there have been great differences in illnesses, so that this type of control must be difficult. Neither presentation showed bacteriologic charts, but apparently the charts included bacteriologic infections. The only data at present with regard to rheumatic fever are those of Colonel Holbrook, and I saw no significant difference in the group as he presented it. In conclusion I should like to suggest that perhaps we may control the major features of streptococcal illness by giving the drug to small groups of men who constitute a single epidemiologic unit and base conclusions on the actual illness experiences in these groups. We know that at least 50 per cent of the men will not need preventive measures. It is possible that the drug can be used intelligently to prevent the maximum amount of disease by giving the drug to the minimum number of men.

CAPTAIN RICHARD G. HODGES, M.C., U.S. In evaluating an epidemiologic experiment on respiratory disease it is necessary to exercise considerable caution because there are a number of factors which can cause considerable variation in the respiratory disease rates. In the military population the seasoning of the troops is extremely important. The living conditions of the troops, particularly as pertain to ventilation and dust, the duties of the troops and finally the inflow of new material into the population may also cause profound changes. It is possible that the mass of Commander Coburn's material makes careful control of these factors somewhat unnecessary. However, to substantiate his contentions I should like to mention my experience at an Army Air Force technical school where a considerable degree of control was possible. The school was almost ideally set up for a controlled experiment, being divided into two teaching shifts of approximately 5,000 men each. The duties, the living conditions and even the recreations of the two groups were identical. They were on different time schedules, and thus mixing between the two was at a minimum. Percentage distributions according to length of stay on the field, according to the length of service and according to age were approximately the same for the two. The inflow of new troops into these two groups was approximately equal. Finally, for the preceding fifteen months component squadrons of the school were found to have behaved similarly toward respiratory disease and to an approximately similar degree. During January both groups showed a progressive rise in rate. On the 2d, 3d and 4th of February the members of one teaching shift received 2 Gm of sulfadiazine per day. Their rate dropped sharply, while the control group's continued to rise. The drop lasted ten days. Then the other group was placed on 2 Gm a day for two days and showed a corresponding but somewhat less prolonged response. Finally one group was placed on a continuous dosage of 1 Gm a day and the other group was placed on 2 Gm a day for two days, and then that was repeated one week later. Both dropped sharply. The response was greatest in streptococcal infections. The streptococcus disease rate was lowered almost to zero by each administration. Thus I believe that the effectiveness of the treatment with sulfadiazine is established.

COMMANDER ALVIN F. COBURN (MC), U.S.N.R. There are two points that I should like to mention before the conclusion of this discussion. One is that conditions in naval training camps lend themselves well to controlled studies. Alternate companies can either be given prophylaxis or serve as untreated groups. Accurate data can be obtained. Except for the one program which, as I stated, was instituted during an epidemic at a naval activity here in Chicago, all of the navy studies were controlled. Companies selected in random fashion mingled and slept in the same barracks, used common mess halls and exercised together in common drill halls. These studies in the effectiveness of chemoprophylaxis were made under ideal conditions. The second point which was mentioned only briefly, is that sulfadiazine prophylaxis was effective in preventing rheumatic fever. The incidence of rheumatic fever among men receiving chemoprophylaxis was 15 per cent of the incidence in control groups. Approximately 85 per cent of the expected rheumatic fever cases appeared to be eliminated by sulfadiazine.

<sup>4</sup> NORRIS, C. M. Sulfonamides in Bronchial Secretion. The Effect of Sulfonamides in Bronchiectasis. J. A. M. A. 123: 667-670 (Nov. 11) 1943.

DR ROY W SCOTT Cleveland Are there any advantages of sulfadiazine over sulfathiazole?

COLONEL W PAUL HOLBROOK, M C, A U S Dr Jones asked about what is being done to determine the question of sensitivity. The possibility of individuals becoming sensitized to the drug has been considered. As yet evidence for an increasing sensitivity in individuals who are on the prophylactic program is not available. Repeated periods of prophylaxis on the same groups have shown in each instance a decreased number of reactors for the second or third prophylactic period rather than an increase. Once the known positive reactors are eliminated no further difficulty is encountered during subsequent periods of prophylaxis. We also now have a rather large number of troops who have had prophylactic sulfadiazine and who have subsequently developed an acute illness requiring the administration of sulfadiazine therapeutically. These patients have responded as well as those not having had a prophylactic period. These experiences do not appear compatible with an increasing sensitivity. A long range study is planned by means of recording each individual's prophylactic record on his immunization register so that in six months or a year a rather large accumulation of information should be available on this subject. I have not used sulfathiazole, largely because of the general reports in the literature as to its increased toxicity, but I have no experience in its use for this type of prophylaxis.

## THE TREATMENT OF TONSILLITIS WITH SMALL DOSES OF SULFONAMIDES

CAPTAIN EDWARD D FREIS

MEDICAL CORPS, ARMY OF THE UNITED STATES

From both military and economic aspects, any relatively nontoxic therapy which will shorten the course of a prevalent disease, if even for a few days, is worthy of application. Since it is generally acknowledged that tonsillitis is responsible for a significant number of the total man hours lost to industry and the armed forces, the advisability of treating acute follicular tonsillitis with sulfonamides has been the subject of a variety of studies. From the medical point of view, chemotherapy would be desirable because of the possibility that such complications as peritonsillar abscess and such sequelae of tonsillitis as nephritis and rheumatic fever might be prevented or at least minimized.

The advisability of using large doses of sulfonamides (2 Gm or more per day) in the treatment of tonsillitis remains controversial. Some believe that, since this disease is relatively benign and self limited, chemotherapy is unnecessary and even dangerous.<sup>1</sup> This view is supported by the number of serious toxic reactions that have resulted from the indiscriminate use of the sulfonamides. Others believe with Gettelman and Kaiz<sup>2</sup> that early treatment with sulfonamides (2 Gm per day) appreciably shortens the course of the disease.

A middle of the road point of view is taken by Janeway<sup>3</sup> who prescribes chemotherapy only for those patients whose temperature exceeds 102 F.

In addition to systemic therapy the local treatment with sulfonamide sprays has become popular. Many investigators have reported effective therapeutic results and an absence of drug reactions following the use of local sprays in the treatment of various upper respiratory infections.<sup>4</sup>

In order to establish the relative efficacy of the local and systemic administration of sulfonamides in the treatment of acute follicular tonsillitis we considered it necessary to study this question under controlled conditions using hospitalized patients.

### METHOD

During the winters of 1943 and 1944 a series of 405 young men of military age who had definite clinical evidence of acute follicular tonsillitis were hospitalized to a separate ward devoted to their care. During the first year of the study the patients were divided into two groups, alternate patients being treated by one of two methods. One group (1) of 100 patients were given only hot saline irrigations every four hours and received no chemotherapy. The other group (2) of 100 patients were treated with hot saline irrigations every four hours and in addition received sulfanilamide spray to the tonsils and pharynx every two hours except while asleep. Powdered sulfanilamide was sprayed into the throat until an even white coating of the mucous membranes was produced, the patient being then instructed to swallow following which the throat was again sprayed.<sup>5</sup> The amount of sulfanilamide used per dose varied from 75 to 100 mg and, as eight applications were administered daily, the total daily dosage varied from 500 to 800 mg. With this dosage blood sulfanilamide levels were never found to be above 1 mg per hundred cubic centimeters and usually were too low to be read by standard methods.

During the second year group 3, consisting of 115 patients, received saline irrigations every four hours and, in addition 125 mg of sulfadiazine by mouth four times a day (500 mg daily). The sulfadiazine was in tablet form and was swallowed immediately. Another group (4) of 90 cases was treated in the same way as group 2 except that "micraform crystals" of sulfadiazine<sup>6</sup> were substituted for sulfanilamide powder.

On admission a throat culture and white blood count were obtained. Patients who showed peritonsillar abscess, fusospirochetal ulcers of the tonsil, scarlet fever, acute glomerulonephritis or rheumatic fever on admission were not included in this study. Similarly excluded were patients who had the common cold with nasopharyngitis and tonsillar swelling without pronounced redness or follicles.

As indicated in the table, the four groups were essentially similar in regard to admission temperature, infecting organism and average admission leukocyte counts.

From the AAF Rheumatic Fever and Streptococcal Disease Control Program.

Lieut Col Robert King M C and Dr Chester S Keefer cooperated with suggestions and criticisms.

From the Medical and Laboratory Services AAF Regional Station Hospital U S Army Air Field Lincoln Neb.

1 Rhoads P S and Afremow M I Sulfanilamide in the Treatment of Sore Throat Due to Hemolytic Streptococci with Controls. *J A M A* 114 942 (March 16) 1940. Richards L G Treatment of Diseases of the Throat. *ibid* 115 501 (Aug. 17) 1940. Hughes L W Diseases of the Nasopharynx. *Mississippi Doctor* 18 261 (Oct) 1940. Kernan J D Infections of the Mouth Pharynx and Respiratory Tract. *Bull New York Acad Med* 17 674 (Sept.) 1941. Beckman H Treatment in General Practice. ed 4 Philadelphia W B Saunders Company 1942.

2 Gettelman E and Kaiz S P The Treatment of Severe Tonsillitis in a Naval Dispensary. *U S Nav M Bull* 42 399 (Feb) 1944.

3 Janeway C A Medical Progress The Sulfonamides. *New England J Med* 227 1029 (Dec 31) 1942.

4 Freeman M S Local Use of Sulfathiazole Powder for Acute Pharyngeal Infections. *Arch Otolaryng* 37 496 (April) 1943. Silcox L E and Schenck H P Use in Otolaryngology of Microcrystals of Drugs of the Sulfanilamide Group. *ibid* 36 171 (Aug.) 1942. Dolowitz D A Loch W E Haines H L Ward A T and Beckrell K L The Prevention of Ear and Nasal Sinus Complications of the Common Cold. *J A M A* 123 534 (Oct 30) 1943. Turnbull F W Hamilton W F Simon E and George M F Sinusitis and Infections Secondary to the Common Cold. *ibid* 123 536 (Oct 30) 1943.

5 The DeVilbiss standard atomizer type powder blower No 175 was used.

6 Smith Kline and French laboratories supplied the sulfadiazine micraform crystals.

## RESULTS

The groups which received sulfonamides (2, 3 and 4) either locally or systemically showed a return to normal temperature and "clinical recovery" in an appreciably shorter period of time than the control group (1) treated with irrigations alone (as shown in the table). Statistical examination of our data reveals that a reliable difference exists between group 1 and the other (sulfonamide treated) groups, since the reliability of the differences of the control group as compared with each of the sulfonamide treated groups is greater than three.

The criteria for "clinical recovery" were complete subjective relief of symptoms and complete disappearance of erythema, edema and follicles. Many of the patients, particularly in the sulfonamide treated groups, were subjectively well before the signs of inflammation had completely subsided. Hence it is probable that in other hands this period of "clinical recovery" might be shorter or longer. Obviously this interim has not the same objectivity as "return to normal temperature" and therefore is not equally significant.

4 and group 2 can be attributed to the well known fact that sulfadiazine is more effective in infections caused by the hemolytic streptococcus than is sulfanilamide.

The fact that the patients in group 3 who received 0.5 Gm of sulfadiazine daily in tablet form, showed a rate of recovery comparable to the groups receiving local spray raises the question of the advisability of using topical therapy in the treatment of tonsillitis. As tablets are more easily administered than local spray, there is no clinical reason for the use of the latter in the treatment of this condition.

The saving of even one day in hospitalization has much economic and military importance, since, when the incidence of tonsillitis is considered, this saving can be translated into terms of thousands of man-days salvaged. In view of the fact that the patients receiving sulfonamides experienced subjective relief even though some residual signs of subsiding inflammation remained, it is possible that such patients can be discharged to military duty or to industry as soon as the temperature becomes normal, with the stipulation that they con-

## Summary of Data

| Groups | No of Cases | Temperature on Admission | White Blood Cells on Admission (Thousands) | Positive Hemolytic Streptococcus | Days to Normal Temperature |       |          |                           | Days to Clinical Recovery |       |          |                           | Complicating Peritonsillar Abscess |
|--------|-------------|--------------------------|--|----------------------------------|----------------------------|-------|----------|---------------------------|---------------------------|-------|----------|---------------------------|------------------------------------|
|        |             |                          |  |                                  | Mean                       | S. D. | S. E. M. | Reliability of Difference | Mean                      | S. D. | S. E. M. | Reliability of Difference |                                    |
| 1      | 100         | 101.6<br>(98.8-104.2)    | 13.7<br>(9.4)                              | 83                               | 3.3                        | 1.68  | 0.163    |                           | 4.7                       | 1.80  | 0.185    |                           | 6                                  |
| 2      | 100         | 101.7<br>(98.6-104.6)    | 1.6<br>(0.2)                               | 55                               | 2.3                        | 1.07  | 0.107    | 5.0                       | 3.0                       | 1.44  | 0.144    | 5.0                       | 1                                  |
| 3      | 115         | 101.7<br>(99.2-104.8)    | 12.5<br>(5.23)                             | 86                               | 1.6                        | 0.83  | 0.083    | 9.1                       | 3.6                       | 1.94  | 0.116    | 4.9                       | 1                                  |
| 4      | 90          | 101.4<br>(98.0-104.5)    | 12.6<br>(5.26)                             | 78                               | 1.4                        | 0.73  | 0.077    | 10.2                      | 3.0                       | 1.15  | 0.121    | 7.4                       | 0                                  |

$$S. D. (\text{standard deviation}) = \sqrt{\frac{\sum d^2}{n}}$$

$$S. E. M. (\text{standard error of mean}) = S. D. / \sqrt{n}$$

$$\text{Reliability of difference} = \frac{\text{Difference between means}}{\sqrt{(S. E. M.)^2 + (S. E. M.)^2}} \quad (\text{all comparisons made between group 1 and the other groups})$$

The control group (1) showed an incidence of 6 cases of peritonsillar abscess, which developed as a complication during the period of hospitalization. In both the sulfanilamide spray treated group (2) and in the group receiving sulfadiazine tablets (3) one complicating peritonsillar abscess developed, while none occurred in the group receiving microform crystals of sulfadiazine as a local spray.

The data reveal that the temperature returned to normal more rapidly in the sulfadiazine treated groups (3 and 4) than in the sulfanilamide spray treated group (2). The group receiving sulfadiazine microform crystals locally (4) seemed to be the most benefited. However, the differences between the various sulfonamide treated groups are not of sufficient significance to merit separate discussion.

None of the patients who received sulfonamides developed either toxic reactions or evidences of sensitization.

## COMMENT

Our data demonstrate that small, nontoxic doses of sulfonamides will appreciably reduce the period of illness associated with tonsillitis, irrespective of the route of administration of the drug. That the difference between the sulfonamide treated groups and the control group is real is indicated by statistical examination of the data. The small difference between groups 3 and

4 and group 2 can be attributed to the well known fact that sulfadiazine is more effective in infections caused by the hemolytic streptococcus than is sulfanilamide.

It is possible that the use of more than 500 mg of sulfadiazine daily would have further hastened recovery. However, when dealing with a potentially harmful drug a balance must be struck between effective and toxic dosage. The complete absence of sulfonamide reactions in the treated groups favors the use of small dosage in the treatment of tonsillitis. This does not imply that these small doses of sulfonamides necessarily are effective in other infections.

## CONCLUSIONS

1 The administration of small doses of sulfonamides appreciably shortens the course of acute follicular tonsillitis and minimizes the complication of peritonsillar abscess.

2 Small doses (500 mg per day) of sulfadiazine administered by mouth in tablet form are as effective as the local application of sulfonamides to the tonsillar area in the form of a powder spray. The ease of administration makes the systemic route the ideal therapeutic procedure.

3 There were no toxic or sensitization reactions observed in any of the 305 patients receiving sulfonamides in the doses given.

## Clinical Notes, Suggestions and New Instruments

### HEMOGLOBIN ESTIMATION BY THE REVOLUTIONARY COLORIMETRIC METHOD OF KENNEDY

WITH FURTHER REPORT ON A SIMPLE INSTRUMENT FOR FACILITATING THE UTILIZATION OF THE PRINCIPLE

DON H. DUFFIE, M.D., CENTRAL LAKE, MICH.

In 1926 Robert P. Kennedy<sup>1</sup> published a method of colorimetry, for hemoglobin especially, that was so new, so valuable, that it is indeed regrettable that the very scholarliness of his paper seems to have concealed his discovery from most of us.

With the exception of spectrophotometry, practically all previous colorimetry had comprised sundry expedients for the matching of colors. In Kennedy's hemoglobin method by means of a light filter transmitting such a narrow band of wavelengths in the green as to be virtually monochromatic, he simply eliminated color from both standard and unknown, then matched light intensities instead—a totally different concept.<sup>2</sup> He could do this—and this is the whole point—because, as seen through his filter, red and gray both appear green. Not merely green, but when illuminated to equal brightness both appear of the identical hue of green.

I have stated before<sup>3</sup> the basic principle as applied to hemoglobin, that green light is absorbed by a red solution. The more red substance present, the less green light will get through, so that by suitably measuring how much does get through the amount of the red substance (oxyhemoglobin) may be computed.

As Kennedy points out, color filters had been employed in colorimetry as far back as Leonardo da Vinci in the sixteenth century, but to the best of my knowledge always either as a means of facilitating color matching or else in the absurd quest of finding an exact additive color complement for each and any color, so that the combination might then be compared in intensity with white light.

The bold idea of cutting loose from color entirely, of doing with our own eyes exactly what the photoelectric colorimeter does—quantitative measurement of colored light—that, so it is believed, was new with Kennedy. In spite of his superb work, however, said photoelectrics have right to date enjoyed virtual if quite unwarranted monopoly of the principle. Kennedy's hemoglobin method does sound cumbersome indeed it was never propounded as a clinical method though it may readily be adapted as such very satisfactorily.<sup>4</sup>

Unaware of Kennedy's work until it was brought to my attention by another<sup>5</sup> who found himself inadvertently trespassing on Kennedy's domain, I, a country doctor and reformed color process photoengraver, had arrived at the same idea empirically, thanks to years of familiarity with light filters in

the trade. Kennedy used an ordinary colorimeter, a number 74 filter, one cup replaced by a fixed gray standard the solution depth in the other cup varied as needed to secure a luminosity match with the gray standard. I applied the principle in reverse, keeping the solution layer constant and securing a match by varying the gray, in the form of an optical wedge. This application lends itself to a less elaborate instrument a less expensive one and one considerably quicker to use. The scale, for direct reading through the eyepiece is superimposed on the margin of the wedge. This instrument that I have devised is a plungerless one cup colorimeter (more correctly, photometer) using a micrometer measured Kahn vial for solution cup and having my own green filter incorporated in the eyepiece. One time saving feature of this construction when used for hemoglobin is that, while a precise 20 cu mm of blood must be used the volume of diluent need not be measured at all. This is because light reaching the eye vertically through the solution will have encountered a constant quantity of blood per unit area, be the depth little or much. (It is ever a disappointment when any one fails to argue this point!) The test can readily be done in less than one minute.

#### CALIBRATION

Aware of having neither ability nor facilities for the quest of the absolute in hemoglobin values, I am content, in calibrating my instrument, to strike a compromise among the weird chaos of calibration levels of instruments already on the market, in which discrepancies of more than 3 grams are found! Since in this type of instrument there are economic and other objections to continuing the wedge down to zero, mine has been arbitrarily restricted to the range between 5 and 20 Gm of hemoglobin. For zero set, readings are made from a slice of permanent gray standard and, in event of the gray not giving a match at the supposed value, the lamp of the instrument is adjusted in position until it does. One advantage of such an arrangement is that it gives free rein to individual convictions in the matter of calibration levels, which may be "remodeled to suit tenant" in a moment. The critic need but set the instrument scale to read whatever his own oracle decrees the blood in question should read and then adjust the lamp position, if need be, until it does. The gray standard is then read at the new setting and labeled accordingly. Stability is thus assured until another Pharaoh arises! This permanent gray standard may be either an Eastman neutral density filter in glass, density 1.0 two layers of fine monel or other screen in glass as suggested by Sunderman,<sup>6</sup> or my present preference, a small square of engraver's halftone screen.

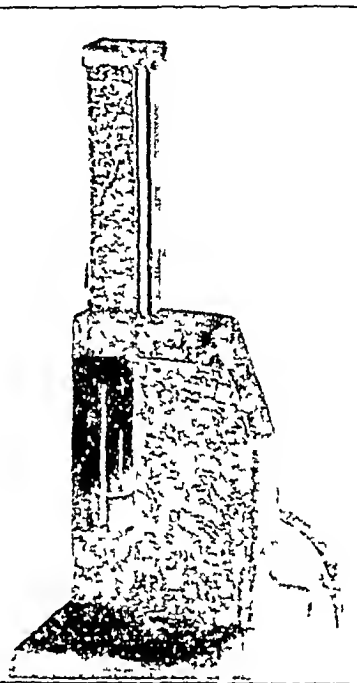


Fig. 1—Simple photometer employing Kennedy's principle. Fields are matched by manipulation of an optical wedge moving in the sleeve at right of ocular. Scale is read through the eyepiece.

The instrument is not in commercial production for the duration. A few of the instruments are being built in the author's hobby shop.

1. Kennedy, R. P. The Use of Light Filters in Colorimetry with a Method for the Estimation of Hemoglobin. *Am J Physiol* 78: 56 (Sept.) 1926.

2. Should my suspect this to be distinction without difference let him ponder the unequal scale divisions so much farther apart in the lower concentrations of any hemoglobin instrument employing the wedge principle on a color matching basis. Contrast this with the scale divisions in equal parts throughout where the wedge is used on the Kennedy principle as in my own photometer.

3. Duffie, D. H. The Elimination of Color from Visual Hemoglobinometry. *J A M A* 119: 493 (June 6) 1942.

4. But meager outline may be given here. A colorimeter cup not more than 12 mm in diameter is preferable. A piece of Eastman neutral density filter of density 0.5 mounted in glass replaces one colorimeter cup. If brilliant illumination is available. Written number 74 filter is laid over the eyepiece if not one layer of number 15 and two layers of number 60 film filter. (For some eyes one layer of 60 is enough to exclude all red.) In the remaining colorimeter cup 0.02 cc of blood (Sahli pipet) in 5 cc. of 0.4 per cent ammonium hydroxide solution is placed and the fields are matched. My own experience with such an instrument is too scanty for dogmatism but by trial with known blood dilutions a factor may be worked out which divided by plunger height (decimal point appropriately inserted) will give the hemoglobin in grams per hundred cubic centimeters. The factor 1.7 is believed to be not greatly in error. Once a table or curve for direct reading of results is prepared the method is rapid.

5. Sunderman, F. W. Personal communication to the author.

#### ACCURACY

Karr and Clark<sup>6</sup> in hundreds of determinations by several of the commoner hemoglobin methods after applying all corrections found fewer than one half of the readings to be within

6. Karr, W. G. and Clark, J. H. Comparison of Various Hemoglobin Methods as Performed in Hospital and Physicians Laboratories. *Am J Clin Path (Tech Supp)* 5: 127 (Sept.) 1941.

0.5 Gm (3 per cent) of the mean. In a test later reported by one of them on my instrument, in which two of the three observers had had no practice, 95 per cent of the sixty readings were within 0.25 Gm of the mean (15 per cent). This is indeed a precision often unattained by the photoelectrics.

The secret of this higher precision is believed to lie in the filter employed. The retina evidently has heightened sensitivity to minute differences in intensity for wavelengths transmitted by this filter when shielded from the "glare" of waves excluded by the filter's absorption.

#### BLOOD CHEMISTRY

Not knowing (fortunately) that maximum filter transmission theoretically should be restricted to a wavelength range coinciding with the maximum absorption of the solution to be tested, so that a different colored filter would be required for nearly every color of solution measured, I went ahead, using my same green filter for all the blood chemistry filtrates I could find. Before learning from wiser heads that this could not be done, I had done it. Entirely satisfactory readings were obtained, which plotted as almost straight lines, from

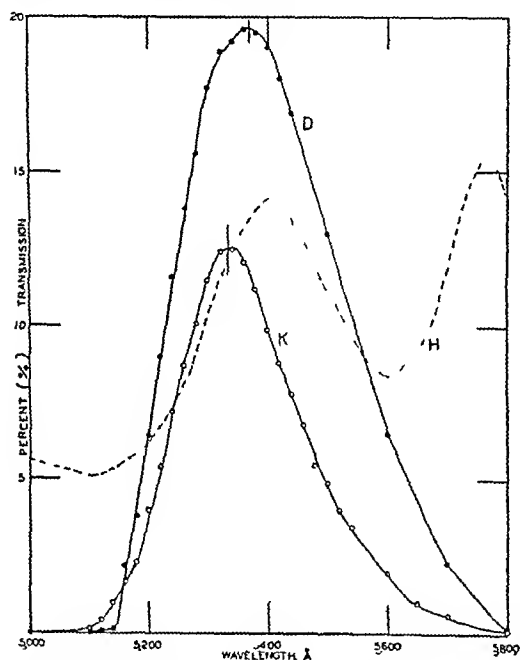


Fig 2—Transmission curves of Kennedy's filter (K), Duffie (D), shown against the absorption curve of oxyhemoglobin.

blood sugar, creatinine, urea, phosphorus, tyrosine, total protein, Haslam's<sup>8</sup> unpublished serum protein method, nonprotein nitrogen and all modifications tried of the Bratton-Marshall sulfa concentration method. The case with creatinine is interesting. The filtrate itself gives perfectly sharp readings, whereas the bichromate standards, indistinguishable to the eye from the respective filtrates, give no readings whatever with this filter. It was to me surprising that the greens of the blood cholesterol test can also be closely read through the green filter, though they plot a sharply inflected curve. While it is true that with one or two of these solutions this filter does not give an absolute hue match, even so the only blood chemistry test I have found on which it will not give satisfactory readings is the yellow of the sulfonamide concentration test with Ehrlich's reagent. The saving of the technician's time is obvious if standard solutions need be run but once for calibration then occasionally as check on reagents.

7 Harr W G. Personal communication to the author in October 1942.

8 Haslam T P. Personal communication to the author. (According to Haslam's equation if for blood sugar precisely 3 cc of the filtrate is used in my instrument a cipher added to the gram scale reading gives the sugar in milligrams per hundred cubic centimeter.)

#### CALIBRATION FOR OTHER TESTS

Once a set of four or five standard solutions have been processed, in strengths covering the usual clinical range of the test, calibration is almost quicker done than fully described. Briefly, readings are obtained in the instrument from suitable and precisely equal volumes of these standard solutions, plotted on graph paper against the known concentrations of these solutions, and a standard curve drawn. Values of identical volumes of unknown solutions may then be instantly evaluated in terms of concentration, from the curve. Having done which, one may be reasonably sure of his results and need take no man's word for anything.

#### SULFONAMIDE CONCENTRATION TESTS

Readings of sulfonamide drug concentration tests by any method using Marshall's reagent may be done so accurately on this instrument, with the same filter and from such small amounts of blood, that truly micro volumes may be used, 0.02 cc of blood instead of 0.2-0.3 cc, as in several micro methods.

#### TWO CASES OF CLOSTRIDIUM WELCHII INFECTION TREATED WITH PENICILLIN

MAXWELL KEPL, MD ALTON OCHSNER MD AND  
J LEONARD DIXON MD NEW ORLEANS

We believe that the development of gas gangrene in a traumatic wound depends on four factors: (1) contamination of the wound with soil or foreign bodies containing clostridia, (2) inadequate blood supply to the affected part, (3) inadequate debridement and (4) conditions in the wound for anaerobic growth. A combination of these four factors in a given patient will almost invariably give rise to clinical "gas gangrene."

Once clinical gas gangrene has fully developed, the only known treatment is radical surgery, laying the affected parts wide open and many times, of necessity, doing a high guillotine amputation in order to save the patient's life.

Any chemical or biotic substance which will inhibit the growth of clostridia in traumatic wounds would be of inestimable value in saving limbs and lives.

The discovery by Fleming<sup>1</sup> of the action of penicillin and its use by McIntosh and Selbie<sup>2</sup> in experimental *Clostridium welchii* infections held promise that this drug would be of value in such infections. As animal experiments are inconclusive in regard to human therapy, it remains for the clinician to put penicillin to the final test in regard to its efficacy in the treatment of gas gangrene. The recent report of Keefer, Blake, Marshall, Lockwood and Wood<sup>3</sup> indicates that more clinical observation on the action of penicillin in "gas gangrene" infection is needed in human cases before definite conclusions can be drawn. Lyons<sup>4</sup> also makes a similar plea.

McKnight, Loewenberg and Wright<sup>5</sup> have reported their experience in a case of "gas gangrene." They could not control the "gas gangrene" infection with wide incisions, sulfathiazole systemically, large doses of gas antitoxin and high voltage x-ray therapy. A high arm amputation was resorted to, but

Leah Seidman Shaffer, ScD made the bacteriologic studies from the Department of Surgery, School of Medicine Tulane University.

Dr Kepl is fellow in orthopedic surgery, Division of Medical Sciences National Research Council.

The work described in this paper was done under a contract recommended by the Committee on Medical Research between the Office of Scientific Research and Development and the Tulane University of Louisiana.

1 Fleming A. An Antibacterial Action of Cultures of Penicillin with Special Reference to Their Use in Isolation of *B. Influenzae*. *Brit J Exper Path* 10: 226 (June) 1929.

2 McIntosh J and Selbie F R. Zinc Peroxide, Proflavine and Penicillin in Experimental *C. Welchii* Infections. *Lancet* 2: 750 (Dec 26) 1942.

3 Keefer C S, Blake F G, Marshall E K, Jr, Lockwood J S and Wood W B, Jr. Penicillin in Treatment of Infections. *J A M A* 122: 1217 (Aug 28) 1943.

4 Lyons C. Penicillin in Surgical Infections in the United States Army. *J A M A* 123: 1007 (Dec 18) 1943.

5 McKnight W B, Loewenberg R D and Wright V L. Penicillin in Gas Gangrene. *J A M A* 124: 360 (Feb 5) 1944.

gas bubbles persisted in the axillary wound. Intravenous sodium penicillin in isotonic solution of sodium chloride was given continuously on the second postoperative day until the edematous condition of the patient made it necessary to stop therapy. In addition, the patient received 40,000 units directly intramuscularly into the stump. During the next week the temperature gradually dropped and the wound cleaned up. No positive bacteriologic identification of the causative organism was done, owing to inadequate laboratory facilities. It was agreed by four experienced clinicians, however, that the case was one of clinical "gas gangrene."

Recently we have had occasion to study two cases of *Clostridium welchii* infection both of which were treated with penicillin. In one following a shotgun injury to the lateral aspect of the thigh, there was no evidence of clinical "gas gangrene," but a persistent *Cl. welchii* cellulitis associated with *Staphylococcus aurantiacus* coagulase positive, and a gram negative anaerobic bacillus, unidentified as yet. Calcium penicillin was applied directly to the wound in a dilution of 5 cc of isotonic solution of sodium chloride containing 20,000 units. Local administration of this dosage was continued for six days. Cultures were taken before, during and after penicillin therapy. Under local penicillin therapy the number of gram negative organisms and *Staphylococcus aurantiacus* appeared reduced in direct smear preparation with an increase in the number of



Fig 1—Arm and forearm edematous, wet and ischemic before penicillin and surgery. Note the multiple bullae.

cocci phagocytized. The clostridia found lacked a good capsule but persisted undiminished in the wound throughout penicillin therapy. A milk tube inoculated with a swab consistently showed "stormy" fermentation. The wound healed slowly by granulation over a period of seven weeks, and at no time was the patient's general condition impaired by the *Cl. welchii* cellulitis.

The second case was that of a man whose arm was lacerated by broken glass which severed the biceps, the brachialis, the radiobrachialis muscles, the brachial artery, the radial and median nerves and the median basilic vein. Bleeding was severe, and a tight tourniquet was put on before he entered the hospital. Complete debridement and closure were done early, followed by repeated stellate blocks and packing of the injured extremity in ice. The temperature, 100 F on admission, went to 102 F the next day. The fingertips were inspected at that time and found warm and pink. The patient began to complain of severe pain in the arm. On the third day the arm was swollen and painful to the touch. Dressing on the fourth day revealed crepitation along the radial side of the forearm, with bubbles of gas escaping from the suture line. There was bronzing of the tissues around the elbow and a putrefactive odor to the arm. Multiple bullae were present on the skin of the forearm. The fingertips were cold and pale (fig 1). The patient was toxic and in great pain, with a temperature of 103 F.

All sutures were removed, smears of exudate made and a blood culture was taken. *Cl. welchii* and beta hemolytic streptococci were identified from the wound, and blood culture was positive for beta-hemolytic streptococci. Sulfadiazine was immediately

given by mouth, 70,000 units of "gas gangrene antitoxin" given intramuscularly, hot wet dressings applied locally and a transfusion of 500 cc of citrated blood administered. The next morning the temperature had dropped a little, he appeared less toxic, and his blood culture had become negative. His arm had definitely become worse, however, and the edema appeared to have spread to the axilla, while crepitation could be noticed in the upper arm and shoulder. One hundred thousand units of sodium



Fig 2—Appearance of stump the day after surgery and penicillin. The gloved finger is placed in the lateral skin flap. The exposed biceps muscle is viable.

penicillin was given in 100 cc of isotonic solution of sodium chloride intravenously, 500 cc of citrated blood was given and a guillotine amputation was done under cyclopropane anesthesia. At operation, the skin and fascia of the stump were split longitudinally and left open. Swabs taken from this area at operation showed gram positive bacilli and gram positive cocci, which on culture proved to be *Cl. welchii* and beta-hemolytic streptococci. Powdered calcium penicillin, 100,000 units, was sprinkled dry into the stump, Dakin tubes were inserted, the stump was bandaged and sealed with cellophane, and a continuous local drip of 1,000 cc of isotonic solution of sodium chloride containing 100,000 units of calcium penicillin started.

The next morning the wound was dressed. The exposed muscle was clean. A culture taken from the wound showed only a scant growth of diphtheroid organisms. No *Cl. welchii* or beta-hemolytic streptococci were found (fig 2) on smear or culture.

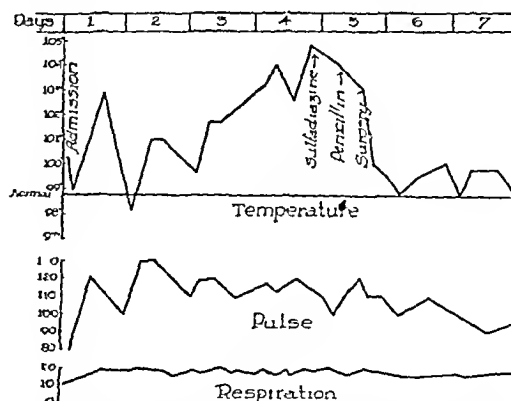


Fig 3—Temperature, pulse and respiration during the first week in the hospital. Notice the sharp drop in temperature and pulse rate following penicillin and amputation.

The clinical course postoperatively was uneventful except that a thrombophlebitis developed at the site of the intravenous penicillin therapy. The stump now has a pyocyanus infection from ward contamination, but healing is assured. The patient still has a low fever, 99 F, but the stump is ready for skin grafting. Figure 3 shows the temperature, pulse and respiration curves during the first week in the hospital.



## SUMMARY

Of 2 cases of *Cl welchii* infection, 1 was treated locally with calcium penicillin and the other systemically with sodium penicillin and locally with calcium penicillin. Careful bacteriologic studies showed persistence of *Cl welchii* in the case of cellulitis treated with calcium penicillin locally, while the use of penicillin systemically and locally, combined with guillotine amputation, caused the disappearance of beta-hemolytic streptococcus and *Cl welchii* from the spreading infection. After oral sulfadiazine, beta-hemolytic streptococci could not be recovered from the blood stream. It must be emphasized that good surgery was the deciding factor in the second case and that penicillin is of most benefit when used in conjunction with good surgical principles.

#### A PRIMIPARA WITH DIABETES AND MILD TOXEMIA TREATED SUCCESSFULLY WITH DIETHYL STILBESTROL

BYRON D. BOWEN, M.D., BUFFALO

The wide experience of Priscilla White<sup>1</sup> in the study of the chorionic gonadotropic hormones and the effect of the use of the estrogens and progesterone in the treatment of pregnant diabetic patients, on whom an increase of these hormones was found, is more than suggestive that their use reduces the incidence of, and is effective in, the treatment of preeclamptic toxemia of pregnancy and thereby reduces the fetal and maternal mortality.

The nature of this action is not understood, nor is the metabolism of the estrogens. It may be that the estrogenic substances have a 'salutary' effect on the liver. It has been demonstrated that pregnant women can tolerate large amounts of estrogens. Among the possibilities of this beneficial effect are the inhibition of the diabetogenic hormones of the pituitary, the reduction of the rate of glycogenolysis or the removal of antagonistic insulin action as White's cases have shown that insulin could usually be reduced after the administration of the estrogen. The following case demonstrates this relationship to a high degree.

## REPORT OF CASE

**History**—Mrs. E. F., aged 23, admitted to the diabetic service of the Buffalo General Hospital Oct. 7, 1943 and discharged Jan. 9, 1944, was referred by Dr. Raymond May, Alden, N. Y. The diabetes was discovered in 1932; she had taken insulin since that time. Because of considerable variation in weight and insulin dosage it was suspected that the control of the diabetes had not been accurate much of this time. She had been in various hospitals on several occasions for adjustment of the diabetic regimen. One of these admissions, at the age of 15, was because of diabetic coma. She had had an enlargement of the thyroid gland since the age of 10. At the time of admission the insulin dose was 90 units of the protamine zinc and 10 to 20 units of the unmodified before breakfast. Her last menstrual period was March 17, 1943. Since the onset of the pregnancy she had experienced some loss of appetite, headache and periods of weakness. For several weeks before admission she had rather frequent attacks of what she thought were insulin reactions—palpitation, sweating, shortness of breath and a choking sensation.

Physical examination showed the following positive findings: diffuse but slight enlargement of the entire thyroid gland, slight accentuation of the basal heart sounds, especially on the aortic side, blood pressure 118 systolic 82 diastolic, pulse rate 120 to 130 seven months' pregnancy. She was on the whole cheerful but there appeared to be quite violent mood swings, when she became quite depressed.

**Course**—Shortly after admission she began to have attacks of 'insulin reactions', blood sugar determinations made during these attacks were always elevated and orange juice failed to relieve them quickly. These "spells" were always associated with tachycardia and during one attack her pulse rate rose to 180. Two electrocardiograms taken two and five days after admission showed a normal sinus rhythm with a rate of 116

and 138 respectively, negative T<sub>2</sub> and a tendency to right axis deviation. It then came to our attention, from the Social Service Department, that her husband, who had been in the armed forces, was missing several months. It seemed probable that these alleged "insulin reactions" were, in all probability, anxiety attacks. She was seen in consultation by Dr. Mabel Ross from the Psychiatric Department, who concurred in the nature of the attacks. However, Dr. Ross believed that the patient's failure to accept the diabetes and her inability to live as other people did was also a contributing factor. No further attacks occurred after their nature was carefully explained to the patient and she had been assured that she would get along all right. On October 15, one week after admission, slight pretibial edema was first noted. There was no essential change in the blood pressure. The urine continued to be free of albumin and abnormal elements in the sediment.

On November 1 she had her first attack of diarrhea. These attacks continued several times each week—often as many as eight watery evacuations daily. These disappeared with the other evidences of toxemia. Several stools showed no occult blood. Culture of the feces was negative for pathogenic enteric organisms.

On November 23 the first trace of albumin in the urine was reported. This persisted and reached a 2 plus reaction by December 8.

On November 4 her blood pressure, which had been measured twice daily, showed its first conspicuous rise: 144 systolic 84 diastolic, it continued to be essentially in that zone save for an occasional normal or rare higher reading until the toxemia improved.

On admission her red blood cells numbered 4,100,000 with 13.5 Gm of hemoglobin per hundred cubic centimeters of blood. The white cells numbered 11,000, with 8 per cent bands, 56 filaments, 2 eosinophils, 30 lymphocytes and 4 monocytes. A slight anemia was first noted on November 18, when the red cells dropped to 3,500,000, with 9 Gm of hemoglobin per hundred cubic centimeters. The leukocytes dropped to 7,900 per cubic millimeter, with no essential change in the differential. On November 26 the red blood cells numbered 3,660,000, with 11 Gm of hemoglobin.

Two of our enterprising and interested clinical clerks, Mr. Melvin N. Wood and Mr. Paul J. Wolfgruber, determined the serum chorionic gonadotropic hormones on November 11. They were found to be at least 500 rat units per hundred cubic centimeters of blood. This was repeated again on November 26. Then one rat, which had a dose of serum corresponding to 1,700 rat units per hundred cubic centimeters, showed a corpus luteum but the other rat, which received an amount corresponding to 1,000 rat units per hundred cubic centimeters of blood, showed no corpora lutea macroscopically. Just before her delivery an attempt was made to estimate the blood serum chorionic gonadotropic hormones. Unfortunately this was indeterminate.

On December 1 the patient was given diethylstilbestrol 2 mg three times a day in the hope that it would alleviate the toxemia. Her weight, which had steadily increased from 58 Kg (127½ pounds) on admission, had by this time reached 67 Kg (147½ pounds). Coincident with the use of the diethylstilbestrol there was a prompt and gradual loss of weight with conspicuous diuresis, so that the weight was reduced to 62 Kg (137 pounds) by the time of delivery on December 17. Also the systolic blood pressures were definitely lower, but the diastolic remained in the neighborhood of 90.

From the beginning the diabetes was difficult to manage. Except for the first two weeks, when the carbohydrate content in her diet was changed back and forth several times from 180 Gm of carbohydrate to 140 Gm, her diet remained constant all through the observations at 160 Gm of carbohydrate, 80 Gm of protein and 110 Gm of fat. A combination of protamine zinc insulin 90 units and unmodified insulin 30 units resulted in continuous glycosuria up to as high as 50 Gm daily. An equal number of units of the unmodified insulin given in three doses—morning, evening and midnight—gave somewhat better control, but as the toxemia became more apparent this had to be increased gradually until the patient was receiving 90 units before breakfast, 68 before supper and 68 at midnight. On December 1, when the diethylstilbestrol was started. The fast-

From the Buffalo General Hospital and the University of Buffalo School of Medicine.

<sup>1</sup> White, I. and Hunt, H. Pregnancy Complicating Diabetes. A Report of Clinical Results. J. Clin. Endocrinol. 3: 500 (Sept.) 1943.

ing blood sugar on November 29 was 250 mg per hundred cubic centimeters. Promptly after the administration of diethylstilbestrol, hypoglycemic reactions, which had not been present before, followed—fifteen in eleven days, in three of these, concentrated dextrose solution had to be given intravenously. This occurred in spite of the sharp reduction of the insulin dosage. The reactions did not cease until the dose had been lowered to 44 units in the morning, 30 units before supper and 10 units at midnight. It is interesting that there were but a few grams of dextrose in the urine even after the administration of 50 cc of 50 per cent dextrose intravenously.

She was delivered on December 17 by Dr Clyde Randall. Both her labor and her delivery were uneventful. She had an episiotomy. Caudal and chloroform anesthesia were used. Her blood pressure taken during labor was 120 systolic, 80 diastolic on one occasion and 128 systolic, 90 diastolic on another. The weight of the male fetus was 7 pounds 7 ounces (3 570 Gm.).

She required only slightly less insulin after delivery than she had previously: 36 units before breakfast, 16 before supper and 10 units at midnight.

She was discharged on a regimen of 180 Gm. of carbohydrate, 90 Gm. of protein and 120 Gm. of fat with 90 units of protamine zinc insulin and 16 of the unmodified insulin before breakfast. There was slight glycosuria occasionally during the day. Her fasting blood sugar was 182 mg per hundred cubic centimeters. She had no insulin reactions.

#### SUMMARY

A primipara who was severely diabetic and who had had diabetes for twelve years was studied in the hospital for a period of three months.

The development of mild toxemia of pregnancy was observed—edema, albuminuria, diarrhea, mild hypertension and anemia. During this period the insulin requirement was nearly doubled. The chorionic gonadotropic hormones exceeded 500 rat units per hundred cubic centimeters of blood.

Soon after the oral administration of diethylstilbestrol 6 mg daily the symptoms and signs of the toxemia disappeared, and the insulin dosage had to be promptly reduced because of the occurrence of many insulin reactions. At that time an estimation of the chorionic gonadotropic hormone was, unfortunately, indeterminate.

100 High Street

## Council on Physical Medicine

*The Council on Physical Medicine has authorized publication of the following reports*

HOWARD A. CARTER Secretary

### KREISELMAN RESUSCITATOR BELLOWS TYPE, MODEL 110, ACCEPTABLE

Manufacturer: The Ohio Chemical & Manufacturing Co., 1177 Marquette Street, Cleveland

The Kreiselman resuscitator is designed to administer artificial respiration to all except the newborn. In general the apparatus as marketed consists of a bellows having an air and oxygen intake valves, an exhaust and a relief valve, a handle, an elbow connector for the face mask, an airway and a carrying case.

#### OPERATION

Administration of the air or air-oxygen mixture is accomplished by applying the mask over the patient's nose and mouth in airtight fashion and manually expanding and compressing the bellows. With the patient in the prone position, the head is turned slightly resting on the patient's hand as when using the prone pressure method of manual artificial respiration. When the patient is in the prone position the resuscitator is used with an elbow interposed between the exhaust valve of the bellows and the mask.

The oxygen intake valve has an inlet nipple to which a supply tubing for oxygen is attached. The valve is large enough to admit sufficient oxygen under pressure for therapeutic purposes. When the resuscitator is used with air only, this valve remains closed. The relief valve on the bellows operates at an internal

pressure of 14 to 15 mm of mercury and discharges freely the contents of the bellows at a pressure of 25 mm of mercury.

The technique of operation is as follows:

- 1 Clear the mouth and throat of mucus and remove any foreign bodies from the mouth. Use a clean handkerchief or cloth if an aspirator is not available.
- 2 Place patient on back with hand extended, then carefully insert tip of airway above tongue along roof of mouth until the airway is well behind tongue thus holding it forward.
- 3 Keep chin raised.
- 4 Place mask over nose and mouth and hold it on airtight with one hand.
- 5 Operate bellows with other hand as follows:
  - (a) Place the hand palm down under strap handle and raise bellows until filled with air.
  - (b) Press down to compress the bellows until chest wall rises.
  - (c) Release pressure at once by raising (expanding) the bellows.
  - (d) Repeat this procedure of expanding and compressing the bellows at the rate of 18 times per minute.
  - (e) When the patient makes breathing efforts compress the bellows as he breathes in.
- 6 When resuscitation is attempted with the patient on his side or abdomen, turn the head to the side and use the bellows with the mask-elbow.
- 7 To use oxygen, attach supply tube to inlet valve on the bellows.

#### INVESTIGATIONS

One physician having had experience with this device reported that it was tested on a number of dogs that were asphyxiated. Controlled experiments were run using other kinds of mechanical apparatus for production of artificial respiration and also manually controlled appliances which are attached to anesthetic apparatus. The Kreiselman bellows type resuscitator was found to be as efficient as any of the other apparatus tried. The same physician said that the bellows resuscitator had been used successfully on 12 patients, all of whom had experienced respiratory arrest by inhalation of anesthetic agents. He reported that (1) asphyxia was not present in any of these cases, (2) all of the 12 patients were successfully and efficiently revived with the bellows type apparatus, (3) none of the patients died, (4) respiratory arrest in these patients was produced by an overdose of an anesthetic agent for the expressed purpose of testing the apparatus and (5) no impairment to the patient's lungs was noted either immediately or later.

The Kreiselman (bellows type) apparatus together with the evidence submitted with it by this firm was referred to the Council investigator for examination and report. He stated that the device was used over a considerable length of time on patients purposely prepared for trial by stopping their respiration. The apparatus does what it is expected to do, namely, inflates the lungs with either air or oxygen under moderate positive pressure. The maximum pressure is controlled by a safety valve and is set to open long before dangerous pressures are reached.

The manufacturer expressed a desire to supply this apparatus to police and fire departments and other lay organizations that perform emergency artificial respiration on victims of drowning, gas poisoning, electric shock and so on. The firm was asked to submit reports of cases of asphyxia in which the device has been used successfully by lay operators in emergency cases. The firm replied that it was collecting these data but to date did not have enough records to satisfy the Council requirements.

The Council on Physical Medicine voted to accept the Kreiselman resuscitator for use in operating rooms and in medical institutions under the direction of a physician but voted not to accept it for use by lay organizations, because evidence is not available that a layman has successfully resuscitated an asphyxiated person with it.



Bellows resuscitator

### THE FISCHER CRYSTAL SHORT WAVE DIATHERMY APPARATUS, MODEL VC, ACCEPTABLE

Manufacturer The H G Fischer Company, 2323-2345 Wabansia Avenue, Chicago 47

This apparatus applies heat to the tissues of the body for the treatment of disease. Where heat is indicated as a therapeutic measure, this appliance may be used. So far as it is known the immediate and only effect of medical diathermy is the production of heat, and the physiologic effects are those which normally follow the production of heat in the living tissues. This medical diathermy apparatus is built to meet not only the requirements of the Council on Physical Medicine but the requirements of the Army Medical Corps as laid down in the Federal Standard Stock Catalogue, section IV, part 5.

Model VC is a so called crystal controlled apparatus. The frequency 13,660 kilocycles per second (21.95 meter wavelength) does not, according to reliable evidence, vary from the norm more than 0.05 per cent. In fact, the tolerance of frequency stability is much less, and thus under wide temperature and humidity variations.

The generator consists of a steel cabinet with an enamel finish, a steel chassis which may be removed and a control panel mounted to the chassis with all controls thereon. The chassis consists of three units, namely a crystal control, a buffer and a final amplifier. The crystal control and buffer compartment may be removed from the chassis for repair or replacement by removing a screw at the base clamp of the buffer compartment. When the crystal is removed, the entire generator is disconnected from the power supply. An overload switch is also provided to protect the unit against short circuits. Connections for treatment electrodes are provided at the side of the unit. Treatment is applied by means of a cable or drum. It weighs approximately 200 pounds.

The ability of the apparatus to heat tissue was tested in a laboratory acceptable to the Council. The report is as follows:

The method followed was 3 turns of cable around thigh, overall measurements 7 to 8 inches, one hand towel and  $\frac{3}{8}$  inch layer of felt between cable and skin. Skin hyperemia was observed.

TABLE 1—Cable Technic

| Experiment Number | Deep Muscle Initial | Temperature of Final | Oral Temperature F |       |
|-------------------|---------------------|----------------------|--------------------|-------|
|                   |                     |                      | Initial            | Final |
| 1                 | 97.1                | 103.5                | 98.0               | 99.0  |
| 2                 | 97.4                | 106.2                | 98.2               | 99.2  |
| 3                 | 97.4                | 104.0                | 98.1               | 99.5  |
| 4                 | 97.5                | 104.9                | 98.6               | 99.7  |
| 5                 | 97.6                | 104.7                | 98.8               | 99.8  |
| 6                 | 97.6                | 104.4                | 99.0               | 100.0 |
| Average           | 97.4                | 104.8                | 98.5               | 99.5  |

TABLE 2—Disk Technic

| Experiment Number | Deep Muscle Initial | Temperature of Final | Oral Temperature F |       |
|-------------------|---------------------|----------------------|--------------------|-------|
|                   |                     |                      | Initial            | Final |
| 1                 | 97.0                | 104.2                | 98.5               | 98.4  |
| 2                 | 97.6                | 104.0                | 98.4               | 98.7  |
| 3                 | 97.0                | 104.0                | 98.5               | 98.8  |
| 4                 | 97.7                | 104.0                | 98.8               | 99.1  |
| 5                 | 97.8                | 104.5                | 98.8               | 99.4  |
| 6                 | 97.8                | 104.0                | 98.9               | 99.5  |
| Average           | 97.3                | 104.9                | 98.6               | 99.0  |

The method followed for the disk technic was 10½ inch diameter disk applied obliquely to the thigh with one layer of toweling between surface of disk and the skin, center of disk opposite center of cannula. Blebs were produced as the result of point heating.

Heating-load test reveals that the transformers meet the requirements of the Council. The report from a laboratory recognized by the Council as qualified to judge on the frequency stability indicates that the crystal control feature maintains a stability within 0.05 per cent.

The apparatus operates on 115 volts alternating 60 cycle current. The lamp load test shows an output of 200 watts. On practical test the apparatus proved to stand up well when used clinically.

The Council on Physical Medicine voted to accept the Fischer Crystal Short Wave Diathermy apparatus, Model VC, for inclusion in its list of accepted devices.

## Council on Foods and Nutrition

The following report, authorized by the Council for publication, represents the completion of the study of the nutritive value of prepared cereal foods made under a grant of the Board of Trustees at the request of the Council.

GEORGE K. ANDERSON, M.D., Secretary

### VITAMIN CONTENT OF PREPARED CEREAL FOODS

GEORGE KITZES, Ph.D.

AND

C. A. ELVEHJEM, Ph.D.

MADISON, WIS.

A preliminary report on the thiamine, riboflavin and niacin content of a number of prepared cereal products was published in THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, Dec. 4, 1943. More extensive data are tabulated in the accompanying table. Some new products have been included, but the main purpose of the additional work was to determine the variation in the vitamin content of the typical products on the market. The cereals were purchased from grocery stores in different parts of Madison and from stores having a rapid turnover in order to avoid products kept on the shelves for long periods of time. Most of the samples were obtained at three different periods, spring, summer and fall of 1943. The thiamine was determined by the thiochrome method<sup>1</sup> and the riboflavin and niacin by microbiologic procedures.<sup>2</sup>

The values for whole grains are included again for comparison. The products to which restorative additions of synthetic vitamins or vitamin concentrates have been made are indicated with an asterisk. Others enriched according to proposed federal standards of enrichment are appropriately indicated. When the individual samples gave values within rather narrow limits, one average figure is given, when a greater variation was observed, the range of figures is included.

The variation between samples of the same product purchased at different periods is surprisingly small. The restored and enriched products gave the most variable results owing undoubtedly to the higher vitamin content and to difficulties in obtaining uniform distribution of the added vitamins. Some of the products low in thiamine also showed considerable variation, probably because of differences in the degree of processing.

It is interesting to note that a large percentage of the wheat products and practically all of the corn, oats and rice products contain levels of thiamine within the range for the whole grains. Very few of the riboflavin values fall below the corresponding minimum whole

From the Department of Biochemistry, College of Agriculture, University of Wisconsin.

Published with the approval of the director of the Wisconsin Agricultural Experiment Station.

<sup>1</sup> Hennessy, D. The Determination of Thiamine in Cereal Products. *Cereal Chemist*, Bull. 2, 1942.

<sup>2</sup> Strong, F. M., and Carpenter, L. E. Preparation of Samples for the Microbiological Determinations of Riboflavin. *Indust. & Engin. Chem. (Anal.)* 14, 909, 1942. Krehl, W. A., Strong, F. M., and Elvehjem, C. A. Determination of Nicotinic Acid, *ibid.* 15, 471, 1943.

grain values. The biggest discrepancy occurs in the niacin values for wheat. Very few of the products, even when the vitamin has been added, meet the minimum values of 5.4 mg for 100 Gm. The reason for this is readily evident. Wheat bran is very rich in niacin, and the bran is generally removed in the preparation of the wheat products. Further consideration may have to be given this standard, but in any case a product design-

of uniformity in the expression of nutritional values on the package was quite apparent. Some are expressed in terms of the average serving, others as a 1 ounce serving or on a pound basis giving the percentage of the minimum daily requirements in some cases and in others the milligrams or international units contained therein. It is difficult or impossible for the average person to make an intelligent comparison of the nutri-

### Niacin Content of Whole Grains

A majority of samples of whole grains contain the indicated nutrients in amounts within the following ranges  
(Data Compiled by the Food and Nutrition Board, National Research Council)

| Product      | Thiamine<br>(Expressed as 10g per 100 Gm) | Riboflavin<br>(Expressed as 10g per 100 Gm) | Niacin<br>(Expressed as 10g per 100 Gm) |
|--------------|---|---|---|
| Wheat, whole | 0.44 to 0.66                              | 0.09 to 0.20                                | 5.4 to 8.0                              |
| Corn, whole  | 0.37 to 0.58                              | 0.03 to 0.24                                | 1.7 to 2.7                              |
| Oats         | 0.66 to 0.88                              | 0.12 to 0.17                                | 0.8 to 1.8                              |
| Rice         | 0.33 to 0.57                              | 0.03 to 0.25                                | 4.4 to 6.6                              |

### Vitamin Content of Prepared Cereal Foods

| Products Derived from Wheat       | Manufacturer                            | Thiamine<br>(Expressed as 10g per 100 Gm) | Riboflavin<br>(Expressed as 10g per 100 Gm) | Niacin<br>(Expressed as 10g per 100 Gm) |
|-----------------------------------|---|---|---|---|
| All Bran                          | Kellogg Company                         | 0.37 to 0.52                              | 0.36 to 0.48                                | 16.0 to 15.5                            |
| Post's Bran Flakes *              | General Foods Corporation               | 0.45 to 0.88*                             | 0.01 to 0.09                                | 7.5 to 9.0                              |
| Chef White Wheat Cereal           | IOA Foods                               | 0.06                                      | 0.05  | 1.0                                     |
| Coco Wheats *                     | Little Crow Milling Company             | 0.39 to 0.48*                             | 0.07  | 1.0 to 2.3                              |
| Cracked Wheat                     | Doughboy Mills, Inc.                    | 0.44                                      | 0.16  | 4.4                                     |
| Cracked Wheat                     | IOA Foods                               | 0.40                                      | 0.17  | 4.5                                     |
| Cream of Wheat **                 | Cream of Wheat Corporation              | 0.41 to 0.65*                             | 0.06 to 0.10                                | 1.6 to 2.0                              |
| Farina **                         | Pillsbury Flour Company                 | 0.40                                      | 0.05  | 2.0*                                    |
| Force                             | The Best Food* Inc.                     | 0.04                                      | 0.16  | 4.1                                     |
| Grape Nut Flakes *                | Post Products                           | 0.22*                                     | 0.17 to 0.25                                | 4.9 to 5.6                              |
| Grape Nuts Wheat Meal *           | Post Products                           | 1.02*                                     | 0.12  | 5.1                                     |
| Grape Nuts *                      | Post Products                           | 0.81*                                     | 0.17 to 0.20                                | 3.9 to 4.9                              |
| Hecker's Cream of Farina **       | The Best Foods, Inc.                    | 0.40                                      | 0.05  | 2.4*                                    |
| Krumbles                          | Kellogg Company                         | 0.02 to 0.07                              | 0.16 to 0.21                                | 4.2                                     |
| Maltex Cereal                     | Maltex Company                          | 0.35                                      | 0.13 to 0.17                                | 4.5                                     |
| Malt O Meal *                     | Campbell Cereal Company                 | 0.40 to 0.60                              | 0.25 to 0.32                                | 2.7 to 3.7                              |
| Pep *                             | Kellogg Company                         | 1.2 to 1.5*                               | 0.16 to 0.25                                | 4.5 to 6.5                              |
| Puffed Wheat Sparkles *           | Quaker Oats Company                     | 0.40 to 0.54*                             | 0.12 to 0.16                                | 8.4                                     |
| Ralston Whole Wheat Cereal †      | Ralston Purina Company                  | 0.33                                      | 0.14  | 4.0 to 5.1                              |
| Rollad Wheat                      | Doughboy Mills, Inc.                    | 0.27                                      | 0.13  | 4.1                                     |
| Rollad Wheat                      | IOA Foods                               | 0.29                                      | 0.14  | 4.0                                     |
| Rollad Wheat (Pettibohn's)        | Quaker Oats Company                     | 0.31 to 0.40                              | 0.13 to 0.16                                | 3.8                                     |
| Shredded Ralston                  | Ralston Purina Company                  | 0.11 to 0.16                              | 0.13  | 4.3                                     |
| Shredded Wheat                    | Kellogg Company                         | 0.19 to 0.25                              | 0.14 to 0.19                                | 4.5                                     |
| Shredded Wheat                    | National Biscuit Company                | 0.24                                      | 0.13 to 0.15                                | 4.2                                     |
| Shreddies                         | National Biscuit Company                | 0.20                                      | 0.12  | 4.0                                     |
| Wheatena                          | Wheatena Company                        | 0.06 to 0.13                              | 0.15  | 4.0                                     |
| Wheaties *                        | General Mills Company                   | 0.39 to 0.60*                             | 0.19 to 0.22                                | 4.1 to 5.1                              |
| Wheatworth                        | National Biscuit Company                | 0.50                                      | 0.13  | 4.8                                     |
| Products Derived from Corn        |   |   |   |   |
| Corn Flakes *                     | Kellogg Company                         | 0.29 to 0.45                              | 0.08  | 1.6*                                    |
| Corn Flakes *                     | Post Products                           | 0.28 to 0.30*                             | 0.10  | 1.3                                     |
| Kix *                             | General Mills Company                   | 0.44 to 0.59                              | 0.10 to 0.20                                | 2.1 to 2.7                              |
| Products Derived from Oats        |   |   |   |   |
| Cheerios *                        | General Mills Company                   | 0.81*                                     | 0.25  | 2.0                                     |
| H O Quaker Oats                   | The Best Foods, Inc.                    | 0.67                                      | 0.17  | 0.5                                     |
| Mother's Oats                     | Quaker Oats Company                     | 0.61                                      | 0.17  | 0.85                                    |
| Quaker Oats *                     | Quaker Oats Company                     | 0.64 to 0.90                              | 0.11 to 0.15                                | 0.69 to 0.7                             |
| Quaker Oats Oats                  | Quaker Oats Company                     | 0.53 to 0.70                              | 0.14 to 0.18                                | 0.85 to 1.0                             |
| Products Derived from Rice        |   |   |   |   |
| Cream of Rice                     | Grocery Products Mfg. Company           | 0.16                                      | 0.03  | 1.7                                     |
| Cream of Rice *                   | Grocery Stores' Product Sales Co., Inc. | 0.94                                      | 0.62  | 6*                                      |
| Puffed Rice Sparkles (new)        | Quaker Oats Company                     | 0.64                                      | 0.05  | 4.0                                     |
| Rice Krispies *                   | Kellogg Company                         | 0.45*                                     | 0.07  | 8.0*                                    |
| Rice-Natural Brown                | Comet Rice Mills                        | 0.41                                      | 0.09  | 4.4                                     |
| Products Not Otherwise Classified |   |   |   |   |
| Cerevim * †                       | Lederle Laboratories                    | 2.1                                       | 2.2   | 20.2                                    |
| Cream of Rye                      | Fruen Milling Company                   | 0.12                                      | 0.17  | 0.2                                     |
| Life of Wheat Wheat Germ          | Life of Wheat Company                   | 2.2*                                      | 1.0   | 4.5                                     |
| Scotch Brand Barley (Pearled)     | Quaker Oats Company                     | 0.15                                      | 0.07  | 2.1                                     |
| Soya Wheat                        | Soya Wheat Company                      | 0.71                                      | 0.27  | 2.4                                     |
| Vibin Wheat Germ                  | Vibin Corporation                       | 2.0                                       | 1.2   | 5.7                                     |

\* Re fortification of synthetic vitamin or vitamin concentrate

\*\* Enriched with synthetic vitamins or vitamin concentrates to conform with proposed federal standards of enrichment

† Added wheat germ

nated as containing added niacin should contain more than 4 mg per hundred grams.

In summary it is evident that the cereal manufacturers have made excellent progress in improving and standardizing their products. Sufficient data are now available to allow rather accurate estimation of the amount of thiamine, riboflavin and niacin contributed by most of the commercial products.

In the process of handling the numerous brands of prepared cereal foods which were examined, the lack

tional content of the various cereal products by examining the labels. On the other hand if these values could be expressed on the uniform basis of the average 1 ounce serving with the nutritional content in terms of percentage of daily requirements as well as actual milligrams (or international units for vitamins A and D) supplied a better understanding and appreciation by the housewife and nutritionist of the food value of the various types of cereal products would be realized.

# THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

535 NORTH DEARBORN STREET - CHICAGO 10, ILL

Cable Address

Medic Chicago

Subscription price

Eight dollars per annum in advance

Please send in promptly notice of change of address giving both old and new always state whether the change is temporary or permanent Such notice should mention all journals received from this office Important information regarding contributions will be found on second advertising page following reading matter

SATURDAY, SEPTEMBER 9, 1944

## THE CHICAGO VIVISECTION FUROR

For some weeks Chicago has been treated to a spectacle such as only Chicago can furnish, because the self-elected star of the performance is Irene Castle, once noted as half of a terpsichorean team and now maintaining a somewhat aging reputation by periodic appearances in the limelight in behalf of a dog shelter called Orphans of the Storm and in behalf of a general attack against all experiments with animals. Listed in the supporting cast is Mr William Randolph Hearst of California and New York, who places the Chicago *Herald American* and all its staff at Miss Castle's disposal during the run of the play. Fortunately for the American people and fortunately also for the scientific medical institutions of Chicago, every other newspaper in the city has recognized the menace of the Castle-Hearst combination and has come to the support of the Chicago leaders of medical education with the amount of space and the vigor demanded by the antivivisectionist shrieking. The pity of it all is that so much important space and time should have to be devoted in the war effort to meeting this stupid and obsolete sentimentalism.

The City Council of Chicago a good many years ago passed an ordinance that makes available the use of stray dogs for scientific medical study. Apparently some of the aldermen have been high pressured by Mr Hearst's campaign into introducing an amendment to the city code which would make it difficult or impossible for medical science to get the necessary number of dogs to carry on. Specifically, it proposes to repeal the ordinance under which stray dogs in the city pound go to medical schools because their owners fail to reclaim them after five days.

The campaign of the *Herald American* featured what was said to be the eye witness story of a former employee of the medical school of the University of

Chicago. This man had served as an animal caretaker for only six weeks and left his position without notice just a few days before the first article appeared in the *Herald American*. Apparently he had used his time to take pictures surreptitiously—pictures which were harmless in themselves but which were made to appear brutal and improper by the captions printed under them. The evidence is positive that the laboratories in question utilize animals with the utmost discrimination, without subjecting them to unnecessary pain or discomfort, carrying out all operative experiments under anesthesia and in accordance with the same standard of procedure that is used in hospitals everywhere throughout the country. The attack was centered on Dr Dallas B Phenister, professor of surgery, whose character and reputation as a distinguished scientist need no defense. The fact that the attack would be centered on a surgeon of distinction for his scientific accomplishments and his devotion to the healing of disease is an indication of the stress to which the antivivisectionists were put in order to make any kind of case whatever. Opposed to the ridiculous presentation which the antivivisectionists made before the city council were the professors of physiology in all the medical schools, the statements of the Surgeons General of the Army, Navy and U S Public Health Service and the personal appearance of Major General George F Lull, Deputy Surgeon General of the Army. The incident served to bring out the tremendous advancement that medical science has made in recent years, largely by the use of animal experimentation. Long since and repeatedly it has been emphasized that dogs themselves have benefited, as well as has man, by the very experimentation that this illogical group condemns.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION wishes to commend the medical scientists of Chicago for having given so much of their time and their energy to meeting this challenge. The preparation which they made for the hearings before the city council, with the attendance of all the medical students of the city in uniform at the sessions, the orderly and painstaking presentation of the case, may well be models for similar efforts when a similar challenge happens to arise elsewhere in the nation or even in Washington. Yet it all comes down to a paragraph from a statement in an editorial in the *Chicago Tribune*, which gave many columns to interviews and editorials during the weeks preceding the hearing.

The *Tribune* said

There comes a time when patience with people like this ceases to be a virtue. It is no excuse to plead for them that they are sincere. So, probably, is Hitler, who is no crazier than some antivivisectionists.

## STREPTOTHRICIN

In 1941 Waksman of the New Jersey Agricultural Experiment Station isolated a bactericidal substance from a soil streptothrix (*Actinomyces lavendulae*), which he named "streptothricin"<sup>1</sup>. Streptothricin is completely adsorbed on charcoal from a fluid culture medium from which it can be recovered by treatment with dilute acid. Waksman found that the crude product thus prepared had a definite inhibitory action on the majority of the bacterial species he tested. As little as 0.1 mg of the product added to 10 cc of nutrient agar completely prevented the growth of *Escherichia coli* and many other gram negative bacteria. Gram positive bacteria were of variable resistance, some being extremely sensitive to this bacteriostatic agent while others were highly refractory. Streptothricin also had a decisive antibiotic action against numerous fungi and yeasts<sup>2</sup>.

A preliminary report on the therapeutic efficiency of this bacteriolysin has been made by Robinson and his associates<sup>3</sup> of the Merck Institute for Therapeutic Research, Rahway, N. J. The crude streptothricins tested by these investigators varied in potency from 5 to 300 units per milligram, the unit being the minimum quantity of the crude product which added to 1 cc of nutrient broth completely inhibits the growth of a selected strain of *E. coli*. The toxicity of these products was tested by administering a single dose intravenously, subcutaneously or by mouth to each of a selected group of 10 mice. Mice given as much as 30,000 units per kilogram of body weight intravenously, 60,000 units subcutaneously or 250,000 units orally showed no evidence of toxicity. When twice these doses were administered, anorexia accompanied by a gradual loss of weight was noted in most of the mice, with a 20 per cent mortality.

Confirming Waksman's data, the bacteriostatic titers were determined by incorporating various amounts of each product in melted blood agar and streaking the surface of the solidified agar with a variety of pathogens. The minimum amount of streptothricin necessary for bacteriostasis varied with different bacterial species. *Eberthella typhi* was completely inhibited by as little as 4 units of streptothricin per cubic centimeter, while *Escherichia coli*, *Staphylococcus aureus*, *Salmonella schottmulleri*, *Diplococcus pneumoniae*, *Bacterium flexneri* and certain strains of *Streptococcus haemolyticus* required from 16 to 32 units. *Streptococcus viridans* and *Streptococcus lactis* were refractory, 1,024 units giving only partial growth inhibition. Intermediate groups included several strains of *Streptococcus haemolyticus*, *Staphylococcus aureus*, *Neisseria meningitidis*, *Proteus vulgaris* and *Aerobacter aerogenes*.

Therapeutic tests were made on groups of 30 to 60 mice. Each mouse was inoculated intraperitoneally with 10,000 lethal doses of a selected pathogen. Treatment was begun immediately after inoculation. The therapy consisted of either a single or a repeated dose of streptothricin given intravenously, subcutaneously or by mouth. A single dose of 50 to 100 units (a tenth of the toxic dose) given subcutaneously shortly after inoculation apparently affords complete protection against *Salmonella schottmulleri*, *Escherichia coli* and *Bacterium shigae*, while 3,000 units was required for the same therapeutic effect if the drug was given by mouth. With relatively refractory micro-organisms, such as *Pseudomonas aeruginosa*, *Staphylococcus aureus* and *Diplococcus pneumoniae*, practically no beneficial effects were noted even when the dose was increased tenfold, i. e. approaching the toxic range. It was also noted that streptothricin given by mouth reduces the normal lactose fermenting flora of the gastrointestinal tract.

Robinson suggests that in time streptothricin may prove to be of value in the treatment of bacillary dysentery, typhoid and colon infections. If so, it would function as a valuable supplement to penicillin, which has little or no therapeutic action against these gram negative infections.

ABORTIVE OR NONPARALYTIC  
POLIOMYELITIS

Fortunately the most frequent clinical form of poliomyelitis is the abortive or nonparalytic. Similar transitory infections may occur in the experimental disease in monkeys. In both cases the absence of paralysis is not necessarily due to failure of the virus to invade and multiply in the tissues of the central nervous system but to limitation of its spread therein. The limitation may depend on the virus, on the host or on both. Faber, Silverberg and Dong<sup>1</sup> studied the resistance to a strain of virus of the cynomolgus monkey under well controlled experimental conditions. They found that nontraumatic exposures to the virus of the respiratory and alimentary mucous membranes of cynomolgus monkeys may be followed by a definite resistance to later intracerebral inoculations of the virus. In such cases typical lesions were found in the central nervous system descending from the level of the inoculation into the brain stem and to a much more limited extent into the cord. There were no indications of any invasion of the central nervous system previous to the intracerebral inoculation but lesions were found in the peripheral ganglions corresponding to the mucous membranes previously exposed to the virus.

1 Waksman, S. A. and Woodruff, H. B. *Proc. Soc. Exper. Biol. & Med.* **49**, 207 (1942).

2 Foster, J. W. and Woodruff, H. B. *Arch. Biochem.* **3**, 241 (1943).

3 Robinson, H. J., Grace, O. E. and Smith, D. C. *Science* **99**, 510 (June 30) 1944.

1 Faber, H. K., Silverberg, R. J. and Dong, L. *Poliomyelitis in the Cynomolgus Monkey. II. Resistance to Spread of Infection in the Central Nervous System Following Exposures of Mucous Membranes to Virus with Comments on Nonparalytic Poliomyelitis*. *J. Exper. Med.* **78**, 519 (Dec.) 1943.



This limitation of spread of experimental poliomyelitis in monkeys resembles the stop in the evolution of human poliomyelitis which results in the clinical gradations represented by abortive, nonparalytic and mildly paralytic forms of the disease. It may be assumed that natural exposures to the virus lead to increase in the resistance to its invasion of the central nervous system, possibly due to the development of specific antibodies. Whether natural human exposures to the virus which do not result in clinical poliomyelitis may leave lesions in peripheral ganglions, as was the case in the experiments on monkeys, is a question. Post-mortem study of these ganglions, especially in children, with this question in mind might well be worth while.

At present there seems to be no practical way of increasing successfully the resistance to human poliomyelitis by artificial means. Previous efforts to that end led to the conclusion that the injection of killed virus is not effective. A safe method of immunizing with modified living virus has not yet been found.

#### AIR BORNE POLIOMYELITIS

The epidemiology of human poliomyelitis has recently directed attention largely to the presence of the virus in feces and sewage and to the growing conviction that infection with poliomyelitis virus is usually by way of the alimentary tract. The demonstration by Faber and his associates<sup>1</sup> of Stanford University of the ease with which the upper portions of the alimentary tract of monkeys can be penetrated by the virus has intensified this concept. A modification of this belief will presumably follow recent studies of the virus content of nasopharyngeal secretions of clinical cases and attempts to infect experimental animals with air borne virus. Up to five years ago, out of 287 clinical trials the virus of poliomyelitis had been isolated but 29 times from the human nasopharynx.<sup>2</sup> Paul<sup>3</sup> concluded from such data that less than 6 per cent of the poliomyelitis patients had viable virus on the nasopharyngeal surfaces, an insignificant percentage when compared with the great frequency with which the same virus is present in the stools or colonic washings in clinical cases.

A different perspective is suggested by a resurvey currently reported by Howe and his associates<sup>4</sup> of Johns Hopkins University. Howe discarded the nasopharyngeal irrigation technic of earlier investigators and obtained secretions from the posterior wall of the oropharyngeal surface and the peritonsillar areas by means of cotton swabs. The two swabs used with each

patient were detached, dropped into 1 cc of sterile water and stored on solidified carbon dioxide. The two swabs were afterward eluted in phosphate buffer solution and the fluid pressed out or sucked out by a syringe. The resulting fluid was rendered bacteriologically sterile by a thirty-six hour contact with a quarter volume of ether, after which the ether was removed. The yield was usually 1.1 cc of fluid from each patient. The entire specimen was inoculated intracerebrally into a rhesus monkey, half of the sample being injected into each lateral thalamus. This region was chosen because of its relatively high susceptibility to the virus and because its deep position minimized the danger of leakage or backflow.

Specimens have been tested from 14 random cases of juvenile poliomyelitis, all tests being made during the first week of the disease. Of this group 7 specimens produced typical and usually lethal poliomyelitis in rhesus monkeys, the positive results being equally distributed between paralytic and nonparalytic human cases. If fully confirmed, this high percentage would suggest that nasopharyngeal secretions play a much more important role in the spread of poliomyelitis virus than had been previously concluded. Many human cases would presumably be due to air borne droplet or dust infection.

This suggestion is made highly plausible by studies of the infectivity of air borne poliomyelitis virus, currently reported by Faber and his associates of Stanford University. The Stanford experimenters used an improved atomizing flask into which a virus suspension can be delivered as a fine spray. All unevaporated droplets are retained in the flask and an even suspension of dry droplets or "droplet nuclei" passed into a large respiratory chamber. This chamber accommodates the heads of 4 monkeys under anesthesia with pentobarbital sodium. After one hour exposure to the virus infected air 5 of the 7 rhesus and 6 of the 7 cynomolgus monkeys thus far tested developed typical poliomyelitis. Histologic evidence indicated that the virus had entered the central nervous systems of all 11 monkeys through the olfactory nerves. To study other possible respiratory ports of entry the test was repeated on 35 rhesus and 10 cynomolgus monkeys in which olfactory blockade had been induced by previous application of 1 per cent zinc sulfate. Of these, 2 rhesus monkeys and 4 cynomolgus monkeys developed typical poliomyelitis. Serial sections indicated that the non-olfactory port of entry was in most cases through the afferent fibers of the fifth cranial nerve, entrance by way of the local sympathetic fibers being demonstrated in but 1 case.

Faber concludes from these tests that the concept of poliomyelitis as an air borne disease acquired by inha-

1 Faber H K, Silverberg R J and Dong L. *J Exper Med* 75: 499 (Dec) 1943.

2 Vignec A J, Paul J R and Traub J D. *Yale J Biol & Med* 11: 15 (Oct) 1938.

3 Paul J R. *Infantile Paralysis*, a symposium delivered at Vanderbilt University Waverly Press Lecture 5 p 127 1941.

4 Howe A A, Wenner H A, Bodian D and Maxey K F. *Proc Soc Exper Biol & Med* 56: 171 (June) 1944.

5 Faber H K, Silverberg R J and Dong L. *J Exper Med* 80: 39 (July) 1944.

lation of contaminated air or dust deserves more consideration. Such a view, he emphasizes, does not exclude ingestive infection, since experiments have shown that in monkeys infection occurs with equal ease by the two ways. Which mode of infection is the more important for man is a problem that still awaits solution.

#### MALNUTRITIONAL ANTIVIRAL IMMUNITY

Reasoning from experimental evidence obtained from a study of bacterial infections, many clinicians have assumed that resistance to pathogenic viruses would be lowered as a result of dietary deficiency and that prophylactic effects would follow the administration of corrective doses of such factors as ascorbic acid, thiamine, riboflavin, nicotinic acid and pantothenic acid. This line of reasoning was challenged in 1939 by Foster and his associates<sup>1</sup> of the department of pediatrics, University of Pennsylvania School of Medicine, who studied the effects of thiamine deficiency on resistance to poliomyelitis virus.

Litters of white mice varying from 21 to 31 days of age were split into two groups. One group was fed ad libitum a standard diet containing 100 micrograms of thiamine per hundred grams. The second group was placed on a similar diet in which the thiamine content had been reduced to 10 micrograms per hundred grams. Fifteen to twenty days later each mouse was injected intracerebrally with 0.03 cc of a 0.5 per cent suspension of virus infected mouse brain (Lansing strain), control injections being made with 0.5 per cent suspension of normal mouse brain. Typical paralysis was noted in 74 per cent of the mice at the optimum thiamine level, as contrasted with but 13 per cent paralysis in the thiamine deficient group.

With a third group of mice the thiamine content of the ingested food was raised to 30 micrograms per hundred grams (minimum maintenance level). In this group 17 per cent of the injected mice developed paralysis. The conclusion was drawn that even a partial reduction in optimum thiamine intake increases resistance to poliomyelitis virus. Foster<sup>2</sup> subsequently found that mere restriction of caloric intake without reduction in ingested thiamine resulted in a similar though less definite increase in resistance to poliomyelitis.

These results were afterward confirmed by Rasmussen and his associates<sup>3</sup> of the University of Wisconsin, who tested four carefully selected mouse groups. The first group was fed a synthetic diet containing optimum amounts of all necessary food factors except thiamine. On this diet the mice developed an acute deficiency, characterized by rapid loss of weight. A

second group of mice was fed the same diet plus a minimum maintenance amount of thiamine (30 micrograms per hundred grams), on which diet the weight remained constant for at least thirty days. A third group was fed the same diet plus an optimum amount of thiamine (200 micrograms per hundred grams). On this diet the weight increased rapidly. A fourth group was fed an excessive amount of thiamine (600 micrograms per hundred grams). Thirteen days after the animals had been placed on these diets each mouse was injected intracerebrally with 0.03 cc of a 2 per cent brain-cord suspension of the Lansing mouse adapted poliomyelitis virus. Within fourteen days 81 per cent of the mice at the optimum or excessive thiamine level developed paralysis, while but 14.2 per cent of those on the thiamine free diet became paralyzed. Of those at the minimum maintenance level 50 per cent became paralyzed.

Rasmussen also tested a fifth group of mice in which there was a restricted caloric intake without a reduction in the thiamine or other vitamin factors. The control morbidity of 81 per cent was reduced to 65 per cent in this group. The Wisconsin bacteriologists then broadened their field of research to include tests with Theiler's encephalomyelitis virus injected intraperitoneally. Here the differences in resistance were of the same order but less pronounced than with poliomyelitis virus, the control morbidity of 55 per cent being reduced to 42 per cent as a result of thiamine deficiency. The field of research was then widened to include the effects of restricted intake of pantothenic acid.<sup>4</sup> They found that Swiss mice fed a synthetic ration deficient only in calcium pantothenate exhibited a definitely increased resistance to Theiler's encephalomyelitis virus. There was however, little or no increased resistance to poliomyelitis virus.

A theory to account for this malnutritional antiviral immunity was suggested in 1942 by Sprunt<sup>5</sup> of Duke University, who studied the resistance of undernourished rabbits to intradermal injection with vaccinia virus. In all cases the resulting lesions were fewer and smaller in the malnutrition group than in adequately fed controls. Sprunt interpreted this as evidence that vaccinia virus is less able to multiply in poorly nourished tissue cells than in adequately nourished cells. With this theory a malnutritional hypersusceptibility to bacterial infections coupled with a partial malnutritional immunity to virus diseases ceases to be paradoxical.

Sprunt's theory is based on the classic assumption that the virus particle is a living parasite feeding on or in competition with the invaded tissue cell. A more complex theory would be necessary if the virus was pictured as a giant protein molecule multiplied by the engrafted cell.

1 Foster C, Jones J H, Henle W and Dorfman F. *Proc Soc Exper Biol & Med* 51: 215, 1942.

2 Foster C, Jones J H, Henle W and Dorfman F. *Science* 97: 207, 1943.

3 Rasmussen A F, Waisman H A, Elvehjem C A and Clark P F. *J Infect Dis* 74: 41 (Jan Feb) 1944.

4 Lichstein H C, Waisman H A, Elvehjem C A and Clark P F. *Proc Soc Exper Biol & Med* 56: 3 (May) 1944.

5 Sprunt, D H. *J Exper Med* 75: 297, 1942.

## Current Comment

### POSTWAR TRAFFIC DANGERS

Automobile traffic hazards will no doubt begin to increase almost at once after the end of the war. Methods to control this problem should receive careful consideration now. The National Safety Council has just published an excellent brochure on postwar traffic problems for a group of forty sponsoring organizations, including the American Medical Association. According to this booklet the long-term problems will include greater traffic volumes and speeds, probable changes in traffic and parking patterns, new developments in automobile design, continued if not increased night traffic hazards, and no anticipated decrease in the accidents resulting from drinking alcoholic beverages. Safety measures devised and instituted, although unevenly, before the war must be continued and implemented. Especially important will be training of adequate personnel to meet the new and perhaps unexpected problems which will surely arise. New measures must be introduced to cope with new problems. Road construction, betterment of existing streets and highways and traffic engineering administration will play a part in preventive measures. New techniques will have to be devised for police personnel and their equipment, standard techniques of enforcement can be more widely adopted. Vehicle inspection, driver licensing, traffic safety instruction and education are additional measures which will require careful application. About 35 000 deaths and well over a million injuries annually from automobile accidents were recorded during recent prewar years, all evidence indicates that this cause of death and injury will rise to new heights in the postwar period unless adequate preventive measures are taken.

### BIOLOGIC SYNTHESIS

The older view, championed by Liebig, considered that the chemistry of the animal body was destructive in character, whereas in plants widespread synthesis took place. Subsequent investigation has shown the fallacy of this concept, there is ample evidence that fat and carbohydrate are synthesized from unlike precursors, while purines, hormones and aminoacetic acid, among other compounds, are known to be products of biochemical synthesis in the animal body. The most recent evidence on this general point relates to beta-alanine a nitrogenous constituent of the muscle extractives carnosine and anserine. Although alpha-alanine is a common amino acid obtained from most proteins, the beta analogue has been considered a biochemical novelty. Interest in this compound was increased when it was discovered<sup>1</sup> that it constitutes part of pantothenic acid, one of the vitamins of the B group. It becomes of interest to know whether or not the growing animal can synthesize the beta-alanine in its tissues. Using weanling rats, Schenck and du Vigneaud<sup>2</sup> have shown that the beta-alanine in the nonhepatic tissues increases some twenty times in the fifty days after weaning and

that this increase is independent of the amount of beta-alanine in the diet. As the tissue extractives assume greater importance in the metabolism of muscle—quantitatively the most important tissue in the body—the origin and availability of these compounds becomes of greater interest.

### THE HETEROLOGOUS TRANSPLANTATION OF HUMAN CANCERS

Greene and Lund<sup>1</sup> have reported successful transplantation of a series of 10 human cancers to the anterior chambers of eyes of guinea pigs. The series contained a fibrosarcoma of the chest wall, an adenocarcinoma of salivary gland tissue, a chondromyxosarcoma of the larynx, a malignant melanoma, an epidermoid carcinoma of the buccal mucosa, an adenocanthoma of the urethra, a mammary fibrosarcoma, an undifferentiated carcinoma of the lung, an epidermoid carcinoma of the lung and a chordoma. The transplants grow progressively in the alien host and bear a close microscopic resemblance to the original tumors. In the majority growth became apparent in all successful transplants within several days. In earlier experiments with rabbit tumors the authors failed to transplant benign tumors or tumors in their preinvasive stage. Apparently, therefore, heterotransplantability may be a characteristic property of cancer. More recent experiments demonstrate that in man as well as in rabbit cancer autonomy or transplantability transcends species barriers. Numerous attempts to transfer benign human tumors to lower animals have failed. Transplantation experiments utilizing biopsy tissue from precancerous lesions and from anaplastic tumors during preinvasive stages likewise failed. Transplantability of malignant tumors to lower animals, it is pointed out, may serve as a diagnostic aid in a case of questionable tissues and assist in the morphologic classification of cancers. Cancers may be associated with local tissue reaction that obscures the nature of the cell involved in the neoplastic process. Thus the tissue obtained from the first biopsy of the fibrosarcoma of the chest wall in 1 of their cases contained a large number of giant cell forms and the question of muscular origin arose. However, only the fibroblastic elements survived guinea pig transfer, and it became clear that the growth was fibrosarcoma and that the giant cells were reactive rather than neoplastic in nature. It is also pointed out that transplants often show a slightly higher degree of cellular differentiation and organization than is found in the primary host and thus allow a classification of highly anaplastic tumors. This was demonstrated in their case of transplanted chordoma. The ability to grow cancer in lower animals affords an approach to many other problems associated with human tumors. After successful primary transplantation the cancer can be carried by serial passage to new generations of animals and subjected to a variety of investigations not permissible in the human host. After preliminary growth in the anterior chamber of the eye, transfer to other body regions is readily effected.

<sup>1</sup> Williams R. T. and Major R. T. *Science* **91**: 246 1940  
<sup>2</sup> Schenck J. R. and du Vigneaud V. *J. Biol. Chem.* **153**: 511 (May) 1944

<sup>1</sup> Greene Harry S. N. and Lund Paul K. *The Heterologous Transplantation of Human Cancers* *Cancer Research* **4**: 352 (June) 1944

# MEDICINE AND THE WAR

## ARMY

### REORGANIZATION OF OFFICE OF SURGEON GENERAL

It has recently been announced from the office of the Surgeon General of the Army that the post of Assistant Surgeon General is to be filled by Brig Gen Raymond W Bliss. The post is newly created as a part of a recent reorganization. General Bliss will hold the new post in addition to his duties as chief, Operations Service.

The Administrative Service is dissolved, as part of the reorganization the Fiscal, Legal and Office Service Divisions will report directly to the executive officer as previously. In place of the Professional Service, four Professional Consultant Divisions are being created: medical, surgical, neuropsychiatric and reconditioning. All personnel of the Nursing Division, another division to be dissolved, and related aspects of the Army Nurse Corps will be the responsibility of the Army Nurse Branch of the Military Personnel Division, Personnel Service. The overall policy aspects of the Army Nurse Corps will be the responsibility of the newly constituted Nursing Division of the Professional Administrative Service.

A new Professional Administrative Service is being created with Col Arden Freer as chief and Col Esmond R Long deputy chief. The following will be included: Physical Standards Division, Nursing Division, Medical Statistics Division, Professional Inquiries Unit, Women's Health and Welfare Unit. Col Florence A Blanchfield will be director of the Nursing Division, Professional Administrative Services.

### SURGICAL OPERATING TRUCKS TAKE HOSPITAL TO WOUNDED SOLDIERS

The Army Medical Department has established mobile surgical groups which provide hospital facilities for wounded soldiers near the front lines. The tent is carried on a two wheel trailer along with an electrical generating unit, the hospital vehicle can be made ready for full operation within thirty minutes. Sufficient room is provided for operating teams composed of surgeons, nurses and technicians, making it possible for 2 men to be operated on simultaneously. The unit is capable of caring for from 80 to 100 men a day. The truck is equipped with a variety of special instruments for orthopedic, nerve, chest, maxillofacial and brain surgery, operating tables, steam and dry sterilizers, lighting equipment, medicines, blood plasma, bandages and dressings, record files, auxiliary power unit, surgical linens and operating gowns.

### MAJOR DUNN APPOINTED NEURO- PSYCHIATRIC CONSULTANT

Major William Harold Dunn has been appointed neuropsychiatric consultant for the Fifth Service Command Headquarters, Columbus, Ohio. Major Dunn was instructor in psychiatry at Cornell Medical College and assistant chief of the outpatient department at the Payne-Whitney Clinic in New York City. He has had extensive army experience with hospital units in the South Pacific. Immediately preceding his appointment he was on the staff of the School of Military Neuropsychiatry at the Mason General Hospital. Dr Dunn graduated from Harvard Medical School in 1927.

### NURSES DECORATED FOR GALLANTRY UNDER FIRE

Twelve officers of the Army Nurse Corps have been awarded the Bronze Star for heroic service in Italy, the War Department recently announced. This brings to 17 the number of American nurses who have been decorated for gallantry under fire. One Bronze Star and four Silver Star awards were made earlier.

### CANCEL REQUISITION FOR PARASITOLOGISTS

Release FR-208, dated August 10 from the Headquarters Army Service Forces, Washington 25, D C, states that the files of a sufficient number of qualified candidates have been received to meet the needs of the Surgeon General under requisition 228 parasitologists. This requisition will be canceled and further procurement will close immediately. Papers on candidates already procured and in process will be completed with the exception of WD AGO form 63, if not already accomplished and forwarded under form OPS-22 with such requisition number shown in proper place.

### CHIEF ARMY NURSE OF SIXTH CORPS AREA RETIRES

Lieut Col Pearl C Fischer recently retired as chief of army nurses for the Sixth Service Command and was honored at a dinner at the Gardiner General Hospital, Chicago August 8. Colonel Fischer was the first woman with that rank to serve with the Sixth Service Command. She will be succeeded by Lieut Col Martha Jane Clement, director of army nurses in the Southwest Pacific Area.

### MAJOR MARY C WALKER GIVEN HONORARY DEGREE

The University of Denver recently conferred the honorary degree of Doctor of Humane Letters on Major Mary C Walker of the Surgeon General's Office. Mr Thomas A Dimes, chairman of the board of trustees of the University of Denver, stated that "the university is pleased to extend this honor to a member of the nursing profession not only in recognition of her individual worth but as a fine representative of her profession."

### SIXTY-NINE ARMY NURSES HAVE DIED IN LINE OF DUTY

The War Department recently announced that of approximately 40,000 members of the Army Nurse Corps 69 have lost their lives in line of duty since Pearl Harbor, 24 have been reported as wounded and 66 are prisoners of war. Six officers of the Army Nurse Corps have died as a direct result of enemy action. Other deaths have been due to vehicle accidents, airplane crashes and disease.

### CHICAGO NURSE RECEIVES AIR MEDAL

Lieut Helen F Lyon of Chicago, a member of the first overseas flight nurse team who went to the Aleutian theater last year to evacuate men wounded in the Attu campaign, has recently been awarded the Air Medal. With Lieutenant Lyon's unit when it arrived in the Aleutians was 2d Lieut Ruth M Gardiner, who was the first air evacuation nurse to lose her life in this war and after whom the Gardiner General Hospital was named.

### FLIGHT SURGEONS' ASSISTANTS

A class of forty flight surgeons' assistants completed the six weeks course in aviation medicine at the School of Aviation Medicine, Randolph Field, Texas July 29. These men are trained as specialists in assisting flight surgeons in the selection, care and maintenance of the flier. Brig Gen Eugen G Reinartz is commandant of the School of Aviation Medicine.

### FRENCH OFFICER CITED BY U S ARMY

Gen Georges Andre Hugonot, Medical Corps, French Army, was cited July 21 by the commanding general of the Fifth Army U S. He was serving as corps surgeon of the French Expeditionary Corps on the Italian front.

## ARMY AWARDS AND COMMENDATIONS

**Brigadier General Edgar Erskine Hume**

Brig Gen Edgar Erskine Hume was recently awarded the Oak Leaf Cluster to the Distinguished Service Medal in recognition of service as chief of the Allied Military Government Section, Fifth Army, in Italy. The citation accompanying the award read:

From Oct 1, 1943 to Dec 15, 1943, as chief of the Allied Military Government Section, Fifth Army, he successfully carried out one of the most extensive military government tasks ever accomplished by the United States being charged with the government of Campania, a region of 6,000,000 inhabitants including Naples one of Italy's largest cities. He made detailed plans for the administration of Naples, which, under his orders, were put into immediate execution when the city was taken on Oct 1, 1943.

Despite enormous handicaps in Naples, where the Germans had destroyed the water supply, electric power sources, drains and other public utilities, had mined buildings, despoiled hospitals, dispersed the police and in general paralyzed the civil administration, he was able by his unusual ability and devotion to duty to restore order forthwith and within a few weeks to return the city's functions almost to normal. A threatened epidemic of typhoid was averted by his wise preventive measures. Our victory was thus hastened, as the army commander was free to perform purely military functions without the added burden of civil government.

The respect in which this officer was held by the Italians, his intimate knowledge of the country, its people and language, and his rare administrative skill and leadership made him unique in his efficient handling of an extremely difficult and politically delicate task."

General Hume was awarded the Distinguished Service Medal for his outstanding service as a medical officer during World War I as commissioner of the American Red Cross after the war in Serbia. He holds many decorations from foreign governments and numerous academic degrees from American and foreign institutions of learning.

General Hume graduated from Johns Hopkins University School of Medicine, Baltimore, in 1913 and was commissioned as a first lieutenant in the Medical Corps, Regular Army, Jan 14 1917.

**Colonel Russell J. Caton**

Col Russell J. Caton, formerly of Bucyrus, Ohio, has received the Bronze Star for meritorious service at Guadalcanal Solomon Islands, from May 13, 1943 to April 26, 1944. The citation reads: "As island surgeon Colonel Caton supervised and controlled medical service for thousands of troops at that base. In the supervision and coordination of twenty dispensaries and eleven hospitals he displayed unusual organizational ability, professional knowledge and leadership. He was directly responsible for the supply, storage and transport of medical equipment and supplies for operations on Guadalcanal and throughout the entire forward area. Under the expert guidance and force of purpose of Colonel Caton the base medical service was developed to a widely extensive and efficient structure capable of meeting every exigency created by tropical climate and combat conditions. His careful planning and unerring sound judgment exemplify the highest tradition of the medical corps." Dr Caton graduated from Ohio State University College of Medicine, Columbus, in 1913 and entered the service Feb 1, 1941.

**Colonel Frank B. Wakeman**

The Legion of Merit was awarded posthumously to Col Frank B. Wakeman, formerly of Indianapolis, for his meritorious work in connection with the training program of the Army Medical Department. The citation accompanying the award reads: "For exceptionally meritorious conduct in the performance of outstanding services from July 1940 to March 1944. Colonel Wakeman, with rare foresight, initiative and organizing ability, laid the groundwork for the necessary expansion in all phases of Medical Department training, placing in operation replace-

ment training centers, service schools for officers, Medical Department enlisted technicians schools and an officer candidate school long before the entry of the United States into the war. As a result of his insight into medical requirements and the execution of plans, the Medical Department was able to expand greatly its training activities following Dec 7, 1941 and also, because of the training already given to render an efficient medical service to the Army during the very rapid expansion that followed the declaration of war. Colonel Wakeman's unusual foresight, aggressive execution of approved plans and selfless devotion to the best interests of the Army and the Medical Department are in the highest traditions of the service." Dr Wakeman graduated from the Indiana University School of Medicine, Indianapolis, in 1926. The Association of Military Surgeons awarded him the Henry Wellcome Prize in 1938 for his thesis on an immunizing antigen of the typhoid bacillus.

**Colonel John A. Rogers**

Col John A. Rogers, Army Medical Department, formerly on duty in Washington, D. C., as executive officer of the Office of the Surgeon General, has been awarded the Legion of Merit for services in the European theater. The citation stated that the award was given for "exceptionally meritorious conduct in the performance of outstanding services from Oct 20, 1943 to May 31, 1944." Dr Rogers graduated from Tufts College Medical School, Boston, in 1914. He was formerly a member of the New Hampshire National Guard and entered the Medical Corps of the Regular Army in 1933, serving at posts in this country and in Hawaii.

**Captain William I. Hunt**

Posthumous award of the Silver Star Medal was recently made to Capt William I. Hunt, formerly of Greenville, Miss., for gallantry in action. The citation accompanying the award read: "Desiring to be where he was needed most, Captain Hunt accompanied a small reconnaissance patrol into Japanese territory. The patrol ran into an enemy ambush, which opened fire at a 30 yard range. During the action the lead scout was killed and three other men were wounded. Captain Hunt, disregarding his personal safety, courageously went forward under exposure to the heavy hostile fire toward the casualties and in doing so was mortally wounded. Although such bravery was neither ordered nor expected, this officer readily sacrificed his life in an attempt to help his wounded comrades." The organization to which Dr Hunt belonged, the American Division, was the first army division to participate in offensive action in this war. Named for American forces in New Caledonia, where it was activated, it fought at Guadalcanal and is the only division officially with a name instead of a number. Dr Hunt graduated from Tulane University of Louisiana School of Medicine, New Orleans, in 1942 and entered the service June 30, 1943.

**Captain Ralph S. Phelan**

The Silver Star award was recently given to Capt Ralph S. Phelan, formerly of Waurika, Okla. The citation accompanying the award read: "On Nov 22, 1943, in the Mediterranean theater, he was battalion surgeon of an infantry battalion which was occupying a defensive position on a mountain top. Enemy artillery caused many casualties, and the rugged terrain made evacuation almost impossible. He went up the side of the mountain and administered first aid to the wounded in the battle area. His action under fire was credited with saving many lives." Dr Phelan graduated from the University of Oklahoma School of Medicine, Oklahoma City, in 1939 and entered the service July 1, 1941.

**Captain Andrew J. Extejt**

The Bronze Star Medal was recently awarded to Capt Andrew J. Extejt, formerly of Toledo. Dr Extejt was decorated for military operations against the enemy in Normandy June 7-10. He has been overseas for more than a year and also saw action in Africa, Sicily and Italy. Dr Extejt graduated from St. Louis University School of Medicine in 1934 and entered the service Aug 27, 1942.

## NAVY

## NAVY AWARDS AND COMMENDATIONS

## Captain Lockhart D Arbuckle

Capt Lockhart D Arbuckle now senior medical officer at the Naval Training Center, Great Lakes Illinois, has been awarded the Legion of Merit for exceptionally meritorious conduct in the performance of outstanding services to the government of the United States as division surgeon of a Marine division during the planning for and the operations against the Japanese on Bougainville, British Solomon Islands, from Sept 10 1943 to Jan 4, 1944. During this period Captain Arbuckle rendered invaluable assistance to the commanding general in executing the operation under the most adverse conditions. When the preparations for the establishment of the beachhead were begun owing to his highly efficient supervision of the medical facilities all troops entered the combat areas in excellent physical condition. As a result of his exceptional professional skill and constant attention to duty medical services were administered to all the wounded, and despite the trying conditions arising from tropical climate, losses from sickness and battle wounds among the troops were held to a minimum. His superior knowledge and sound judgment contributed materially to the success of the campaign and were in keeping with the highest tradition of the United States Naval Service." Dr Arbuckle graduated from the Medical College of Virginia Richmond, in 1915 and has been in the service since May 28, 1917.

## Lieutenant Commander Richard Monroe Forsythe

Posthumous award of the Navy Cross has been made to Lieut. Comdr Richard Monroe Forsythe formerly of Cleveland. The citation accompanying the award read: "For extraordinary heroism while serving as regimental surgeon with the First Marine Division during action against enemy Japanese forces near Volupai Plantation Willaumez Peninsula New Britain on March 6 1944. When our forces suffered severe casualties while landing on the strongly fortified beach Lieutenant Commander Forsythe immediately went to the assistance of the wounded and, undeterred by devastating hostile mortar fire untriflingly administered medical aid to the injured and assisted in moving them out of range of Japanese guns. Courageously remaining in the exposed area despite multiple wounds from a bursting enemy mortar shell he continued ministering to the injured until severe pain finally forced him to cease his valiant efforts. Although fully aware that postponed surgical attention would gravely impair his chance of recovery, Lieutenant Commander Forsythe steadfastly refused medical assistance while there were other casualties in need of care and later succumbed as a result of wounds received in this action. His outstanding professional skill, his great personal valor and heroic devotion to duty were an inspiration to his associates and reflect the highest credit on the United States Naval Service. He gallantly gave his life for his country." Dr Forsythe graduated from Western Reserve University School of Medicine, Cleveland in 1937 and entered the service May 31, 1940.

## MISCELLANEOUS

MORE THAN 400 FROM POST-GRADUATE  
HOSPITAL NOW SERVING WITH  
ARMED FORCES

More than 400 physicians, nurses and others connected with the Post-Graduate Hospital New York City, are now serving with the armed forces. The number of physicians attached to the Army Navy and Marines in various battle fronts is one of the largest from any hospital in the country. Doctors from the attending staff of the hospital number 296, while there are 47 from the intern and resident units. In addition to these there are 47 nurses, who like the doctors are volunteers. One member of the hospital staff has been killed in action and those drafted from the nonvolunteer group have reached a total of 36.

The Post-Graduate veterans now in uniform will often be reminded of their home service by the fact that they will use some of the flying ambulances for the transfer of their patients. Owing to the success of the 'E bond' campaign conducted at the hospital, three of these great air ambulances will carry the name of the Post-Graduate Medical School and Hospital.

The medical school is engaged in arrangements for classes and courses for military doctors returning to their civilian practices, scores of whom have asked for this training.

RESTRICTIONS ON USE OF  
AGAR REMOVED

The War Production Board recently announced that stockpiles of agar, formerly dependent on supplies received exclusively from Japan, have now been improved to such an extent by newly developed domestic production and by imports from Mexico that restrictions on the use of agar have been removed, by revocation of Order M-96. Agar, a jelly-like substance extracted from certain types of seaweed found on both the Atlantic and Pacific coasts, is principally used in making bacteriologic cultures, but only the seaweed found on the West Coast yields the type of agar that can be used for the production of these cultures. Agar is also used in the preparation of medicinals, pharmaceuticals and food and in the drawing of tungsten wire and the manufacture of dental impression compounds.

Domestic production of agar was accomplished as a result of close cooperation between industry and the Chemicals Bureau of the War Production Board. The largest agar plants the American Agar and Chemical Company, is situated in Los Angeles. Smaller agar production units have been established in Massachusetts the Carolinas and Florida.

To insure fulfillment of any emergency needs for agar a stockpile is being reserved by the Defense Supplies Corporation a subsidiary of the Reconstruction Finance Corporation.

HOSPITALS NEEDING INTERNS  
AND RESIDENTS

The following hospitals have indicated to the Council on Medical Education and Hospitals that they have not completed their house staff quota allotted by the Procurement and Assignment Service.

(Continuation of list in THE JOURNAL September 2 page 37)

## CALIFORNIA

Santa Clara County Hospital San Jose Capacity 470 admissions 4 435 Dr Henry E Dahleen Superintendent (resident—tuberculosis)

## KENTUCKY

Louisville General Hospital Louisville Capacity 587 admissions 9 805 Dr John W Moore Medical Director (1 intern 1 assistant resident—medicine October 1)

## MICHIGAN

Leila A Post Montgomery Hospital Battle Creek Capacity 165 admissions 6 301 Sister Mary Constance Administrator (intern)

## NEW YORK

Israel Zion Hospital Brooklyn Capacity 380 admissions 10 532 Dr J Praeger Executive Director (interns October 1944 January 1945)

## RHODE ISLAND

Butler Hospital Providence Capacity 175 admissions 178 Dr Arthur H Ruggles Superintendent (residents—psychiatry)

## TEXAS

All Saints Episcopal Hospital Fort Worth Capacity 100 admissions 3 997 Miss Eva M Wallace RN Superintendent (resident—mixed)

## WISCONSIN

Methodist Hospital Madison Capacity 127 admissions 3 911 Miss Carolyn M Fenby RN Superintendent (intern)



### URGE SPECIAL MICROSCOPIC TESTS BEFORE TREATING GONORRHEA WITH PENICILLIN

Dr C J Van Slyke of the Public Health Service Venereal Disease Research Laboratory, Staten Island, N Y, and Dr S Steinberg of the U S Marine Hospital, New York City recently reported the possibility of overlooking syphilis symptoms in gonorrhea patients treated with penicillin in patients who have both diseases. This can be avoided, however if special microscopic tests are made before penicillin is used, and if blood tests are made after penicillin treatment has been completed. The masking effect of penicillin on syphilis symptoms is due to the fact that the relatively small amounts of penicillin required to cure gonorrhea are sufficient to cause disappearance of the spirochete germs of syphilis from syphilis lesions, although not sufficient actually to cure syphilis. When serum from the lesions is examined under a special microscope after penicillin has been used, the spirochetes will not be seen and the examining doctor may be misled to conclude that the patient was not infected with syphilis. Making the microscope examination before treatment with penicillin prevents this possible error. A blood test for syphilis some time after the treatment of gonorrhea has been completed is advisable because blood tests do not always reveal very new syphilis infections immediately after they have been acquired.

### MEDICAL AND SURGICAL RELIEF COMMITTEE OF AMERICA

The Medical and Surgical Relief Committee of America (420 Lexington Avenue, New York City) recently donated a shipment of medical supplies including five cuses of fracture pillows crutches stretchers, wheel chairs and a fracture cradle for use of wounded soldiers, to the Halloran General Hospital, Staten Island N Y. The Medical and Surgical Relief Committee of America was organized four years ago and is conducted by a nationwide group of physicians surgeons and dentists. The committee is a philanthropic organization dedicated to medical surgical and dental aid for the armed and civilian forces of the United Nations. To date the committee has shipped and delivered safely in America more than \$640 000 of supplies.

### PRINTED FORMS FOR CADET NURSES WHEN TRAVELING

Some members of the U S Cadet Nurse Corps have encountered transportation difficulties through being confused with members of the armed forces. In one instance a cadet nurse was unable to purchase a train ticket because a passenger agent thinking her a member of some governmental service, requested to see furlough papers which of course she did not have. This occasioned an expensive delay in her trip. In order to avoid this possible confusion the U S Public Health Service is printing forms which will be sent in the near future to directors of schools of nursing which (when signed) are to be given to cadet nurses who are traveling in uniform. This will clarify the situation for any agent who, in line of duty might question their right to travel. Additional forms will be sent to the directors of schools of nursing on request.

### COMMITTEE ON MEDICAL RESEARCH BEGINS PUBLICATION

The Committee on Medical Research of the Office of Scientific Research and Development began publication recently of a weekly journal entitled *Summary of Reports Received by the Committee on Medical Research*. Circulation of the publication is restricted to selected Medical Corps men in the United States, Canada and Great Britain. The journal is being edited and published by the records section of the committee, the work of which is directed by Dr Kenneth B Turner, who is on leave of absence from Columbia University College of Physicians and Surgeons.

### WARTIME GRADUATE MEDICAL MEETINGS

The following subjects and speakers for Wartime Graduate Medical Meetings have just been announced.

At Camp Ellis Illinois Conditions Affecting Glucose Metabolism, Drs Arthur R Colwell and George W Scupham, September 20

At Camp Grant, Illinois Recent Advances in the Treatment of Syphilis, Drs Robert M Craig and George X Schwemlem, September 20

At Chanute Field, Rantoul, Ill Chemotherapy—Present Status, Drs W Barry Wood Jr and Italo F Volini, September 20

### HEALTH NEWS FROM EUROPE

According to DNB of May 13, 1944 (Germany) hospitals have time and again been the target of enemy terror bombers. Far sighted vision revealed many years ago the need for sick persons to be lodged outside towns, in a place where they would be safe from air attacks. Prof Dr Brandt, the fuhrer's general commissioner for the medical and health services, was entrusted by the fuhrer with the task of devising and applying the necessary measures. Under the technical direction of Dr Poschmann, delegate of the general commissioner for hospital emergency installations and of Ministerial-Direktor Schonleben of the building office in the Speer ministry, emergency hospitals were built in several stages at many places all over the reich. Although they are in the nature of emergency hospitals they combine all the qualities of an up to date hospital building with the added advantage of being close to nature, which is particularly beneficial to the sick and also affords protection from air attacks.

Reich Minister Speer gave press representatives an opportunity to inspect such a hospital which is under construction in the neighborhood of the reich capital. The friendly and airy rooms with their white ceilings make one oblivious of the fact that they are really huts. In planning the site the pavilion system was abandoned and the six wards form a close structure, they are connected by a 250 meter brick corridor, which makes it possible to move within the hospital, regardless of temperature and weather, exactly as in the several floor building of the town hospital. Each ward consists of several fair sized sickrooms with 6 to 8 beds each, while the smaller sickrooms, wash rooms and bath rooms and a cozy common room are situated on the other side of the passage. In each ward there is room for the offices of the doctors and sisters and a kitchenette on the other side of the main connecting corridor. A modern central kitchen for the whole hospital is situated at one end of this corridor while at the other end is the ward for infectious diseases, which is completely isolated from the other wards and in its design is probably the most up to date of its kind in Europe. Situated between the wards exactly in the center of the whole site is the reception and treatment hut which also houses the x-ray units and the laboratory and contains the consulting rooms of the dentist the ophthalmologist and other specialists.

Many such hospitals were completed in the neighborhood of many air raid danger towns during the last four months, despite wartime difficulties it was possible to complete the buildings in the short space of six to eight months. Each hospital has 500 beds and in an emergency will hold as many as 800. Germany disposes already of 15,000 such beds, while space is being provided for thousands more. New methods are also being employed in the administration of these emergency hospitals. They are under the direction of General Commissioner Dr Brandt to whom the senior house surgeon is responsible in all matters. This procedure eliminates red tape, particularly in questions of hospital supplies and also in the admission of patients they are treated there regardless of who is to pay.

These hospitals will naturally be used in the first place to house serious cases and others which it will take some time to cure, while the hospitals in the towns will continue to be available for day to day cases.

The Netherlands Information Bureau states that a group of prominent physicians recruited from American medical schools and hospitals will leave for the Netherlands after that country's liberation to give a series of four week postgraduate refresher courses in Dutch universities. This plan was announced by Dr Herbert Loeb of Cambridge, Mass., former president of the Netherlands Dental Association at Amsterdam who was instrumental in arranging for a similar postwar movement to bring dental care to the Netherlands. Nine medical specialists will make the transatlantic voyage to give the refresher courses, which cover eight specialties and have been prepared in both the English and the Dutch languages. The Netherlands government will finance the traveling and other personal expenses of the American professors, who will, however, receive no extra or special compensation for their work in the Netherlands. Because of German looting of Dutch medical schools and hospital equipment, the physicians will take with them all material and instruments needed for laboratory and demonstration purposes.

The idea of these refresher courses originated with Dr Herman deJong of Duke University, formerly of the University of Amsterdam, where he specialized in neurology and psychiatry for the Dutch branch of the Rockefeller Foundation. He discussed his plan with Dr Gerrit Bolkestein, Netherlands minister of education, when the latter toured a number of American universities last May, who approved the plan. In addition to Dr deJong, the expedition will include Dr Frederick M. Hanes, clinical medicine, Dr Keith S. Grimson, surgery, Dr David T. Smith, bacteriology and infectious diseases, Dr Edwin C. Hamblen, obstetrics gynecology and hormones, all of whom are from Duke University School of Medicine, Durham, N. C., Dr Wilburt Davison, dean of Duke University School of Medicine, pediatrics, Dr Isidore Snapper, director of the Department of Graduate Medical Education at Mount Sinai Hospital, New York, will also cover clinical medicine. Dr Snapper left the University of Amsterdam in 1937 to go to the Rockefeller Foundation at Peiping, China. He was captured by the Japanese and later sent to America as an exchange prisoner. Other members are Dr C. J. Van Slyke of the Rockefeller Institute, New York, biochemistry, and Dr Eli K. Marshall Jr., Johns Hopkins University, physiology and pharmacology.

According to *Le journal* of May 18, diets for sick people are granted only on production of a medical certificate drawn up on a printed and numbered form delivered monthly for three periods of ten days. The control is severer as regards No. 1 and feeding up diets, which are granted with the greatest parsimony for only five seven and sometimes ten days. Each doctor now receives, through the medical council five printed forms per thousand inhabitants of his district. Thus a skin or eye specialist is entitled to prescribe the same number of diets as a child specialist whose patients need most feeding up. The results of this measure were that in one Lyons arrondissement the number of persons entitled to diet No. 2 fell within a month in the proportion of four to one. Under diet No. 2 the meat and wine rations can be replaced by 0.25 liter of milk daily and 750 Gm of spaghetti 750 Gm of sugar and 6 Kg of potatoes monthly. Those entitled to this diet are generally old persons unable to eat the present meat and for whom doctors' fees are often an extravagant expenditure which they cannot afford to repeat monthly preferring to give up the diet. It is incomprehensible that certain patients cannot be treated because the doctor has used his five diet vouchers. Thus the district doctor is often compelled to deprive of their diet those who need it most.

According to *Der Bund* Berne of June 28 it is not known whether the decision of the French medical council whereby no doctor may leave the Paris region without the permission of the council is connected with the communiqué extending the compulsory labor service to doctors, or whether it is merely intended to prevent the regrettable situation which arose in the summer

of 1940 owing to the mass flight of doctors. The council's circular adds information about the difficulties facing the medical profession owing to the restrictions on electricity and gas in the Paris district. X-rays can no longer be used either in hospitals or in private consulting rooms. It is almost impossible to sterilize instruments. The modest supplementary distribution of methylated spirit is inadequate.

DNB of May 15, 1944 (Germany) states that the penal regulations on professional abortion have been tightened up by the order for the protection of marriage, family and motherhood. The penal code now provides for the death sentence in cases in which the vitality of the German people has been impaired by continuous abortion. The special court at Frankfurt on the Oder applied this new provision of the law against Heinrich Schulz of Balkow, Kreis West-Sternberg. Schulz had carried out altogether nine abortions and thus committed a particularly grave sin against the future of his people. He was sentenced to death as a dangerous habitual criminal for professional abortion. The sentence has already been carried out.

The DAF announced that five hundred theater performances and lectures were held for Dutch workers in Germany in April according to the German European Service of May 24, 1944. Medical care for foreign workers in Germany has been further improved. Three hospitals in central Germany have been opened exclusively for their use equipped with the most modern installations, special departments for infectious diseases and clinics for women. Doctors and nursing staff are recruited from Germany and many European countries.

SNP (Norway) reports, according to *Aftontidningen* Stockholm, of June 21 that a number of young Oslo girls were recently conscripted for national labor service in German military hospitals in Oslo and the surrounding districts. The Norwegian home front boycott of conscription included such conscriptions, and if the German authorities continue to summon Norwegian girls then the girls may find themselves in the same situation as men conscripts.

The Chambery medical board considering the prohibition of night automobile traffic, the substantial fuel reduction and telephone restrictions earnestly asks patients to abstain from calling doctors at night since it is virtually impossible to travel after 10 p. m. according to *Le Nouvelliste de Lyon* of June 17. The most distant patients can be visited only in daylight by taxi.

Transocean (for the Far East) of May 12, 1944 (Germany) states that the first bomb proof dispensary has been opened in a Ruhr town. Built into a steep slope it is 13 meters long but only 3 meters wide and 28 meters high. Ten cupboards contain 5,000 types of drugs and medical supplies sufficient to meet four weeks' requirements.

Radio Paris of May 22 reports from Brussels that during the night of May 19 a large quantity of anesthetic drugs was stolen by unknown persons from a depot of pharmaceutical products including a large quantity of crude morphine destined for hospitals and clinics. The stolen goods are valued at about 2 million francs.

The minister of the interior according to *Slo-o* of March 3, 1944 has signed an order published in the *Official Gazette* of March 24 stating that the fees paid in private hospitals and sanatoriums in the country are increased by 100 per cent over what they were in 1936.

The *Mullhauser Tagblatt* for April 20 (Alsace) states that by a decree dated March 4 (published in the *Verordnungsblatt des Chefs der Zivilverwaltung im Elsass* of April 4) the law introduced in the reich on July 14, 1933 for the prevention of hereditary disease in the rising generation is now valid in Alsace.

# ORGANIZATION SECTION

## WASHINGTON LETTER

(From a Special Correspondent)

Sept 4, 1944

### Hearings on Blindness and Infantile Paralysis

Sixty per cent of the cases of blindness in this country are unnecessary and could be prevented, Dr Harry S Gradle, professor of ophthalmology at the University of Illinois College of Medicine and vice president of the Illinois Society for the Prevention of Blindness, testified here this past week before the Kelley Labor Committee Subcommittee to investigate aid to the physically handicapped. He spoke as a representative of the American Medical Association. Dr Gradle deplored the fact that there are not sufficient agencies where a newly blinded person can become accustomed to his affliction and get training in new uses of his senses and capabilities. He suggested centers such as those now operated by the Army and Navy for reconditioning men blinded in war. Prevention of blindness, he contended, "is of even greater importance than care for the blind."

Dr Gradle recommended that state public assistance commissions be assisted in the physical rehabilitation of the blind. "There are enlisted," he said, "6,000 ophthalmologists in the United States, of whom a little over 2,000 have been certified as being ophthalmologists and 2,000 who are doing capable work without certification. The other 2,000 comprising the 6,000 are mostly general practitioners who are doing a small amount of ophthalmology on the side but who are not capable of doing necessary rehabilitation work." He explained later that the number we have is sufficient for the physical rehabilitation of the blind. The 6,000 in existence are not enough to cover the needs of the general population of the United States, apart from rehabilitation."

Dr Gradle was followed as a witness by Dr Allan C Wood, director of the Department of Ophthalmology in Johns Hopkins University School of Medicine and director of the Wilmer Ophthalmological Institute, who expressed the opinion that the Sanders 1934 estimate of 150 blind persons per hundred thousand or from 215,000 to 240,000 blind in the United States, was most accurate of all estimates and "a fair guess." He quoted National Health Survey figures on the incidence of blindness in the 100,000 of population as follows: "You will find that 11 per hundred thousand of the population are blind under 15 and that figure steadily goes up, so that for the ages between 45 and 54 you find that 90 per hundred thousand are blind and when you get to 75 to 84 you find that approximately 1,000 per hundred thousand are blind and when you get to 85 plus, prac-

tically 3,000 per hundred thousand of the population are blind. The answer to that is that the people are moving in their advancing age to the time when the various diseases take their toll of blindness."

These two witnesses were among a score or more heard by Representative Augustine B Kelley (Democrat, Pennsylvania) in the study on blindness. During the present week it is proposed to hear experts testify regarding the prevalence of infantile paralysis to determine if adequate facilities are available for its treatment. The purpose of the hearings, according to Representative Kelley, is to "learn the causes of the handicaps and the means to cure or alleviate them, to provide the afflicted with educational opportunities, training and restoration to gainful occupations, and to assist those who cannot be employed."

### Postwar Hospitalization Under Study

Favorable indications for the bill providing federal aid to build a cooperative hospital center in Washington, to be operated on a self-sustaining and nonprofit basis, have stirred interest here generally in United States postwar hospitalization needs. Senator Millard Tydings (Democrat, Maryland), one of the chief sponsors of the bill, has expressed the conviction that Congress would approve the plan, in which participating hospitals here would pool their resources to carry the full load of maintenance costs. He emphasized that Congress was not expected to contribute anything toward the annual expenses.

The pending plan calls for construction of a 1,500 bed hospital center in which any of Washington's private hospitals could join as participating or associate members. The cost is estimated at between \$6,000,000 and \$7,500,000 exclusive of land. To date only Garfield and Emergency hospitals have decided to join the center as full participating members.

Health authorities here have shown interest in what has been done by the Cleveland Hospital Service Association to help people meet the cost of illness without leaning on the government for funds or control. Eight hundred thousand people in the greater Cleveland area are entitled to benefits, with 55 per cent of all the residents of the community enrolled in the service and currently adding 100,000 additional subscribers annually. Each subscriber to the association makes a small monthly payment which insures him or a member of his family of proper hospital care when necessary. In its ten years of existence the association has provided such care for 300,000 patients. The Cleveland Hospital Service Association, one of the pioneer organizations of its kind, provides hospitalization only and does not include services of the physician or surgeon. It is one of seventy-eight such associations operating in the United States, details of operations differing in various communities.

## MEDICAL ECONOMIC ABSTRACTS

### CALIFORNIA PHYSICIANS' SERVICE

A REPORT BY THE BUREAU OF MEDICAL ECONOMICS

The California Physicians Service has just issued its fifth annual report so comprehensive as to various phases of the operation of the plan as to form an excellent guide to other state and local medical associations considering the establishment of a prepayment plan. As the first statewide plan California has been forced to experiment in many directions. It has issued several types of contracts. It still retains a number of these as suited to special conditions. Its largest enrolment is now under the surgical service contract, in which membership dues per month are \$0.60 for male employees, \$0.90 for female employees, \$1.50 for an additional dependent and \$2.25 for two dependents. Participation is limited to those with incomes under \$3,000 a year, to whom all contracted services are granted.

Employed beneficiary members under the surgical contract may obtain a "two visit deductible medical rider." With a few

exceptions this covers a complete medical service for the payment of 75 cents a month in addition to the regular surgical contract rate. To meet the demand for those with an income of more than \$3,000 an indemnity surgical reimbursement contract is issued under which patients make their own arrangements with physicians and receive reimbursement under the regular schedule of the surgical contract.

In northern California territories California Physicians' Service has found it necessary to cover hospitalization as well as surgical services. The hospital rider rates per month are 75 cents for the employed man, 80 cents for the employed woman and \$1.80 and \$2.40 for one and two or more dependents respectively.

Service is also furnished for farm families with an income of less than \$2,000 a year. This program conducted in cooperation with the Farm Security Administration provides for medical surgical and hospital care to all members of the family alike. A fee of \$1.50 must be paid by the patient for the first home visit and there are some other minor limitations. The rates annually are \$30 for single persons, \$48 for a family of two and \$60 for a family of three or more.

As a special war emergency undertaking the California Physicians Service entered into contracts to provide medical, surgical and hospital care to residents of projects under the jurisdiction of local housing authorities. Monthly rates were \$2.50 for single persons, \$4 for a family of two and \$5 for larger families.

The experience with the Rural and Housing Project contracts has gained a necessary knowledge of methods of cooperation with government bodies as well as of the variations in service required under these different conditions. At present California Physicians Service is paying 90 per cent of what might be called the normal unit value. At one time in 1940 the amount paid per unit was \$1.10 and in February 1944 it was \$2.25. In the meantime the "unit state fund" has been increased to \$70,000. It is hoped that this backlog will avoid such violent fluctuations

in the future. While fairly good relations have been established with such diverse bodies as labor organizations, membership served hospitals and government agencies, the relations with the medical profession, etc., still remains "the most urgent problem of C P S."

Without an active and positive support from its professional members, C P S cannot grow, and if it cannot grow it will never reach its true value to the medical profession. C P S is an agency composed of its professional members. It must, regardless of the personal desires of individuals, function as the bulk of its members wish. It cannot perform its purposes in any other manner.

Many of the problems of acquisition are directly related to the lack of professional member support and the lack of labor and employer support.

## DISCUSSIONS ON POSTWAR SECURITY

### National Health Plan Advocated by Dr. Parran

The United Press reports that a postwar national health program, supported by insurance and taxation, was proposed by Dr. Thomas Parran, Surgeon General of the U. S. Public Health Service, in a Labor Day address at the University of California medical center, San Francisco. He suggested that the program should not be "entirely socialized or an entirely private undertaking but a combination of both."

### Health Plan Offered to Workers in East

According to the United Press, incorporation papers for a health insurance plan covering all persons living or working in New York and earning not more than \$5,000 annually have been filed with the state board of social welfare and the superintendent of insurance. The plan, providing medical and surgical care, is expected to be ready for operation by January 1, with most of the city's 190,000 employees and many union members enrolled. Mayor F. H. LaGuardia announced. Incorporators include Henry J. Kaiser, West Coast shipbuilder; former Governor Alfred E. Smith, and Beardsley Ruml, chairman of the board of the Federal Reserve Bank; Gerard Swope, chairman of the board of the General Electric Company; Sidney

Hillman, president of the Amalgamated Clothing Workers Union; Wendell Willkie and the borough presidents.

### Eric Johnston Speaks

According to the *Chicago Tribune*, high praise for America's private security system of insurance as compared with any "incentive stifling bureaucracy" contemplated in a postwar super-federal social security system was given by Eric Johnston, president of the Chamber of Commerce of the United States, in an article which will appear in the forthcoming issue of the *Casualty and Surety Journal*. "The private security system of insurance is as American as apple pie," Johnston wrote "for it was conceived and developed in the adventurous American spirit of individual initiative and enterprise. No sprawling incentive stifling bureaucracy is this dynamic system but a nationwide industry, composed of 524,000 self-reliant employees and producers earning their own way in the world keeping in step with the pulsating tempo of progress." Johnston said that, through private enterprise, a supersocial security system is already here and questioned "the need of elaborate blueprints for a superfederal social security system."

## MEDICAL LEGISLATION

### MEDICAL BILLS IN CONGRESS

**Changes in Status**—The Kelley subcommittee of the House Committee on Labor has scheduled hearings for September 12, 13 and 14 at which time testimony will be received relating to the aid given to the hard of hearing and the deaf. H. R. 1506 has passed the House and Senate, and Senate amendments have been agreed to by the House, proposing to amend further the Pay Readjustment Act of 1942. This bill, among other things, will permit the counting of services in the Medical Reserve Corps for pay purposes. H. R. 5257 has been reported to the House, a bill to provide for health programs for government employees, with an amendment exempting the Tennessee Valley Authority from the scope of the bill. Health services now provided by any governmental agency will continue until June 30, 1945 at which time the Civil Service Commission in consultation with the United States Public Health Service will supervise such health activities.

**Bills Introduced**—S. J. Res. 147, introduced by Senator Langer, North Dakota, would authorize an appropriation of \$10,000,000 for the investigation and study of the origin, causes and means of control of infantile paralysis. This resolution proposes to create an Infantile Paralysis Control Board to be composed of the Surgeon General of the Public Health Service as chairman and one outstanding member of the medical profession in each state and in the District of Columbia to be appointed by the Surgeon General. The Surgeon General will also be authorized to "appoint Sister Kenny, the famed Australian nurse, as a member of the board." H. J. Res. 305 introduced by Representative Priest, Tennessee, would authorize the Surgeon General of the United States Public Health Service to dispose of certain reserves of liquid, frozen or dry blood plasma or serum albumin to federal, state or local public health authori-

ties or to federal or other nonprofit hospitals. This plasma or albumin is being held in reserve for casualties resulting from enemy action and disposition is to be made of it when the Surgeon General determines that it is no longer needed for the purpose for which it is held in reserve. H. R. 5249, introduced by Representative Rankin, Mississippi, contemplates an amendment to title II of the G. I. Bill of Rights, relating to the education and training of returning veterans, to provide that if any publicly supported institution or private institution exempt from tax under section 101(6) of the Internal Revenue Code has no established tuition fee, or if the established tuition fee is less than the actual cost to such institution of furnishing the education and training, the Administrator of Veterans Affairs will be authorized to provide for the payment to such institution of the actual cost of furnishing education or training to a veteran but not to exceed \$500 for an ordinary school year.

### DISTRICT OF COLUMBIA

**Bills Introduced**—S. 2074 introduced by Senator Tydings, Maryland, for himself and Senator Bilbo, Mississippi, and H. R. 5183, introduced by Representative Harless of Arizona, propose to provide for the establishment of a modern, adequate and efficient hospital center in the District of Columbia. A subcommittee of the Senate Committee on the District of Columbia has conducted hearings on S. 2074. It is understood that the Medical Society of the District of Columbia has approved the bill in principle on condition that all nonprofit voluntary hospitals affording service to indigents and near indigents in the District be given equal opportunity to participate in the program and on condition that they be assured equal representation in the corporate body created by the bill, namely the Washington Hospital Corporation.

## Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH)

### CALIFORNIA

**Symposium on Penicillin**—The San Francisco County Medical Society devoted its August 8 meeting to a symposium on penicillin at which the following participated

Dr Lowell A Rantz The Background of Penicillin Therapy  
Dr Arthur L Bloomfield Special Problems in the Clinical Uses of Penicillin  
Drs Horace J. McCorkle and Henry L. Silvan, Uses of Penicillin in Surgical Infections  
Comdr Clark M. Johnson (MC) Uses of Penicillin in Infections of the Genitourinary Tract

**Course on Occupational Dermatoses**—Dr Louis Schwartz medical director of the dermatoses section of the U S Public Health Service will conduct a course on occupational dermatoses at the Los Angeles County Medical Association, Los Angeles, September 18-23, under the auspices of the University of Southern California School of Medicine and the College of Medical Evangelists, the Los Angeles Chamber of Commerce and the Los Angeles County Medical Association

**Physician Wanted**—The Los Angeles County Civil Service Commission announces that a chief physician (tuberculosis) is wanted to administer the tuberculosis service of the Los Angeles County Hospital or to assist in directing medical care and treatment of patients at Olive View Sanatorium and to act as tuberculosis consultant. Physicians under 55 years of age who have an M D degree and three years' recent experience or training in the specialty of tuberculosis are urged to apply for this position which carries a salary of from \$417 to \$489 a month. Full information and applications may be obtained from the office of the commission Room 102 Hall of Records Los Angeles 12. Applications must be filed on or before September 16.

### DELAWARE

**Committee for Postwar Planning**—The state medical society has appointed a committee of nine to be known as the Committee of Postwar Planning of the Medical Society of Delaware composed of the following members: Drs Richard C Beebe Lewes Joseph B Waples Jr Georgetown John Roscoe Elliott Laurel, representing Sussex County Joseph S McDaniell Dover, William Marshall Jr, Milford, representing Kent County William O LaMotte William Edwin Bird Frederick A Hemsath, secretary, all of Birmingham and Mesrop A Tarumanz, Farnhurst, chairman representing New Castle County. A survey of medical and hospital services of all types will be carried out in sections of the state to aid the committee in studying adequate medical services of various specialties for every community of the state, various hospital facilities medical service to industry, large and small adequate medical service of all types for public schools the need for closer relationship between all existing state municipal and private postwar planning organization and to enlist the full cooperation of all physicians and hospitals for rehabilitation of veterans. The society, which believes that as a scientific organization it cannot achieve the desirable level of success unless it becomes an integral part of the economic and social structure of the country, will cooperate with the state legislature state administration various boards of education various industrial and agricultural organizations chambers of commerce bar association state and municipal and private, social civic and religious agencies, all labor unions promulgating the definite policy that sound health is the business of every citizen and the prerogative of progressive people and that this can be achieved through the help and cooperation of organized medicine.

### ILLINOIS

**Stuart Wood Memorial Fund**—Plans are under way to establish a memorial fund in honor of the late Dr Wilbur Stuart Wood Decatur. The memorial will take the form of a fund to be used to purchase orthopedic equipment in the Decatur and Macon County Hospital, where Dr Wood had been active for many years. Dr Wood died August 7.

### Chicago

**Rongetti Sentenced to County Jail**—Amante Rongetti, whose license to practice medicine was revoked in 1932 when he was sent to the state prison at Joliet following his conviction of manslaughter, was sentenced August 30 to three months in the county jail for practicing medicine without a license and fined \$500. Newspapers reported that the sentence was imposed by Judge Russell W. Keeney of Du Page County sitting in county court. Rongetti is also reported to have served a term in the federal penitentiary at Leavenworth for violating the federal narcotic act. At the trial, June 14, Rongetti was found guilty by a jury after an inspector for the state department of registration and education testified that he had prescribed distilled water for a "supposed kidney ailment." Ray E. Lane, Rongetti's attorney, said he would appeal.

**Assembly on Nervous and Mental Diseases and War**—The Institute of Medicine of Chicago will hold its postgraduate assembly, November 1-2, at the Palmer House. The program will cover "Nervous and Mental Diseases and War" and will be devoted to phases of neurology, psychiatry and neurosurgery that are of particular importance to clinicians, specialists and lay workers. There will be a registration fee of \$5 for all except those in uniform. Among the speakers will be

Dr Samuel W. Hamilton Washington D C, Psychiatry Before World War II  
Dr Winfred Overholser Washington Civilian Mental Health in War Time  
Dr C. Charles Burlingame Hartford Conn Present and Future Effects of War Neuroses  
Dr Bernard J. Alpers Philadelphia War and Nervous Disorders  
Dr Cobb Pfeiffer Nashville Tenn Civilian Advances and Investigations in Neurosurgery During the War  
Col William C. Menninger, M C The Mentally Unfit: Detection, Elimination and Disposal  
Lieut Col Roy R. Grinker Psychiatric Disorders in Combat Crews Overseas and in Returnees  
Dr Edwin G. Zabriskie New York Nervous Disorders in the Armed Forces  
Capt Winchell M. Craig M C Injuries to the Central Nervous System  
Dr Howard C. Naffziger San Francisco Injuries to the Peripheral Nervous System  
Luther F. Woodward Ph D New York Social Readjustment of Returning Veterans  
Lieut Comdr Howard P. Rome (MC) The War and Its Psychiatric Problems  
Dr David J. Margolis Chicago Compensation Laws and the Veterans Administration  
Dr Sidney I. Schwab St Louis Residuals of Neuropsychiatric Disorders  
Dr Ernest Sachs St Louis Residuals of Neurosurgical Disorders

The program will include a series of panel discussions on war neuroses or battle fatigue? war injuries to the nervous system, does war modify the behavior of the civilian population? and who are the mentally unfit for military service? The first evening session will include a neuropsychiatric "information please" program with Dr Foster Kennedy, New York, as moderator. On the second evening Dr Edward A. Strecker, Philadelphia, will deliver the seventeenth annual Pasteur lecture of the institute on "War Psychiatry and Its Influence on Post-war Psychiatry and Civilization."

### KANSAS

**Jack Austin Dies**—Capt Jack F. Austin, executive secretary of the Sedgwick County Medical Society from 1937 until 1942, when he went into military service, was killed recently while on maneuvers in South Carolina, according to the *Medical Bulletin* of the Sedgwick County Medical Society.

**William Abramson Named Supervising Ophthalmologist**—Dr William F. Abramson, Topeka, has been appointed state supervising ophthalmologist for the division of service for the blind of the Kansas State Board of Social Welfare, succeeding Dr William W. Reed, Topeka. The appointment is effective for an eighteen month period.

### MASSACHUSETTS

**Advisory Committee for Endorsement of Heavy Cream**—In Massachusetts authority has been given to the district supervisor of the Office of Distribution to make a reasonable interpretation of the terms of amendment 2 to War Food Order number 13 emanating from the Office of Distribution of the War Food Administration, providing that medical prescriptions for heavy cream must be approved by the public health officer or the secretary of the county medical society of the area where a patient or hospital is situated. The *New England Journal of Medicine* reports that the endorsing function has, by this interpretation, been vested in an advisory committee composed of John H. Sullivan, district



supervisor, Office of Distribution War Food Administration, chairman Dr Vlado A Getting, Boston, state commissioner of health, Dr G Lynde Gately, Boston, city health commissioner, Dr H Qumby Gallupe, Boston, secretary, state board of registration in medicine Dr Nathaniel W Faxon, medical director Massachusetts General Hospital, Boston, and Drs Francis Gorham Brigham Brookline, Joseph Garland Boston Loring Grimes, Swampscott, and Franklin W White, Boston representing the Massachusetts Medical Society

### MICHIGAN

**Seminar on Speech Rehabilitation**—The speech clinic of the University of Michigan, Ann Arbor, announces an intensive training course for veterans with speech and hearing disabilities. The course will begin November 6 and continue for six weeks. This program will be similar to one mentioned in THE JOURNAL, June 17, page 504.

**Personal**—Melville Sahyun, Ph D, has been named divisional vice president of Frederick Stearns and Company, Detroit, Division of Sterling Drug, Inc. Dr Sahyun has been associated with Stearns since 1934, first as director of biochemical research and since 1943 as director of research. He developed the first amino acid preparation for parenteral administration in man and his book "An Outline of the Amino Acids and Proteins" will soon be published.

**Fredrick Yonkman Joins Ciba Company**—Dr Fredrick F Yonkman has resigned as professor of pharmacology and therapeutics and chairman of the department at Wayne University College of Medicine, Detroit, to accept a position as chief pharmacologist in the research division of Ciba Pharmaceuticals, Inc, of Summit N J. Other changes in the pharmacology staff include the resignation of Dr Harold F Chase, assistant professor, to accept a similar position in the Western Reserve University School of Medicine Cleveland, and Bradford N Craver, Ph D, as research associate to become instructor and director of pharmacologic research conducted under governmental contract at the University of Rochester, N Y.

### NEW JERSEY

**Personal**—Dr Jacob Cohen, formerly acting clinical director of Central Islip State Hospital, Central Islip N Y, has been appointed assistant director of the Newark State School Newark. Since the death of Dr August E Witzel, May 15, Dr Hiram G Hubbell, assistant director (superintendent), has been acting director.

**Foremen Should Not Dispense Acetylsalicylic Acid**—Newspapers reported on August 12 that Dr J Lynn Mahaffey, Trenton, state director of health, made a recommendation to the Ford Motor Company at Edgewater that it discontinue a recently established practice of allowing foremen to dispense aspirin (acetylsalicylic acid) to workers complaining of minor ailments. It was stated that the health director also recommended that the company revert to its old procedure of allowing workers complaining of minor ailments to visit, on the company's time, first aid stations in the plant staffed with medical personnel.

**Medical School to Open October 1**—The Essex College of Medicine, said to be the first institution of its kind in New Jersey, plans to open about October 1 in a three story building at Broad Street and Third Avenue, Newark, according to the New York Times. The facilities include an auditorium, twenty-five classrooms and laboratories. A prospective faculty of fifty members is available it was stated. The state board of education recently ruled that the school might not issue the degree of doctor of medicine until it has been in existence two years. In a statement to the press, Samuel R Herbster registrar is reported to have said "The board encouraged us to open on that basis. It's a testing period, a trial period that they wanted us to go through, and we'll open on that understanding." The registrar also stated that more than 200 applications mainly from New Jersey residents, had been received, and that the institution would open as soon as 100 had been accepted. For the first four years only 100 students would be accepted each year, it was stated.

### NEW YORK

**Personal**—A surprise party was held for Dr Christopher G Parnall recently in celebration of his twentieth anniversary as medical director of the Rochester General Hospital, Rochester.

**Physician Observes Ninety-Fifth Birthday**—Dr Gerrit F Blauvelt, Nvack former president of the Rockland County Medical Society, observed his ninety-fifth birthday August 1. Dr Blauvelt is the sole surviving incorporator of the Nvack Hospital.

**Free X-Ray Service to Public**—The Ontario County Committee on Tuberculosis and Public Health plans to make available free roentgenograms of the chest to every one, newspapers reported. The plan is an expansion of the original one of limiting the service to industrial employees only. Tests will be made by a visiting mobile x-ray unit that will tour the county and will be available to any one wishing to do so.

**Physicians Honored**—Dr Festus M Chaffee was given a dinner in the Middlesex Town Hall August 1, for his forty years of service to the community. The Wayne County Medical Society on August 8 gave a dinner in honor of four members who have completed fifty years in the practice of medicine. The physicians are Drs George D Winchell Rose Cyrus P Jennings Macedon, Samuel L Houston, Wolcott and Ralph Sheldon Lyons.

**Outbreak of Food Poisoning**—Ninety-two members of the staff at Strong Memorial Hospital Rochester became ill August 17. Fifty-two were hospitalized and 40 others were unable to report for duty. An investigation disclosed that the outbreak was attributed to bacteria infected egg salad sandwiches which had been served to members of the staff. None had been served to the patients of the hospital. Among the persons ill were medical students physicians and dietitians. The 40 less severe cases were among student nurses who were treated at their homes, the Rochester Times-Union reported.

### New York City

**Louis Julianelle Dies**—Louis A Julianelle Ph D, chief of the division of infectious diseases Public Health Research Institute, died in Memorial Hospital for the Treatment of Cancer and Allied Diseases August 12, aged 49. Dr Julianelle received his Ph D at the University of Pennsylvania in 1922 subsequently serving there as instructor in bacteriology. After a number of years of service at the Hospital of the Rockefeller Institute Dr Julianelle joined the staff of Washington University School of Medicine, St Louis, serving there from 1930 to 1942 when he went to New York.

**The Lewis Cass Ledyard Fellowship**—Applications are now being accepted for the Lewis Cass Ledyard Jr Fellowship by the Society of the New York Hospital. Three thousand dollars will be available as a stipend to an investigator in the fields of medicine and surgery or in any closely related field and about \$1,000 for supplies or expenses of the research. Preference will be given to younger applicants who are graduates in medicine and who have demonstrated fitness to carry on original research of high order. Applications should be received by the Committee of the Lewis Cass Ledyard Jr Fellowship not later than December 15. It is expected that the award will be made by March 15 1945. Additional information may be obtained from Dr Eugene F Du Bois chairman of the committee Society of the New York Hospital 525 East 68th Street. The fellowship was established in 1939 by a gift from Mrs Ruth E Ledyard in memory of her late husband Lewis Cass Ledyard Jr, a governor of the New York Hospital.

**Course in Industrial Medicine**—The Long Island College of Medicine, Brooklyn, will conduct its third postgraduate course in industrial medicine October 16 to November 3 under the auspices of the department of preventive medicine and community health. The course intends to provide physicians engaged in full time or part time industrial practice as well as those who wish to enter this field an opportunity to orientate themselves more fully to modern procedures in the rapidly developing specialty of industrial medicine. This year the course will place particular emphasis on postwar conditions and problems associated with the return of workers from military service. Although designed for graduate physicians, the course will be open to industrial executives personnel workers, industrial nurses hygienists, engineers and others interested in industrial health. The course will include afternoon and evening lectures and seminars at the college supplemented by morning clinics and demonstrations arranged in cooperating hospitals and industrial medical departments. Sections of the course will be devoted to medical administration in industry industrial aspects of internal medicine, industrial surgery occupational diseases and personnel relations in industry with emphasis on the medical aspects of personnel problems. Additional information may be obtained from Dr Thomas D Dublin 248 Baltic Street, Brooklyn 2.



## Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES NEW HOSPITALS EDUCATION AND PUBLIC HEALTH)

### CALIFORNIA

**Symposium on Penicillin**—The San Francisco County Medical Society devoted its August 8 meeting to a symposium on penicillin at which the following participated

Dr. Lowell A. Rantz: The Background of Penicillin Therapy  
Dr. Arthur L. Bloomfield: Special Problems in the Clinical Uses of Penicillin  
Drs. Horace I. McCorkle and Henry L. Silvan: Uses of Penicillin in Surgical Infection  
Comdr. Clark M. Johnson (MC): Uses of Penicillin in Infections of the Genitourinary Tract

**Course on Occupational Dermatoses**—Dr. Louis Schwartz, medical director of the dermatoses section of the U. S. Public Health Service, will conduct a course on occupational dermatoses at the Los Angeles County Medical Association, Los Angeles, September 18-23, under the auspices of the University of Southern California School of Medicine and the College of Medical Evangelists, the Los Angeles Chamber of Commerce and the Los Angeles County Medical Association.

**Physician Wanted**—The Los Angeles County Civil Service Commission announces that a chief physician (tuberculosis) is wanted to administer the tuberculosis service of the Los Angeles County Hospital or to assist in directing medical care and treatment of patients at Olive View Sanatorium and to act as tuberculosis consultant. Physicians under 55 years of age who have an M.D. degree and three years' recent experience or training in the specialty of tuberculosis are urged to apply for this position which carries a salary of from \$417 to \$489 a month. Full information and applications may be obtained from the office of the commission, Room 102 Hall of Records, Los Angeles 12. Applications must be filed on or before September 16.

### DELAWARE

**Committee for Postwar Planning**—The state medical society has appointed a committee of nine to be known as the Committee of Postwar Planning of the Medical Society of Delaware, composed of the following members: Drs. Richard C. Beebe, Lewis Joseph B. Waples, Jr., Georgetown; John Roscoe Elliott, Laurel, representing Sussex County; Joseph S. McDaniel, Dover; William Marshall, Jr., Milford, representing Kent County; William O. LaMotte, William Edwin Bird, Frederick A. Hemsath, secretary, all of Birmingham; and Mesrop A. Tarumian, Farnhurst, chairman, representing New Castle County. A survey of medical and hospital services of all types will be carried out in sections of the state to aid the committee in studying adequate medical services of various specialties for every community of the state, various hospital facilities, medical service to industry, large and small, adequate medical service of all types for public schools, the need for closer relationship between all existing state, municipal and private postwar planning organization and to enlist the full cooperation of all physicians and hospitals for rehabilitation of veterans. The society, which believes that as a scientific organization it cannot achieve the desirable level of success unless it becomes an integral part of the economic and social structure of the country, will cooperate with the state legislature, state administration, various boards of education, various industrial and agricultural organizations, chambers of commerce, bar association, state and municipal and private social, civic and religious agencies, all labor unions, promulgating the definite policy that sound health is the business of every citizen and the prerogative of progressive people and that this can be achieved through the help and cooperation of organized medicine.

### ILLINOIS

**Stuart Wood Memorial Fund**—Plans are under way to establish a memorial fund in honor of the late Dr. Wilbur Stuart Wood, Decatur. The memorial will take the form of a fund to be used to purchase orthopedic equipment in the Decatur and Macon County Hospital, where Dr. Wood had been active for many years. Dr. Wood died August 7.

### Chicago

**Rongetti Sentenced to County Jail**—Amante Rongetti, whose license to practice medicine was revoked in 1932 when he was sent to the state prison at Joliet following his conviction of manslaughter, was sentenced August 30 to three months in the county jail for practicing medicine without a license and fined \$500. Newspapers reported that the sentence was imposed by Judge Russell W. Keeney of Du Page County sitting in county court. Rongetti is also reported to have served a term in the federal penitentiary at Leavenworth for violating the federal narcotic act. At the trial, June 14, Rongetti was found guilty by a jury after an inspector for the state department of registration and education testified that he had prescribed distilled water for a "supposed kidney ailment." Ray E. Lane, Rongetti's attorney, said he would appeal.

**Assembly on Nervous and Mental Diseases and War**—The Institute of Medicine of Chicago will hold its postgraduate assembly, November 1-2, at the Palmer House. The program will cover "Nervous and Mental Diseases and War" and will be devoted to phases of neurology, psychiatry and neurosurgery that are of particular importance to clinicians, specialists and lay workers. There will be a registration fee of \$5 for all except those in uniform. Among the speakers will be

Dr. Samuel W. Hamilton, Washington, D. C., Psychiatry Before World War II  
Dr. Winfred Overholser, Washington, Civilian Mental Health in War Time  
Dr. C. Charles Burlingame, Hartford, Conn., Present and Future Effects of War Neuroses  
Dr. Bernard J. Alpers, Philadelphia, War and Nervous Disorders  
Dr. Cobb Pilcher, Nashville, Tenn., Civilian Advances and Investigations in Neurosurgery During the War  
Col. William C. Menninger, M. C., The Mentally Unfit: Detection, Elimination and Disposal  
Lieut. Col. Roy R. Grinker, Psychiatric Disorders in Combat Crews Overseas and in Returnees  
Dr. Edwin G. Zabriskie, New York, Nervous Disorders in the Armed Forces  
Capt. Winchell M. Craig, M. C., Injuries to the Central Nervous System  
Dr. Howard C. Naffziger, San Francisco, Injuries to the Peripheral Nervous System  
Luther P. Woodward, Ph.D., New York, Social Readjustment of Returning Veterans  
Lieut. Comdr. Howard P. Rome, (MC), The War and Its Psychiatric Problems  
Dr. David J. Margolis, Chicago, Compensation Laws and the Veterans Administration  
Dr. Sidney I. Schwab, St. Louis, Residuals of Neuropsychiatric Disorders  
Dr. Ernest Sach, St. Louis, Residuals of Neurosurgical Disorders

The program will include a series of panel discussions on war neuroses or battle fatigue? war injuries to the nervous system, does war modify the behavior of the civilian population? and who are the mentally unfit for military service? The first evening session will include a neuropsychiatric "information please" program with Dr. Foster Kennedy, New York, as moderator. On the second evening Dr. Edward A. Strecker, Philadelphia, will deliver the seventeenth annual Pasteur lecture of the institute on "War Psychiatry and Its Influence on Postwar Psychiatry and Civilization."

### KANSAS

**Jack Austin Dies**—Capt. Jack F. Austin, executive secretary of the Sedgwick County Medical Society from 1937 until 1942 when he went into military service, was killed recently while on maneuvers in South Carolina, according to the *Medical Bulletin* of the Sedgwick County Medical Society.

**William Abramson Named Supervising Ophthalmologist**—Dr. William F. Abramson, Topeka, has been appointed state supervising ophthalmologist for the division of service for the blind of the Kansas State Board of Social Welfare, succeeding Dr. William W. Reed, Topeka. The appointment is effective for an eighteen-month period.

### MASSACHUSETTS

**Advisory Committee for Endorsement of Heavy Cream**—In Massachusetts authority has been given to the district supervisor of the Office of Distribution to make a reasonable interpretation of the terms of amendment 2 to War Food Order number 13, emanating from the Office of Distribution of the War Food Administration, providing that medical prescriptions for heavy cream must be approved by the public health officer or the secretary of the county medical society of the area where a patient or hospital is situated. The *New England Journal of Medicine* reports that the endorsing function has, by this interpretation, been vested in an advisory committee composed of John H. Sullivan, district

supervisor, Office of Distribution War Food Administration, chairman Dr Vlado A Getting, Boston, state commissioner of health Dr G Lynde Gately Boston city health commissioner, Dr H Qumby Gallupe, Boston secretary, state board of registration in medicine Dr Nathaniel W Faxon, medical director Massachusetts General Hospital Boston and Drs Francis Gorham Brigham Brookline Joseph Garland, Boston Loring Grimes, Swampscott, and Franklin W White, Boston representing the Massachusetts Medical Society

### MICHIGAN

**Seminar on Speech Rehabilitation**—The speech clinic of the University of Michigan Ann Arbor, announces an intensive training course for veterans with speech and hearing disabilities. The course will begin November 6 and continue for six weeks. This program will be similar to one mentioned in THE JOURNAL, June 17, page 504

**Personal**—Melville Sahyun Ph D, has been named divisional vice president of Frederick Stearns and Company, Detroit, Division of Sterling Drug, Inc. Dr Sahyun has been associated with Stearns since 1934 first as director of biochemical research and since 1943 as director of research. He developed the first amino acid preparation for parenteral administration in man and his book "An Outline of the Amino Acids and Proteins" will soon be published

**Fredrick Yonkman Joins Ciba Company**—Dr Fredrick F Yonkman has resigned as professor of pharmacology and therapeutics and chairman of the department at Wayne University College of Medicine, Detroit, to accept a position as chief pharmacologist in the research division of Ciba Pharmaceuticals Inc of Summit N J. Other changes in the pharmacology staff include the resignation of Dr Harold F Chase, assistant professor to accept a similar position in the Western Reserve University School of Medicine Cleveland, and Bradford N Craver, Ph D, as research associate to become instructor and director of pharmacologic research conducted under governmental contract at the University of Rochester, N Y

### NEW JERSEY

**Personal**—Dr Jacob Cohen, formerly acting clinical director of Central Islip State Hospital Central Islip N Y, has been appointed assistant director of the Newark State School Newark. Since the death of Dr August E Witzel, May 15 Dr Hiram G Hubbell assistant director (superintendent), has been acting director

**Foremen Should Not Dispense Acetylsalicylic Acid**—Newspapers reported on August 12 that Dr J Lynn Mahaffey, Trenton, state director of health made a recommendation to the Ford Motor Company at Edgewater that it discontinue a recently established practice of allowing foremen to dispense aspirin (acetylsalicylic acid) to workers complaining of minor ailments. It was stated that the health director also recommended that the company revert to its old procedure of allowing workers complaining of minor ailments to visit on the company's time, first aid stations in the plant staffed with medical personnel

**Medical School to Open October 1**—The Essex College of Medicine said to be the first institution of its kind in New Jersey, plans to open about October 1 in a three story building at Broad Street and Third Avenue Newark, according to the New York Times. The facilities include an auditorium, twenty-five classrooms and laboratories. A prospective faculty of fifty members is available it was stated. The state board of education recently ruled that the school might not issue the degree of doctor of medicine until it has been in existence two years. In a statement to the press, Samuel R Herbster registrar is reported to have said "The board encouraged us to open on that basis. It's a testing period a trial period that they wanted us to go through, and we'll open on that understanding." The registrar also stated that more than 200 applications mainly from New Jersey residents had been received, and that the institution would open as soon as 100 had been accepted. For the first four years only 100 students would be accepted each year, it was stated

### NEW YORK

**Personal**—A surprise party was held for Dr Christopher G Parnall recently in celebration of his twentieth anniversary as medical director of the Rochester General Hospital, Rochester

**Physician Observes Ninety-Fifth Birthday**—Dr Gerrit F Blauvelt Nvack former president of the Rockland County Medical Society, observed his ninety-fifth birthday August 1. Dr Blauvelt is the sole surviving incorporator of the Nvack Hospital

**Free X-Ray Service to Public**—The Ontario County Committee on Tuberculosis and Public Health plans to make available free roentgenograms of the chest to every one newspapers reported. The plan is an expansion of the original one of limiting the service to industrial employees only. Tests will be made by a visiting mobile x-ray unit that will tour the county and will be available to any one wishing to do so

**Physicians Honored**—Dr Festus M Chaffee was given a dinner in the Middlesex Town Hall August 1 for his forty years of service to the community. The Wayne County Medical Society on August 8 gave a dinner in honor of four members who have completed fifty years in the practice of medicine. The physicians are Drs George D Winchell Rose Cyrus P Jennings Macedon Samuel L Houston, Wolcott and Ralph Sheldon Lyons

**Outbreak of Food Poisoning**—Ninety-two members of the staff at Strong Memorial Hospital Rochester became ill August 17. Fifty-two were hospitalized and 40 others were unable to report for duty. An investigation disclosed that the outbreak was attributed to bacteria infected egg salad andwiches which had been served to members of the staff. None had been served to the patients of the hospital. Among the persons ill were medical students physicians and dietitians. The 40 less severe cases were among student nurses who were treated at their homes. The Rochester Times Union reported

### New York City

**Louis Julianelle Dies**—Louis A Julianelle Ph D chief of the division of infectious diseases Public Health Research Institute, died in Memorial Hospital for the Treatment of Cancer and Allied Diseases August 12 aged 49. Dr Julianelle received his Ph D at the University of Pennsylvania in 1922 subsequently serving there as instructor in bacteriology. After a number of years of service at the Hospital of the Rockefeller Institute Dr Julianelle joined the staff of Washington University School of Medicine St Louis serving there from 1930 to 1942 when he went to New York

**The Lewis Cass Ledyard Fellowship**—Applications are now being accepted for the Lewis Cass Ledyard Jr Fellowship by the Society of the New York Hospital. Three thousand dollars will be available as a stipend to an investigator in the fields of medicine and surgery or in any closely related field and about \$1000 for supplies or expenses of the research. Preference will be given to younger applicants who are graduates in medicine and who have demonstrated fitness to carry on original research of high order. Applications should be received by the Committee of the Lewis Cass Ledyard Jr Fellowship not later than December 15. It is expected that the award will be made by March 15 1945. Additional information may be obtained from Dr Eugene F Du Bois, chairman of the committee Society of the New York Hospital 525 East 68th Street. The fellowship was established in 1939 by a gift from Mrs Ruth E Ledyard in memory of her late husband Lewis Cass Ledyard Jr, a governor of the New York Hospital

**Course in Industrial Medicine**—The Long Island College of Medicine, Brooklyn will conduct its third postgraduate course in industrial medicine October 16 to November 3 under the auspices of the department of preventive medicine and community health. The course intends to provide physicians engaged in full time or part time industrial practice as well as those who wish to enter this field an opportunity to orientate themselves more fully to modern procedures in the rapidly developing specialty of industrial medicine. This year the course will place particular emphasis on postwar conditions and problems associated with the return of workers from military service. Although designed for graduate physicians the course will be open to industrial executives personnel workers industrial nurses hygienists, engineers and others interested in industrial health. The course will include afternoon and evening lectures and seminars at the college supplemented by morning clinics and demonstrations arranged in cooperating hospitals and industrial medical departments. Sections of the course will be devoted to medical administration in industry industrial aspects of internal medicine industrial surgery occupational diseases and personal relations in industry, with emphasis on the medical aspects of personnel problems. Additional information may be obtained from Dr Thomas D Dublin 248 Baltic Street, Brooklyn 2

## OKLAHOMA

**Narcotic Violation**—Dr William T Huddleston, Konawa pleaded guilty in the U S District Court at Muskogee, June 28 of a violation of the federal narcotic laws. The physician was sentenced to pay a fine of \$800 and was placed on probation for a period of five years.

**The Leroy Long Memorial Lecture**—Dr George M Curtis, Columbus, Ohio, gave the Leroy Long Memorial Lecture in Oklahoma City, June 21, on 'Surgery of the Spleen'. The lecture is sponsored by the alumni and undergraduates of Phi Beta Pi as a memorial to the late Dr Leroy Long, Oklahoma City, dean of the medical school from 1915 to 1931.

**Annual Conference**—The Oklahoma City Clinical Society will hold its fourteenth annual clinical conference at the Biltmore Hotel Oklahoma City October 23-26. Among the speakers will be

Dr Nathaniel G. Alcock Iowa City urology  
Dr O Theron Clagett Rochester Minn surgery  
Dr Charles C. Dennis Kansas City Mo dermatology  
Dr Lawrence P. Engel Kansas City surgery  
Dr George P. Gubior Chicago ophthalmology  
Dr Tinsley R. Harrison Dallas Texas medicine  
Dr Harold O. Jones Chicago gynecology  
Dr Ralph A. Kinsella St Louis medicine  
Dr Hugh McCulloch, St Louis pediatrics  
Dr Ralph H. Major Kansas City medicine  
Dr William F. Mengert Dallas obstetrics  
Dr Alan R. Moritz Boston pathology  
Dr Henry H. Ritter, New York surgery  
Dr George E. Shambaugh Chicago otolaryngology  
Dr James S. Speed Memphis Tenn orthopedic surgery  
Dr Bruce K. Wiseman Columbus Ohio medicine  
Dr Herman L. Kretschmer Chicago President American Medical Association

## PENNSYLVANIA

**Foreign Nonprofit Organizations and Medical Service**—The Department of Justice of Pennsylvania has ruled that foreign nonprofit corporations cannot enter the state to provide or render medical services to individuals except when specifically authorized by statute according to *Philadelphia Medicine*.

**Schireson Obtains Injunction Against State Board**—A temporary injunction was recently issued by the Dauphin County Court restraining the state board of medical education and licensure from conducting a hearing on a citation against Dr Henry J. Schireson, Philadelphia, to show cause why his license should not be revoked. The hearing was to have been held July 14.

## RHODE ISLAND

**Personal**—Paul J. Spencer of Butler Hospital, Providence, has been appointed secretary of the New England Hospital Assembly to succeed Gerhard Hartman, director of Newton Hospital, Newton, Mass., resigned.

**Butler Hospital Observes Centennial**—Butler Hospital, Providence will hold its second and final observance of its one hundredth anniversary on October 4. The program is intended to interest the lay public, and a special evening session will be held at the Rhode Island School of Design. Governor J. Howard McGrath is expected to attend the meeting. Other speakers will include

Dr Eliu S. Wing Providence president state medical society a message from the medical profession  
Clemens J. France director Rhode Island State Department of Social Welfare an appreciation from social welfare  
Col H. Edmund Bullis A Hundred Years of Service in Mental Health  
Dr Arthur H. Ruggles superintendent Providence A Few Remarks on the Past the Present and the Future of Rhode Island's Oldest Hospital

## GENERAL

**Physician Needed in West Africa**—Dr George W. Harley, who recently returned to this country because of an emergency health condition announces that a physician is urgently needed in Ganta Liberia, West Africa. The emergency was created when Dr Harley founder of the Ganta Mission, was compelled to return to the United States. The area to be served is inhabited by more than a million natives and 25 or 30 white missionaries. Physicians in contingent mission stations have gone one by one to join the United States armed forces. At the dispensary handled by Dr Harley the work is now carried on with the aid of a school teacher Miss Mildred Black who is not even a nurse, and a couple of schoolboys who help in the treatment of about 200 patients with leprosy and assist with intramuscular and intravenous injections each week. These injections are mostly for yaws, trypanosomiasis, schistosomiasis and other skin diseases. The position is available to a doctor of medicine who has graduated at an approved medical school and who has had two years internship or residency. The salary is moderate, with allow-

ances for wife and children, travel expenses will be paid. A communication from Dr Harley indicates that the position offers experience in tropical medicine and includes facilities for research in trypanosomiasis and leprosy.

**Accident Facts**—The National Safety Council has just brought out its 1944 edition of 'Accident Facts,' which presents a comprehensive report on accidents of all types. The booklet states that the 1943 accidental death toll was 97,500, an increase of about 2 per cent over 1942. Accidental injuries in 1943 totaled about 10,100,000, about 350,000 of which resulted in some permanent disability ranging from a finger amputation to permanent crippling. Accident costs totaled approximately \$4,900,000,000, including wage loss, medical expense, overhead costs of insurance, property damage in motor vehicle accidents and fires, and the so-called indirect costs of occupational accidents. Motor vehicle accidents accounted for 23,400, a 17 per cent decrease from 1942. Public nonmotor vehicle accidental deaths of civilians totaled 17,000, a 6 per cent increase over the previous year. There were 32,500 civilian home accident fatalities in 1943, an increase of 7 per cent over 1942. Deaths of civilians in occupational accidents totaled 18,000, or 3 per cent less than in 1942. Accidental deaths of military personnel in the United States accounted for 11,500 deaths, a 69 per cent increase over 1942. The most important single type of accidental death in 1943 was falls, replacing motor vehicle accidents which had for twenty years resulted in the largest annual death total. Falls accounted for 27,400 deaths, giving a rate per hundred thousand of 20.3, an increase of 7 per cent over 1942. The total increase since 1933 amounted to 17 per cent.

**American Hospital Meeting**—The annual convention of the American Hospital Association will be held at the Hotel Statler and Public Auditorium Cleveland October 2-6. The preliminary program includes the following speakers:

Thomas S. Gates I.L.D. President University of Pennsylvania Philadelphia. The Commission on Hospital Care  
Dr Arthur C. Bachmeyer director University of Chicago Clinics Hospital Trends  
Dr Morris Fishbein Editor THE JOURNAL The Physician and Public Health  
Dr Julius I. Weil on New Orleans Tuberculosis the Hospital and Public Health  
Dr John R. McElroy Washington D.C. Program of the Indian Service Hospitals  
Dr Edwin Dwight Barnett Santa Rosa Calif Hospital and Public Health Under One Administration  
Dr Ephraim M. Bluestone New York Basic Principles of Medical Social Work  
Dr Herman C. Werskotten Syracuse N.Y. Medical Care of the Discharged Hospital Patient  
Dr Cassius H. Wit on New York Trends in Outpatient Service  
Dr Harold M. Coon Madison Wis Hospitals and Nurses Personnel Relations  
Dr Clarence H. Bellinger Brooklyn Organization and Management of Shock Therapy Service  
Dr Melbourne C. Westmoreland Council on Medical Education and Hospitals American Medical Association Where is the Record Librarian Coming From?  
Dr Victor Johnson Secretary Council on Medical Education and Hospitals American Medical Association What Should the Returning Doctor Expect from His Hospital?  
Col Richard P. Strong M.C. Our Hospitals Problems in Diagnosing and Treating Tropical Diseases

**International College of Surgeons**—The ninth national assembly of the United States chapter of the International College of Surgeons will be held at the Benjamin Franklin Hotel Philadelphia October 3-5, under the presidency of Dr Thomas A. Shallow who will speak on "Radical Treatment of Carcinoma of the Esophagus." Included among the speakers will be

Dr George M. Piersol Philadelphia Rehabilitation  
Dr Desiderio A. Romay Philadelphia The Chinese Cesarean Section with Analyses of 53 Cases Operated on by the Author  
Dr Leonard Everett Philadelphia Vaginal Hysterectomy Indication and Advantages  
Dr Frances I. Seymour New York The Responsibility of the Surgeon in the Preservation of Human Fertility  
Dr Roy W. Mohler Philadelphia An Analysis of the Indications Results and Dangers of Complete and Supravaginal Hysterectomy  
Dr Clifford B. Lull Philadelphia Caudal Anesthesia  
Dr Karl F. Schlepper Milwaukee Pentothal Sodium Anesthesia in Major Surgery and Its Dangers  
Dr Charles M. Griffith Washington D.C. The Rehabilitation of Ex-Members of the Armed Forces by the Veterans Administration  
Capt Howard H. Montgomery (MC) Rehabilitation in the Navy  
Major General George I. Lull M.C. (subject not announced)  
Vice Admiral Ross T. McIntire Surgeon General of the Navy (subject not announced)  
Dr Thomas B. Noble Jr. Indianapolis The Surgical Control of Obstructive Adhesions of the Small Bowel  
Dr John E. Cannaday Charleston W. Va. The Cutis (Dermis) Graft Transplant  
Dr Robert H. Ivy Philadelphia Principles of Skin Graft  
Dr Lyman Weeks Crossman New York Refrigeration for the Preservation of Traumatized Tissue  
Dr John Royal Moore Philadelphia Massive Bone Defects  
Dr Custis Lee Hall Washington D.C. Osteotomy for the Treatment of Ununited Fractures of the Femoral Neck.

Dr Austin T Moore Columbia S C Fractures of the Hip Joint Treatment with Adjustable Nails or Blade Plate Fixation  
Dr Roger Anderson Seattle (subject not announced)  
Drs Harry C Bacon Orville C Gass and William D Todhunter Philadelphia Cancer of the Rectum and Pelvic Colon with Special Reference to Preoperative and Postoperative Treatment  
Dr William Seaman Bainbridge New York A Survey of Surgical Incisions in Cancer  
Dr Albert A Berg New York The Preservation of the Sphincter Ani in Radical Operation for Cancer of the Rectum  
Dr Elmer Hess Erie Pa The Indications for Transplantation of the Ureters with a New Surgical Technique  
Dr Oswald Swinney Lowsley New York Plastic Operations on the Kidneys  
Dr Rudolf Nissen New York A New Technique of Operation for Cysts of the Lung and for Chronic Spontaneous Pneumothorax  
Dr Frederick M Allen New York Surgical Shock and Its Treatment  
Dr Richard H Lawler Chicago Gastric Surgery  
Dr Sebastian J Carnazzo Omaha Subtotal Gastric Resection for Peptic Ulcer  
Dr Max Thorek Chicago History and Practical Application of Tubo-valvular Gastrostomy  
Dr Moses Behrend Philadelphia Ulcerative Leiomyoma of the Stomach  
Dr Asher Winkelstein New York The Relation of Gastric Acidity to Recurrent Ulcers After Partial Gastrectomy  
Dr Otto De Muth Vancouver B C Recent Developments of Biliary Surgery  
Nicholas A Michels DSc Philadelphia Variations in the Arterial Blood Supply of the Liver Gallbladder Stomach Duodenum and Pancreas  
Robert Lich Jr and Ralph B Samson U S Public Health Service Preserve A Method of Inguinal Herniorrhaphy  
Miss Helen S Willard director Philadelphia School of Occupational Therapy Occupational Therapy in Rehabilitation  
Dr William A Lell Philadelphia Observation on the Bronchoscopic Insufflation of the Sulfonamides into the Tracheobronchial Tree  
Dr Benjamin I Golden Elkins W Va Massive Single Doses of the Sulfu Drugs  
Dr Elias D Lawrence Paterson N J Saphenous Vein Ligation  
Dr Edmund B Spaeth Philadelphia Aneurysm of Circle of Willis from an Ophthalmological Standpoint  
Dr Samuel R Skollern Philadelphia The Frontal Sinuses as the Pathway of Infection to the Cranium and Its Contents  
Dr Ben Robnett Dysart Pasadena Calif Diabetic Gangrene Involving the Sinuses

The program will include a series of round table discussions and scientific and technical exhibits and motion pictures. On Wednesday evening the convocation address will be delivered by Dr Morris Fishbein, Chicago, Editor of THE JOURNAL, on "The Organization of American Medicine." The assembly dinner will be held Thursday evening.

## FOREIGN

**Dr Aldo Castellani Reported Suspended from Rome Faculty**—Dr Aldo Castellani, who formerly served as professor of tropical medicine at Tulane University of Louisiana School of Medicine and Louisiana State University Medical Center New Orleans, is reported to be one of twenty-five members of the faculty of the University of Rome who have been suspended. According to *Science* the *Times* London, states that the majority of these men had either been ministers in the fascist government or had held high appointments in the corporations.

**Special Lectures**—At the recent sixth annual meeting of the Royal Australasian College of Physicians, Sydney, Australia a portrait of the first president of the college, Sir Charles Bickerton Blackburn, was unveiled. Special lectures delivered as a part of the meeting included the second G E Rennie Memorial Lecture by Sir C Trent Champion de Crespigny, London, on "Torula Infection of the Central Nervous System" and the second Annie B Cunningham Lecture by Dr C G McDonald on "Diet and Disease." Other speakers included Lieut Col J Erskine Sewell on "Notes on Scrub Typhus from the Observation of 500 Cases," Dr T M Greenaway, "Hyperinsulinism Due to Pancreatic Adenoma" and Dr S V Sewell, "The Results of Sympathectomy in the Treatment of Severe Cardiac Pain, Headache and So Forth."—Dr Thomas L Hardy recently delivered the Croonian Lectures before the Royal College of Physicians of London on "Order and Disorder in the Large Intestine."

**Report Dr Carrel Ousted**—On August 28 the Associated Press reported that Dr Alexis Carrel emeritus member of the Rockefeller Institute for Medical Research New York, and associate member of the American Medical Association had been dismissed from his position as director of the Vichy government's Foundation for the Study of Human Relations. The information was said to be broadcast over the Paris radio and further intimated that the foundation had been notorious for its actions detrimental to the French nation. Dr Carrel, who is 71 years of age is a native Frenchman who retained his citizenship despite many years spent in the United States. A newspaper report on August 30 indicated that Dr Carrel had been arrested by the French Forces of the Interior on charges that he had founded his institute with Vichy support for the purpose of supplanting the great French universities,

and introducing fascism and Marxism to the students. It was further stated that the Petain regime donated funds freely to Dr Carrel's institute, the initial gift amounting to about \$800,000 with the intention of hiring away professors from the Sorbonne and other universities. It was further alleged that Dr Carrel tried to close university laboratories so that professors would have to come to his institute to earn their living.

## Government Services

### Charles Williams to Direct States Services

Dr Charles L. Williams who has been stationed in New Orleans as medical and district director for the U S Public Health Service district number 4 since July 1 1940 was to have been transferred on August 16 to Washington D C as assistant surgeon general. He will be in charge of the Bureau of States Services (THE JOURNAL, Dec 11, 1943 p 983) and will be promoted to the rank of brigadier general.

### Private Home Given to Public Health Service

Hilhome in Westchester County, New York, estate of the late Percy S Straus, became on August 11 the property of the U S Public Health Service, which will make it a convalescent home for merchant seamen and Coast Guardsmen. The presentation of the deed by Mrs Straus was made in a special ceremony in the headquarters of the U S Public Health Service in Washington, D C. In accepting the deed Dr Thomas Parran, Surgeon General, U S Public Health Service, is reported to have said that the home may be converted into a convalescent home with 75 beds and, subject to Presidential approval, will be the site of a permanent hospital under the postwar program of the public health service. The property includes a 112 acre tract partly in the town of Rye and partly in the town of Harrison and is located 4 miles north of Port Chester. Hilhome will be available for hospital use immediately and will be adapted for permanent hospital service. During the twenty-five years that it has been the home of the Straus family, more than a million dollars has been expended on the property above the original cost. Mr Straus was formerly chairman of the board of R H Macy and Company.

### Funds for Public Works

The President, July 10, approved allotment of federal funds totaling \$1,412,488 for thirty war public works and services projects in seventeen states, including hospital and child care facilities and schools in war impacted communities. Major General Philip B Fleming, federal works administrator, announced. A grant of \$291,802 will match funds of the Sisters of St Francis for constructing and equipping a 100 bed hospital in Detroit to cost an estimated \$583,604. A second grant in the Detroit area is for \$30,800 for an addition to the Burton School in Royal Oak Township. Federal contributions of \$222,324 and \$199,886 go to the U S Public Health Service for continued assistance in the maintenance and operation of venereal disease hospital facilities in Chatham County and in Augusta, Ga. respectively. More than 2,100 patients have been treated in these centers. A grant of \$75,700 was made to the Allegany Hospital of the Sisters of Charity in Cumberland, Md., providing for the dismantling and transporting of a demountable dormitory from Dublin, Va. and constructing, altering and equipping the building to provide training facilities for student nurses. A grant of \$34,500 will match an equal amount provided by the Medical College of Virginia, Richmond for remodeling a part of St Philip Hospital in Richmond to expand training facilities for 185 student nurses. Six California communities will receive funds for child care centers and for school maintenance. Other projects were approved in Alabama, Arizona, Idaho, Missouri, Oregon, North and South Carolina, Pennsylvania and Texas.

## CORRECTION

**Officers of Pathology Board**—The name of Major R Philip Custer M C, was inadvertently omitted from the news item carrying the names of new officers of the American Board of Pathology (THE JOURNAL August 12 p 1051). Major Custer was chosen trustee at large of the board.

## Foreign Letters

### LONDON

(From Our Regular Correspondent)

Aug 5, 1944

#### The Rebuilding of Guy's Hospital

Guy's Hospital is known all over the world not only as a great teaching center but also for the advances in English medicine emanating from it. The clinician Jonathan Hutchinson once said "Diseases seem to have been made in order that Guy's physicians should discover them." No doubt he had in mind the eponymous diseases of Bright, Addison and Hodgkin, who were elder contemporaries of his. This famous hospital has been badly damaged by German bombs, but arrangements have already been made, thanks to the munificence of Lord Nuffield, to restore it with every modern equipment and to build a new college for students. The eighteenth century buildings, which have survived and are suitable for modern requirements, will be combined with new buildings. Now located in the country (whither bombing has made many of the London hospitals resort) is what is known as "Guy's U S A Hospital," because it was started as a wartime measure largely by American help. It is thought that this should prove of great value in working out the bigger plan for a permanent country Guy's Planning is not restricted to building. A closer fusion of the hospital with its medical and dental schools into a great teaching center is contemplated. Already new fields are opening up. A recent development, the York Clinic for Psychoneuroses, is the only one of the kind in the country associated with a teaching hospital. Guy's has the largest dental school, and it is hoped that arrangements can be made for every patient to receive not only expert dental treatment but also any other treatment necessary. It is also proposed to establish a university chair in dental medicine and to make a study of the relations between dental disease and disease processes in general.

#### Labeling of Foods to Protect the Public

The Ministry of Food has issued an order on food labeling which is intended to ensure wholesome quality and to make certain that the public gets what it expects. Under the new ruling, certain requirements must be met by the labels of all prepacked foods (those packed or made ready in advance for retail sale in a wrapper or container). The labels must show the name and address or registered trade mark of the person for whom the food is packed and the name or usual name of the food. Foods containing more than one ingredient must show the usual name of the ingredients in the order of the proportions in which they were used and the minimum quantity of food in the package. Foods claiming to contain vitamins or minerals are subject to special rules. Claims must not be made on the labels or in advertisements unless supported by a statement of the nature of the vitamin or mineral present and the quantity. Fruit and vegetables are exempt from this order unless canned or boiled.

#### The Accidental Discovery of Penicillin

In an address at the King's Chapel of the Savoy on Hospital Sunday (when donations for the hospitals are collected), Alexander Fleming, the discoverer of penicillin, delivered an address. The discovery, he said, illustrated the great value of the freedom to pursue research which was so prominent in the voluntary hospital and might be restricted under a more bureaucratic system. Like many bacteriologists, Professor Fleming related he had many culture plates contaminated with mold spores which drop from the air, and, like every other bacteriologist, he had cast them out with suitable expressions of annoyance. But on this one occasion he did not and peni-

cillin was the result. He noticed that the molds prevented growth of the culture for a small area. It seemed providential that the most powerful agent against septic infection was discovered at this time, when we were plunged into a bloody war. Penicillin has already done much to alleviate the sufferings of the wounded, Fleming stated, and will do more as the supply increases. In the last war the infected wounds of many soldiers remained open for six months or more, with frequent painful dressings. Now it is hoped that by the aid of penicillin they will not become infected at all or that, if they do, many will heal in a month or less.

#### The Site for Intramuscular Injections

In the correspondence columns of the *British Medical Journal* attention is called to the danger of using the gluteal muscles as a site for intramuscular injections. This practice is not only in vogue but is taught in our leading hospitals, it is stated by Prof. Grey Turner, who recalls that he pointed out its dangers as long ago as 1920. After the first world war he observed that several soldiers were victims of severe and persistent neuritis or paralysis of the great sciatic nerve as a result of injecting quinine solutions into the nerve instead of into the mass of the gluteal muscle. A case of death from sloughing also came to his knowledge. After the malaria epidemic in Ceylon there were at least 2 cases of severe secondary hemorrhage from the superior gluteal artery complicating abscess due to injecting quinine into the buttock. In 1941 A. W. Frankland stated in the *Journal* that if solutions of sulfapyridine are administered deeply into the gluteal region there is grave danger of injury to the larger branches of the sciatic nerve. He quoted 6 cases of foot drop with varying degrees of anesthesia, and also cases of gluteal paresis. Recently one of the larger provincial hospitals was forced to pay damages of several hundred pounds because a patient developed sciatic paralysis after an injection in the gluteal region.

Professor Turner again urges that the outer side of the thigh is the proper place for such injections. The vastus externus is a large muscle, is protected by the fascia lata and is not traversed by any important vessels or nerves. The muscular mass is of large capacity and as much as 500 cc can be introduced into its substance, provided the injection is done slowly. The technic is simple, Professor Turner claims. A point on the middle of the outer side of the thigh is selected, and the hollow needle is thrust at right angles to the surface. It is enough to insert it just beneath the fascia lata—a point which can readily be determined by the sensation of yielding resistance after penetration or by introducing the needle to the average depth of about an inch. If the needle strikes the bone no harm is done, provided it is withdrawn about half an inch before injecting. If necessary, injections of small bulk may be made repeatedly in this situation. It is reasonable to vary the area of injection by starting near the top of the thigh and working down to about 3 inches above the knee, or the outer side of the other thigh may be used alternately. Injection of a particularly irritating solution or introduction of infection may result in abscess, but that is about the worst that can happen. The risk of phlebitis and generalized systemic infection associated with rigors is eliminated, Professor Turner says.

The *Army Medical Department Bulletin* also deals with the subject of intramuscular injection, particularly in battle casualties. The *Bulletin* points out that the injection should be made into healthy muscle. The gluteal muscles are perhaps most often chosen. They are extensive enough to absorb a good volume of fluid. It is important to keep clear of the sciatic nerve and related vessels. The upper and outer quadrant alone may be regarded as a suitable area for injection, it has a good thickness of muscle, lies well away from the sciatic nerve and is not pressed on as the patient lies in bed. Many other muscle groups are suitable. It is unnecessary to put a badly wounded



man to the discomfort of turning him on a stretcher simply to give an intramuscular injection into his buttock, the *Bulletin* states. The external thigh muscles, deltoid muscle and pectoral muscles are often more conveniently accessible. Indeed, any large muscle away from important vessels or nerves may be used.

### AUSTRALIA

(From Our Regular Correspondent)

May 20, 1944

#### Problems of Anthropology in the Pacific

While the war is still raging in the Pacific it may seem premature to consider proposals for the future government and development of native races in the South Pacific islands. Yet, assuming that Australia's interest and responsibility in relation to mandated territories will be retained and possibly extended when the war is over, it is obvious that the welfare of the territory natives, whose friendship and assistance in the present conflict are of inestimable value to the Allied nations, must be taken into account in planning for postwar reconstruction.

This question is raised by J. W. Burton in a pamphlet entitled "Brown and White in the South Pacific," published by the Australian Institute of International Affairs. He declares that the impact of the present catastrophic war will affect the life and social order of the native races to an extent which at this stage cannot be determined, but it is obvious that the results will be deep and far reaching.

When Australians read of the heroic and unselfish part taken by the native stretcher bearers of Papua and New Guinea in the campaign against the Japanese, few give a thought to the effects of the war on social life of the island natives, the disruption caused in homes and villages, the demoralizing effect on the younger natives, the problem of restoring native agriculture and normal conditions of community life when peace returns.

Burton's pamphlet deals first with the native culture in the Pacific—a very old culture with roots that go deep into the past. "One may live for weeks in a native village," he says, "and feel its rhythm and charm, enjoy its laughter and gaiety, watch its colorful ceremonies and yet not suspect that the simplest actions and most commonplace habits have a long ancestry behind them and that every part of the common life is regulated by almost imperceptible rules of conduct." He states too that the South Sea social organization has been classed by some as communistic, although not in any marxian sense, and this element is admittedly present, for the life of the village is assuredly based, perhaps quite unconsciously, on the principle of "each for all and all for each." In Fiji, for instance, all land is held by the mataqali, or clan, and can never be alienated unless the mataqali itself dies out. While every man has his own house (in Fiji usually of an excellent type), no one can sell his house to another. Like the land, it belongs to the people as a whole, and the occupant has only the use of it.

It is pointed out that under this system there was no danger of property falling into a few hands, as with us. Mutual ownership of property prevented accretions of wealth and thereby restricted temporal power. No man ever went hungry, except for some visitation of nature, such as drought or flood, no one went unemployed, although there was abundant leisure.

With the introduction of the plantation system by white men came the indenture of native labor. It is true, says Mr. Burton, that the indenture system has its good side as far as the native is concerned. On the other hand, from the moral point of view, life on the plantations is far from ideal. Large numbers of men, separated for years from their women-folk and from the healthy influence of children contract vices such as gambling, thieving and general irresponsibility, and return to exercise a bad influence on the village.

As to the evidence of the effects of the present war on the native life and social order, Mr. Burton says "In areas, particularly in the southeastern Pacific, where the actual devastation of war has not been felt, there are serious repercussions. The presence of tens of thousands of European servicemen, with plenty of money to spend and abundant leisure, has had a profound and immediate effect on native economy. There has come such an abundance of wealth that it has resulted in many places in natives neglecting their gardens and villages, they are content to do a little washing for the troops or sell a few curios at ridiculous prices and then spend their money in buying tinned meats and preserved fruits from the trader's store."

There is too, Mr. Burton adds, a serious disregard for the village authority, and the young girls have had their heads turned by the attentions of random admirers while their own men are away at other theaters of war. "There is no vivid imagination required to sense the dangers here," he says. "The case of those islands, particularly the Solomons, Papua and New Guinea, where the ravages of war have been so terrible, is even worse. No estimate can be made of the physical damage done. Hundreds of people have been killed, thousands have been torn away from their villages and although they have won a great name as stretcher bearers and carriers, no one may estimate the rupture of the social fabric of their lives."

There is evidence that both United States and Australian armies are conscious of these problems and are taking action to overcome them.

#### Australian Reaction to British Criticism of Medical Students' Training

The report of the planning committee of the Royal College of Physicians aroused interest here. The report stated that the average medical graduate has defects chiefly attributable to the manner of his training. He tends to lack curiosity and initiative. His powers of observation are relatively undeveloped, his ability to arrange and interpret facts is poor and he lacks precision in the use of words. In short his training, however satisfactory it may have been in the technical sense, has been unsatisfactory as education.

Increase of scholarships as a method of overcoming financial barriers to the profession has the defect of compelling a boy to specialize in order to pass examination, at the expense of general education, especially in activities that develop personality and character. University education should be absolutely free, not only in medicine but in all other subjects. Allocation to universities would be on the merit of character plus ability, instead of wealth. Methods whereby the medical course itself can be improved include curtailment of certain traditional subjects, such as botany and topographic anatomy and, preeminently, division of medical education into two categories—the undergraduate course which shall be general and unspecialized and designed to provide for doctors as a whole, and the postgraduate course, catering to special needs of gynecology, x-rays and other highly technical branches.

Dr. B. T. Zwar, deputy chancellor of Melbourne University and president of the Royal Melbourne Hospital, said that experience in the last war had shown that graduates of Australian medical schools compared very favorably with those from English schools, while our graduates who went to England were very highly regarded there. Dr. Zwar said he agreed, however, that there was insufficient preliminary general education before university courses were begun. Up to this year Melbourne University had accepted students at 16 years of age, now it is 17, but he felt that was still rather young. In England the General Medical Council had laid down that no medical student could register until within three months of his eighteenth birthday. Dr. Zwar was particularly



glad to note that the planning committee of the Royal College of Physicians had said that allocation to universities should be on the merit of character, plus ability, instead of wealth." He said he had always advocated that some regard should be paid to the character of a student entering a profession, that was done in various American university medical schools, and the system had worked quite satisfactorily.

## BRAZIL

(From Our Regular Correspondent)

SÃO PAULO, July 22, 1944

### Treatment of Chronic Osteomyelitis with Penicillin and Surgery

At the last meeting of the National Academy of Medicine a paper was presented by Dr Mauricio Gudín on the treatment of 2 cases of chronic osteomyelitis in which surgery, under conditions of integral asepsis of the environment," was associated with the use of penicillin. Dr Gudín constructed, several years ago, a closed and entirely aseptic operating room, which he uses for his daily work at the Beneficência Portuguesa Hospital of Rio de Janeiro. This whole aseptic operating technique has also been adopted by a few surgeons of Paris, where the system was considered worth while. In Dr Gudín's first case the illness began thirteen years earlier, and eight operations had been performed. Recently the patient had been treated, without result, with twenty-five intramuscular injections of penicillin prepared at the Oswaldo Cruz Institute. After the operation in the integrally aseptic room the patient received several local, intramuscular and intra-arterial injections of the same penicillin. The wound healed completely in seven days. The second patient became ill in 1937 and had been operated on three times by another surgeon. Dr Gudín operated once more, this time under conditions of integral asepsis, and the wound was maintained opened. On the seventh day the dressing was undone in the aseptic room and it was ascertained that the wound was in good condition. On the fourteenth day the wound was again examined and a secondary suture was done. On the twenty-first day healing was judged complete. The treatment by penicillin was the same as in the first case.

### Iodized Table Salt to Combat Goiter

Central Brazil has a great area where goiter is endemic, and iodine deficiency in several parts of this area has been ascertained. In order to help correct this situation Mr João Alberto, coordinator of economic mobilization, signed a special order with the following main provisions: 1 All table salt to be consumed in the areas recognized as deficient in iodine shall be industrially processed to contain the amount of iodine judged appropriate by the Division of Food of the Office of the Coordinator. 2 The product to be immediately sold under the name of "iodized table salt" shall contain 10 mg (15 grains) of iodine per kilogram (2.2 pounds) of table salt. 3 The Division of Food will furnish technical assistance to table salt producers to insure the effectiveness of this order. The order also established a limit on the increase in price to be charged for iodized table salt.

### Relief of Pain in Renal Colic

Prof Luis Surraco and Dr Lockart have presented a new treatment for renal colic. According to their recent publication in *Montevideo* they proposed the inhalation of amyl nitrite as an unproved means to relieve the pain.

The pain in renal colic arises from a spasm of the smooth muscular fibers surrounding the ureter as well as the visceral ducts and provokes regional contracture, to which there is added a ureteral distention above and a zone of ischemia below, the whole acting through appropriate stimuli on a special state of hyperreflexivity of the aortic-renal plexus.

It is understood that the therapy in crisis, in order to be useful, should take the form of a sedative for the hypersensi-

tivity, an antispasmodic for the hypertonicity, a vasodilator favoring arterial irrigation and venous depletion. Responding to these demands, Surraco and Lockart have employed amyl nitrite, which has a well known action against the cardiovascular spasm and which in renal colic produces the triple vasodilator, hypotensive and analgesic action through total intervention of the splanchnic nerves.

Immediately following inhalation they observed, together with the usual vascular phenomena, a complete and lasting cessation of the spontaneous pain, disappearance of the contracture of the abdominal wall through concomitant action on the striated muscular fiber and frequently a stimulation of diuresis. This quick action of the medicament is an important help in diagnosis in doubtful syndromes.

The immediate action of the amyl nitrite may be maintained and prolonged by employing glyceryl trinitrate after a few hours, repeating it according to the circumstances in the course of the first twenty-four or forty-eight hours.

## Brief Items

Since the beginning of the war and the shortage of some medicinal products, the culture of *Mentha piperita* and the extraction of peppermint oil are being developed in São Paulo, Paraná and the other southern states of Brazil. At the price of \$30 per kilogram of crystallized menthol, as set by the United States government for the importation of the drug, the production of menthol is one of the best paid extractive industries. A free booklet on the culture of the plant is being distributed by the division of information of the Department of Agriculture.

Ten years ago on June 6, Dr Miguel Couto, professor emeritus of medicine at the University of Rio de Janeiro, died at the age of 72. Dr Couto had a large private practice in Rio de Janeiro and has been considered by some the greatest Brazilian doctor of the present century. The Brazilian Academy of Medicine held a special meeting to commemorate this anniversary.

The National University of Rio de Janeiro is a semiautonomous organization financially supported in large part by the federal government. The government has recently bought a large plot of land known as the Valqueire Park in a northern suburb of Rio de Janeiro, in which will be constructed the new buildings of the university.

Dr Augusto Paulino Jr has been elected a member of the National Academy of Medicine. Dr Paulino is professor of surgery at the University of Rio de Janeiro.

The Brazilian Society of Ophthalmology recently held a meeting in which papers on endocrinologic problems in ophthalmology, tumors and refractive changes in diabetes were discussed. The most important papers were presented by Dr Evaldo Campos, Dr Orlando Cyrino and Dr Sylvio de Campos.

## Marriages

WILL BYRN ALSUP JR, Dublin, Ga., to Miss Martha Ham McRae of Charlotte, N C., in Colorado Springs, Colo., August 4.

SAVUFL RICHARD STAGGERS, West Point, Miss., to Miss Sophy Malone Tilley of Durham, N C., August 12.

JOHN JAY OSBORN, Garrison-on-Hudson, N Y., to Miss Anne Mary M Kidder of New York, August 6.

JAY EDWIN STOECKEL, Scranton, Pa., to Dr CATHERINE M ROTH of Roanoke, Va., July 22.

GRAHAM BURT BLAINE JR to Miss Patricia Smallwood, both of New York, August 5.

HENRY T SIMMONDS to Mrs Edythe Graeber Wetzel, both of Shamokin, Pa., July 28.

ROBERT L DILTS, Fort Wayne, Ind., to Miss Virginia Lewis of Indianapolis, July 28.

JOHN T MANNING, Muskegon, Mich., to Miss Betty E Letts of Flint, July 29.

## Deaths

**Charles Hartwell Coker** @ Asheville, N C Cornell University Medical College New York 1905 served an internship in the Presbyterian Hospital New York, in 1906-1907 specialist certified by the American Board of Internal Medicine fellow of the American College of Physicians serving once as chairman of the board of governors and vice president in 1942, 1943 and 1944 in 1926 vice president of the Medical Society of the State of North Carolina, past president and secretary of the Buncombe County Medical Society, in 1932 vice president of the Southern Medical Association and in 1937 chairman of its section on medicine fellow and former vice president of the American College of Chest Physicians member and in 1934 vice president of the American Clinical and Climatological Association, member of the American Trudeau Society, American Association of the History of Medicine, American Sanatorium Association, Southern Interurban Clinical Club and the National Tuberculosis Association corresponding member of the International Union Against Tuberculosis attending physician Asheville Mission Hospital and the Biltmore (N C) Hospital, consulting physician to the Patton Memorial Hospital, Hendersonville one of the medical directors and attending physician Zephyr Hill Sanatorium member of the chamber of commerce served as secretary and heart and lung consultant to the medical advisory board during World War I, died August 3, aged 62 of coronary occlusion

**Frederick Brown Moorehead** @ Chicago, Rush Medical College, Chicago 1906 professor of oral surgery and head of the department of oral and plastic surgery and oral pathology at the University of Illinois College of Dentistry, formerly associate clinical professor of surgery (oral and dental) at his alma mater chairman of the Section on Stomatology, American Medical Association, 1914-1915 1915-1916, member and in 1926-1927 president of the American Association of Oral and Plastic Surgeons, member of the Institute of Medicine of Chicago Chicago Pathological Society and the Chicago Historical Society, fellow of the American College of Surgeons, specialist certified by the American Board of Plastic Surgery joint author of 'Pathology of the Mouth', consulting plastic surgeon, Illinois Central Railroad System consulting oral and plastic surgeon Home for Destitute and Crippled Children attending oral and plastic surgeon Presbyterian Hospital, where he died August 29, aged 68 of peritonitis due to perforated gastric ulcer and bronchopneumonia

**Herman Elwyn Pearse**, Bonner Springs, Kan, St Louis College of Physicians and Surgeons, 1888 honorary member of the Kansas Medical Society, past president of the Missouri State Medical Association and the Jackson County (Mo) Medical Society, fellow of the American College of Surgeons a founder and at one time professor of abdominal surgery at the Kansas City College of Physicians and Surgeons, formerly professor of surgery at the Kansas City Post-Graduate Medical School and Hospital health director of Kansas City Mo 1925-1926, a member of the staff of St Luke's Hospital, of which he had been a founder and of St Joseph St Mary's and Kansas City General hospitals where in 1916 he had been chief of staff died June 10, aged 84, of myocarditis

**Alfred A Kent Sr**, Winter Park Fla Jefferson Medical College of Philadelphia 1885 formerly a practitioner in Lenoir, N C member and past president of the Medical Society of the State of North Carolina, organizer and once president of the Caldwell County (N C) Medical Society for many years a member of the North Carolina State Board of Medical Examiners and for two years president served as a member of the North Carolina State Board of Health and the North Carolina state legislature an organizer and former president of the Citizens Building and Loan Association and president of the First National Bank of Lenoir died August 11, aged 85

**William H German**, Chicago Michigan College of Medicine Detroit 1883, member of the Illinois State Medical Society and the American Association of Railway Surgeons, served as a major in the Illinois National Guard formerly member of the Morgan Park elementary high school and library boards for twenty two years secretary of the Calumet Park district since 1902 local surgeon for the Chicago Rock Island and Pacific Railroad died in the Wesley Memorial Hospital July 31 aged 89 of chronic myocarditis, chronic nephritis and bilateral lobar pneumonia

**Smylie Scott Anderson**, Hammond, La Medical Department of Tulane University of Louisiana, New Orleans 1906, served as health officer of Hammond died June 25, aged 66

**Thomas Rufus Aycock** @ Monroe Ga, University of Georgia Medical Department Augusta 1909 served as acting president and secretary of the Walton County Medical Society on the staff of the Walton County Hospital Walker Park died in St Joseph Infirmary Atlanta August 5 aged 62, of heart disease following an operation

**Charles Wesley Banks**, East Orange N J Bellevue Hospital Medical College New York 1890, formerly city pathologist served as chief of staff and chief surgeon of St Mary's Hospital in Orange for many years for many years in charge of the infirmary of the Thomas A Edison Inc plant in West Orange, died July 21, aged 77, of carcinoma of the bladder

**John Banks**, Hamilton Ga Atlanta School of Medicine 1911 died May 16 aged 65

**Blaine B Barton** Markleysburg Pa, Maryland Medical College, Baltimore 1905 member of the Medical Society of the State of Pennsylvania, died July 8 aged 64 of cerebral hemorrhage

**Burton Wayne Brivins**, Waukegan, Wis, Chicago College of Medicine and Surgery, 1904, Spanish-American War Veteran died in Chetek June 7 aged 68, of coronary thrombosis

**Stanislaus N Borowiak**, Buffalo University of Buffalo School of Medicine, 1908, served as president of the board of education of Buffalo, secretary-treasurer of the Polish Medical Association 1910 1914 in 1933 received the Polonia Restituta medal from the Polish government for aid in the restoration of Poland died in the Millard Fillmore Hospital July 11, aged 61, of myocardial failure and coronary arterio sclerosis

**Oliver Preston Bourbon** @ Los Angeles Kansas City (Mo) Hahnemann Medical College 1908 specialist certified by the American Board of Otolaryngology member of the American Academy of Ophthalmology and Otolaryngology formerly assistant professor of surgery (ophthalmology) College of Medical Evangelists at one time lecturer on physiology at his alma mater on the staffs of the Methodist Hospital and the California Hospital, where he died April 25 aged 80 of coronary thrombosis

**Christopher William Brown**, Brooklyn Long Island College Hospital Brooklyn, 1903, member of the Medical Society of the State of New York, on the staff of the Bushwick Hospital for many years during World War I served as a captain with the thirteenth Regiment Coast Artillery died in the Long Island College Hospital July 7 aged 64, of carcinoma of the stomach with metastases to the spine

**Emerson Marrs Bushnell** @ Black Lick Pa University of Vermont College of Medicine, Burlington 1903 president of the Indiana County Medical Society in 1936 school director and bank president served on the staff of the Indiana Hospital Indiana Pa, died April 21 aged 67 of coronary disease

**William Aaron Cashion**, Nashville Tenn Vanderbilt University School of Medicine Nashville, Tenn 1915, a captain in the medical corps of the U S Army during World War I formerly associated with the U S Veterans Administration died July 1, aged 53, of coronary occlusion due to cardiorenal vascular disease

**Charles Eli Caylor** @ Bluffton Ind Kentucky School of Medicine Louisville 1893 in 1895 president of the Wells County Medical Society a charter member of the Bluffton Rotary Club member of the Southern Medical Association chief of staff of the Caylor-Vickel Clinic which he founded and of the Clinic Hospital where he died July 5 aged 74 of a skull fracture and other injuries received in an automobile accident

**Emily Clark Charles**, New York New York Medical College and Hospital for Women Homeopathic New York 1894 subsequently served at her alma mater as lecturer on diseases of children assistant to the chair of diseases of children secretary of the faculty associate professor of diseases of children professor of materia medica and deam died in the Franklin County Hospital, Greenfield Mass July 9, aged 80 of a strangulated femoral hernia

**William Fladger Clark**, Tampa Fla Emory University School of Medicine, Atlanta 1922 died in the Tampa Municipal Hospital July 11, aged 49 of bronchiopneumonia and general septicemia

**Daniel Crosby** @ Oakland, Calif, Cooper Medical College, San Francisco 1898 past president of the Alameda County Medical Association fellow of the American College of Surgeons health officer of Oakland, 1918 1920 past president of

the Insurance Association of Approved Hospitals on the staffs of the Providence and Peralta hospitals, Oakland, and the Alameda Hospital, Alameda, died at his home in Piedmont July 15, aged 69, of coronary thrombosis

**Nelson Park Davis** \* Pittsburgh, University of Pittsburgh School of Medicine, 1909, associate professor of surgery at his alma mater, fellow of the American College of Surgeons, on the staff of the Mercy Hospital, died July 7, aged 58, of cerebral hemorrhage

**Lester Cornelius Diddy**, Paxton, Ill., Chicago College of Medicine and Surgery, 1907, member of the Illinois State Medical Society, past president of the Ford County Medical Society, died July 11, aged 61, of coronary heart disease

**Hugh Victor Du Bois**, Niota, Tenn., Chattanooga (Tenn.) Medical College, 1904, died July 7, aged 64, of heart disease

**Harry Edward Dunlop** \* Pelham, N. Y., University of the City of New York Medical Department New York 1886, an Affiliate Fellow of the American Medical Association died in the Gallagher Nursing Home, Mount Vernon, July 14, aged 80, of transverse myelitis and uremia

**Elihu Noble Elliott**, Chicago, College of Physicians and Surgeons, Chicago, 1883, member of the Illinois State Medical Society, died June 29, aged 82, of carcinoma of the prostate with metastasis, pyelocystitis and cerebral arteriosclerosis

**Ralph Waldo Emerson**, Owensville, Ind., Eclectic Medical Institute, Cincinnati, 1898, died July 3, aged 74, of heart disease

**William Albert Fisher** \* Chicago, University of Michigan Department of Medicine and Surgery Ann Arbor, 1885, at one time president and professor of ophthalmology at the Chicago Eye, Ear, Nose and Throat College, formerly professor of clinical ophthalmology at the University of Illinois College of Medicine, member of the American Academy of Ophthalmology and Otolaryngology, fellow of the American College of Surgeons, died July 31, aged 84

**Thomas Francis Foley**, Buffalo, University of Buffalo School of Medicine, 1904, for many years staff physician in the child hygiene division of the city health department a captain in the medical corps of the U. S. Army during World War I, medical examiner at the Attica State Prison, died July 11, aged 68, of pulmonary edema and dilatation of the heart

**Frederick Lewis Forker**, Binghamton, N. Y., University of the City of New York Medical Department, 1885 served as a member of the board of education, on the staffs of the Binghamton City and Our Lady of Lourdes Memorial hospitals died July 11, aged 83, of arteriosclerosis

**William Hodskin Gale**, St. Johns, Mich., Jefferson Medical College of Philadelphia, 1901 formerly secretary and treasurer of the Clinton County Medical Society, served in the medical corps of the U. S. Army during World War I in 1910 appointed to the U. S. Board of Pensions, for many years county health officer, on the staff of the Clinton Memorial Hospital, served as district surgeon for the Grand Trunk Railroad, died June 30, aged 74, of cardiorenal disease

**John Asa Gibbons**, Mitchell, Ind., Central College of Physicians and Surgeons, Indianapolis, 1898, died in the Dunn Memorial Hospital, Bedford, July 6, aged 71, of carcinoma of the rectum

**John Louis Gilleland**, Pullman, Wash., American Medical College, St. Louis, 1903, member of the Washington State Medical Association formerly on the staff of St. Ignace Hospital, Colfax, died June 5, aged 69, of carcinoma of the prostate and Parkinson's disease

**Thomas Leverett Gingold**, New Haven Conn., Columbia University College of Physicians and Surgeons New York 1919, formerly police surgeon and alderman served on the staff of the Grace Hospital, where he died July 6 aged 49, of carcinoma of the pancreas

**Faustine Graves**, Piney Flats Tenn., Tennessee Medical College Knoxville, 1894, died July 13 aged 76, of myocardial failure and Parkinson's disease

**J. Edward Harmon**, Pine Knot Ky., Hospital College of Medicine, Louisville 1905 died in St. Anthony's Hospital Louisville, June 29, aged 41, of cardiovascular disease

**John Edward Harris**, of Virginia, Richmond 1901, member of the Medical Society of Northern Virginia, died May 10, 1944, of arteriosclerosis

**Atticus Greene Haygood** \* Downey, Calif., University of Nashville (Tenn.) Medical Department, 1891, Vanderbilt University School of Medicine, Nashville, 1891, a captain in the medical corps of the U. S. Army during World War I, examiner for the Selective Service Board, on the staff of the Methodist Hospital, Los Angeles, a charter member and past president of the Kiwanis Club, died in the Downey Community Hospital June 27, aged 73, of bronchopneumonia and acute gastroenteritis

**Edward Lathrop Hill Jr.**, Jacksonville, Ill., St. Louis University School of Medicine, 1933, member of the Illinois State Medical Society, formerly an intern at St. Louis City Hospital and resident in neuropsychiatry at the City Sanitarium in St. Louis, first lieutenant in the medical reserve corps of the U. S. Army not on active duty, health officer in charge of the McDonough-Fulton bicounty health unit of the state health department with headquarters in Macon, died in the Barnes Hospital, St. Louis, aged 37, of myelogenous leukemia

**Joseph Harrison Humphrey** \* St. Louis Washington University School of Medicine, St. Louis, 1901, served as director of hygiene for the board of education, died in the Evangelical Deaconess Home and Hospital June 23, aged 67, of cerebral embolism

**John Charles Kamp**, Saugerties, N. Y., University of Buffalo School of Medicine, 1895, member of the Medical Society of the State of New York, health officer since May 1924 with jurisdiction over the consolidated health district of Saugerties, served on the staff of the Kingston Hospital, Kingston, died June 18, aged 84, of arteriosclerosis

**Edwin Jerome Kauffman**, Marion, S. D., College of Physicians and Surgeons, School of Medicine of the University of Illinois, 1906, member of the South Dakota State Medical Association, formerly councilman, on the staffs of the Methodist State Hospital, Mitchell, and the Sioux Valley Hospital Sioux Falls, where he died May 1, aged 60, of coronary thrombosis

**Theophilus Kubricht**, Wallis, Texas, College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois 1905, also a minister, died in a sanatorium in Houston May 28, aged 80

**Charles Labash**, Passaic, N. J., Chicago Medical School, 1926, member of the Medical Society of New Jersey, died in St. Mary's Hospital June 26, aged 61, of cirrhosis of the liver

**Virgil Alfred Lea**, Gloster, Miss., Medical Department of Tulane University of Louisiana, New Orleans, 1905, died in the Marion Butler Memorial Hospital, Liberty, August 6, aged 63, of injuries received in an automobile accident

**Thomas B. W. Leland**, San Francisco University of California Medical Department, San Francisco 1894, formerly county and city coroner, served as a lieutenant commander in the U. S. Navy during World War I, died June 28, aged 74

**Frederic Michael Lemen**, Buffalo, University of Buffalo School of Medicine 1905, member of the Medical Society of the State of New York, on the staff of the Millard Fillmore Hospital, died June 24, aged 64, of leukemia

**Patrick F. Martin**, Emmitsburg Md., University of Maryland School of Medicine Baltimore, 1900, member of the Medical and Chirurgical Faculty of Maryland, served as coroner in eastern and western health districts of Baltimore for many years resident physician at the Mount St. Mary's College, died June 18, aged 67, of uremia

**Hubert Burns Marvin** \* Binghamton, N. Y., University of Buffalo School of Medicine, 1907, fellow of the American College of Physicians, examiner for draft board number 453, member of the examining board during World War I, on the staff of the Susquehanna Valley Home and the Binghamton City Hospital, where he died June 20, aged 64, of pneumonia

**Roy Cowles McDaniel** \* Portland, Ore., Medico-Chirurgical College of Philadelphia, 1905 fellow of the American College of Surgeons served as secretary-treasurer of the Eastern Oregon District Medical Society, first vice president of the Oregon State Medical Society, 1909-1910 member of the staffs of St. Vincent's Emanuel and Good Samaritan hospitals died June 16, aged 62, of coronary occlusion

**Gertrude Minthorn**, Newport Ore., State University of Iowa College of Medicine Iowa City 1910 formerly a medical missionary in India, died June 28 aged 62, of chronic endocarditis

**Edwin Pendleton Moon**, Wetumpka, Ala., Vanderbilt University School of Medicine Nashville, Tenn. 1898 member of the Medical Association of the State of Alabama served as state physician for prison number 1 and the tuberculosis hospital, died June 10, aged 67, of arteriosclerosis

**Nathan Vernon Noble**, St Mary's Ohio, Starling-Ohio Medical College, Columbus 1911 member of the Ohio State Medical Association, an officer in the medical corps of the U S Army during World War I on the staffs of the Memorial and St Rita's hospitals died June 26, aged 55 of coronary thrombosis

**Carlton V Norcross**, Butte, Mont, State University of Iowa College of Homeopathic Medicine, Iowa City 1887, died May 20, aged 80

**Clifford Seeley Page**, Sisseton, S D Yale University School of Medicine New Haven, Conn, 1896 formerly coroner of Clark County, Neb, and camp surgeon for the Civilian Conservation Corps in New Ulm, Minn, physician for the Indian agency died in the Peabody Hospital, Webster, May 15, aged 68

**Howard Ashley Pardee**, Upper Montclair, N J University of the City of New York Medical Department, 1880 retired in 1934 as medical director of the United States Life Insurance Company a position he held for many years died July 23, aged 85 of acute congestive heart failure secondary to chronic myocarditis and arteriosclerosis

**Lester Claude Pepper** & **Sidney**, Ohio, Starling Medical College, Columbus 1898 formerly member of the legislative committee past president vice president, delegate and secretary of the Shelby County Medical Society served as county coroner and as examining physician for the local Selective Service Board died in the Wilson Memorial Hospital June 23 aged 68, of cerebral hemorrhage

**Carl Anton Platow**, Valley City, N D Maryland Medical College Baltimore, 1912 member of the North Dakota State Medical Association, served during World War I on the staff of the Mercy Hospital, died in Pompano Fla May 22 aged 56, of coronary occlusion

**Hyman Leon Ratnoff** & **New York**, Cornell University Medical College New York, 1906, on the staffs of the Beth-El and Kingston Avenue hospitals, died June 25, aged 62, of coronary thrombosis

**Volney E H Reed**, Austin, Texas Missouri Medical College St Louis 1881 served as president of the bank in Holland for many years formerly health officer of Milan County died June 3 aged 84

**Clarence William Robertson** & **James-town**, N D, Rush Medical College, Chicago 1915 on the staffs of the Janestown and Trinity hospitals died May 22 aged 53 of coronary thrombosis

**Walter C Robinson**, Atlanta Ga Southern Medical College Atlanta 1881, honorary member of the Medical Association of Georgia died June 17 aged 88 of cerebral embolism

**William Taylor Salmon**, Duncan Okla, University of Tennessee Medical Department, Nashville, 1892 formerly associated with the Indian Service died June 26, aged 75, of cranial hemorrhage and hypertension

**Charles Matthew Scott**, Bluefield, W Va, University College of Medicine Richmond 1901, member of the West Virginia State Medical Association fellow of the American College of Surgeons past president of the county board of health founder and head of St Luke's Hospital, established the St Luke's Nurses Training School for eight years secretary of the state board of examiners for nurses died in the University Hospitals Iowa City August 17, aged 65, of pneumonia following an operation

**John Sidney Sharp**, Grenada Miss Medical Department of Tulane University of Louisiana New Orleans 1895 member of the Mississippi State Medical Association, for many years a member of the state board of health member of the Grenada Clinic since its organization on the staff of the Grenada General Hospital chief surgeon in the area for the Illinois Central Railroad died August 5 aged 72 of carcinoma of the prostate

**Isaac Judah Silverman** & **Washington D C** University of Melbourne Faculty of Medicine Australia, 1911, professor of clinical psychiatry at the Georgetown University School of Medicine, member of the American Psychiatric Association fellow of the American College of Physicians, on the staff

of the Gallinger Municipal Hospital died August 6 aged 55, of acute myocardial infarction (posterior) and arteriosclerotic heart disease.

**Rufus Southworth**, Glendale Ohio Miami Medical College, Cincinnati 1904 served as associate professor of therapeutics at the University of Cincinnati College of Medicine served in the medical corps of the U S Army during World War I formerly a medical missionary in China, made a memorable trip around the world in the schooner *Lankce* formerly on the staff of the Cincinnati General Hospital, died in the Christ Hospital, Cincinnati, June 14, aged 65, of cerebral hemorrhage

**Vivienne Eu Gene McMains Spencer**, Sterlington, La Tulane University of Louisiana School of Medicine New Orleans, 1930 served on the staff of St Francis Sanitarium Monroe died in El Paso, Texas, June 26, aged 39, of military tuberculosis

**Edward Charles Stoeltje**, Rosebud, Texas Louisville (Ky) Medical College 1897 member of the State Medical Association of Texas killed in an automobile accident in Galveston June 20, aged 71

**Henry Marshall Swift** & **Cape Elizabeth Maine** Harvard Medical School Boston 1900 assistant in neuropathology at Tufts College Medical School Boston 1907-1908, formerly professor of neurology at the Bowdoin Medical School, Portland served during World War I, member of the American Psychiatric Association and the New England Society of Psychiatry at one time on the staff of the Danvers Insane Hospital, Danvers, Mass past president of the Portland Medical Club died August 18 aged 72

**Gaston E Trosclair**, Thibodaux La University of the South Medical Department, Seawee Tenn 1903, died in St Joseph Hospital June 30, aged 67 of heart disease, nephritis and hypertrophic cirrhosis of the liver

**Thomas Freeman Turner** & **Macon Mo** Washington University School of Medicine St Louis, 1925 served an internship at St Luke's Hospital Kansas City county physician aged 42 drowned in Macon Lake June 28 when the motor boat in which he was riding capsized

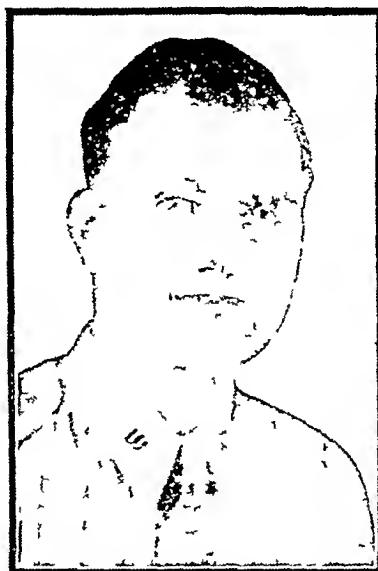
**Elbert Lycurgus Watson** & **Newport Ark** Columbia University College of Physicians and Surgeons New York 1901 past president of the Arkansas State Board of Health president of the Jackson County Medical Society a captain in the medical corps of the U S Army during World War I at one time mayor of Newport served as county health officer physician for the Missouri Pacific Railroad Company died June 3 aged 68

**Myron La Verne White** & **Coffeyville Kan**, Dunham Medical College, Chicago, 1901, served during World War I died in the Mercy Hospital Independence June 4 aged 71 of cirrhosis of the liver and bronchopneumonia

**James Frederick Young**, Danbury Conn Columbia University College of Physicians and Surgeons New York 1913 served in the medical corps of the U S Army during World War I died June 27 aged 55

## KILLED IN ACTION

**Elmer Norval Carter**, Huntington W Va Medical College of Virginia Richmond 1937 member of the West Virginia State Medical Association served an internship at the Scott and White Hospital in Temple, Texas a residency in psychiatry at the Spencer State Hospital Spencer and a residency in medicine at the Chesapeake and Ohio Hospital commissioned a first lieutenant in the medical corps of the Army of the United States July 7 1942 and began active duty on Aug 10 1942 in 1943 ordered to England where he was assigned to hospital duty promoted to captain battalion surgeon in the Twenty-Ninth Division killed in action in Normandy June 19 aged 32



CAPT ELMER N CARTER  
M C, A U S, 1911-1944

the Insurance Association of Approved Hospitals on the staffs of the Providence and Peralta hospitals, Oakland, and the Alameda Hospital, Alameda, died at his home in Piedmont July 15, aged 69, of coronary thrombosis

Nelson Park Davis @ Pittsburgh, University of Pittsburgh School of Medicine, 1909, associate professor of surgery at his alma mater, fellow of the American College of Surgeons, on the staff of the Mercy Hospital, died July 7, aged 58, of cerebral hemorrhage

Lester Cornelius Diddy, Paxton, Ill., Chicago College of Medicine and Surgery, 1907, member of the Illinois State Medical Society, past president of the Ford County Medical Society, died July 11, aged 61, of coronary heart disease

Hugh Victor Du Bois, Nixa, Tenn., Chattanooga (Tenn.) Medical College, 1904, died July 7, aged 64, of heart disease

Harry Edward Dunlop @ Pelham, N. Y., University of the City of New York Medical Department, New York 1886, an Affiliate Fellow of the American Medical Association, died in the Gallagher Nursing Home, Mount Vernon July 14, aged 80, of transverse myelitis and uremia

Elihu Noble Elliott, Chicago, College of Physicians and Surgeons, Chicago, 1883, member of the Illinois State Medical Society, died June 29, aged 82, of carcinoma of the prostate with metastasis, pyelocystitis and cerebral arteriosclerosis

Ralph Waldo Emerson, Owensville, Ind., Eclectic Medical Institute, Cincinnati, 1898, died July 3, aged 74, of heart disease

William Albert Fisher @ Chicago, University of Michigan Department of Medicine and Surgery, Ann Arbor, 1885, at one time president and professor of ophthalmology at the Chicago Eye, Ear, Nose and Throat College, formerly professor of clinical ophthalmology at the University of Illinois College of Medicine, member of the American Academy of Ophthalmology and Otolaryngology, fellow of the American College of Surgeons, died July 31, aged 84

Thomas Francis Foley, Buffalo, University of Buffalo School of Medicine, 1904 for many years staff physician in the child hygiene division of the city health department, a captain in the medical corps of the U. S. Army during World War I, medical examiner at the Attica State Prison, died July 11, aged 68, of pulmonary edema and dilatation of the heart

Frederick Lewis Forker, Binghamton, N. Y., University of the City of New York Medical Department, 1885 served as a member of the board of education, on the staffs of the Binghamton City and Our Lady of Lourdes Memorial hospitals died July 11, aged 83, of arteriosclerosis

William Hodskin Gale, St. Johns, Mich., Jefferson Medical College of Philadelphia, 1901, formerly secretary and treasurer of the Clinton County Medical Society, served in the medical corps of the U. S. Army during World War I, in 1910 appointed to the U. S. Board of Pensions, for many years county health officer on the staff of the Clinton Memorial Hospital, served as district surgeon for the Grand Trunk Railroad died June 30, aged 74, of cardiorenal disease

John Asa Gibbons, Mitchell, Ind., Central College of Physicians and Surgeons, Indianapolis, 1898, died in the Dunn Memorial Hospital, Bedford, July 6, aged 71, of carcinoma of the rectum

John Louis Gilleland, Pullman, Wash., American Medical College, St. Louis, 1903 member of the Washington State Medical Association formerly on the staff of St. Ignatius Hospital, Colfax, died June 5, aged 69, of carcinoma of the prostate and Parkinson's disease

Thomas Leverett Gingold, New Haven, Conn., Columbia University College of Physicians and Surgeons New York, 1919 formerly police surgeon and alderman served on the staff of the Grace Hospital, where he died July 6, aged 49 of carcinoma of the pancreas

Faustine Graves, Piney Flats Tenn., Tennessee Medical College, Knoxville, 1894 died July 13 aged 76, of myocardial failure and Parkinson's disease

J. Edward Harmon, Pine Knot, Ky., Hospital College of Medicine Louisville, 1905, died in St. Anthony's Hospital, Louisville, June 29, aged 65, of hypertensive cardiovascular disease

John Edward Harris, Winchester, Va., Medical College of Virginia Richmond 1900, secretary-treasurer of the Medical Society of Northern Virginia and of the Winchester Memorial Hospital, died May 30, aged 69

Atticus Greene Haygood @ Downey, Calif., University of Nashville (Tenn.) Medical Department, 1891, Vanderbilt University School of Medicine, Nashville, 1891, a captain in the medical corps of the U. S. Army during World War I, examiner for the Selective Service Board, on the staff of the Methodist Hospital, Los Angeles, a charter member and past president of the Kiwanis Club, died in the Downey Community Hospital June 27, aged 73, of bronchopneumonia and acute gastroenteritis

Edward Lathrop Hill Jr., Jacksonville, Ill., St. Louis University School of Medicine, 1933, member of the Illinois State Medical Society, formerly an intern at St. Louis City Hospital and resident in neuropsychiatry at the City Sanatorium in St. Louis, first lieutenant in the medical reserve corps of the U. S. Army not on active duty, health officer in charge of the McDonough-Tulton bicounty health unit of the state health department with headquarters in Macomb, died in the Barnes Hospital, St. Louis, aged 37, of myelogenous leukemia

Joseph Harrison Humphrey @ St. Louis, Washington University School of Medicine, St. Louis, 1901, served as director of hygiene for the board of education, died in the Evangelical Deaconess Home and Hospital June 23, aged 67, of cerebral embolism

John Charles Kamp, Saugerties, N. Y., University of Buffalo School of Medicine, 1895, member of the Medical Society of the State of New York, health officer since May 1924 with jurisdiction over the consolidated health district of Saugerties, served on the staff of the Kingston Hospital, Kingston, died June 18, aged 84, of arteriosclerosis

Edwin Jerome Kauffman, Marion, S. D., College of Physicians and Surgeons, School of Medicine of the University of Illinois, 1906 member of the South Dakota State Medical Association, formerly councilman on the staffs of the Methodist State Hospital, Mitchell, and the Sioux Valley Hospital, Sioux Falls, where he died May 1, aged 60, of coronary thrombosis

Theophilus Kubricht, Wallis, Texas, College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1905, also a minister, died in a sanatorium in Houston May 28, aged 80

Charles Labash, Passaic, N. J., Chicago Medical School, 1926, member of the Medical Society of New Jersey, died in St. Mary's Hospital June 26, aged 61, of cirrhosis of the liver

Virgil Alfred Lea, Gloster, Miss., Medical Department of Tulane University of Louisiana, New Orleans, 1905, died in the Marion Butler Memorial Hospital, Liberty, August 6, aged 63, of injuries received in an automobile accident

Thomas B. W. Leland, San Francisco, University of California Medical Department, San Francisco, 1894 formerly county and city coroner served as a lieutenant commander in the U. S. Navy during World War I, died June 28, aged 74

Frederic Michael Lemen, Buffalo, University of Buffalo School of Medicine 1905, member of the Medical Society of the State of New York, on the staff of the Millard Fillmore Hospital, died June 24, aged 64, of leukemia

Patrick F. Martin, Emmitsburg, Md., University of Maryland School of Medicine, Baltimore, 1900, member of the Medical and Surgical Faculty of Maryland, served as coroner in eastern and western health districts of Baltimore for many years resident physician at the Mount St. Mary's College, died June 18, aged 67, of uremia

Hubert Burns Marvin @ Binghamton, N. Y., University of Buffalo School of Medicine, 1907, fellow of the American College of Physicians, examiner for draft board number 453, member of the examining board during World War I, on the staff of the Susquehanna Valley Home and the Binghamton City Hospital, where he died June 20, aged 64, of pneumonia

Roy Cowles McDaniel @ Portland, Ore., Medico-Chirurgical College of Philadelphia, 1905, fellow of the American College of Surgeons served as secretary-treasurer of the Eastern Oregon District Medical Society, first vice president of the Oregon State Medical Society, 1909-1910 member of the staffs of St. Vincent's Emanuel and Good Samaritan hospitals died June 16, aged 62, of coronary occlusion

Gertrude Minthorn, Newport, Ore., State University of Iowa College of Medicine Iowa City, 1910 formerly a medical missionary in India, died June 28, aged 62 of chronic endocarditis

Edwin Pendleton Moon, Wetumpka, Ala., Vanderbilt University School of Medicine, Nashville, Tenn., 1898 member of the Medical Association of the State of Alabama served as state physician for prison number 1 and the tuberculosis hospital, died June 10, aged 67, of arteriosclerosis



**Nathan Vernon Noble**, St Mary's Ohio, Starling-Ohio Medical College, Columbus 1911 member of the Ohio State Medical Association, an officer in the medical corps of the U S Army during World War I on the staffs of the Memorial and St Rita's hospitals, died June 26, aged 55, of coronary thrombosis

**Carlton V Norcross**, Butte, Mont, State University of Iowa College of Homeopathic Medicine, Iowa City, 1887, died May 20, aged 80

**Clifford Seeley Page**, Sisseton, S D Yale University School of Medicine New Haven, Conn, 1896 formerly coroner of Clark County, Neb and camp surgeon for the Civilian Conservation Corps in New Ulm Minn, physician for the Indian agency, died in the Peabody Hospital, Webster, May 15, aged 68

**Howard Ashley Pardee**, Upper Montclair, N J University of the City of New York Medical Department 1880 retired in 1934 as medical director of the United States Life Insurance Company a position he held for many years, died July 23, aged 85 of acute congestive heart failure secondary to chronic myocarditis and arteriosclerosis

**Lester Claude Pepper** @ Sidney, Ohio, Starling Medical College, Columbus 1898 formerly member of the legislative committee, past president vice president, delegate and secretary of the Shelby County Medical Society served as county coroner and as examining physician for the local Selective Service Board died in the Wilson Memorial Hospital June 23 aged 68 of cerebral hemorrhage

**Carl Anton Platou**, Valley City, N D Maryland Medical College Baltimore, 1912 member of the North Dakota State Medical Association, served during World War I on the staff of the Mercy Hospital, died in Pompano, Fla May 22 aged 56, of coronary occlusion

**Hyman Leon Ratnoff** @ New York Cornell University Medical College New York, 1906 on the staffs of the Beth-El and Kingston Avenue hospitals died June 25, aged 62, of coronary thrombosis

**Volney E H Reed**, Austin, Texas Missouri Medical College St Louis 1881 served as president of the bank in Holland for many years formerly health officer of Milan County died June 3 aged 84

**Clarence William Robertson** @ Jamestown, N D, Rush Medical College Chicago, 1915, on the staffs of the Jamestown and Trinity hospitals died May 22, aged 53, of coronary thrombosis

**Walter C Robinson**, Atlanta Ga, Southern Medical College Atlanta 1881 honorary member of the Medical Association of Georgia, died June 17 aged 88 of cerebral embolism

**William Taylor Salmon**, Duncan Okla University of Tennessee Medical Department, Nashville, 1892 formerly associated with the Indian Service died June 26, aged 75, of cranial hemorrhage and hypertension

**Charles Matthew Scott**, Bluefield, W Va, University College of Medicine Richmond, 1901, member of the West Virginia State Medical Association fellow of the American College of Surgeons past president of the county board of health founder and head of St Luke's Hospital, established the St Luke's Nurses Training School for eight years secretary of the state board of examiners for nurses died in the University Hospitals Iowa City August 17, aged 65, of pneumonia following an operation

**John Sidney Sharp**, Grenada Miss Medical Department of Tulane University of Louisiana New Orleans 1895 member of the Mississippi State Medical Association for many years a member of the state board of health member of the Grenada Clinic since its organization on the staff of the Grenada General Hospital chief surgeon in the area for the Illinois Central Railroad, died August 5 aged 72 of carcinoma of the prostate

**Isaac Judah Silverman** @ Washington D C University of Melbourne Faculty of Medicine Australia, 1911, professor of clinical psychiatry at the Georgetown University School of Medicine member of the American Psychiatric Association fellow of the American College of Physicians, on the staff

of the Gallinger Municipal Hospital died August 6 aged 55 of acute myocardial infarction (posterior) and arteriosclerotic heart disease

**Rufus Southworth**, Glendale, Ohio Miami Medical College Cincinnati 1904, served as associate professor of therapeutics at the University of Cincinnati College of Medicine served in the medical corps of the U S Army during World War I, formerly a medical missionary in China made a memorable trip around the world in the schooner *Lankee* formerly on the staff of the Cincinnati General Hospital died in the Christ Hospital, Cincinnati, June 14, aged 65, of cerebral hemorrhage

**Vivienne Eu Gene McMains Spencer**, Sterlington La Tulane University of Louisiana School of Medicine New Orleans 1930, served on the staff of St Francis' Sanitarium Monroe died in El Paso Texas, June 26 aged 39 of military tuberculosis

**Edward Charles Stoeltje**, Rosebud Texas Louisville (Ky) Medical College 1897, member of the State Medical Association of Texas killed in an automobile accident in Galveston June 20, aged 71

**Henry Marshall Swift** @ Cape Elizabeth Maine Harvard Medical School, Boston, 1900, assistant in neuropathology at Tufts College Medical School, Boston 1907-1908 formerly professor of neurology at the Bowdoin Medical School Portland

Portland served during World War I member of the American Psychiatric Association and the New England Society of Psychiatry at one time on the staff of the Danvers Insane Hospital, Danvers Mass, past president of the Portland Medical Club died August 18 aged 72

**Gaston E Trosclair**, Thibodaux La University of the South Medical Department, Sewanee, Tenn 1903, died in St Joseph Hospital June 30, aged 67, of heart disease nephritis and hypertrophic cirrhosis of the liver

**Thomas Freeman Turner** @ Macon Mo Washington University School of Medicine St Louis, 1925 served an internship at St Luke's Hospital Kansas City county physician aged 42 drowned in Macon Lake June 28 when the motor boat in which he was riding capsized

**Elbert Lycurgus Watson** @ Newport Ark Columbia University College of Physicians and Surgeons New York 1900 past president of the Arkansas State Board of Health president of the Jackson County Medical Society a captain in the medical corps of the U S Army during World War I at one time mayor of Newport served as county health officer physician for the Missouri Pacific Railroad Company died June 3, aged 68

**Myron La Verne White** @ Coffeyville Kan Dunham Medical College, Chicago 1901 served during World War I died in the Mercy Hospital Independence, June 4, aged 71 of cirrhosis of the liver and bronchopneumonia

**James Frederick Young**, Danbury, Conn Columbia University College of Physicians and Surgeons, New York 1913 served in the medical corps of the U S Army during World War I, died June 27, aged 55

## KILLED IN ACTION

**Elmer Norval Carter**, Huntington, W Va Medical College of Virginia Richmond 1937, member of the West Virginia State Medical Association served an internship at the Scott and White Hospital in Temple, Texas a residency in psychiatry at the Spencer State Hospital Spencer and a residency in medicine at the Chesapeake and Ohio Hospital commissioned a first lieutenant in the medical corps of the Army of the United States July 7 1942 and began active duty on Aug 10 1942, in 1943 ordered to England where he was assigned to hospital duty promoted to captain battalion surgeon in the Twenty-Ninth Division, killed in action in Normandy June 19 aged 32



CAPT ELMER N CARTER  
M C, A U S, 1911-1944



## Bureau of Investigation

### STIPULATIONS

#### Agreements Between Federal Trade Commission and Promoters of Various Products

Following are abstracts of stipulations in which promoters of "patent medicines," medical devices or cosmetics have agreed, following action by the Federal Trade Commission, to discontinue certain misrepresentations in their advertising. These stipulations differ from the "Cease and Desist Orders" of the Commission in that such orders definitely direct the discontinuance of misrepresentations. The abstracts that follow are presented primarily to illustrate the effects of the provisions of the Wheeler-Lea Amendment to the Federal Trade Commission Act on the promotion of such products.

**Amisogen**—In December 1943 J P Hoff, Berwyn Ill and the A N Baker Advertising Agency Inc Chicago stipulated with the Federal Trade Commission that they would discontinue the following misrepresentations in the advertising of this product. That it will have any effect on asthma except to the extent that it may afford palliative relief from the paroxysms of this disease that it will relieve hay fever or its symptoms or that the product is free from opiates or narcotics. They further agreed not to disseminate any advertisement which fails to reveal that the product should not be used in excess of the dosage recommended that frequent or continued use of it may be habit forming or cause nervousness restlessness or sleeplessness and that the product should not be used by persons suffering from high blood pressure heart disease diabetes or thyroid trouble. It was provided however that such advertisements need only contain the statement Caution Use Only as Directed if the labeling directions contain a warning to the same effect.

**Buxton's A Special Compound**—This is marketed by a Hopc Buxton trading as Buxton Medicine Company Abbot Village Maine. In November 1943 this person stipulated with the Federal Trade Commission to cease representing that the product has been approved by a federal agency that it is a remedy or cure for sciatica arthritis neuritis diseased liver stomach or kidneys that it eliminates uric acid from the system overcomes acidity strengthens the heart normalizes the kidneys or bladder purifies the blood or is a treatment for ingestion or stomach trouble.

**Cramer Chemical Company's Preparations**—The concern in question located at Gardner Kan stipulated with the Federal Trade Commission in December 1943 that it would discontinue the following misrepresentations. That "Nitrolin" is the best known or most universally used germicide in the United States produces complete sterilization in 90 seconds checks or stops bleeding other than capillary bleeding from superficial skin lesions draws the torn jagged edges of a wound together stops sore throat assists in the prevention of influenza or may be relied on for quick and safe recovery from all skin conditions that "Cramer's Athletic Stringer for Gargle" is effective in checking or preventing influenza tonsillitis or like disorders that "Cramer's Athletic Liment" has special penetrating powers or reaches into muscular or other tissues to any significant degree that Cramer's Dextrose Tablets will produce quick energy in the sense of capacity for more intense physical exertion stimulate an athlete to greater performance enable him to win more games or afford immediate relief from hay fever or asthma that Cramer's Athletic Hair Oil prevents shower bath baldness or any other kind of baldness that Iso Pine is a suitable preparation for sterilizing surgical instruments that Cramer's Athletic Effervescent Alkaline Powder relieves acid condition of the system or has any significant effect on the acid base balance of the body that Athletic Ointment has any therapeutic effect on boils or performs any function in the healing process that Athletic Red Hot Ointment relieves deep seated pain or affords adequate relief from sprains that Athletic Analgesic Balm relieves congestion that Athletic Foot Ointment is an effective treatment for athlete's foot or ringworm except in mild cases that Athletic Inhalant effectively relieves sinus trouble or forms a protective coating against bacteria that Cramer's Cold Tablets have any appreciable effect in preventing common colds or that Cramer's Athletic Alkaline Powder relieves nausea or stomach sickness regard less of the nature or cause thereof. The respondent also agreed to cease using the word Antiseptic as part of the trade name or designation of Cramer's Athletic Antiseptic Powder or indicating in any way that the nostrum has antiseptic properties.

**Dr Gray's Foot Bath Powder**—In November 1943 S W Ward trading as Ward & Sons Chicago entered into a stipulation with the Federal Trade Commission to discontinue the following misrepresentations in advertising the product. That it is used by physicians hospitals or sanatoria that it is a result of scientific research or a study of foot ailments that statements in the advertising have been made by or are quotations from the literature of the United States Public Health Service or that the latter or any other agency of the government has endorsed or recommended the use of this powder that a package of it has a greater value than the price at which it is regularly sold that its price is limited as to time or that the powder draws poison from the feet, has curative or healing powers or destroys germs. Ward further agreed to discontinue the representations that no other products are as effective as his powder is in the treatment of athlete's foot, itching broken skin open sores and blisters that its use will prevent athlete's foot or that the coloring of the skin caused by the powder destroys infection.

**Elastic Rupture Guard**—This is put out by a T E Brooks trading as the Rupture-Guard Company Marshall Mich. In December 1943 Brooks and Ralph L Wolfe & Associates Inc, an advertising agency stipulated with the Federal Trade Commission that they would discontinue representations that the device in question may be properly fitted to one's personal requirements when ordered through the mails will hold the rupture securely or comfortably in any position of the body, will assist nature in strengthening the muscles or in closing the hernia opening or that it is the only device of its kind further they would cease representing that the use of the device will eventually enable one to go without a truss or will correct or cure rupture that it will stay in position under all conditions of use that it is more natural or comfortable than other trusses or that satisfaction in using it is guaranteed unless the terms of the guaranty are disclosed.

**Sar Tol Cough Syrup Cough Drops and Nose Drops**—On Dec 8 1943 the Federal Trade Commission reported that it had accepted a stipulation from O B Whitaker, trading as the O B Whitaker Manufacturing Company Joplin Mo. In this he agreed to cease representing that his preparations whether used alone or in combination prevent or cure colds have any curative effect on the underlying factors which cause colds or cure throat irritations prevent fatigue maintain health or aid in building bodily resistance. Further he agreed to cease representing that Sar Tol Cough Drops neutralize tobacco onion or other odors. Also Whitaker agreed to discontinue any advertisement which did not conspicuously warn that frequent or excessive use of the Nose Drops may cause injury to the lungs nervousness, restlessness or sleeplessness and should not, except on competent advice be given to infants or young children or be taken by persons suffering from high blood pressure heart disease diabetes or thyroid trouble. It was provided however that such advertisements need only contain the statement Caution Use Only as Directed if and when the directions in the labeling contain a warning to the same effect.

### MISBRANDED PRODUCTS

#### Abstracts of Notices of Judgment Issued by the Food and Drug Administration of the Federal Security Agency

[EDITORIAL NOTE—These Notices of Judgment are issued under the Food Drug and Cosmetic Act, and in cases in which they refer to drugs and devices they are designated DDNJ and foods, FNJ. The abstracts that follow are given in the briefest possible form: (1) the name of the product, (2) the name of the manufacturer, shipper or consigner, (3) the date of shipment, (4) the composition, (5) the type of nostrum, (6) the reason for the charge of misbranding, and (7) the date of issuance of the Notice of Judgment.]

**Araban Oil**—Standard Drug Company Inc Spartanburg S C Shipped Feb 28 and March 13 1941. Composition essentially a mixture of soap ammonia turpentine and water. Misbranded because the ammonia and turpentine present might be irritating to the skin particularly if applied with rubbing and also to eyes or mucous membranes whereas label did not warn against this. Further misbranded because label falsely represented the product as a cure treatment or preventive of pain incident to rheumatism lame back stiff joints croup swellings wounds and some other disorders.—[DDNJ FDC 805 December 1943]

**Climax C & P R**—Standard Drug Company Inc Spartanburg S C Shipped Feb 28 and March 13 1941. Composition essentially water alcohol chloroform and plant drugs including capsicum. Misbranded because of false and misleading label representations for the product as a cure treatment or preventive of pain in the bowels cramp colic and diarrhea.—[DDNJ FDC 805 December 1943]

**Gloria Tonic Tablets**—John A Smith Company Oconomowoc Wis Shipped Oct 20 1941. Composition in each tablet 0.77 grain of iron 3.64 grains of sodium salicylate 0.003 grain of colchicin and extract of *Cuscuta sagrada* in an undecleared amount. Adulterated because strength differed from that which it was represented to possess namely in each tablet 1 grain of reduced iron 5 grains of sodium salicylate and ½ a grain of colchicin. Misbranded because directions on label did not provide for sufficient medication to constitute a treatment for gout because though a laxative it failed to warn adequately that product should not be taken when symptoms of appendicitis were present such as abdominal pain nausea and vomiting and that frequent or continued use might result in dependence on laxatives also misbranded because statement Tonic An Allevial [sic] Treatment Useful in Gout was false and misleading since the tablets when used as directed did not constitute a tonic or treatment for gout.—[DDNJ FDC 767 September 1943]

**Royale Agar and Oil with Phenolphthalein**—Vital Laboratories Union City N J Shipped Jan 7 and March 21 1942. Composition an emulsion containing mineral oil and phenolphthalein. Misbranded in that it bore no labeling containing adequate directions for use or the warning that it should not be taken when nausea vomiting abdominal pain or other symptoms of appendicitis are present or the caution that frequent or continued use might result in dependence on laxatives. Further misbranded because name and place of business of manufacturer packer or distributor were not given or an accurate statement of the quantity of the contents or the common or usual name of each active ingredient.—[DDNJ FDC 758 September 1943]

## Correspondence

### CANCER SAID TO BE CAUSED BY A SINGLE INJURY

To the Editor—I am interested to note your editorial of August 12 on the matter of claims for disability said to have resulted from cancer caused by a single injury. In my opinion this editorial is timely but scarcely goes far enough. Traumatic cancer attracted my interest for a rather brief period following the death of the late Dr. James Ewing. Dr. Ewing had been interested in this matter for years and at his death a number of unfinished cases were turned over to me for completion.

In the course of hearings in these cases I acquired an exceedingly bad taste both for certain members of the legal profession and for members of the medical profession who seemed to me to be quite willing to testify to almost anything for a fee. I likewise learned to distrust the type of referee who is so afraid of possible injustice to a claimant that he tends to make awards in the face of incompetent evidence, and I believe he actually practices sociology rather than medicine. He rewards the "deserving" laborer at the expense of the insurance carrier and in so doing uses supposedly scientific medicine to further his notion of proper social behavior.

As for medical testimony, it appears to me that (1) such testimony can be purchased at a price or (2) those individuals who testify are hopelessly ignorant of the commonly known facts of cancer pathogenesis, which in turn is the result either of bad teaching in the cancer field or of dependence on casual statements heard in medical schools or encountered in textbooks on the subject. Lastly, it would oftentimes seem that the supposed expert doesn't take the trouble to reason at all. Let me illustrate. The same surgeon who will testify that mammary cancer has resulted from a single trauma will at the least provocation operate for a benign lesion of the breast and would never think of warning a patient that because of his operative trauma, which usually greatly exceeds the casual industrial trauma, she should give heed to the possibility that she will develop a cancer of the breast. The same surgeon who will do all sorts of orthopedic jobs involving chiseling into bone or insertion of such objects as ice tongs or pins or screws may testify that a blow which has left no real signs has caused an osteogenic sarcoma, although he never thinks his surgery will do so nor has he ever warned a patient with the severest form of bone trauma—a fracture—to be on the lookout for a possible sarcoma. A man testifies that a blow has caused a soft part sarcoma and yet that man and his colleagues throughout the world will do hundreds of thousands of appendectomies involving the cutting of abdominal wall musculature and observe no tumors. Another says that a malignant melanoma has followed a pin prick and yet no melanoma has ever followed the millions of venipunctures for complement fixation tests or intravenous medication. A third will say that testis cancer is the result of single trauma although the same tumor, histologically indistinguishable, appears in the ovary and no one assigns that to trauma. As far as I know I have never seen a cancer which I could logically and irrevocably assign to single trauma and, even more important than that, I do not know that any one has ever observed the development of a process which could be called "precancerous" after a trauma. The absurd efforts made in our compensation courts to emphasize the severity of traumas rests on the nonsensical point of view that there is some dividing line between the degree of trauma which will or will not cause cancer, under the popular supposition that the metabolic changes which make a cell a cancer cell require a few additional dynes for their complete florescence.

Some means should be found to exclude these figments of imagination from our compensation courts and place such claims

in the hands of a truly expert commission—not composed of individuals who have nothing else to do or who have political friends either within medicine or without—and make the findings of this commission binding on the compensation referee, thus avoiding time wasted at hearings, questions and insults from cheap lawyers and the mental anguish resulting from having to listen to the testimony of ignorant doctors, that in itself judged by medicolegal standards, might be deemed a sufficient cause for development of a glioma in the expert. I tried this in a way. That is, I wrote a few letters to people who should have been interested and didn't get anywhere and am unable to wage a one man war on the racket. It will certainly be hard to break, for, under the law compensation is profitable to claimant physician and lawyer and of course in the end the public foots the bill.

FRED W. STEWART, M.D. New York  
Acting Director Memorial Hospital for the  
Treatment of Cancer and Allied Diseases

## Society Proceedings

### COMING MEETINGS

- American Academy of Ophthalmology and Otolaryngology Chicago Oct 8-12 Dr W L Benedict 102 Second Ave SW Rochester, Minn Secretary
- American Hospital Association Cleveland Oct 2-6 Mr George P Bugbee 18 East Division St Chicago Executive Secretary
- American Pediatric Society Atlantic City N J Sept 25-27 Dr Hugh McCulloch 325 N Euclid Ave St Louis 8 Secretary
- American Public Health Association New York Oct 3-5 Dr Reginald M Atwater 1790 Broadway New York 19 Executive Secretary
- American Roentgen Ray Society Chicago Sept 24-29 Dr H Dabney Kerr, University Hospitals Iowa City, Secretary
- Association of American Medical Colleges Detroit Oct 23-25 Dr Fred C Zapffe 5 S Wabash Ave Chicago Secretary
- Association of Military Surgeons of the United States New York Nov 2-4 Col James M Phalen Army Medical Museum Washington 25 D C Secretary
- Colorado State Medical Society Denver Sept 27-29 Dr John S Bouslog 537 Republic Bldg Denver 2 Secretary
- Delaware Medical Society of Lewes Sept 11-12 Dr W O La Motte 601 Delaware Avenue Wilmington Secretary
- District of Columbia Medical Society of the Washington Oct 5-7 Mr Theodore Wiprud 1718 M St N W Washington Secretary
- Indiana State Medical Association Indianapolis Oct 3-5 Mr T A Hendricks 23 East Ohio St Indianapolis 4 Executive Secretary
- Inter State Postgraduate Medical Association of North America Chicago Oct 17-20 Dr Arthur G Sullivan 16 N Carroll St Madison WI Managing Director
- International College of Surgeons U S Chapter Philadelphia Oct 3-5 Dr Desiderio Roman 250 South 17th St Philadelphia Secretary
- Kentucky State Medical Association Lexington September 18-20 Dr P E Blackerby 620 S Third St Louisville Secretary
- Michigan State Medical Society Grand Rapids Sept 27-29 Dr L Fernald Foster 2020 Olds Tower Lansing 8 Secretary
- Mississippi Valley Medical Society, Peoria Ill Sept 27-28 Dr Harold Swanberg, 510 Maine St Quincy Ill Secretary
- Omaha Mid West Clinical Society Omaha Nebraska Oct 21-22 Dr J D McCarthy 1036 Medical Arts Bldg Omaha 2 Secretary
- Pennsylvania Medical Society of the State of Pittsburgh Sept 19-21 Dr Walter F Donaldson 500 Penn Ave Pittsburgh 22 Secretary
- Radiological Society of North America Chicago Sept 24-29 Dr Donald S Childs 607 Medical Arts Bldg Syracuse N Y Secretary
- Virginia Medical Society of Richmond Oct 20-25 Miss Agne V Edwards 1200 E Clay St Richmond 19 Secretary
- Wisconsin State Medical Society of Milwaukee Sept 18-20 Mr Charles H Crownhart 110 E Main St Madison 3 Secretary

## Bureau of Legal Medicine and Legislation

### MEDICOLEGAL ABSTRACTS

**Workmen's Compensation Acts Cerebral Hemorrhage Following Exertion in Hot Weather by Syphilitic Workman**—The workman, a Negro about 40 years of age, had syphilis in the tertiary state. The court nevertheless states that he enjoyed good health prior to the date of the industrial accident here discussed. On May 1, 1942, a "very warm" day, he had been unloading lumber from boxcars. About 7 p m he became overheated and had a dizzy feeling but continued to work another hour until his work day was finished. He was sick at home all night but returned to work next morning, when he became unconscious and was unable to begin work. Subsequently he suffered a cerebral hemorrhage which resulted in paralysis of his left side. He was denied compensation under the Florida workmen's compensation act and appealed to the circuit court, Leon County, which affirmed the denial of compensation. He then appealed to the Supreme Court of Florida.

The Florida workmen's compensation act, said the Supreme Court so far as here pertinent, provides as follows:

Accident shall mean only an unexpected or unusual event happening suddenly.

Where a preexisting disease is accelerated or aggravated by an accident arising out of and in the course of the employment only acceleration of death or the acceleration or aggravation of disability reasonably attributable to the accident shall be compensable.

On just what precise reason the trial court denied compensation is not clear. Presumably the employer and his insurance carrier must have argued that Davis's disability was due solely to the syphilitic condition and that there was no causal connection between the exertion of employment and the disability. The Supreme Court concluded that Davis was entitled to compensation on the theory that the exertion of his employment had accelerated or aggravated his syphilitic condition. The court relied among other cases, on *Crowley's Case*, 223 Mass 288, 111 N E 786. The Massachusetts statute, said the Supreme Court, was similar to the Florida statute to be construed. In that case also the employee had syphilis but being dormant, it left his ability unimpaired to carry on his work. Exertion of employment apparently, was followed by paralysis or insanity and total disability. The employer and his insurance carrier contended that the workman could not recover under the Massachusetts workmen's compensation act because of the preexisting syphilitic condition. The court there said:

The statute prescribes no standard of fitness to which the employee must conform and compensation is not based on any implied warranty of perfect health or of immunity from latent and unknown tendencies to disease which may develop into positive ailments if incited to activity through any cause originating in the performance of the work for which he is hired. What the legislature might have said is one thing, what it has said is quite another thing and in the application of the statute the cause of partial or total incapacity may spring from and be attributable to the injury just as much where undeveloped and dangerous physical conditions are set in motion producing such result as where it follows directly from dislocations or dismemberments or from internal organic changes capable of being exactly located. *Madden's Case*, 222 Mass 487, 111 N E 379.

Recovery of compensation by a claimant continued the Florida court, is not conditioned on good or perfect health. The statute here considered does not require a health certificate or require the workman to be free from disease at the time he was employed or injured. It is reasonable to assume that a workman has physical infirmities and takes them if any, with him to his employment. The employer accepts the workman in such physical condition as he finds him and assumes the risk of a disease condition aggravated by injury. Compensation is not made to depend on the condition of health of the workman but on an injury which is a hazard of employment. The controlling principle of law is succinctly expressed by Schneider on Workmen's Compensation Law, ed 2 vol 1, p 517, par 138 viz:

**Aggravation of Preexisting Condition**—Likewise the courts consistent with the theory of workmen's compensation acts hold with practical uniformity that where an employee afflicted with disease receives a personal injury under such circumstances as that he might have appealed to the act for relief on account of the injury had there been no disease involved but the disease as it in fact exists is by the injury materially aggravated or accelerated resulting in disability or death earlier than

would have otherwise occurred and the disability or death does not result from the disease alone progressing naturally as it would have done under ordinary conditions but the injury aggravating and accelerating its progress materially contributes to hasten its culmination in disability or death there may be an award under the compensation acts.

The Supreme Court accordingly, in effect, ordered an award of compensation in favor of the workman—*Davis v Arley Const Co*, 18 So (2d) 255 (Fla, 1944).

## Medical Examinations and Licensure

### COMING EXAMINATIONS AND MEETINGS

#### NATIONAL BOARD OF MEDICAL EXAMINERS EXAMINING BOARDS IN SPECIALTIES

Examinations of the Examining Boards in Specialties were published in THE JOURNAL Sept 2, page 49.

#### BOARDS OF MEDICAL EXAMINERS

|                              |                         |  |                                     |                      |
|------------------------------|-------------------------|--|-------------------------------------|----------------------|
| ALABAMA                      | Montgomery              | Oct 24 26                                  | Sec, Dr B F Austin                  | 519                  |
| Dexter Ave                   | Montgomery              |  |                                     |                      |
| ARIZONA                      | Phoenix                 | Oct 3 4                                    | Sec Dr J H Patterson                | 826                  |
| Security Bldg                | Phoenix                 |  |                                     |                      |
| ARKANSAS                     | Little Rock             | Nov 9 10                                   | Sec Dr D L Owens                    | Harrison             |
| DELAWARE                     | Dover                   | Oct 10 12                                  | Sec Medical Council of Delaware     |                      |
| Dr J S McDaniel              | 229 S State St          | Dover                                      |                                     |                      |
| DISTRICT OF COLUMBIA         | Washington              | November                                   | Sec Commission                      |                      |
| on Licensure                 | Dr G C Ruhland          | 6150 E Municipal Bldg                      | Washington                          |                      |
| IDAHOO                       | Boise                   | Jan 8 11                                   | Dir Bureau of Occupational Licenses |                      |
| Mrs Lela D Painter           | 355 State Capitol Bldg  | Boise                                      |                                     |                      |
| ILLINOIS                     | Chicago                 | Oct 10 12                                  | Supt of Registration Department of  |                      |
| Registration and Education   | Mr Philip Harman        | Springfield                                |                                     |                      |
| INDIANA                      | Indianapolis            | Jan 3 5                                    | Exec Sec Board of Medical           |                      |
| Registration and Examination | Miss Ruth V Kirk        | 301 State House                            | Indianapolis                        |                      |
| IOWA                         | Iowa City               | Sept 25 27                                 | Dir Division of Licensure and       |                      |
| Registration                 | Mr H W Grefe            | Capitol Bldg                               | Des Moines                          |                      |
| KANSAS                       | Nov 23                  | Sec Board of Medical Registration and Exam |                                     |                      |
| nation                       | Dr J F Hassig           | 905 N Seventh St                           | Kansas City                         |                      |
| KENTUCKY                     | Louisville              | Sept 11 13                                 | Sec State Board of Health           |                      |
| Dr Philip L Blackerby        | 620 S Third St          | Louisville                                 |                                     |                      |
| MARYLAND                     | Homoeopathic            | Baltimore                                  | Dec 13                              | Sec Dr John A        |
| Evans                        | 612 W 40th St           | Baltimore                                  |                                     |                      |
| MICHIGAN                     | Detroit                 | Sept 25 27                                 | Sec Board of Registration in        |                      |
| Medicine                     | Dr J E McIntyre         | 100 W Allegan St                           | Lansing                             |                      |
| MISSISSIPPI                  | Jackson                 | Oct 16 17                                  | Asst Sec Dr R N Whitfield           |                      |
| Jackson                      |                         |  |                                     |                      |
| MISSOURI                     | St Louis                | Sept 18 20                                 | Sec State Board of Health           | Dr                   |
| James Stewart                | State Capitol Bldg      | Jefferson City                             |                                     |                      |
| MONTANA                      | Helena                  | Oct 2 4                                    | Sec Dr O G Klein                    | First Natl           |
| Bank Bldg                    | Helena                  |  |                                     |                      |
| NEBRASKA                     | Omaha                   | Sept 26 28                                 | Dir Bureau of Examining Boards      |                      |
| Mr Oscar F Humble            | 1009 State Capitol Bldg | Lincoln                                    |                                     |                      |
| NEW HAMPSHIRE                | Concord                 | Sept 14 15                                 | Sec Board of Registration in        |                      |
| Medicine                     | Dr D G Smith            | 77 Main St                                 | Nashua                              |                      |
| NEW MEXICO                   | Santa Fe                | Oct 9 10                                   | Sec Dr LeGrand Ward                 | 141                  |
| Palace Ave                   | Santa Fe                |  |                                     |                      |
| NORTH CAROLINA               | Raleigh                 | Sept 11 12                                 | Sec Dr W D James                    |                      |
| Hamlet                       |                         |  |                                     |                      |
| NORTH DAKOTA                 | Grand Forks             | Jan 2 5                                    | Sec Dr G M Williamson               |                      |
| 414 S 3rd St                 | Grand Forks             |  |                                     |                      |
| OHIO                         | Examination             | Columbus                                   | Sept 26 29                          | Endorsement Columbus |
| Oct 3                        | Sec Dr H M Plittner     | 21 W Broad St                              | Columbus                            |                      |
| OKLAHOMA                     | Oklahoma City           | Sept. 16                                   | Sec Dr J D Osborn Jr                |                      |
| Frederick                    |                         |  |                                     |                      |
| SOUTH CAROLINA               | Charleston              | Sept 11 13                                 | Sec Dr N B Heyward                  |                      |
| 1329 Blandena St             | Columbia                |  |                                     |                      |
| SOUTH DAKOTA                 | Pierre                  | Jan 16 17                                  | Sec Medical Licensure State         |                      |
| Board of Health              | Dr G Cottum             | Pierre                                     |                                     |                      |
| TENNESSEE                    | Memphis and Nashville   | Sept 20 22                                 | Sec Dr H W                          |                      |
| Qualls                       | 130 Madison Ave         | Memphis                                    |                                     |                      |
| TEXAS                        | Dallas                  | Nov 15 17 and Dec 19 21                    | Sec Dr T J Crowe                    |                      |
| 918 20 Texas Bank Bldg       | Dallas                  |  |                                     |                      |
| UTAH                         | Salt Lake City          | Sept 13 15                                 | Asst Dir Department of              |                      |
| Registration                 | Miss Rena B Loomis      | 324 State Capitol Bldg                     | Salt Lake City                      |                      |
| VERMONT                      | Burlington              | Sept 12 14                                 | Sec Dr F J Lawliss                  | Richford             |
| VIRGINIA                     | Richmond                | Sept 19 22                                 | Sec Dr J W Preston                  | 30 1/2               |
| Franklin Rd                  | Roanoke                 |  |                                     |                      |
| WEST VIRGINIA                | Charleston              | Oct 2 4                                    | Commissioner Public Health          |                      |
| Council Dr John E Offner     | State Capitol           | Charleston                                 |                                     |                      |
| WISCONSIN                    | Endorsement             | Milwaukee                                  | Sept 18 19                          | Sec Dr C A           |
| Dawson                       | Tremont Bldg            | River Falls                                |                                     |                      |

\* Basic Science Certificate required

#### BOARDS OF EXAMINERS IN THE BASIC SCIENCES

|                      |                         |                           |                                      |                        |
|----------------------|-------------------------|---------------------------|--------------------------------------|------------------------|
| CONNECTICUT          | New Haven               | Oct 14                    | Address                              | State Board of Healing |
| Arts                 | 250 Church Street       | New Haven                 |                                      |                        |
| DISTRICT OF COLUMBIA | Washington              | Oct 23 24                 | Sec Commission on                    |                        |
| Licensure            | Dr G C Ruhland          | 6150 E Municipal Bldg     | Washington                           |                        |
| FLORIDA              | Gainesville             | Nov 4                     | Final date for filing application is |                        |
| Oct 20               | Sec Dr J F Conn         | John B Stetson University | Deland                               |                        |
| IOWA                 | Des Moines              | Oct 10                    | Dir, Division of Licensure and Regis |                        |
| tration              | Mr H W Grefe            | Capitol Bldg              | Des Moines                           |                        |
| MICHIGAN             | Ann Arbor               | and Detroit               | Oct 13 14                            | Sec Miss Eloise        |
| LeBeau               | 101 N Walnut St         | Jansing                   |                                      |                        |
| NEBRASKA             | Omaha                   | Oct 3 4                   | Dir Bureau of Examining Board        |                        |
| Mr Oscar F Humble    | 1009 State Capitol Bldg | Lincoln                   |                                      |                        |
| NEW MEXICO           | Santa Fe                | Feb 12                    | Sec, Miss Marion M Rhea              |                        |
| State Capitol        | Santa Fe                |                           |                                      |                        |
| OREGON               | Portland                | Nov 4                     | Sec Mr C D Byrne                     | University of          |
| Oregon Eugene        |                         |                           |                                      |                        |
| TENNESSEE            | Memphis and Nashville   | Sept 25 26                | Sec Dr O W                           |                        |
| Hyman                | 874 University Ave      | Memphis                   |                                      |                        |
| WISCONSIN            | Madison                 | Sept 23                   | Sec Prof R N Bruer                   | 152 W                  |
| Wisconsin Ave        | Milwaukee               | 3                         |                                      |                        |

## Current Medical Literature

### AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1934 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (\*) are abstracted below.

### Archives of Dermatology and Syphilology, Chicago 49 389-478 (June) 1944

- Keratoses Blennorrhagica Without Gonorrhea (Reiter's Disease?)  
W F Lever and G M Crawford—p 389
- Chromoblastomycosis Report of Case from Continental United States and Discussion of Classification of Causative Fungus  
C H Binford G Hess and C W Emmons—p 398
- \*Intensive Ambulatory Therapy of Syphilis Thirty Day Mapharsen Technic  
S Goldblatt—p 403
- Ulcerative Diphtheria of Skin Sporadic and Epidemic Types Observed in Haifa Palestine  
S Gill—p 408
- \*Hereditary Ectodermal Dysplasia Report of Case with Experimental Study  
Z Felsher—p 410
- Localized Myxedema in Association with Hyperthyroidism  
J C Amersbach and B Kane—p 415
- Fixed Erythema Due to Sulfanilamide with Gradually Lessening Sensitivity  
A Dostrovski and F Sagher—p 418
- Coal Tar in Dermatologic Preparations  
J G Downing L M Ohmart and G Di Cicco—p 421
- Bullous Lichen Sclerosus et Atrophicus Its Relation to Bullous Scleroderma  
C R Anderson—p 423
- Cutaneous Absorption II Value of Petrolatum Anhydrous Wool Fat and Other Bases in Percutaneous Absorption of Topically Applied Cottonseed Allergen  
A Walzer and S S Sack—p 427
- \*Contact Dermatitis from Cold Permanent Waving  
J B Howell—p 432
- Cutaneous Leishmaniasis (Oriental Sore) I Time Required for Development of Immunity After Vaccination  
D A Berberian—p 433

**Thirty Day Mapharsen Technic in Syphilis**—Goldblatt gave 60 mg of mapharsen intravenously dissolved in 5 cc of sterile distilled water for thirty successive days. A total of 1,800 mg of mapharsen was thus administered without adjuvant therapy. An unselected group of 107 patients with syphilis of all types was treated by this intensive consecutive thirty day mapharsen method. The serologic reactions which were positive in 81 per cent of the total group before treatment, showed a decided and continuing reduction in titer. On termination of the treatment positive serologic reactions were noted in 55 per cent, two months later in 35 per cent. Follow-up investigations from three to six months after the treatment indicated that the reactions of 20 per cent remained positive. No significant changes were observed in the formed or chemical constituents of the blood. Electrocardiographic examination revealed no deleterious effect on cardiac function, either immediately or remotely. Roentgenographic examination of the cardiovascular system indicated no progressive or toxic sequelae. Retreatment was carried out for the 3 patients with serologic relapse. Two with severe meningovascular involvement were subjected to fifteen attacks of induced fever concurrent with the hyperintensive therapy without untoward reaction. It was found possible to administer sulfonamide compounds for the treatment of intercurrent disease without interrupting the intensive mapharsen therapy. Complete healing of all the lesions of infectious syphilis required an average of ten days. A gain in weight and increased appetite and feeling of well-being were noted in the large majority of patients. No mucocutaneous relapse or neurorecurrence developed. This therapy appears to be nontoxic. Hospitalization is not required, the treatment is inexpensive and does not disrupt the economic life of the patient.

**Hereditary Ectodermal Dysplasia**—Felsher shows that the inheritance of hereditary ectodermal dysplasia is not as clearcut as was believed. The history of his patient with this disorder revealed sex linked inheritance in the family tree, with male patients and female conductors. Eccrine glands were practically absent on the face and abdomen. Their number on the extremities was decreased to 5 to 7 per cent of the normal

number. Apocrine sweat glands were abundant in the axillae on the upper part of the chest and on the perimamillary areas. The patient's insensible perspiration at rest in a room temperature of 73 F, was normal. Atropine sulfate in a dose of 0.5 mg subcutaneously did not change it. The intradermal injection of a 1:100 solution of acetylcholine bromide produced only a few isolated spots of sweating on the patient's forearm as contrasted with the decided response of a normal control subject. In the heat chamber the body temperature of the patient rose rapidly whereas the body temperature of normal persons did not change under similar conditions. The term 'hypohidrotic' is suggested as being more accurate than 'anhidrotic' for the described type of ectodermal dysplasia. The absence of eccrine glands is not necessarily complete in spite of hyperthermia at high external temperatures.

**Contact Dermatitis from Cold Permanent Waving**—Howell reports that a woman experienced burning and stinging sensations over the sides of her neck, face and ears the afternoon after she had received her first cold permanent wave. The next morning she noted redness of the areas. When she was in the office the following day a mild dermatitis venenata type of eruption, consisting of slight swelling, diffuse redness, pruritus and in some areas fine vesiculation was noted. The dermatitis reached its maximum extent within seventy-two hours and subsided by the end of the sixth day. Patch tests on 3 normal controls with 1 per cent concentrations of the shampoo, the preliminary lotion, the waving compound, the neutralizing solution and mixtures of these chemicals failed to evoke any reactions. Contact tests were then applied to the forearm of the patient one month after the dermatitis of her face, neck and ears had healed. On two different occasions a positive reaction followed within twenty-four hours the application of the preliminary lotion. No reactions were observed following contact tests with the waving compound, the neutralizing liquid or the shampoo. This case is an example of an eczematous contact dermatitis following within twenty-four hours a 'cold permanent wave.' Unquestionably this patient was already sensitive to some ingredient in the preliminary lotion, since patch tests elicited positive reactions on two different occasions. Sensitization due to previous contacts with the allergen present in the preliminary solution or a closely related chemical took place without the patient's knowledge. Reexposure to this substance when she received a cold permanent wave precipitated the allergic response.

### Archives of Otolaryngology, Chicago 39 465-572 (June) 1944

- Four Decades of Nasal Allergy  
L Richards—p 465
- Sarcoid of Nose  
R Fletcher—p 470
- pH of Nasal Secretions in Situ in Atrophic Rhinitis Its Implications  
N D Fabricant—p 474
- Reconstruction of Deformed Nasal Septum Critical Evaluation of Orthodox Submucous Resection from an Anatomophysiologic Standpoint  
M S Erner—p 476
- Osteomyelitis of Frontal Bone  
L A Brown—p 485
- Recent Progress in Management of Acute Suppuration of Middle Ear  
J R Lindsay—p 492
- Head Noises in Normal and in Disordered Ears Significance Measurement Differentiation and Treatment  
E P Fowler—p 496
- Atmospheric Pressures in Nasal Fossa Maxillary Sinus and Trachea  
E Simon—p 504
- Physiology of Nose from Standpoint of Plastic Surgeon  
A W Proetz—p 514
- Role of Plastic Surgery in Field of Otolaryngology  
S Gomon—p 518
- Report of Isograft Transplants in Identical Twins  
A Schattner—p 521
- \*Injection of Tympanum for Chronic Conductive Deafness and Associated Tinnitus Aurium Preliminary Report on Use of Ethyl morphine Hydrochloride  
B C Trowbridge—p 523
- Perforation of Tuberculous Lymph Nodes into Trachea and Bronchi  
O Auerbach—p 527
- Adenoma of Ceruminous Glands  
H J Adler and I Sommer—p 533
- Use of Solution of Posterior Pituitary of Twice U S P Concentration for Hemorrhage Following Tonsillectomy or Adenoidectomy  
J W McLaurin—p 536
- Contributions to Plastic Surgery During 1943  
L A Peer—p 537

**Injection of Tympanum for Chronic Conductive Deafness and Tinnitus Aurium**—According to Trowbridge, injection of the tympanum as a method of treatment in deafness was first suggested and used by Gray in 1934 at the Middlesex Hospital in London. Gray advocated this therapy for otosclerosis and employed thyroxin as the medium of injection.

Results with thionin therapy have not been altogether encouraging. Trowbridge sought an agent which would incite a sterile inflammation with subsequent absorption of the scar tissue, cicatricial bands and adhesions that interfere with the normal functioning of the conductive mechanism. The therapeutic value of ethylmorphine hydrochloride in removing pupillary exudates and in absorbing interstitial corneal deposits has long been known. It acts as a vasodilator and lymphagogue, stimulating the vascular and lymphatic circulation of the eye and producing dilatation of these vessels. The drug produces analgesia, which counteracts the discomfort of the injection and of the subsequent inflammation. Improvement in hearing occurred in 18 of 22 patients selected for this type of therapy. In 4 patients no improvement was obtained. Lessening of the tinnitus occurred in 6 and loss of tinnitus in 3 of 9 patients with associated tinnitus aurium. All of the patients were ambulatory and continued their usual daily routines without interference from the injections. Secondary reactions were negligible. Only transient vertigo occurred in several cases, disappearing within fifteen minutes after the injection. The improvement in hearing was demonstrated by audiometric studies as well as by the testimony of the patients themselves.

### Connecticut State Medical Journal, Hartford

8 343-406 (June) 1944

- Medical Practice and Hospital Service A M Schwittalla—p 348  
Carcinoma of Lip at New Haven Hospital 1921 to 1940 Inclusive E A Lawrence and A W Oughterson—p 353  
Some Fallacies and Deficiencies in Problem of Heart Disease W J Bruckner—p 357  
Purposes of Woman's Auxiliary Mrs E J Carey—p 360

8 407-482 (July) 1944

- Comment on Experimental Gastric Cancer G M Smith—p 409  
Treatment of Thoracic Trauma G E Lindskog—p 414  
Bacillary Dysentery K M Wheeler—p 419  
Osteomyelitis of Skull B S Brody—p 421  
How Hospitals Are Attempting to Meet Increasing Demands for Hospital Service O H Bartine—p 423  
Report on Progress and Activities of the Society J R Miller—p 426

### Hawaii Medical Journal, Honolulu

3 159-198 (March-April) 1944

- Anesthesia in Small Hospital: Review of Methods Used for Period of One Year M A Brennecke—p 159  
Primary Carcinoma of Liver with Hemorrhage: Report of Case C T Young—p 161  
Rupture of Uterus Following Previous Cesarean Section: Review and Report of 2 Cases C F Chang and W K Chang—p 164

### Iowa State Medical Society Journal, Des Moines

34 225-268 (June) 1944

- Head Injuries A Ver Bruggen—p 225  
Continuous Caudal Anesthesia D Wall—p 236  
Mental Hygiene Program for Iowa M Heiman—p 238  
Clinical Diagnosis of Pernicious Anemia F P McNamara—p 242

34 269-340 (July) 1944

- Potwar Industrial Medical Program C D Selby—p 269  
Military Management of Allergic Diseases S W French and L J Halpin—p 272  
Hard of Hearing and Hearing Aids C C Walker—p 274  
Mixed Tumor of Parotid Gland A B Nesler—p 276

### Journal of Experimental Medicine, New York

79 559-680 (June) 1944

- Experimental Epidemiology of Tuberculosis: Prevention of Natural Air Borne Contagion of Tuberculosis in Rabbits by Ultraviolet Irradiation M B Lurie with collaboration of Helen Tomlinson and S Abramson—p 559  
Recoverability of Virus from Papillomas Produced Therewith in Domestic Rabbits W F Friedewald and J G Kidd—p 591  
Amino Acid Mixtures Effective Parenterally for Long Continued Plasma Protein Production: Casein Digests Compared S C Madden R R Woods F W Shull and G H Whipple—p 607  
Methionine Protects Against Napharsen Liver Injury in Protein Depleted Dogs J P B Goodell P C Hanson and W B Hawkins—p 623  
Qualitative Differences in Antigenic Composition of Influenza A Virus Strains W I Friedewald—p 633  
Studies on Etiology of Primary Atypical Pneumonia: Filtrable Agent Transmissible to Cotton Rats Hamsters and Chick Embryos M D Eaton G Neikiejohn and W van Herick—p 649

### Journal of National Malaria Society, Tallahassee, Fla

3 79-154 (June) 1944

- \*Malaria Mortality and Morbidity in United States for Year 1942 E C Faust—p 79  
Recent Research in Prophylaxis and Treatment of Malaria: Report for 1942 1943 H C Clark—p 85  
Recent Research in Avian and Simian Malaria R I Hewitt—p 95  
Malaria Prevention Activities of State Boards of Health 1943 T J Underwood—p 111  
Introduction of Tropical Diseases Other Than Malaria Into United States After the War W A Sawyer—p 115  
Spleen Measurement in Malaria L W Hackett—p 121  
Notes on Construction and Use of Stable Traps for Mosquito Studies M Bates—p 135

**Malaria Mortality and Morbidity in 1942**—Malaria mortality data by states and counties for the United States in 1942 show a continued improvement over previous years. Only eight states had a rate of 10 or more per hundred thousand and only four counties had a rate of 250 or more. The malaria morbidity data, as reported by bureaus of vital statistics of the several states, continue to be unreliable when tested against the expected ratios of deaths to cases. In mildly endemic territory, such as the malarious areas of the United States have become, it is estimated that there were between 236,000 and 590,000 cases in 1942 as compared with 278,000 to 695,000 in 1941.

### Journal of Nervous and Mental Disease, New York

99 889-1012 (June) 1944

- Prevention of Subconvulsive Reactions in Convulsive Therapy for Psychoses Esther S Ziskind and E Ziskind—p 889  
Cholinergic Sensitivity R Altschul—p 895  
Myotonic Dystrophy B B Mongillo and M Serog—p 906  
Shock Therapies G H Alexander—p 922  
Suggestions for New Therapy in Dementia Precox E Lowenstein—p 923  
Diethylstilbestrol in Management of Psychopathological States in Males R M Foote—p 928  
Growth Concept of Nervous Integration IV On Etiology and Treatment of Renal Hypertension D E Schneider—p 936  
Homosexuality, Transvestism and Psychosis S Liebman—p 945  
The Picking Into Mouth and Coprophagic Habits S Arieti—p 959

### Journal of Neurosurgery, Springfield, Ill

1 163-226 (May) 1944

- Neurosurgical Head Rest for Use in Army and Navy Hospitals W M Craig—p 163  
Traumatic Pneumocephalus with Spontaneous Ventriculogram: Report of Case A Kaplan—p 166  
\*Studies on Fibrin Foam as Hemostatic Agent in Neurosurgery with Special Reference to Its Comparison with Muscle F D Ingraham O T Briley and E E Nulsen—p 171  
Experimental Traumatic Cerebral Cysts in Rabbit M A Falconer and Dorothy S Russell—p 182  
Mechanics of Trauma with Special Reference to Herniation of Cerebral Tissue A H S Holbourn—p 190  
Intracranial Dural Cyst with Report of Case W Haymaker and M E Foster Jr—p 211  
\*Sutureless Reunion of Severed Nerves with Elastic Cuffs of Tantalum P Weiss—p 219

#### Fibrin Foam as Hemostatic Agent in Neurosurgery—

Ingraham and his associates show that in the course of fractionation of human blood plasma large quantities of human fibrinogen and thrombin become available. Bering has prepared from these materials a substance designated "fibrin foam." The product is composed of a porous mass of fibrillar fibrin with macroscopic air spaces. When the foam is moistened fluid rapidly enters the air spaces. It then becomes rubbery and shrinks to a certain extent. If the moistening agent is a solution of human thrombin the foam becomes an effective hemostatic agent. While the fibrin foam and thrombin may be used in many forms of surgery, the authors' experiences are limited to neurosurgery. In this field it has proved the most satisfactory hemostatic agent available. For use in the operating room two bottles are provided. One contains sterile fibrin foam and the other thrombin in the dry state. Thrombin is dissolved in 30 cc of sterile isotonic solution of sodium chloride. Pieces of the fibrin foam are then placed in the thrombin solution, after which the material is ready for use. For application to bleeding surfaces a piece of appropriate size is cut and held firmly against the tissue. This is usually best accomplished by covering it with a cotton patte and applying suction for a moment. When the patte is removed, the fibrin foam remains adherent to the tissue surface. The authors found that fibrin foam with



thrombin promptly controls bleeding from oozing surfaces, from large veins and from the dural sinuses. Muscle as a hemostatic agent is less adaptable than fibrin foam and causes considerably more tissue reaction. Fibrin foam has several advantages over soluble cellulose though the tissue reaction to the two substances is similar. Fibrin foam has been applied at more than one operation in 34 cases without change in tissue response or other damage. The usefulness of fibrin foam is enhanced by the fact that it may be molded to the contour of the bleeding surface before or after application, that it retains that contour after pressure is released and that it adheres quickly and permanently to the bleeding surface.

**Sutureless Reunion of Nerves with Elastic Cuffs of Tantalum**—Weiss describes a method by which tantalum foil can be fashioned into resilient self-sealing tubes which may be used as cuffs for the sutureless linking of severed nerve stumps in the manner previously described for arterial sleeves. Preliminary observations on monkey and cat nerves joined by this method have demonstrated that excellent reunion between the stumps with the properties required for optimal nerve regeneration may be achieved if the sleeves have been suitably shaped and properly handled.

### Journal of Thoracic Surgery, St Louis

13 169-270 (June) 1944

- Dermoid Cysts and Teratomas of Mediastinum. Review. N. L. Rusby —p. 169.  
Closed Intrapleural Pneumolysis. J. Goorwitch —p. 223.  
Surgical Management of Residual Tuberculous Cavities Following Primary Thoracoplasty. A. R. Judd —p. 249.  
Pneumolysis Sponge Carrier and Dissector. J. S. Conant —p. 267.

### Journal of Urology, Baltimore

51 447-562 (May) 1944

- Bilateral Nephrolithiasis in Horseshoe Kidney. F. Farman —p. 447.  
Duplication of Kidney and Ureter. Statistical Study of 230 New Cases. E. F. Nation —p. 456.  
Congenital Renal Hypoplasia Associated with Hypertension. Report of 2 Cases. D. R. Higbee —p. 466.  
Case of Polycystic Kidney Disease with Unusual Features. R. Schwartz —p. 476.  
Two Stage Nephrectomy. G. V. Caughlan and T. D. Boler —p. 481.  
Renal Surgery as Cause of Renal Ischemia. W. G. Hayward —p. 486.  
Giant Hydronephrosis Following Generalized Trauma. M. Meltzer —p. 491.  
\*Carcinoma of Bladder. An Improved Technique for Cystoscopic Implantation of Radium Element. T. D. Moore —p. 496.  
Rhabdomyosarcoma of Urinary Bladder. Clinicopathologic Case Report with Review of Literature. Including Tabulation of Rhabdomyosarcoma of Prostate. E. N. Khoury and F. D. Speer —p. 505.  
Extramural Rhabdomyosarcoma of Neck of Urinary Bladder. E. F. Hirsch and G. W. Gasser —p. 517.  
Interstitial Cystitis. Treatment with Silver Nitrate. F. L. Pool and H. F. Rives —p. 520.  
My Personal Opinions of Interstitial Cystitis (Hunner's Ulcer). T. L. Howard —p. 526.  
Sympathetic Innervation of Detrusor Muscle. A. Kuntz and G. Sacco —p. 535.  
Primary Fibrosarcoma of Penis. Review of Literature and Report of Case. C. A. Wattenberg —p. 543.  
Hemangioma of Testis. A. H. Kleiman —p. 548.  
Torsion of Spermatic Cord. E. E. Evert and H. A. Hoffman —p. 551.

**Cystoscopic Implantation of Radium Element in Carcinoma of Bladder**—Moore states that cases suitable for closed methods of treatment, with or without the use of radium, must be selected with care. They comprise chiefly tumors of a low degree of malignancy, and occasionally small or early tumors of grades 3 and 4. In a series of 96 cases of carcinoma of the bladder, 16 were inoperable and treatment was refused in 10. Of the 70 patients who underwent treatment, 36 were treated by closed methods and 34 were subjected to open operation. If cystoscopic implantation of radium is contemplated, the tumor should be in a location favorable for a good view and for attack through a direct cystoscope which would include tumors involving the trigone, lateral bases posterior wall and the posterior half of the lateral walls. If the growth is in the vesical dome the anterior wall or anterior half of the lateral walls this method is unsuitable. Radium element should be employed cystoscopically in preference to radon seeds because the cystoscopic implantation of small platinum needles by the author's method is technically no more difficult than the implantation of radon and on expiration of the allotted time of radiation the needles

are removed. Radon usually is left in place and becomes a permanent foreign body, which may be undesirable in the presence of infection especially in the region of the trigone, in charity services and in indigent patients in private practice the expense of gold radon seeds may be prohibitive. The author treated 11 patients by cystoscopic implantation of radium element. Of the 5 who have died the survival varied between six months and six years. Among the 6 still surviving some have been treated quite recently. The neoplasms were mostly of grades 2 and 3. The chief indication for irradiation in bladder carcinoma has been advanced age. It is generally agreed that the avoidance of open surgery in such a group is desirable.

### Kansas Medical Society Journal, Topeka

45 161-196 (May) 1944

- Sternberg and Fort Harker Cholera Epidemic of 1867. J. M. Schneck —p. 161.  
Possible Transmission Factors in Poliomyelitis. O. S. Walters —p. 163.  
Pathologic Physiology of Hypertension. G. A. Walker —p. 167.

45 197-232 (June) 1944

- Management of Acute Infectious Diseases in Childhood. A. L. Hovne —p. 197.  
Staphylococcus Osteomyelitis. Case Report. F. L. Feireabend —p. 200.  
Sulfathiazole in Gonorrhea. B. M. Marshall —p. 201.

### Military Surgeon, Washington, D. C.

94 325-398 (June) 1944

- Sanitary Problems of Tropical Advanced Base. L. W. Johnson —p. 325.  
Orthopedic Surgery in Treatment of Wounds. A. E. Porritt —p. 335.  
Surgery in Desert Warfare. P. B. Ascroft —p. 337.  
\*Use of Sulfathiazole as Prophylactic Agent. J. O. Gooch and A. L. Gorby —p. 339.  
Medical Examination at Armed Forces Induction Station. Observations of Medical Examining Physician. F. K. Herpel —p. 345.  
Clinical Review of Schistosomiasis with Presentation of an Interesting Case. R. R. Pliskin —p. 351.  
Vincent's Infection. H. L. Malter —p. 358.  
Radical Operation with Plastic Closure for Cure of Ingrowing Nails. L. C. Bennett —p. 361.  
Clinical Observations on Dengue Fever. Report of 100 Cases. J. S. Diasio and F. MacD. Richardson —p. 365.  
Value of Sedimentation Rate Determinations in Management of Primary Atypical Pneumonia. Etiology Unknown. S. A. Wolfson —p. 370.  
Traction of Soft Tissues. New Method Following Amputation. J. L. Magrath —p. 373.  
Irradiation Device for Hand Washing. H. Greenbaum —p. 374.

**Sulfathiazole Prophylaxis for Gonorrhea**—Gooch and Gorby describe three different plans of sulfathiazole prophylaxis in units with venereal disease rates in excess of 100 per thousand a year. The use of regularly established prophylactic stations (these stations do not administer sulfathiazole) as soon as possible after contact was encouraged directing that sulfathiazole should be considered as an adjunct to such measures rather than supplanting them. It was emphasized that sulfathiazole in no way protected against syphilis and that syphilis prophylactic measures should not be neglected. At the time the sulfathiazole prophylaxis was put into effect the annual gonorrhea rate of the units affected averaged 170 per thousand. After two and one-half months of application the annual rate was reduced to an average of 70 per thousand. The rate as it now stands is due to cases contracted on furloughs, which often means that the men are away from the organization for fifteen days. They frequently return from furlough with acute gonorrhea. Aside from the method in use with those units exhibiting high venereal disease rates different methods were used to establish the most efficacious dosage, the smallest effective dose, the proper timing of the dosage and to compare sulfathiazole gonorrhea prophylaxis with the standardized venereal disease prophylactic method using soap five minute urethral instillation of 2 per cent solution of strong protein silver and ointment of mild mercurous chloride. After describing the prophylaxis used in four different groups the author says that in those using sulfathiazole the drug was entirely administered after the exposure except in group 4. In this group 2 Gm of sulfathiazole was given as the man left his company area on pass and when he returned the drug being given before and after exposure. During the period covered by this report there was a reduction in the venereal disease rate from gonorrhea alone from an approximate annual figure of 16 to 11 per thousand. The authors concluded that (1) sulfathiazole is an effective gonor-



rheal prophylactic agent, (2) the average individual prefers the sulfathiazole type of prophylaxis over the urethral instillation method, (3) sulfathiazole gonorrheal prophylaxis is effective for a longer period following exposure, (4) in prophylactic dosage toxicity and sensitivity reactions to the drug are negligible, (5) a total dose of 2 Gm of sulfathiazole appears as effective as twice that amount, (6) there was a concurrent lowering of the common respiratory disease rate in those units placed on a mandatory sulfathiazole gonorrheal prophylaxis regimen, in those units with high venereal disease rates, and (7) there has been a concurrent lowering of the syphilis rate as a result of increase in the number of prophylactic administrations

### Minnesota Medicine, St Paul

27 337-432 (May) 1944

Social and Economic Trends in Relation to Medical Practice W L Burnap—p 355  
Postwar Planning for Medicine E J Carey—p 359  
Treatment of War Wounds of Extremities C A Caspers—p 364  
Challenge to Psychiatry in Postwar Period E K Clarke—p 367

27 433-512 (June) 1944

Manpower Problems in Professional Fields D Bjornaraa—p 453  
Clinical Use of Diuretic Report of Cases E E Eckstam—p 455  
Hand Infections R F Hedin—p 459  
Crippled Appendix—Pediatric Problem W R Shannon—p 466  
Isolation from Milk Supplies of Specific Types of Green Producing (Alpha) Streptococci and Their Thermal Death Point in Milk E C Rosenow—p 469

### New England Journal of Medicine, Boston

230 685-720 (June 8) 1944

Medical Service in Industry D O'Hara—p 685  
Clinical Significance of Bacteriuria in Patients with Spinal Cord Injuries D Badal D Munro and M E Lamb—p 688  
Tuberculosis of Lower Lobe E Z Ossen—p 693  
Parathyroid Glands and Parathormone A Pope and J C Aub—p 698

230 721-748 (June 15) 1944

Treatment of Anuria C W Styron and W F Leadbetter—p 721  
Dr Saul Tchernichovsky 1875-1943 Hebrew Medical Poet Laureate H A Savitz—p 728  
New Biologic Concepts Derived from Research on Sulfonamide Drugs B D Davis—p 734

### New Orleans Medical and Surgical Journal

96 551-610 (June) 1944

President's Address Progress of Medicine and Surgery in United States in Last Fifty Years and What the Future Holds for It Under the Wagner Murray Dingell Bill C C deGravelles—p 551  
Memorial Address J Q Graves—p 556  
Peace and Health R Fitz—p 557  
\*Ephedrine Sulfate in Treatment of Nocturnal Enuresis W E Kittredge and H G Brown—p 562  
Adenomya of Gallbladder Report of Multiple Papillary Adenomyoma in 15 Year Old Boy G McHardy and D Browne—p 567  
\*Incidence of Peptic Ulcer M Patterson—p 570

**Ephedrine Sulfate in Nocturnal Enuresis**—Parkhurst suggested in 1930 the use of ephedrine in incontinence of urine. Kittredge and Brown used the drug for the control of enuresis in 25 children who were chronic bed wetters. Twenty-three of these immediately became continent and remained so as long as the drug was administered. It was given in a single dose of  $\frac{3}{4}$  grain (50 mg.) each night at bedtime, and no other measures were taken to influence the bed wetting habit. The drug was continued in each case for two weeks and then withdrawn. It was then noted that enuresis returned in 11 of the 23 children; the other 12 remained well. The 2 who were not influenced were incorrigible children of low mentality. Each case is first carefully studied to eliminate organic pathologic conditions which might cause frequency of urination stimulating enuresis. It is always necessary to eliminate the possibility of infection in the urine, mechanical obstruction to the emptying of the bladder with resultant retention, or neurologic defect which would interfere with normal function of the bladder. The drug is recommended because of its ease of administration, absence of disagreeable reactions and excellent results.

**Incidence of Peptic Ulcer**—Patterson states that statistical reports from various countries reveal a manifest variability in the incidence of peptic ulcer from country to country but that

in America approximately 12 per cent of all persons have peptic ulcer at some time in their lives. The ratio of gastric to duodenal ulcer is extremely variable, but among patients seen in this country duodenal lesions predominate about 4 to 1. The period of life from the thirtieth to the sixtieth year with a peak in the middle age years (35 to 50) is the most frequent period for peptic ulcer, and duodenal ulcer makes its appearance earlier in life than the gastric ulcer. Peptic ulcer is predominantly a lesion found in the male. This predominance is more obvious in cases of duodenal ulcer than of gastric ulcer. The main evidence, though slight, points toward an endocrine basis. Hemorrhage is the most frequent complication, but perforation is the more serious. Opinions as to the role of occupation in peptic ulcer are contradictory. The impression that the disease is most prevalent among those who lead lives entailing great nervous strain and responsibility awaits proof. Draper's contention that there is a body type peculiar to peptic ulcer is unreliable. Some authors obtained a positive family history in a large percentage of ulcer patients. Peptic ulcer is of importance in the present national crisis. Dyspepsia is the number one medical problem in the armed forces, and reports show that the incidence of ulcer is 30 per cent or over, with the majority in the duodenum. The author thinks that the high incidence of peptic ulcer in the armed forces is not a result of the war but that the war called attention to the numerous cases which existed but were not recognized.

### New York State Journal of Medicine, New York

44 1169-1280 (June 1) 1944

Prolonged Intravenous Pentothal Sodium Anesthesia Especially with Reference to Its Application to Military Surgery B A Greene—p 1205  
Inhalation Therapy Using Mineral Waters and Medicated Oils W S McClellan, with technical assistance of Margaret Rogers—p 1214  
Antepartum Necrosis of Anterior Lobe of Pituitary Gland J S Taylor and E F Shea—p 1223  
\*Preventive Aspects of Coronary Disease and Myocardial Infarction M Plotz—p 1227  
Cesarean Section Advantages and Disadvantages of Present Day Types J P Marr—p 1230

**Preventive Aspects of Coronary Disease**—Plotz thinks that preventive measures are possible for a certain number of patients with coronary disease or myocardial infarction. First there is the patient who has already had one attack of coronary thrombosis. Next there is the man with angina pectoris. Next there are middle aged and aged persons with electrocardiographic evidence of heart damage without symptoms. Given certain conditions, their coronary arteries will fail. Somewhat less vulnerable but still requiring special vigilance are patients with hypertension, diabetes, myxedema, polycythemia or elevated blood cholesterol from any cause. Coronary thrombosis practically never occurs in an undamaged artery. It is preceded by an atheroma. Terrifying pain, shock and changes in the cardiogram are only the final act in coronary thrombosis. Preceding this there may be a prodromal stage of precordial pain resembling coronary pain. It is like a prolonged, atypical attack of angina pectoris and is a reflection of reduced coronary circulation and anoxia of the heart. If a patient falls into one of the vulnerable categories such an attack should lead one to suspect an impending coronary thrombosis. A man who suddenly develops angina pectoris for the first time should be put in the same category. These patients should be treated as though they had a cardiac infarction. Bed rest for five to fourteen days and use of papaverine to increase the pulmonary circulation are essential. Patients should be warned against the use of glyceryl trinitrate at this stage. If it does not relieve pain promptly it should not be used again, because the repeated use lowers the blood pressure and increases the possibility of infarction. Sharp and prolonged reduction of blood pressure may be fatal to a patient of the vulnerable classes. Therefore he must be protected against such events as shocking operations, spinal anesthesia, which lower the blood pressure, and severe hemorrhages. In this connection the author cites several illustrative cases and says that for the past two years he has employed slow plasma transfusion for those patients whose systolic blood pressure has fallen below 90. He feels that several lives have been saved by preventing the coronary head pressure from falling too low.

## North Carolina Medical Journal, Winston-Salem

5 173-216 (May) 1944

- Challenge to the Doctors of North Carolina J W Vernon—p 173  
Interstitial Nephritis Case Report E S Faison—p 179  
Streptococcal Disease in Infancy and Childhood E V Turner—p 182  
Brucellosis C G Reid—p 186  
Management of Occipitoposterior Position T L Lee—p 189  
Thumbnailed Sketches of Eminent Physicians J C Trent—p 193

5 217-264 (June) 1944

- Address of President Elect Extension of Medical Care in North Carolina P F Whitaker—p 217  
Treatment of War Casualties W Walters—p 222  
Human Health and Common Weal J K Hall—p 227  
Continuous Caudal Analgesia Report on Its Use in 100 Obstetric Cases A T Thorp—p 232  
\*Fatal Poisoning with Thiocyanate in Treatment of Hypertension K D Weeks—p 234  
Cardiospasm W H Sprunt and J A Harill—p 238  
Resection of Presacral Nerves in Functional Uterine Dysmenorrhea J W Farthing—p 241

**Poisoning with Thiocyanate in Hypertension**—Weeks reports 2 instances of severe potassium thiocyanate intoxication, one in a 41 year old married Negro woman who recovered and the other in a 45 year old white married man whose illness terminated in death. Both patients presented a clinical condition characteristic of severe thiocyanate intoxication in which psychosis, delirium, confusion and signs of central nervous system irritation predominated. The highest blood level obtained from the patient who recovered was 32 mg per hundred cubic centimeters and in the fatal case it was 36 mg per hundred cubic centimeters. The latter patient lapsed into coma on the third hospital day and died shortly thereafter. Thiocyanate intoxication was not suspected on admission in either case. An unusual feature of both cases, and one which has been previously reported in only 1 or 2 cases, was the occurrence of unexplained vascular phenomena. The patient who recovered had clinical, physical and x-ray evidence of pulmonary infarction. The explanation of its production was not apparent. In the other case there was found at necropsy a subdural hematoma in the left frontoparietal region which had ruptured into the subarachnoid space. There was no history of head injury before death, and no explanation was found at necropsy. Anginal pain, arterial thrombosis and painful enlargement of the thyroid may also be produced. The high cerebrospinal fluid thiocyanate level found in the 2 cases reported here suggests that signs and symptoms of severe poisoning are primarily due to the toxic effect on the central nervous system. This is substantiated by the absence of significant pathologic changes in other organs.

## Northwest Medicine, Seattle

43 129-156 (May) 1944

- What the Future Holds for America C E Martin—p 132  
Incidence of Common Duct Stones and Postoperative Management of the T Tube J W Baker and M H Evey—p 137  
Human Salmonella Suspestifer Infection Report of Unusual Case J E Hunter C A Andresen W B Hutchison—p 142  
Electrocardiogram After Exercise in Angina Pectoris G D Capaccio—p 144

43 157-184 (June) 1944

- Current Problems in Relation to Accelerated Program for Premedical and Medical Education O Larsell—p 161  
\*Filariasis W O Ramey—p 164  
Rheumatic Fever in Childhood P F Guy—p 166  
Infectious Neuritis A L Severeide—p 169  
Hemorrhagic Tumors of Ovary E B Brookhank—p 170  
Treatment of Parasites of Small Intestine with Dover's Powder J O George—p 172

**Filariasis**—Ramey says that filariasis is primarily the result of fibrotic changes, causing obstruction to the lymphatic and venous flow. Among the microscopic changes are hyperplasia of the connective tissue and infiltration of lymphocytes, basophilic cells and eosinophils. These changes may be manifested as (1) chronic adenitis with or without obstruction and elephantiasis or (2) dilatation of lymphatics with or without elephantiasis. Some other lesions are (1) the lymphatic varix, which is a tumor consisting of a mass of dilated lymph vessels, (2) lymph scrotum, the result of dilatation of the scrotal lymphatic system and pronounced lymphedema, elephantiasis frequently supervening and adding to the enlargement, and (3) elephantoid

fever, which is characterized by pyrexia attributable to inflammation of intra-abdominal or intrapelvic structures and is usually associated with pain. The onset of the disease is characterized by pyrexia of 102 to 104 F, headaches, rigor, anorexia, often nausea, occasionally vomiting and a depressed mental state. The affected part presents signs of an acute inflammatory process which may be of the lymphatic type or the erysipeloid variety, usually the acute symptoms largely subside in a few days, but the pronounced swelling persists. More than 70 per cent of cases recently reported from a mobile hospital showed scrotal involvement and, in more than half of these, involvement of an extremity. Septicemia and death may supervene. The tendency of the fever to recur, the severe rigor, pyrexia and terminal diaphoresis have caused it to be mistaken for malaria. There is no specific drug therapy for filariasis. The treatment should consist of bed rest, morphine for pain, elevation of the affected part to assist in postural drainage, a semielastic bandage to prevent swelling, keeping the skin well cleansed with soap and water, sulfonamide drugs, which frequently are found to exercise a distinctly beneficial effect, and surgical operation for such conditions as lymph scrotum. The only known definite aid to filarial disease is removal to a cool climate, the patient should be told frankly the nature and prognosis of the disease. The author stresses that filariasis may be acquired after only a few weeks stay in an endemic area. The extensive distribution of American forces in areas where filariasis is endemic suggests that filarial infection may be introduced in all parts of the United States. It becomes necessary to include a consideration of filariasis in the differential diagnosis of acute fevers, edema, pseudodema, varicosities, glandular enlargements, lymphatic disease, general enlargements of the extremities, synovitis and arthritis in all persons returning from the tropics and subtropics.

## Pennsylvania Medical Journal, Harrisburg

47 769-864 (May) 1944

- Medical Progress in War Effort D L Borden—p 783  
Surgical Treatment of Cranial Trauma F C Grant—p 790  
Etiology and Control of Progressive Axial Myopia H H Turner—p 793  
Bromide Intoxication Some Observations on Its Treatment with Sodium Chloride and Desoxycorticosterone M G Wohl and H F Robertson—p 802

47 865-960 (June) 1944

- Selection and Interpretation of Laboratory Tests W M Yater—p 883  
Typhus Fever Case Report R C Hamilton and J C Fleming—p 892  
Trends and Shortcomings in Approach to Gastrointestinal Diseases Review Based on Experience in an Army General Hospital J E Berk—p 897  
Problems of Rural Surgeon C M Hower—p 902

## Puerto Rico J Pub Health &amp; Trop Med, San Juan

19 551-698 (June) 1944

- Experimental Plague in Guinea Pigs Inoculated with Pasteurella Pestis of Ecuadorian Origin A Macchiavello and D Urquien—p 577  
Use of Calcium Gluconate in Treatment of Malarial Chills D S Stevenson—p 602  
Observations on Nocturnal Activity of Anopheles and Certain Other Mosquitoes in Eastern Puerto Rico A A Weathersbee and G E Bohart—p 626  
Note on Mosquito Distribution Records of Puerto Rico and of Virgin Islands A A Weathersbee—p 643  
Comparative Study of Results Obtained from Flocculation and Complement Fixation Tests Carried out Among 3,994 Selectees and Volunteers in 1941 O Costa Mandry and J L Janer—p 649  
Note on Treatment of Schistosomiasis Mansoni with Gentian Violet F Hernandez Morales—p 666

## Rocky Mountain Medical Journal, Denver

41 361-448 (June) 1944

- Coordination of Industrial Hygiene Instruction with Other Clinical Training D E Cummings—p 379  
Tuberculosis and War Industry W P Shepard—p 381  
Elements of Diagnosis and Prognosis in Pneumoconiosis L U Gardner—p 385  
Review of Silicosis for Industrial Hygienist and Medical Practitioner L E Hamlin—p 391  
Physician's Responsibility in Compensation Law Administration B E Kuechle—p 399  
Benzene (Benzol) Poisoning Report of Fatal Case with Autopsy Findings R H Ackerly and G E Hawick—p 402  
Management of Silicotic Patients P J Ramberger—p 405

## Surgery, Gynecology and Obstetrics, Chicago

78 561-662 (June) 1944

- Surgical Construction of 80 Cases of Artificial Esophagus S S Yudn —p 561
- Cortical Kidney Tumor—Analysis of 100 Consecutive Cases C C Herger and H R Sauer —p 584
- Surgical Division of Spinothalamic Tract in Medulla R D Adams and D Munro —p 591
- Use of Pectin and Other Agents to Prevent Shock L Figueroa and F J Lavieri —p 600
- Studies in Lymphatics of Female Urinary Bladder T O Powell —p 605
- \*Rh Factor in Intragroup Blood Transfusion Reactions B C Butler D N Danforth and J Scudder —p 610
- Experimental Head Injury with Special Reference to Certain Chemical Factors in Acute Trauma E S Gurdjian J E Webster and W E Stone —p 618
- Translocation of Peroneus Longus Tendon for Paralytic Calcaneus Deformity of Foot W H Buckel and J H Moe —p 627
- \*Fractures of Neck of Femur An Analysis of 157 Intracapsular and Extracapsular Fractures I E Siris and J D Ryan —p 631
- Induction Examination for Inguinal Hernia L Carp —p 640
- Mesenteric Pouch Hernia Simulating Paraduodenal Hernia R B McCarty and A J Present —p 643
- Repair of an Avulsed Scrotum E P Whelan —p 649
- Three Pin Method for Treatment of Severely Comminuted Fractures of Os Calcis —p 653

**Rh Factor in Intragroup Blood Transfusion Reactions**—Butler and his associates observed an Rh negative obstetric patient who carried a dead fetus for two months and who then at the middle of the seventh month of pregnancy aborted a macerated stillbirth. Following the abortion, because of uncontrollable uterine hemorrhage, the patient went into shock. One hundred cubic centimeters of group O Rh positive blood was administered. A severe hemolytic transfusion reaction occurred which was characterized by chills and fever, hemoglobinuria, jaundice, oliguria and convulsions. The blood chemical findings are tabulated. Ten days after the transfusion reaction the woman had generalized convulsions, but she gradually recovered. The authors selected 25 similar cases of intragroup transfusion reaction from the literature and present them in tabulated chart form. They also outline a rational method of therapy. They emphasize that under no circumstances should obstetric patients be transfused with Rh positive blood unless the patients have been tested for the Rh factor.

**Fractures of Neck of Femur**—Siris and Ryan analyze the management of 157 consecutive fractures of the neck and intertrochanteric region of the femur seen in the fracture service of the Third (New York University) Division of Bellevue Hospital from Jan 1, 1941 to June 30, 1943. They stress that the treatment of choice for the intracapsular fractures in the aged and feeble is the immediate insertion of a Smith-Petersen cannulated three flanged nail or similar device. The treatment of choice for the intertrochanteric fractures in the aged is the immediate insertion of a device incorporating the principle of a Smith-Petersen nail and Hawley bar, preferably a Moore Blount blade plate. For intertrochanteric fractures in the younger age group bilateral Russell traction suspension has given satisfactory results and the authors see no reason at present to change their opinion. External pin fixation should not replace internal fixation for fractures of the hip or intertrochanteric region. Other than expediting the procedure of transfexion and minimizing the immediate trauma, it has none of the advantages of internal fixation. It is an extremely hazardous procedure and should be restricted to those who have had experience and are familiar with its technique. The authors think that the patients who are in a poor physical condition on admission have a better chance of survival if they are operated on immediately rather than waiting to see if their general condition improves. They disagree with the selection of survivors policy in which all patients are treated conservatively for a few days and then the operation is decided on only for those who it is expected will survive. Immediate operation permits early ambulation in bed without pain and reduced incidence of potential complications and allows early ambulation with crutches. The use of local anesthesia, focal skin clips and guide wires and the three sets of indispensable roentgenograms to determine (1) the accuracy of reduction and location of the skin clip in relation to the head of the femur, (2) the position of the guide wires and (3) the position of the nail will enhance the ability of the surgeon to expedite the proper insertion of the transfexion device.

## Texas State Journal of Medicine, Fort Worth

40 1-42 (May) 1944

- Psychosomatic Medicine J R Ewalt —p 5
- Preparation of Plasma J H Glynn —p 10
- Sulfonamide Treatment of Gas Gangrene R L Sewell —p 12
- Gastrointestinal Tuberculosis Medical Aspects G M Underwood —p 14
- Spinal Anesthesia C M Simpson and E O Bradfield —p 18
- Problems Pertaining to Socialization of Medicine A E Greer —p 24

## Virginia Medical Monthly, Richmond

71 279-338 (June) 1944

- Preliminary Report of Study of 200 Autopsy Cases at Eastern State Hospital, with Special Emphasis on Neuropathology and Brain Tumor in Old Age I S Zfass and W Riese —p 281
- \*Femoral Vein Ligation in the Treatment of Pulmonary Embolism Due to Femoral Thrombophlebitis E I Lowenberg —p 288
- \*Medical Treatment of Pulmonary Embolism J R Beckwith —p 296
- Questions on Vitamin B Complex and on Iodine Sulfocyanate and Menadione J H Smith —p 301
- False Negative Results in Friedman Test for Pregnancy \* R Buxton —p 303
- Primary Atypical Pneumonia S G Page Jr and C R Tittle —p 305
- Spina Bifida and Polydactyly in One Egg Twins Case Report and Medical Aspects W B Quisenberry —p 309
- Demonstration of Tuberculous Bacillema Comparison of Guinea Pig Inoculation of Whole Blood and Sediment Concentrated by Iowenstein Method J S Howe —p 312
- George Ben Johnston and Listerism F S Johns —p 314

**Femoral Vein Ligation in Pulmonary Embolism**—Lowenberg reports 3 cases of pulmonary embolism in which the femoral vein was ligated, with cessation of the embolic episodes. He also reports 2 cases in which ligation was not performed, with fatal consequences. Emphasizing the importance of early recognition of thrombophlebitis of the lower extremity and especially in the deep veins of the calf, he discusses the importance of Homans' test and the status of venography. He advocates femoral vein ligation as a routine emergency procedure whenever pulmonary embolism incident to lower extremity thrombophlebitis has occurred. In such instances the procedure may well be life saving. Whether femoral vein ligation is to be routinely performed in all cases of deep vein thrombosis remains to be proved, but in time the dictum may well be the treatment of femoral vein thrombophlebitis is femoral ligation. Ligation of the femoral vein at as high a level as possible often has a salutary effect on the thrombophlebitic process even though the ligation is not performed entirely above the inflammatory process, owing to total interruption of the blood flow through the affected veins.

**Medical Treatment of Pulmonary Embolism**—Beckwith shows that the classic picture of pulmonary embolism is not difficult to recognize. When a patient who has been lying in bed sits up or strains at stool and suddenly becomes dyspneic and develops severe substernal pain, pallor, sweating, weak rapid pulse and low blood pressure, the diagnosis is obvious. At times the symptomatology may be bizarre. Pneumonia, pleurisy or progressive heart failure may be suspected. The finding of a hitherto unsuspected thrombosis of a deep leg vein may be a lead. X-ray examination may also be helpful. Characteristic electrocardiographic changes often occur. Careful clinical examination of the patient is very necessary, and detection of signs indicating pulmonary hypertension and right ventricular failure is important. When an acute episode occurs and the diagnosis of pulmonary embolism is made, therapy should be immediately instituted. This should be directed at relieving the anoxemia by the administration of oxygen in high concentration and simultaneously making an effort to reestablish the impaired circulation. The latter can be done by the administration of atropine 1.00 gram (0.0013 Gm) and papaverine ½ gram (0.032 Gm) intravenously. Then atropine and papaverine should be given every four hours. The response is often dramatic, and a patient who looks moribund may be "responsive" in a short while. The heart rate becomes slower, blood pressure rises, the heart sounds become louder and the color improves. During the past two years the author has seen 3 cases of pulmonary embolism shortly after the condition occurred. All were treated as described and all obtained dramatic relief following the initial attack. Two died later with subsequent attacks and 1 recovered completely. It is probable that had the focus of the embolus been found, the latter episodes could have been prevented. The cases are presented.

## FOREIGN

An asterisk (\*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

## Archives of Disease in Childhood, London

19 1-42 (March) 1944

Erythroblastosis Foetalis J R Gilmore—p 1

\*Scheme for Prevention of Cross Infection in Children's Wards N M Jacoby—p 26

**Prevention of Cross Infection in Children's Wards**—Jacoby describes a scheme which was to guard against the dangers of cross infection and was carried out for a year in a new children's ward. A plan of the ward is shown in a diagram. Infants up to 18 months of age who had no infection were admitted to single rooms where no case of known or suspected infection was ever allowed. Infants up to 18 months of age who, although suffering from an infection which excluded them from class 1, are themselves equally susceptible to cross infection, were likewise admitted to single rooms. Children over the age of 18 months suffering from noninfectious disease, e.g. rheumatic fever, chorea, nephritis, diabetes and epilepsy were admitted to the larger wardlets (with 4 to 6 beds). Children of all ages suffering from infectious diseases, e.g. tonsillitis, respiratory infection, alimentary infection and otitis media were admitted to the small wardlets, one type of disease being kept in each wardlet as far as possible. Children of all ages suffering from tuberculosis were admitted to the large ward originally designed as a solarium. Only fully trained nurses or senior probationers were selected for nursing and as far as possible no nurse was given charge of "clean" and infected cases at the same time. All doctors, nurses, students, cleaners, visitors and any one else who wished to enter a ward was required to wear a gauze mask covering the nose and mouth. Infectious cases were nursed on full barrier precautions. Children who were not continuously in bed were not allowed to leave their rooms. The infants' feeds were prepared with full aseptic technique. No precautions other than those in general use in the hospital, were taken over the food of the older children. Visitors were discouraged. The best results as regards prevention of cross infection were obtained in groups 1 and 2, who were given the best bed isolation. The highest incidence of cross infection was among the tuberculous children and this is readily explained by the fact that they occupied the largest ward and stayed in the hospital for very long periods. The total incidence at 6 per cent appears to be of a low order compared with 18.9 per cent reported by Wright in 1940. In the conclusion the author stresses once more the importance of bed isolation, careful classification on admission, a competent nursing staff and face masking. He shows that if children's wards are to be made safer, attention will have to be paid to their architecture, and the staffing with nurses must be on a generous scale. Moreover, the number of beds for children will have to be increased.

## British Heart Journal, London

6 53-114 (April) 1944

Paroxysmal Heart Block and Ventricular Standstill J S Lawrence and G W Forbes—p 33

Heart Block with Aneurysm of Aortic Sinus P F Duras—p 61

Stokes-Adams Attacks in Child V S Stern—p 66

\*Complete Heart Block M Campbell—p 69

Rare Case of Complete Heart Block K Saracoglu—p 93

Social and Economic Conditions and Incidence of Rheumatic Heart Disease G H Daniel—p 103

Unusual Electrocardiogram in Dextrocardia J M Holford—p 105

Atrioventricular Rhythm R A Miller—p 107

**Complete Heart Block**—Campbell discusses 64 cases of heart block, mostly complete, which were seen during the same period as 29 cases with dropped beats and 140 cases with latent heart block. Of the patients attending the cardiographic department of Guy's Hospital during twelve years 0.6 per cent had complete, 0.5 per cent partial and 2.2 per cent latent heart block. The author gives particular attention to the prognosis, incidence and significance of Stokes-Adams attacks and the extent to which complete block remains persistent or varies to lower grades of partial or latent block. Complete heart block is most

often seen in men in the seventh decade with enlarged hearts and atherosclerosis but no other evidence of gross heart disease. Four fifths of the patients were men and 84 per cent were over 50 years of age. Syphilitic and rheumatic heart disease were responsible for only just over 10 per cent of the cases. Myocardial disease was responsible in three fourths of the cases. Cardiac enlargement with no other signs of atherosclerosis was the evidence of myocardial disease in nearly half of the cases. High blood pressure, angina pectoris or congestive failure being present in the other half. The heart rate averaged just under 35 (excluding congenital cases, in which it was generally 40 to 56). Heart block may be complete, partial or varying, changing to other degrees of block, or interrupted. It may also be transient, due to a known infection or to a specific episode such as cardiac infarction or paroxysmal of which there are two varieties, paroxysmal complete heart block when the usual rhythm is latent heart block and paroxysmal heart block (complete) when the usual rhythm shows a normal PR interval. Although complete heart block is a serious lesion, some, especially those under 40, live for many years in reasonably good health. Of the author's patients 50 were followed for more than two years or until death. Thirty-four were dead after an average period of 2.5 years; others were observed for from two to six years and still others for from seven to twenty years. Stokes-Adams attacks were present in half the patients with complete heart block. When they were present they were one of the earliest if not the first significant symptom of heart block. In those without Stokes-Adams attacks, dyspnea or attacks of faintness or dizziness were the main presenting symptoms. The prognosis was considerably worse in those with Stokes-Adams attacks. Of 30 with Stokes-Adams attacks 24 died during the period of observation whereas of 20 without Stokes-Adams attacks only 10 died. Sixty-one per cent of those with Stokes-Adams attacks died suddenly and of the others only 1 died suddenly. If when a patient is first seen with complete heart block he has not had a Stokes-Adams attack the risk of such an attack developing or of his dying suddenly is not great, and with each month that has passed the risk becomes still less.

## British Journal of Urology, London

16 1-34 (March) 1944

\*Treatment of Arterial Hypertension with Potassium Thiocyanate J L D'Silva and G Evans—p 1

**Potassium Thiocyanate in Arterial Hypertension**—D'Silva and Evans studied the effects of potassium thiocyanate in the treatment of 25 patients with hypertension. During the first week the patients were given three times daily 0.1 Gm of potassium thiocyanate. At the end of the week, that is after 2.1 Gm had been given, the serum thiocyanate content was determined. In some patients the serum concentration was less than 4 mg per hundred cubic centimeters, in others it was between 4 and 11 and in still others it was over 11, in 1 patient as high as 15. This showed that the requirements of the patients varied greatly and that caution was necessary. The dosage was altered in steps of 0.4 Gm weekly until a serum level of from 5 to 12 (usually from 7 to 9) mg per hundred cubic centimeters was obtained. Once the individual patient's requirement of potassium thiocyanate was established in the hospital, the follow-up after discharge from the hospital, with blood thiocyanate estimations at less frequent intervals was fairly satisfactory. Summarizing their observations, the authors say that 11 of the 25 patients responded by a considerable fall and 6 by a slight fall in blood pressure. In 8 cases the blood pressure was unchanged. Headache, vertigo and lack of concentration were the associated symptoms most often relieved. The drug was administered safely to elderly patients and those with electrocardiographic evidence of myocardial degeneration. Two patients with cerebral arteriosclerosis benefited greatly by treatment. No patient with severe renal dysfunction was encountered in this series. Two patients were poisoned with the drug but made uneventful recoveries when its administration was suspended.

## Irish Journal of Medical Science, Dublin

6 169 200 (June) 1944

- \*Heart in Pregnancy, with Special Reference to Public Health G E Donovan—p 169  
 Middle Meningeal Hemorrhage and Concussion A A McConnell—p 179  
 Estimation of Prolimin in Blood and Urine and Study of Its Excretion A E A Werner—p 189  
 Observations on Treatment of Psychosis by Electrically Induced Convulsions J Delany and J R Shea—p 193  
 Carcinoma of Fallopian Tube R M Corbet—p 196

**Heart in Pregnancy**—Donovan points out that the effects of pregnancy on the normal woman may produce both symptoms and signs which closely simulate heart disease, e g shortness of breath, palpitation, fullness of the neck veins, rales at the lung bases and a change in the radiographic silhouette of the heart similar to that of mitral stenosis. Citing figures mostly of American investigators, Donovan shows that heart disease is not a common complication of pregnancy. He cites a New York report which indicates that in mothers with known heart disease the death rate was 10.3 per thousand pregnancies, compared with 2.0 per thousand for all obstetric patients. Post-mortem studies by Glasgow authors revealed that of 813 patients who succumbed during pregnancy or puerperium 108 had acute or chronic heart lesions. Mitral stenosis is the predominant lesion in heart disease complicated by pregnancy. Auricular fibrillation causes approximately four times more deaths than any of the others. Antepartum supervision with early hospitalization in those cases needing it, materially reduces the mortality rate. There are two schools of thought regarding the best methods of delivery. One favors cesarean section, the other prefers delivery by the natural route with general anesthesia and the application of forceps at a certain stage. Those who prefer cesarean section argue that it is possible to choose a time for the operation with a strict regard for the heart condition of the patient, physical strain of labor is avoided, and there is reasonable certainty of producing a living child. Those who favor natural delivery maintain that women with heart disease usually have easy labors, owing possibly to the laxity of the tissues. The sudden flooding of the circulation at the time of the contraction of the uterus may be a causal factor in the increased incidence of heart failure in the first twenty-four hours of the puerperium. Venous section and the application of a tight abdominal binder as soon as the uterus is evacuated may help. The danger involved in anesthetizing and operating on pregnant women suffering from heart disease has been exaggerated. Probably nitrous oxide and oxygen supplemented by ether is as good as any anesthetic. The use of spinal anesthesia is of doubtful wisdom. It is inadvisable for patients who suffer or have suffered from heart failure to become pregnant. Antepartum clinics should have facilities for special investigations, x-rays and electrocardiographs should be available. Some antepartum cases require hospital treatment, investigation or supervision.

## Lancet, London

1 649 680 (May 20) 1944

- Reflections on Reform in Medical Education T Lewis—p 649  
 War Surgery of Extremities in Light of Recent Experience J Trueta—p 651  
 Case Finding by Mass Radiography. Report on 500 Selected Cases A Kahan and H G Close—p 653  
 \*Pneumococcal Meningitis Treated with Penicillin H Cairns E S Duthie W S Lewin and H V Smith—p 655  
 Fractured Femoral Shaft. New Approach to Problem G R Fisk—p 659

1 681-712 (May 27) 1944

- Gunshot Wounds of Knee Joint S J D Buxton—p 681  
 Reflections on Reform in Medical Education T Lewis—p 685  
 Effect of Vitamin C Deficiency on Experimental Wounds. Tensile Strength and Histology G H Bourne—p 688  
 Pruritus Ani. Practical Approach A J Cantor—p 692  
 Tissue Culture of Malaria Parasites (Plasmodium Gallinaceum) F Hawking—p 693

**Pneumococcal Meningitis Treated with Penicillin**—Cairns and his co-workers report 8 cases of pneumococcal meningitis treated with intrathecal penicillin, supplemented in 3 cases with penicillin intramuscularly. In 6 cases recovery was complete. In 2 cases leptomeningitis was controlled but death subsequently occurred, one from subdural abscess, the other from brain abscess, ventriculitis and obstruction of the

aqueduct of Sylvius. Both sodium and calcium salts have been used intrathecally. Concentrated solutions of approximately 5,000 units per cubic centimeter were made in distilled water, which after Seitz filtration and assay were diluted in water or isotonic solution of sodium chloride to 250 to 500 units per cubic centimeter. Repeated daily injections of these solutions into the lateral ventricles or lumbar subarachnoid space in amounts of 4 to 10 cc have not produced impairment of nervous function. The usual dosage was 3,000 to 4,000 units per injection. This was given daily for from four to nine days in the uncomplicated cases. The dose was varied, the smallest, 650 units, caused only temporary disappearance of pneumococci, the largest, 20,000 units, was too high for this preparation and produced a severe reaction. The total amount injected intrathecally has varied between 10,000 and 85,000 units. In the mild cases the intrathecal injections of penicillin can all be given by the lumbar route, but the ventricular route should be employed if there is not prompt clinical improvement or if blockage of the cerebrospinal pathways is suspected. In severe cases it would seem desirable to combine lumbar and ventricular injection. When adequate supplies of penicillin become available it may be wise to give penicillin intramuscularly or intravenously for a few days. The authors treated 8 further cases, in 2 of which death occurred. This makes a total of 16 fully treated cases, with 12 recoveries. The majority of the recent cases provided additional evidence of the beneficial effect of sulfonamides. Although much less effective than penicillin sulfonamides can be administered by mouth, and they pass readily from the blood stream into the cerebrospinal fluid.

## Medical Journal of Australia, Sydney

1 429-452 (May 13) 1944

- Strongyloidiasis in Man. Infestation with Strongyloides Stercoralis (Bavay 1876) T E Lowe and H O Lancaster—p 429  
 Therapeutic Value of Sulfaguanidine in Treatment of Bacillary Dysentery at an Australian General Hospital B A Baker—p 435  
 Use of Chorionallantois of Developing Chick Embryo in Diagnosis of Smallpox E A North J A Broben and A H Mengoni—p 437  
 Leprosin Test in Laboratory Animals J W Fielding—p 439

## Practitioner, London

152 345-408 (June) 1944

- Water Metabolism in Relation to Hot Weather J M O'Connor—p 345  
 Summer Sports A Abrahams—p 352  
 Public Health Aspects of Diseases Prevalent in Warmer Weather E H R Smithard—p 355  
 Skin Disorders of Warmer Weather J Sommerville—p 362  
 Diet in Hot Weather Rose M Simmonds—p 370  
 Significance of Minor Head Injuries G C Knight—p 377  
 Some Problems of Breast Feeding F Charlotte Naish—p 384  
 Interpretation of Physical Signs VI In Gynecology V B Green Armytage—p 392

## Schweizerische medizinische Wochenschrift, Basel

73 937-960 (July 31) 1943 Partial Index

- Organization of Climatic Treatment of Patients Not Suffering from Tuberculosis K von Neergaard—p 937  
 Problems and Requirements of Balneologic and Climatologic Investigations in Switzerland W Morlofer—p 939  
 Development of Spas in Switzerland. Demands and Requests by Balneologists J Weber—p 941  
 New Methods and Possibilities of Analyses of Springs W D Treadwell—p 944  
 Spontaneous Sciatic Causalgia C Julhard—p 946  
 \*Endocrine Obesity and Spastic Abdominal Syndrome H J Schmidt—p 948  
 Percutaneous Electrosurgical Puncturing of Lateral Ligament of Knee Joint F Becker—p 950  
 Severe Stenotic Laryngotracheobronchitis Complicated by Pericarditis and Its Effective Treatment by Tracheotomy, Naphazoline Preparation and Sulfathiazole H Martin and J Mury—p 951

## Endocrine Obesity and Spastic Abdominal Syndrome

—The subjects of Schmidt's report were 3 women, 29, 44 and 46 years of age with endocrine adiposis associated with a predominant spastic abdominal syndrome. Froehlich's type of hypophysial-genital adiposis was present in 1 case and hypophysial-adrenal obesity associated with pronounced virilism in the 2 others. The spastic abdominal syndrome corresponded to the picture of spastic neuropathic colitis. Renal and ureteral colics in addition to intestinal colics were predominant. They are considered to be manifestations of the same functional dis-



order in two closely related organic systems rather than disorders which are different in principle. Anatomic changes could not be demonstrated in the intestinal canal but mild bilateral hydronephrosis was shown by 2 of the cases. This hydronephrosis may have been a sequel of the ureteral colics rather than their origin, since a mechanical cause was missing and hydronephrotic changes could not be demonstrated on roentgenologic and postmortem examination. Primary functional disturbances of intestine and ureter in the sense of neuromuscular dyskinesia on a vegetative-nervous base are suggested. Psychic anomaly was present in all 3 cases. A basic depressive attitude was manifested and was associated with a pronounced hysteriform tendency. The accompanying polynurotic syndrome was characterized by subjective complaints without any objective neurologic findings. The porphyrin examination always was negative. The conformity of the symptom complex of these 3 cases suggests an internal genetic relationship, but no indication was presented with regard to its type.

### Medicina Española, Valencia

7 277-398 (March) 1944 Partial Index

- \*Early Rising and Pulmonary Embolism After Abdominal Operations E. Marescot—p. 284
- Renal Diabetes in Infant Case D. Duran—p. 335
- Vitamin B<sub>1</sub> in Therapy of Whooping Cough L. Cortes de los Reyes—p. 347

**Early Rising and Pulmonary Embolism**—Marescot emphasizes the importance of early rising after abdominal operations in prevention of pulmonary embolism. The author performed 1,192 abdominal operations during a period of five years in the Pontevedra Hospital. Early rising was practiced in the majority of the cases. Of the small group of patients who remained in bed for more than one week after the operation thrombophlebitis occurred in 4. The patients were ordered to rise immediately from bed, to move their legs and to walk. Phlebitis was controlled. Pulmonary embolism occurred in 1 case. It was benign and controllable.

### Revisia de la Asoc. Med. Argentina, Buenos Aires

58 163-216 (April 15) 1944 Partial Index

- Vitamin K in Therapy of Hypertension A. Barcellos Ferreira—p. 163
- \*Dissecting Aneurysm of Aorta with Diagnosis During Life of Patient J. E. Israel and J. Valotta—p. 174
- \*Adrenal Cortex Extract in Vomiting of Pregnancy E. Bottiroli—p. 181

**Dissecting Aneurysm of Aorta**—According to Israel and Valotta diagnosis of dissecting aneurysm of the aorta during the patient's life is difficult. Changes in the tunica media of the artery constitute the main pathogenic factor. Fissure of the intima layer of the artery and arterial hypertension are inconstant secondary factors. Sudden acute precordial pain which radiates to the back and to the lumbosacral region along the course of the aorta, combined with the feeling of impending death, followed by shock, paralysis and signs of arterial obstruction are the predominant symptoms. X-ray examination shows great enlargement of the thoracic segment of the aortic shadow, double border of the aortic shadow in the frontal view and left ventricular hypertrophy. Recovery after the acute attack is extremely rare, although possible. The authors report that a man aged 43 with hypertension of long standing suffered an acute attack of severe precordial pain followed by paralysis of both legs. The roentgenogram was typical of a dissecting aneurysm of the aorta. Treatment consisted of intravenous injections of papaverine and bed rest. Paralysis greatly improved the patient being able to walk one month after the attack. He led a comfortable existence for eight months when he suddenly died. A necropsy was not permitted.

**Adrenal Cortex Extract in Vomiting of Pregnancy**—Bottiroli administered adrenal cortex extract to a large number of patients during the last three years for vomiting of pregnancy. The patients belonged to four groups: (1) those with nausea but no vomiting, acidosis or asthenia, (2) patients with acute nausea, vomiting and asthenia but without acidosis, (3) patients with acute nausea, vomiting, asthenia and acidosis and (4) patients with intractable vomiting. Intravenous injections of dextrose solution, a diet of thirst and hunger, enemas of urine of pregnant women, large doses of sodium bicarbonate

insulin, belladonna and thyroid preparations failed in all of the cases. Intramuscular injections of desoxycortico-sterone and adrenal cortex extract controlled the nausea and vomiting within three days or a week. It is advisable to administer tablets of 0.10 Gm. of powder of the cortex for one week after vomiting has been controlled. Adrenal cortex extract is a harmless substance which has no contraindications.

### Deutsche medizinische Wochenschrift, Leipzig

69 349-378 (April 30) 1943 Partial Index

- \*Constrictive Pericarditis and Its Therapy F. Koch—p. 349
- Localization of Urticarial Rash Following Injection of Foreign Serum A. Cimbal—p. 353
- Febris Neuralgica Periodica (Wolhynic Fever, Five Days Fever) E. von Bormann—p. 356
- Allergy in Trichinosis F. Linneweh and Harmsen—p. 359
- Thrombopenia and Blood Coagulation H. Werner—p. 36
- Gastroenterogenous Pellagra W. Seitz—p. 365
- Generalized Thrombopenia After Single Arsphenamine Injection (comment on an article on same subject by Heinsen and Wachter) K. Zieler—p. 368
- Generalized Thrombopenia After Single Arsphenamine Injection H. A. Heinsen—p. 369

**Constrictive Pericarditis and Its Therapy**—The concept of cardiac insufficiency resulting from embarrassment of the diastolic phase of the heart action will be of considerable help in the diagnosis of constrictive pericarditis and as an indication for surgical intervention. Differentiation between tuberculous and rheumatic nature of the condition is of no importance so far as intervention is concerned except where definite tuberculous changes in other organs are present when the operation should not be performed. The earlier the intervention is performed, the more promising the result. Operation gives best results where a complete cure from acute pericarditis has occurred. In such cases even the removal of the feltlike fibrous tissue over the auricles and between the large vessels may be possible and the formation of adhesions with proliferation of connective tissue and cicatrization may be prevented. Operation is recommended nevertheless for the very grave cases since they are not amenable to any other type of treatment. It is important to commence the surgical intervention on the left ventricle in order that an increased cardiac output may be coped with. Definite improvement may result from this conduct of the operation when first the left ventricle and the right ventricle and even portions of the auricles are freed. Unsatisfactory results, in spite of the fact that the heart had been freed to a large extent may be due to the anatomic conditions of the posterior wall of the pericardium and its junction with numerous vessels. Adhesions may be particularly pronounced at this area. Two conditions throw light on this state before the intervention. Pulmonary stasis at the base of the lungs as demonstrated on roentgenologic examination and not amenable to conservative treatment of the heart is to be regarded as a sequel to the massive obstruction to the filling power of the left auricle. The electrocardiographic recordings of 7 of 20 patients with definite constrictive pericarditis revealed auricular fibrillation and a peculiar change of the P deflection was shown by the electrocardiograms of the other 13 patients. It was interpreted as a transitional change from the normal stimulation period to fibrillation and as an impairment of the auricular contraction. That corresponds with the anatomic condition of some of these cases, in which calcification was demonstrated on roentgenologic examination. The electrocardiogram of 13 of the 20 cases also showed a definite change in the ST segment which was depressed more or less below the zero line particularly in leads 2 and 3. There was an upward convexity of the ST segment ending with a negative T. The peculiar change of the P deflection associated with the well defined changes of the ST segment strongly suggests the occurrence of constrictive pericarditis. In these cases the success of surgical intervention is doubtful and a two stage operation is suggested in those in which the parietal layer and the visceral pericardium can be separated. Conservative management with digitalis, rest, diet and systematic training of the functional capacity of the heart is advisable during the period of improvement following the first stage operation. The second operation is easier and will make more promising the freeing of the right ventricle and of the auricles.



## Book Notices

**Heart Disease An Elementary Reference for Physicians** By Robert S. Berghoff, M.D., F.A.C.P., Clinical Professor of Medicine, Loyola University School of Medicine, Chicago. Issued Under the Auspices of the Post Graduate Committee of the Illinois State Medical Society, State of Illinois, Department of Public Health Circular No. 176, Paper. Pp. 63. Springfield, 1944.

This booklet has been prepared as an elementary syllabus on heart disease for physicians. There are nine chapters of from three to fourteen pages, on congenital heart disease, rheumatic endocarditis, syphilitic heart disease, arteriosclerotic heart disease, acute and subacute bacterial endocarditis, hypertensive and thyroid heart disease, diseases of the pericardium, abnormalities of rate and rhythm and left ventricular failure vs. right ventricular failure. The plan is excellent but the execution is disappointing. The book fails to present the newest advances in our knowledge of various conditions, such as congenital heart disease in the case of the auricular septal defect. In the discussion of rheumatic heart disease there is little or no statement of the myocardial involvement which is predominant in the early cases and which is responsible for the early dilatation and murmurs. Valvular deformity is a later manifestation. Syphilitic heart disease is essentially syphilitic aortitis and in many cases does not show heart involvement at all. "Heart involvement" should really be "aortic involvement." It is impossible to diagnose syphilitic aortitis early in its course. The symptoms and signs described are late, and it should be emphasized that percussion is notoriously inaccurate in the measurement of the aorta.

Under the heading arteriosclerotic heart disease many cardiologists would doubt any common existence of the senile heart per se, in persons in the fifties, for example. Also individuals vary much in their aging. It is important to recognize that coronary disease is not necessarily a disease of senility, it increases with age, of course, but it is an important disease of youth. Angina pectoris is not necessarily severe. Its position, character and causation are much more important than its severity. Minor myocardial infarction does not require eight weeks for adequate cicatrization, at least for consideration in treatment clinically. Four to six weeks suffice for adequate scar formation. Also it is important to note that the status anginosus, as in the case of acute myocardial infarction and angina pectoris decubitus, is not a chronic state. It should be regarded as an acute or subacute type of heart disease.

In the discussion of subacute bacterial endocarditis, some mention should be made of the reduction of mortality that has already occurred by the use of the sulfonamides and penicillin. In the discussion of hypertensive and thyroid heart disease, *pulsus alternans* is inserted after *gallop rhythm* as a synonym, but these two conditions are not synonymous. Also most doctors would consider tobacco contraindicated in hypertension, since it is known that most persons show an elevation of blood pressure, especially if they are already hypertensive, during and immediately after smoking. In the chapter on diseases of the pericardium, the important condition of chronic constrictive pericarditis has been omitted. In chapter 8, digitalis intoxication as an important cause of paroxysmal ventricular tachycardia should be included. In the final chapter on congestive failure, one cannot separate, so clearly as is done here, either the symptoms or the treatment of left and right ventricular failure. Cyanosis due to pulmonary congestion is the result of left ventricular failure, not of right, but there may be added cyanosis in right ventricular failure due to stasis in the peripheral circulation. Pain of aortic origin or otherwise is not a characteristic symptom of left ventricular failure, and clubbed fingers are not characteristic of right ventricular failure. Finally, diuretics are important in the treatment of left ventricular failure as well as of right as is also a decreased fluid intake, and it should be noted that digitalis often helps left ventricular failure strikingly.

The usefulness of this pamphlet would be greatly increased with revision to bring it up to date. There are quite a few simple typographic errors that need correction.

Annual Reprint of the Reports of the Council on Pharmacy and Chemistry of the American Medical Association for 1943. With the Comments That Have Appeared in the Journal. Reprinted from The Journal of the American Medical Association. Cloth. Price \$1. Pp. 150. Chicago: American Medical Association, 1944.

In the introduction to its "Official Rules," which have been used as a model by subsequent similar organizations, the Council on Pharmacy and Chemistry states that these were adopted "primarily with the object of protecting the medical profession and the public against fraud, undesirable secrecy and objectionable advertising in connection with proprietary medicinal articles." Later it is stated that the function of the Council is also "to advise the medical profession concerning the status of medicinal articles, to publish reports on claimed advances in the use of drugs and to elaborate standards for the control and identity of drugs that are introduced into *materia medica*." In its earlier years the Council was chiefly occupied with examining individual preparations for compliance with the Rules, and the early reprints of the Council's reports are predominantly statements concerning the nonacceptability of many preparations. Lately the emphasis has significantly changed to the more educational phase of the Council's work. The present volume of reprints is an excellent example of this trend. It contains only eight reports on rejected articles and it is noteworthy that objections to these are on a much higher plane than those it was necessary to urge against the flagrantly quackish preparations of earlier days.

Perhaps the most noteworthy of the nineteen educational reports in this volume is the one declaring the Council's intention of using henceforth only the metric or centimeter-gram-second system in its publications. The report itself gives some interesting and readable history on the subject of weights and measures. Of most timely interest to the general physician as well as to the endocrine specialist is the report on nomenclature of endocrine preparations. The report gives a currently quite complete list of the available commercial preparations, including those not accepted by the Council as well as those which stand accepted. Another report in the field of endocrinology is that recognizing the use of estrogens in the treatment of prostatic carcinoma.

Attention should be called to at least two of the reports concerned with vitamin preparations, namely the status report giving the Council's decision that the evidence does not yet warrant the acceptance of cod liver oil preparations for external use and the report announcing the Council's recognition of the use of massive doses of vitamin D in the treatment of refractory rickets. The Council has previously objected to the use of massive doses of vitamin D in arthritis and in this volume includes a current comment from *THE JOURNAL* titled "Hope (false) for the Victims of Arthritis" which reemphasizes this objection.

The status report on xanthine compounds gives a much needed delimitation of the therapeutic claims that may be recognized for aminophylline and its related xanthine derivatives. Of similar interest is the report on the local use of sulfonamides in dermatology, and in the same category may be mentioned the report on agents for the treatment of trichomonas vaginitis, which points out that the present aim should not be for new medicaments in this field but for further information especially concerning failures with those that have been used. In another status report the Council sets forth its conclusion that present evidence does not justify claims for advantage of oral use of sodium sulfonamides over the free drug.

In line with its decision to consider for acceptance various contraceptive preparations, the Council published a status report on conception control, which is included in this volume. The report comprises a series of concise statements on the various preparations and methods of control, prepared by Dr. Robert Latou Dickinson together with a statement of criteria by which the Council will consider the acceptability of contraceptive jellies, creams and syringe applicators and nozzles, diaphragms and caps.

It cannot be too often said that this volume, as well as the other publications of the Council, remains of paramount interest to all who are concerned with rational use of therapeutic agents.

Taken all together, the printed record of the Council's work represents a fitting monument to a service born of unselfish altruism and continued in a spirit of finest devotion to the best interests of the medical profession and the public

**The Diet Therapy of Disease A Handbook of Practical Nutrition** By Louis Peltner MD Assistant Attending Physician Long Island College Hospital Greenpoint Hospital and Brooklyn Cancer Institute Cloth Price \$3.75 Pp 143 with 6 illustrations New York Personal Diet Service 1944

This book is intended for the guidance of the physician in providing the greatest possible benefits to the patient from use of properly selected diets. In many cases there is no therapeutic effect to be derived from the most careful selection of food types, but in such cases proper selection at least can be of value in lightening the burdens of the body.

In the brief introductory discussion covering the basic facts of nutrition, new developments of practical significance in this field are touched on. A question might be raised concerning the classification of vitamins given here as Council accepted and not accepted. A clearer understanding of their status would probably result from their differentiation as those whose significance in human nutrition is now established and those whose relationship to human nutrition is not yet determined.

The body of the book consists of diet lists for some thirty disease conditions in their various forms as well as many types of special diets. For each a sample diet covering the meals of one day is accompanied by a helpful discussion of the fundamental pathology of the disease and the principles governing a diet for that condition. In some cases it is felt that the author attempts to cover too much ground for a book of this nature by going into the differential diagnosis of the disease state. The dietary principles set forth are based on sound, up to date scientific information with numerous references quoted. The actual diet lists are quite simple and apparently have proved themselves practical from long experience. As brought together in one book such as this, a ready reference and sample diet source is available to the medical practitioner for the application of the developments in the science of nutrition.

**Fundamentals of Psychiatry** By Edward A. Strecker MD ScD FACP Professor of Psychiatry and Chairman of the Department Undergraduate School of Medicine University of Pennsylvania Philadelphia Second edition Cloth Price \$3 Pp 219 with 15 illustrations Philadelphia London & Montreal J. B. Lippincott Company 1944

This book was first published in October 1942. Additional material was added in March 1943, and the present edition includes a single six page chapter on war neuroses that was not in the reprinting of the first edition. Otherwise the book appears to be unchanged except for minor typographic errors. The addition of this brief chapter would hardly seem to justify, in the opinion of the reviewer, a second edition. The book itself is excellent, as was pointed out in a review when it was first issued. Written by one of the leading psychiatrists in America, it is a brief, sound, compressed work, highly readable and excellent for the general medical adviser, who so often is faced with the problems of mental disease. This small manual can again be highly recommended as a useful and accurate summary of present day psychiatry.

**Cancer A Study for Laymen** Prepared for the Women's Field Army of the American Society for the Control of Cancer Inc. [Compiled by] Clarence C. Little ScD Managing Director Paper Grátis Pp 122 with 54 illustrations New York & Toronto Farrar & Rinehart Inc 1944

This can be regarded as an excellent manual if one keeps in mind that it is designed for the use of interested lay persons who have time to devote to study and to work in the cause of cancer control. It should not, however, be used outside the circles of interested workers. Its greatest usefulness will be among those who have at least a rudimentary knowledge of biologic science. It is prepared for the Women's Field Army of the American Society for the Control of Cancer, Inc., and is distributed free by that society, which may be addressed at 350 Madison Avenue, New York 17.

**Our American Babies The Art of Baby Care** By Dorothy A. Whipple MD Introduction by C. Anderson Aldrich MD Cloth Price \$2.50 17367 with illustrations New York N. B. Barrows and Company Inc 1944

This book is well organized and the material is completely integrated, from antepartum management through the first two years of life. The information given is what every young mother desires and is especially adapted for those who are working. There is a certain authority which comes only from one who has both practical as well as the scientific knowledge of the many problems one encounters in the care of infants. The information on most subjects is very adequate. The chapter on the development of habits and their treatment is delightfully covered and would save much valuable time of the pediatrician if all mothers could read it. The book would make a valuable reference for all persons interested in the care of infants.

**One Hundred Years of American Psychiatry** J. K. Hall MD General Editor Gregory Zilboorg MD Associate Editor and Henry Alden Bunker MD Assistant Editor Cloth Price \$6 Pp 649 with illustrations New York Published for the American Psychiatric Association by Columbia University Press London Oxford University Press 1944

Psychiatry like other branches of medicine has made enormous progress in the last century. In this field American psychiatrists have played an increasingly important part. This volume is not intended to list past achievements or to present a symposium on what American psychiatry is doing today but rather as pointed out in the foreword is intended as a historical synthesis of a century of American psychiatric evolution. It is a little surprising to find such extremely wide margins and other wasted space in a book published in these days of paper shortage. The editorial board and the contributors have been well chosen and deserve congratulations on the interesting chapters presented.

**Summary of State Legislation Requiring Premarital and Prenatal Examinations for Venereal Diseases** By Aneta E. Bowden MA PhD and George Gould MA LLB Assistant Director Division of Legal and Protective Services American Social Hygiene Association New York Published and distributed by the American Social Hygiene Association in cooperation with United States Public Health Service Second edition revised by George Gould Paper Price 25 cents 1p 30 with 2 illustrations New York 1944

As of Jan 1 1944 thirty states had passed legislation to prevent the spread of venereal disease through marriage by requiring a premarital examination as a condition to the issuance of a marriage license. A similar number of states had enacted antepartum examination laws to prevent syphilis in the unborn child. This summary represents an adequate dependable analysis of such laws which will serve as a practical guide to health authorities, officials issuing marriage licenses physicians and all others concerned. It will be particularly valuable to those who may be interested in the promotion of similar legislation in states in which laws of this character do not yet exist.

**The Management of Neurosyphilis** By Bernhard Dittner MD JurD Associate Clinical Professor of Neurology New York University Medical College With the collaboration of Evan W. Thomas MD Assistant Professor of Medicine and Assistant Professor of Dermatology and Syphilology New York University Medical College and Gertrude Wexler MD Instructor in Dermatology and Syphilology New York University Medical College Foreword by Joseph Earle Moore MD Associate Professor of Medicine and Adjunct Professor of Public Health Administration Johns Hopkins University Baltimore Cloth Price \$5.50 Pp 398 with 7 illustrations New York Grune & Stratton 1944

This book is a practical and much needed contribution. The author published another book on modern treatment of neurosyphilis eleven years ago when he practiced in Vienna. This publication is written along the same lines. It is divided into two parts, namely technics of withdrawal and examination of spinal fluid and methods of treatment and application and results. The part on the spinal fluid is extremely well written concise and encyclopedic in nature. It is the best the reviewer has ever seen on the subject. The second part is a textbook in itself. Every known form of treatment is described with technic and results. This book must be purchased by any medical man who treats any form of syphilis. It is the best at the present time. There is an index of authors and subjects.

## Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT HOWEVER REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS BUT THESE WILL BE OMITTED ON REQUEST.

### EVACUATION OF STOMACH OF INFANTS

**To the Editor**—Can you suggest a dependable safe and quick acting emetic to be used for young infants one that may be given by mouth or by needle or both? It often happens that children get poisoned on fuel oil and the like, and emptying the stomach with a stomach tube is not altogether satisfactory because of food blocking the outlet of the tube. Syrup of ipecac I have found, is too slow and cannot be relied on for prompt results.

C. C. Horton M.D. Pendleton, S. C.

**ANSWER**—Emetics are not as commonly used as in former times, though the list of these remedies has remained for the most part unchanged through the years. The emetics which are in common use may be briefly enumerated. Ipecac is used in the form of powder, 1 teaspoon to a glass of water or 1 tablespoon of the syrup in water repeated every fifteen minutes until vomiting is produced. Ipecac is uncertain and in large doses acts as a depressant. Zinc sulfate and copper sulfate are no longer in common use. One-half teaspoon of the zinc salt in water will usually cause emesis. Copper sulfate in 5 grain (0.32 Gm.) doses in warm water repeated in fifteen minutes will cause vomiting with only slight constitutional symptoms, but if not promptly ejected it may cause corrosion of the mucous surfaces. Mustard is safe but not certain in the desired action. One teaspoon in a cup of warm water should be given, repeated every fifteen minutes until vomiting is produced. Salt water 2 tablespoons to a glass of water, sometimes produces the desired result. Apomorphine is a rapidly acting emetic, though most physicians are reluctant to use it for young infants on account of its toxic and depressant action. For young infants the dose is  $\frac{1}{60}$  grain (0.0011 Gm.) hypodermically or  $\frac{1}{2}$  to  $\frac{3}{4}$  grain (0.0054 to 0.0032 Gm.) by mouth.

The emetics may be employed if lavage is contraindicated or inadvisable, though as a rule they are less reliable and are likely to be more depressing. Lavage is the method of choice in removing poisonous substances from the stomach. A catheter will serve the purpose the diameter of which should vary with the size of the child. A small funnel may be attached to the lumen of the tube, and the stomach washing may proceed in the usual manner. In most cases it is preferable to attach a 20 cc. glass syringe (larger size if available) to the catheter. Water should be slowly and gently forced through the catheter into the stomach, followed by immediate aspiration. This washing and aspirating process should be frequently repeated until the wash water is clear and free from ingested poison. By use of the syringe the catheter is less likely to be blocked by food substances. If the poison has caused erosion of the mouth, pharynx, or digestive tract the passage of a tube is contraindicated. In washing the stomach great care should be taken that food particles and poisonous substances are not aspirated from the pharynx into the lungs. It has been suggested that this accident may occur when the stomach is evacuated in kerosene poisoning, causing pneumonia, others think that if the oil remains long in the stomach it may be absorbed and partially eliminated through the respiratory organs, causing irritation and inflammation in these areas.

### CONTRACTURE OF HAND AND MERCURIC CYANIDE DRESSING

**To the Editor**—Can a solution of mercuric cyanide used as a wet dressing on an aluminum metacarpal splint cause a permanent deformity of the hand? I have a case in which mercuric cyanide was used as a wet dressing on an aluminum metacarpal splint for an infected hand. Later (within a few weeks) contracture of the hand developed and now the patient is unable to close his hand completely. He was told by another physician that the cyanide solution caused the deformity. I should like to know if it is possible for the mercuric cyanide to react with the aluminum and produce the contracture of the hand that is now present.

M. D. North Carolina

**ANSWER**—There is no definite information which would permit an answer to this question. It seems extremely doubtful that a combination of mercuric cyanide as a wet dressing with an aluminum splint could be responsible for the injury. Why one should use a destructive chemical like mercuric cyanide in the treatment of a hand infection is difficult to determine.

### STRYCHNINE SULFATE FOR NERVOUS MANIFESTATIONS OF ALCOHOLISM

**To the Editor**—A colleague recently expressed himself in favor of strychnine sulfate for cases of delirium tremens and acute alcoholic delirium. The thesis of antagonism (chemical or physiologic) between alcohol and strychnine seems to me particularly untenable as a basis for therapy since a patient with delirium tremens may not be saturated with alcohol at the time.

A. Valdes Dapena M.D. Havana Cuba

**ANSWER**—A recent article (Perisson, J. *Alcoolisme. Traitement des Complications Nerveuses par la Strychnine, Union med du Canada* 72 317 [March] 1943) which discusses the treatment of the nervous manifestations of alcohol addiction by means of strychnine contains some startling statements. Huge doses of strychnine are given subcutaneously, the daily total used in the treatment of delirium tremens being as much as 50 mg. and the individual doses being as high as 10 mg. ( $\frac{1}{6}$  grain). After two or three days the dosage may be reduced, but the treatment usually lasts from five to six weeks. Smaller doses of strychnine are used in chronic alcoholism, but about six weeks of treatment are again required. It is asserted that this treatment generally causes no untoward complications since the alcoholic patient has a remarkable tolerance for strychnine, and that strychnine is an antidote for alcohol because it causes a functional antagonism to alcohol on the nervous centers. The article indicates, however, that strychnine has no effect in the case of a demented chronic alcoholic addict.

The rationale for this form of treatment may be questioned, since a person under the influence of alcohol will oxidize or eliminate all of his imbibed alcohol within twenty-four hours after stopping drinking. It is then no longer a question of combating the narcotic action of alcohol by strychnine. Actually there is usually a period of heightened nervous irritability following alcoholic excesses, which condition would be further aggravated by strychnine. It would be better even to give more alcohol! If the strychnine treatment should measure up to the claims made in the article cited, the good results might be due to the punitive regimen.

### VITAMIN K AND PHLEBITIS IN LATE PREGNANCY

**To the Editor**—A patient developed a phlebitis two weeks prior to delivery. She had been taking vitamin K for some two weeks previous to the development of the phlebitis. Could you tell me whether in a case like this vitamin K will tend to cause phlebitis?

C. N. Talley M.D. Marlow Okla.

**ANSWER**—In therapeutic doses vitamin K has little if any effect on the coagulation of the blood of normal persons. There is no experimental or clinical evidence that the administration even in large doses, of vitamin K is followed by phlebitis. Since thrombophlebitis is not too infrequent in pregnant women, one can state confidently that in a case like that described vitamin K would not be significant in the etiology of the phlebitis.

### PAINFUL BURSAE AROUND ISCHIAL TUBEROSITY

**To the Editor**—Is there any such term as bursitis ischioglutealis? This diagnosis was made for pain on the os pubis of one side on sitting lasting now over some years with intermissions of months. Some years prior to the onset of pain there was prostatitis. Regular and repeated treatment was instituted and the prostate is all right now.

M. D., New York

**ANSWER**—There are several small bursal pouches in the region of the ischial tuberosity. As a result of repeated irritation and sometimes following a traumatic injury there may develop a pronounced bursal swelling with chronically thickened walls. This bursa is so placed between the ischial tuberosity and the gluteus muscle that it would seem quite correct to designate this as an ischioglutealis bursitis, although that term has not been used often enough to become generally well recognized.

### ALKALIS FOR SCALDING HOGS

**To the Editor**—On page 320 of the May 27, 1944 issue of *The Journal* there is a query regarding the use of lime in scalding hogs. In the reply it is stated that packing houses have discontinued the use of chemicals that hogs are merely scalded in boiling water and sent through the dehairers. In this connection I want to say that alkalis still are used in all packing plants in the scalding tubs in order to cleanse the carcasses. As suggested by your inquirer lime is used as is also soda ash and sodium hydroxide. One authority suggests 100 pounds of pine tar 10 pounds of caustic soda and 30 pounds of soda ash for a 3 500 gallon scalding tub. It is true of course that workmen do not come in contact with the scalding water except in raising the tendon of the hind shank. Scalding is not done at the boiling point as the reply suggests but at 140-146 F. Dehairing is done with a mechanical device. Some shaving is usually necessary by hand to remove hairs which escaped the beaters.

William J. Laeffel Lincoln Neb.  
Chairman Animal Husbandry Department University of Nebraska

# The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL 126, No 3

CHICAGO, ILLINOIS  
COPYRIGHT, 1944 BY AMERICAN MEDICAL ASSOCIATION

SEPTEMBER 16 1944

## THE CHANGES IN OPERATIVE GYNECOLOGY DURING THE LAST QUARTER-CENTURY

CHAIRMAN'S ADDRESS

LOUIS E. PHANEUF, M.D., Sc.D.  
BOSTON

Much progress has been made in the surgical technic of all specialties in the last twenty-five years. Mass ligation of tissues has been supplanted by careful dissection and the tying of individual vessels. Large suture material has been replaced by fine sutures, with better healing. The advocates of the silk technic have shown that, with careful hemostasis and the use of the finest threads, inflammatory reaction in wounds or incisions so treated is almost entirely absent. There are those—and they probably form the majority of operators—who prefer catgut to silk. Taking a leaf from the book of the silk advocates, they have gradually reduced the size of their catgut until now a No. 0 strand may be used in place of the former No. 2, this having been made possible by the improvement in the manufacture of catgut. With the decrease of foreign bodies in sutured wounds, the severe reaction and abundant serum previously found have been eliminated, resulting in better and more rapid healing. The painstaking dissection of the tissues, the employment of the finest sutures consistent with the amount of tension present and perfect hemostasis are the three general factors which have had the most to do with the improvement of surgery in general.

### CARCINOMA OF THE UTERINE CERVIX

Twenty-five years ago radium and high voltage x-rays were just beginning to be selected in the treatment of carcinoma of the uterine cervix. Irradiation then was usually resorted to for the inoperable cases. The radical abdominal hysterectomy to which the name of Wertheim has become attached was the method of choice in the treatment of this malady. It was well known at this period that a simple panhysterectomy offered but little chance of a permanent cure, since in this operation the parametria, the pelvic connective tissue and the iliac glands were left undisturbed. The mortality of the Wertheim operation at this period was high, the fatalities being due in large part to shock, hemorrhage and infection, and the prevention and management of these conditions not being so well understood as they are today. Blood transfusion had not as yet come into its own, the facilities for blood transfusion in the average hospital were very meager to say the least, and in certain cases the blood transfusion,

if given at all, was more of an operation than the hysterectomy itself. The sulfonamide drugs used in the prevention of infection were of course unknown during the period under discussion. The Schauta vaginal hysterectomy for malignant disease of the cervix had but few adherents in America, surgeons here preferring the abdominal route. Considering the constant and rapid improvement in the technic of irradiation with its low or absent mortality, simplicity of performance and primary results as good as or better than those of the Wertheim hysterectomy, it is not to be wondered at that the latter procedure was practically totally abandoned. As time has gone on and women treated by irradiation have been carefully followed over a period of many years, injuries of the large and small bowel, the result of fibrosis resulting in intestinal obstruction at the end of fifteen to twenty years according to some statistics, have averaged about 20 per cent. Again deep and refractile ulcers of the bladder have been found after a number of years. This is no disparagement of radium and x-ray therapy, which doubtless have been used in most cases in the treatment of cervical cancer. As one of those who never entirely gave up radical pelvic surgery for irradiation, I have often wondered why an operation like the radical abdominal hysterectomy which had rendered such signal service could be absolutely abandoned. It has always seemed to me that there must be a place for it in the properly selected case. Recently a small number of gynecologists have reasoned along the same lines and have again turned to surgery in well selected cases. Those who are returning to the Wertheim operation today realize that the mortality must be kept at a low figure. This may be accomplished by selecting only group 1 cases, those of women in good physical condition, by cleaning the cervix and minimizing infection by a small preoperative dose of radium, when indicated, by preparing the patient carefully, paying particular attention to the blood, by the judicious use of whole blood and blood plasma transfusion preoperatively, intraoperatively and postoperatively, and by leaving the required amount of one of the sulfonamide drugs in the culdesac of Douglas after covering the raw areas with peritoneum. When this selection and technic are carefully followed, the convalescence of these women does not differ much from that of those who have been subjected to an ordinary panhysterectomy. Radium and high voltage x-rays are still reserved for some cases in group 1 and for groups 2 and 3, and are used as palliative agents in some group 4 cases. Diagnosis of early cancer of the cervix is one of the prominent achievements of the last quarter of a century.

### CARCINOMA OF THE UTERINE CORPUS AND ENDOMETRIUM

In the management of corporal and fundal carcinoma no such radical change has taken place as in carcinoma of the cervix. A simple panhysterectomy with the

Read before the Section on Obstetrics and Gynecology at the Ninety Fourth Annual Session of the American Medical Association, Chicago June 15 1944

ablation of the adnexa, with or without preoperative radium and postoperative high voltage x-ray therapy, has remained the treatment of choice. Improvement here has also come through early diagnosis. Malignant disease occurs in this area at a more advanced age than it does in the cervix. The advocacy of a diagnostic curettage for women who bleed irregularly at or after the menopause has been responsible for the recognition of the disease in its incipience. Even here irradiation has been of great benefit to a group of women advanced in age whose physical condition does not warrant as extensive an operation as a panhysterectomy. Although radium and x-rays have not shown such brilliant results in cylindric cell as in squamous cell cancer, nonetheless a sufficient number of patients with the condition have been benefited by this form of therapy.

#### UTERINE MYOMAS

Uterine fibroids are one of the commonest lesions in gynecology. During the last twenty-five years myomectomy has been resorted to with increased frequency. Originally it was thought that myomectomy on account of the increased dangers of hemorrhage and sepsis was a more serious operation than hysterectomy. Recent statistics have shown that through thorough asepsis and careful suturing these difficulties have been overcome, the mortality reported being no higher than that of supravaginal hysterectomy. The great advantage of myomectomy rests in the fact that the functions of menstruation and reproduction are not interfered with, an important desideratum in the younger group of women still in the childbearing age. All statistics show a rather large number of children born of women so treated. The continuance of menstruation is an important factor in the lives of these patients. The principles of supravaginal hysterectomy for fibroids were well established twenty-five years ago, and the results of this method were quite satisfactory. The conservation of the adnexa, when in a healthy state, in performing hysterectomy for myomas on women who have not reached the menopause is a principle accepted by most gynecologists. Our knowledge of the hormones of the ovary and of the fact that they continue their function of internal secretion for a certain period of time if a small amount of endometrium is retained at operation has led to conservation in this respect. That it is essential to maintain a good blood supply to the retained ovaries is a fact recognized by all operators.

The question of supravaginal hysterectomy versus panhysterectomy in the treatment of certain uterine lesions of benign origin in which fibroids play an important role has led to important debates before medical societies when the subject is brought up for discussion. An increasingly well planned and careful follow-up of patients has led to the discovery of a number of carcinomas of the retained cervical stump. It is argued by the protagonists of panhysterectomy that if the cervix had been removed at the time of the original hysterectomy for fibroids or other benign conditions, carcinoma of the cervical stump could not have developed, a proposition that is absolutely logical and cannot be ignored. On the other hand, the advocates of supravaginal amputation of the uterus agree that the difference in mortality between panhysterectomy and supravaginal hysterectomy is greater than the incidence of stump carcinoma, that the vagina is shortened by panhysterectomy and that in the presence of a retained cervix more satisfactory marital relations may be permitted. In answering these allegations it

may be said that it is true that the mortality of panhysterectomy is considerably higher in the hands of those who perform this operation only occasionally, but the same cannot be said of well trained specialists and experts in its performance. A glance at the statistics for the last ten years seems to prove this point. If the vagina is carefully dissected around the cervix it is not shortened appreciably, and it must be admitted that retaining the cervix for purposes of marital relations is a sound argument and one difficult to refute. One step in the progress of supravaginal hysterectomy during the period under discussion has been the opportunity for careful examination of the cervix, with the aid of a good light, under anesthesia before proceeding with the operation, as benign lesions of the cervix should be healed before or treated at the time of the subtotal removal of the uterus. To accomplish this end many methods have been suggested. These include trachelorrhaphy, amputation, electrocoagulation and cauterization. I have tried all these and come to the conclusion that in my hands thorough cauterization of the cervical canal and portio vaginalis has given the best results. Moreover, the gynecologist in choosing the type of hysterectomy for benign lesions is influenced by the number of stump carcinomas which come to his attention. In my practice, in recent years, the total has almost entirely supplanted the subtotal operation.

In the last decade irradiation by means of radium or x-rays has achieved greater popularity in the treatment of fibroids, but if this method is resorted to it should be an inviolate rule to precede it by a thorough curettage of the uterus in order to rule out malignant disease. In the opinion of many, irradiation should be reserved for those considered poor surgical risks and for those who have reached the age where the ovaries have ceased to function. In the young, whose ovaries should be conserved, and in the good surgical risks, surgery is still accepted as the better method of treatment.

#### VAGINAL HYSTERECTOMY

The trend toward vaginal hysterectomy in the United States has become more prominent since 1919. Performed before the days of abdominal surgery because of its great safety, it was almost entirely abandoned at the beginning of the present century when abdominal pelvic surgery became popular. During the last two decades it has been reborn, so to speak, and its performance in all gynecologic services is now commonplace. In some clinics its indications have been extended to the point of removing large fibroid tumors by morcellation. Two schools of thought exist in connection with this operation, the first including those who favor the suture method and the second, a small group, sponsored by James W. Kennedy of Philadelphia, including those who favor an improved clamp method because of its simplicity and rapidity. Vaginal hysterectomy plays such an important role in gynecology that it is not likely to be again abandoned.

#### VESICOVAGINAL FISTULAS

Originally vesicovaginal fistulas were the result of the trauma of childbirth or of protracted labor, and with the exception of those adherent to the pubic ramus the operative treatment was not especially difficult since they were usually accessible. With the increase in operations on the pelvic viscera, hysterectomy and operations on the anterior vaginal wall and bladder for example, the so-called surgical fistulas now greatly outnumber the obstetric. Because of their location especially those situated high in a scarred and retracted



vaginal vault, their closure may tax the ingenuity of the operator. As a result, vaginal, intravaginal and intraperitoneal methods have been devised. Most of these fistulas, however, are operated on, by the gynecologist, through the vaginal approach. Two extremely helpful adjuncts to the operation, probably not resorted to frequently enough, are, first, the Schuchardt incision, which permits such excellent exposure of the upper third of the vagina, and, second, suprapubic cystostomy. The latter, constantly employed by the urologist, has received but little consideration from the gynecologist, who usually inserts a self-retaining catheter through the urethra to keep the bladder empty. In many cases the catheter rests and causes pressure on the recently repaired area. This may militate against healing, whereas draining the bladder suprapubically places the sutured area at rest and leaves it undisturbed. This method is so advantageous in difficult cases that I wonder why I did not resort to it much sooner. The silver wire suture recommended by J. Marion Sims still has a place in the repair of vesicovaginal fistulas. More recently the metallic alloy wire suture, recommended by W. Wayne Babcock, has received deserved attention because of its greater tensile strength and because of the possibility of tying instead of twisting the suture.

#### TRACHELORRHAPHY AND AMPUTATION OF THE CERVIX

Trachelorrhaphy and amputation of the cervix are still valuable operations, although trachelorrhaphy seems to be losing some of its popularity. The current and useful methods of cauterizing the cervix after each labor, thereby overcoming erosion and ectropion and healing the smaller lacerations, has resulted in the less frequent performance of these operations. It should be emphasized that high amputation of the cervix should not be performed on one who is expected to have more children because of the frequent resultant sterility, because of the increased incidence of abortion and because of the dystocia in subsequent labors.

#### UTERINE PROLAPSE CYSTOCELE RECTOCELE

During the last twenty-five years the progress in this branch of gynecologic surgery has come through a better understanding of the structures that hold the pelvic viscera in their normal position. The modern reconstructive operations are based on sound anatomic and physiologic principles. The supportive structures are exposed by layer dissection rather than by superficial dissection of the surface mucous membrane of the vagina. As might be expected, better operative results have been secured. The operations of uterine suspension and fixation of the uterus to the anterior abdominal wall have definitely decreased in frequency. It has been recognized that fixation of the uterus to the abdominal wall is contraindicated during the childbearing period. In treating women who have passed the menopause there has been a decided tendency to operate entirely through the vagina rather than by the combined vaginoabdominal method in vogue in the early part of the century.

#### PELVIC INFLAMMATORY DISEASE

Although numerous organisms may be etiologically responsible for pelvic inflammation, three large groups predominate: specific infection, caused by the gonococcus, tuberculous infection and the large group of pelvic cellulitis for which the streptococcus is generally responsible. It is evident in all large gynecologic services that pelvic inflammation is decreasing. The

sulfonamide drugs are changing and may still further change the course of gonorrheal infection. It has been proved that these drugs limit the extension of the disease. For practical purposes gonorrheal infection in women may be divided into three stages: the initial infection involving the urethra, the vulvovaginal glands and the cervix; pelvic invasion usually occurring at the time of menstruation, when the organisms attack the endometrium, the tubal mucosa, the ovary and the pelvic peritoneum, and the development of degenerative lesions resulting in hydrosalpinx, tubo-ovarian cyst, adhesions, fixed retroversion and the like.

The treatment of the first two stages is conservative; that of the third stage operative. If the sulfonamide drugs come up to expectations and if the infection is limited to the first stage, the treatment of gonorrhea in women may become entirely conservative and the extensive operative procedures carried out in the third stage may rarely occur. Tuberculosis of the female organs of generation has gradually diminished during the last twenty-five years, doubtless because of the systematically carried out prophylactic measures against the disease in general, its decreased incidence and its earlier recognition. This disorder does not play an important part in pelvic inflammatory disease today. Puerperal infection in the form of postabortal and postpartal pelvic cellulitis still demands the earnest efforts of the profession. Although prophylaxis has reduced the number of such infections, puerperal sepsis still heads the list of causes of maternal deaths in this country. Here again the prophylactic measures are beneficial and the sulfonamide drugs are proving to be valuable in arresting such infections, so that even here the operative treatment may be curtailed.

#### OVARIAN TUMORS

In connection with ovarian tumors the progress established during the last two and a half decades has been due to better classification and the recognition of certain of the rare ovarian new growths. The significant work of Sampson and others has placed pelvic endometriosis on a sound basis. Although there is some disagreement regarding the etiology of endometriomas, gynecologists agree on the method of treatment. There are no great differences of opinion as to the operative management of ovarian tumors. It is the general opinion that small multiple cysts, follicular cysts and lutein cysts seldom need operative intervention. As far as the true neoplasms of the ovary are concerned, the opposite obtains, since a high percentage of the benign new growths are known to develop a certain degree of malignant degeneration and since it is obvious that the malignant ones should be operated on as soon as they are diagnosed. Whereas uterine myomas may be kept under observation, with safety, for an indefinite period of time—a significant number regressing at the time of the menopause—the same cannot be said of ovarian neoplasms because of the strong possibility of the development of malignant changes, slight or extensive. It is a safe rule therefore, to follow the custom instituted many years ago—namely, that the treatment of ovarian neoplasms be operative and that operation be performed as soon as the diagnosis has been established.

#### SUMMARY

The last quarter of a century has shown significant improvement in surgical technic, with emphasis on careful dissection and ligation of individual vessels with fine material rather than mass ligation of tissues. The treatment of carcinoma of the cervix has changed from



surgery to irradiation with the return to the radical pelvic operation by a few gynecologists in early cases and good surgical risks. Carcinoma of the uterine corpus and fundus has remained a surgical lesion, surgery, however, having been complemented by irradiation. Improvement in the operation of myomectomy has resulted in more conservative management of these lesions in the young, supravaginal hysterectomy still remains the common method in use, while an increasing number of gynecologists have turned to panhysterectomy as a prophylactic means against carcinoma of the cervical stump. Vaginal hysterectomy has been reborn and improved and has now become a commonplace procedure. The increased number of surgical vesicovaginal fistulas has been responsible for the elaboration of new techniques in the cure of this lesion.

Trachelorrhaphy and amputation of the cervix are less frequently done these having been replaced in many cases by cauterization and electrocoagulation. A significant advance has been made in the surgical treatment of uterine prolapse, cystocele and rectocele through better anatomic understanding of these lesions and by reconstructing the deficient supports through the vagina rather than by depending on abdominal suspension or fixation of the uterus. Pelvic inflammatory disease has been handled more and more by conservative methods, and the sulfonamide drugs seem to show great promise in lessening and eradicating this condition. Ovarian tumors have been better classified, the rare tumors have been discovered, the tendency of malignant changes in these neoplasms has been emphasized and their early ablation has been strongly advised.

270 Commonwealth Avenue

## TREATMENT OF WAR NEUROSES

LIEUTENANT COLONEL ROY R. GRINKER

MEDICAL CORPS, ARMY OF THE UNITED STATES

Major Spiegel and I have described brief, dynamic psychotherapy as applied to various types of war neuroses.<sup>1</sup> We have indicated the standard technical methods found by experience to be the most effective in the treatment of typical cases. However, psychotherapy is always an individual procedure, variable for each patient, requiring on the part of the therapist not only scientific knowledge but skill or art and a sense of timing. The following steps are carried out in most cases:

1. Release of repressed emotions in a process of so called 'abreaction'.
2. Support of the patient's weakened and regressed ego through identification with the therapist's strength.
3. Desensitization from the memories of the anxiety producing situations by repetitive recounting of traumatic experiences, as the therapist helps the ego to discriminate between past danger and present safety and between dangers of the world of reality and inner anxieties.
4. Neutralization of the severe superego reaction of guilt to the actual, or sense of failure.

From the AAF Convalescent Center, Don Ce Sar Place, St. Petersburg, Fla.

Read in a panel discussion on Neuropsychiatry in the General Scientific Meetings at the Ninth Fourth Annual Session of the American Medical Association, Chicago, June 13, 1944.

1. Grinker, R. R. and Spiegel, J. P. War Neuroses in North Africa and the Tunisian Campaign (January-May 1943). New York: Josiah Macy, Jr. Foundation, September 1943. *Neurosynthesis: A Psychotherapeutic Method for Acute War Neuroses*. Air Surgeon's Bull. (No. 2) 1: 1 (Feb.) 1944. *Brief Psychotherapy in War Neuroses*. *Management of Neuropsychiatric Casualties in Zone of Combat*. *War Neuroses in Flying Personnel*.

5. Instilling insight into the relationship between the neurotic reactions to war and the past character and personality trends.

6. Encouraging the ego in its experimental attempts to regain mature attitudes and to attempt adult activities, thereby giving new confidence to the weakened and regressed personality.

In order to describe these procedures in a concrete fashion I have chosen to present an abstract of the actual therapeutic maneuvers in the treatment of one patient.

### REPORT OF CASE

*Depression with anxiety of one year's duration relieved by pentothal narcosynthesis and brief psychotherapy in one week.*

A captain aged 25, who was sent to the Convalescent Center because of objective symptoms of depression, presented an expressionless face, his muscles were quite rigid, indicating a great deal of tension. He did not volunteer much information and never smiled, and his speech was retarded. The patient had been a flight leader in a pursuit squadron and had fought successfully until about his twenty-fifth mission, when a friend who had been flying on his wing went up in flames. However, he stated that he continued fighting and successfully completed his tour of duty, although feeling bad and depressed. He returned to the United States, refusing the chance of remaining as commanding officer of a squadron. He had been reassigned to a job in the United States which he liked very much and wanted to keep, but his depression continued and was accompanied by severe startle reactions. When any one came into his room and made a sudden noise or turned on the light he would jump out of bed with great anxiety. In addition to the depression and its concomitants, there was considerable insomnia with battle dreams which repeated some of the very severe traumatic incidents of his combat experiences. However, he maintained fairly good control of himself and continued to fly. He attempted to decrease the anxiety and depression by drinking, but the only result was an increase in anxiety. He stated that he tried hard to forget his experiences but found it impossible.

During this initial interview I learned that he was single, a university graduate who studied hard, made excellent grades and was given a fellowship in animal genetics which he could not continue because he entered the Air Forces. There was no history of any previous depression and no incident that showed that he could not adjust himself to his normal experiences and environment.

That afternoon I gave him 0.25 Gm. of pentothal sodium intravenously. He was then told that he was up in the air on a strafing mission and that the man on his wing was aflame, and then I commanded "Go ahead and talk." Immediately he went into an emotional reaction shouting to his friend whose name was Grannv, to "pull up and bail out."

"Why doesn't he pull up, why doesn't he bail out?" I hope he doesn't think it's my fault. He's such a nice boy. Such a swell fellow. I hope I'm not responsible for his death. We were together all the time. He lived in the same tent with me and would share anything that he had. When we were on low rations he would give as much as he could to every one else." Accompanying all this were tears and sobbing and repetitions of "I hope he doesn't think it's my fault. He wasn't a good flier. Oh, if I had only picked out another spot, a safer target, but that is where they told me to go, right over those trucks. If I had gone in some other place he wouldn't have got it. Why did he do it?" He should have stayed in formation. He didn't stay where he was supposed to. He came up and took the lead position with me. Maybe I should have given a talk before we went, about staying in formation. Why didn't I do that?"

Then he talked about the letter they wrote home to Grannv's family and how he couldn't bear to read it. That would start it all over again. "I can't get him out of my mind. I couldn't see his family because they probably had forgotten and I didn't want to stir them up." In this fashion he went over and over the traumatic situation crying and sobbing.

This is the phase of abreaction.

As this reaction subsided he was allowed to close his eyes and sleep for a few moments. Then I handed him a lighted cigaret and awakened him. He looked at his watch and stated,

"I must have been asleep. I had a dream about Granny." His pillow was wet with tears. He said "Gosh I perspired a lot."

I told him "No, you were asleep for only a few minutes but you talked to me about Granny and you told me all about it. Let's talk about him some more."

Then in a conscious state he went over the situation again, just as he had done when asleep, but one more bit of information was elicited, Granny was not appointed a regular flight leader because he was a mechanical flier. Instead the patient was given the job. Then the patient talked about another boy who crashed in a low level flight maintaining radio silence according to instructions although he was in need of help. Then he told of feeling bad about killing the Germans. I ended the interview by telling him that he had assumed a responsibility for the death of Granny that did not seem to be based on fact.

Identification with the therapist and desensitization has begun.

The next morning the patient entered the interviewing room and stated "I feel like a load has been lifted from my mind like a great relief. I slept well last night, awakened once and went right to sleep again. I had no dreams. This morning I feel good. There was a silence. Then he said "I guess I blamed myself unnecessarily." I said "Yes you did. Now let's try to figure out why you blamed yourself. Tell me something about your background." The patient then told me he lived on a farm of 650 acres. His father was a successful farmer who made enough to enable four children to go to college. The first child was born dead, the second was the patient and then there were two sisters each two years apart and the oldest two years younger than he. He had one brother nine years younger. The mother was very mild mannered and very religious. The children went to Sunday school and church, though not forced to do so. The father was very kind and gentle but strict in his attitudes. He rarely spanked the patient but he expected him to live up to his responsibilities. If he did not, he would look pained and disappointed and tell him "This was your job, and then do it himself, which the patient stated was worse than a spanking. He was always on very good terms with his father and would rather work with him than any one else.

He then began to talk about his commanding officer and told how this man was an exceptionally strong leader, a person who went on the most dangerous missions himself, a man who was fair and expected every one to do his job.

I said to him "Your C O was very much like your father." The patient stated "You know, I often thought he was like my father, doing things he wasn't supposed to do and doing everything to help us but expecting the best from us. Of course not in the same way because he was a fighter." I said "Now let us summarize the things for which you blame yourself. Granny's death—but you were ordered to hit the target even though dangerous, you could do nothing else and could not be responsible for his death. Secondly, you blame yourself for not giving implicit formation instruction, but you were all experienced fliers and had been trained in formations for six months and every man knew his position. You blame yourself for killing the Germans but you know that was to save the lives of our own troops. You blame yourself for the boy who crashed on the low mission, but it was agreed beforehand that radio silence was to be maintained. You blame yourself for not communicating with Granny's family, but you know that it is not good to stir up a sorrowing family again. So you have a lot of disapproving attitudes toward things which are not really your fault. You behave as if you were still reacting to a disapproving attitude that your father might have had toward you. You behave as if your father's image were looking at you with a disappointed expression."

Here we see a beginning neutralization of a severe superego.

The patient said "Well, I have always taken responsibilities and duties seriously. I have never been able to feel that I did give my best unless I worked terribly hard."

Then I stated "And now your behavior which is depressed and completely unhappy, is just as if you were intent on

punishing yourself and never letting yourself have any fun or pleasure."

The patient stated "That's it. I can't enjoy things. I wonder why I take his death so seriously." I stated "Yes I wonder why" and terminated the interview.

The next day the patient entered the interview smiling and stated frankly "I must say I haven't felt so good as I feel now for a long time. I slept well and had no dreams." He felt as if he could carry on. He now realized that he took his responsibility too seriously but always had felt as if he didn't want to let any one down and then told about a younger pilot 21 years of age, whom he had taught to fly formation. The younger pilot looked up to him as an older man or father. I said "Something like your younger brother" and he answered "Yes he used to think I was a great guy. I taught him how to shoot how to hold a gun and how to play all sorts of games. Our C O always spoke quite frankly about his opinion of the conduct and performance of the boys. He either disapproved or complimented. If a fellow did his work properly and it he asked for a day off he always got every consideration."

I explained to the patient then because of guilty feelings he was punishing himself for Granny's crash (which had happened one year before). I explained to him that this feeling had persisted without any cause in reality. Therefore this sense of guilt and the punishment which he had been giving himself must be due to some inner feeling and that it was not possible to master such feelings unless we unearthed them and brought them to light.

I told him "Now you have told me nothing but good things about Granny. You told me how attached you were and what a fine fellow he was but I think your guilty feelings about him are due to some negative attitudes toward Granny that you have not yet discussed. Perhaps these feelings were unconscious and a source of your sense of guilt."

This step is the beginning of the loosening of unconscious hostility derived from part of his precombat personality.

The patient then said "Of course no one is perfect but Granny was the easiest person to get along with. He drank frequently and had to be taken care of. Once when we were in the desert and got drunk Granny tore up the tent in the middle of a sand storm. There was a family quarrel with the four tent mates."

I then drew his attention to the fact that Granny was not much flight leader. Was Granny envious of the patient? He reconstructed the flight. Granny was flying on the left wing of the patient, who was the leader. Granny flew on the left slightly behind, but he veered to the right and forward to accompany the patient in the lead position. I asked him whether he interpreted this as if Granny were out to take the lead as a sort of rebellion. He said he didn't think so but that he didn't give way because he wanted to maintain the proper formation in the flight. Then he said "Maybe that is why I feel so guilty because I didn't give way. The result was that Granny was hit by flak and slid over the patient's plane to the right, on fire."

I told him "I think that there are some definite unconscious negative feelings toward Granny which might be responsible for your sense of guilt, and hence depression, and we will take that up in the morning."

The next morning the patient entered the room at ease and in good spirits and said "Colonel, I have been thinking a good deal about the situation of Granny, and some clue you gave me yesterday brought me to some sort of a conclusion. Probably it is silly, you might not think it is important, but I have been thinking about it." [When a patient says he is going to tell you something silly you prick up your ears because it is probably going to be the most important thing you will hear.] "I always decided that I wanted to do things and get ahead. I was very ambitious. I wanted to be better than just average and when I decided on any ambition I worked very hard to accomplish it. Sometimes I would win and sometimes I would lose but I would always work for whatever I wanted. When I was in school there were four of us on a cattle judging team. I wanted to be top man, but there was another fellow on the

team who lived with me and he was awfully good. I had to fight it out with him. We fought it back and forth all year round. In my junior year I was able to beat him. The next year he beat me. There were no hard feelings about it. It was competition but we still were friends."

The patient now begins to test his own inner attitudes in the light of reality.

The patient then repeated several other incidents of competitive relationship with other men and it became clear that he took no pleasure in winning over people who gave him no struggle. He always wanted to win out over some one who he felt was superior to him. "When I joined my outfit it was the same way. We had a C O who believed that the leadership in the squadron should come from the boys themselves. There were eight places for flight leaders and the men had to win the job. Even after a man became flight leader he had to work hard to keep it. We were always practicing, practically all the time. Two or three would go up and try to outfly one another. When we finally went overseas I wasn't able to take a lead position but I became an assistant flight leader. I was disappointed but worked hard just the same. Finally there were eight of us who were flight leaders, including Granny and myself. But we weren't always given the job of leading the flight. Our C O wanted to see how we were able to fly under somebody else's orders. We didn't always fly leader, we frequently flew wing. Once I went up with our C O to try to outfly him. I fought him hard and I beat him. When we came down I didn't say a word to anybody that I had beaten my C O."

You now see how the patient has arrived at the logical conclusion without a direct interpretation. He has worked this thing out himself. There has been a certain amount of direction in the interview, but he has been able to think along the directed lines all by virtue of the fact that he has had an initial emotional release and ego support. But the release alone was not sufficient. He still didn't know the reason for the load of guilt that he had been carrying.

I then explained to the patient the nature of unconscious attitudes which were not tempered and modified by civilized realities, that our unconscious aggressions which arose from the instinctual depths within us were derived from our animal backgrounds. Sportsmanlike competition was a civilized modified type of aggression, but the real hostile competitive spirit is still based, as far as the unconscious is concerned, on the concept "to kill or to be killed." As a result, victory in competition would mean unconsciously, as if the defeated person had been destroyed as the direct result of an unconscious wish to be rid of that person. Hence when competition was followed by the death of an individual, the person felt actually as if he himself had killed that individual.

He grasped this interpretation and in the same interview was given another pentothal injection. He immediately started out by saying "I used to think I was responsible for Granny's death. I used to feel as if it were my fault. I know now that it is just one of those things that happen and I couldn't help it. He was a fine fellow. I was scared to go on that mission. He and I went into the mess hall that night for some supper, but we just nibbled. We couldn't eat. I had no cigarettes but Granny had two packages and gave me one of them. I smoked half a package of cigarettes. Granny was generous like that. I was terribly nervous. It was a dangerous target, but off we went in a tight formation. There was a terrible amount of flak over the target. The trucks blew up and I felt good when I saw it. I don't know why Granny came over and tried to take the lead from me. I flew under his lead the day before and I stayed in formation. I can't understand why he broke formation and came up toward me and then got into a heavy flak position. But I didn't give

ground. I know now we were jealous of each other and we were really fighting against each other for the job."

When he awakened he felt a little dizzy and thought he had been sleeping. We summarized the whole material of the interview again before terminating the session.

The next day he came in and said he felt perfectly well. He slept soundly all night, had no dreams and felt that a great load had been lifted from him. He wants to go back to duty and feels he can carry on. When he went home for overseas leave his people recognized there was something the matter with him and didn't ask him any questions. The result was that he kept all the experiences to himself and deliberately tried to forget, but there was always that load on his stomach. He now understands that the only way one can forget is to suffer the pain of remembering first. He remembers episodes he thinks are funny and amusing incidents that happened in his squadron overseas. He is beginning to remember and talk about little experiences. Prior to this he had not been able to think about these because they always led his mind into situations which became painful. "It is silly for intelligent people to let things bother them the way I did." His ego now has confidence in its strength and can dwell on the past without anxiety.

The question arises whether we should go on in further interviews and therapy to bring to consciousness the obvious unconscious hostility he had to his own father, or should we stop at this moment and return him to duty. We have been successful in removing the load on this man's personality which he has been carrying for a year. This load was the direct result of his combat experiences acting on his specific character and personality. As a result of the incorporation within his personality of the idealized figure of his father we have a man who has been a successful student, a successful pilot and a successful leader. We can predict from this personality structure that he will probably continue to be successful in life. Along with this compulsiveness toward success we have to recognize the severity of his ego ideal, which would make him some trouble if he came into a situation in which he could not be successful but we have already dislodged and disturbed that ideal. The therapy has been directed largely to weakening the severity of his father's attitudes to permit him to accept his repressed aggressions. That is the load that is off his chest. We can be assured that the loosening and easing of this pressure on him will continue perhaps to the extent that his ego ideal will be strong enough but not too severe. Therefore we did not treat him any further but returned him to duty. Six months later reexamination revealed him to be entirely well and competently performing his flying duties.

In the therapeutic process there was an initial loosening of the emotion, the substitution of a new less severe superego and then the confrontation of the old guilt with reality which forced the patient to look inside himself for the source of his reaction. It might be said in many cases that it is harder for a man to face his own unconscious than to face the fire of the enemy, but it must be endured if recovery is desired.

Overseas we were concerned with the direct and demonstrable effect of combat.<sup>2</sup> In the time that elapses before these men return to the United States a change seems to take place in the pattern of the neuroses. Old

2 Grinker, R. R. and Spiegel, J. P. The Management of Neuro-psychiatric Casualties in the Zone of Combat in Solomon. H. C. and Yakolev, P. I. Manual of Military Neuropsychiatry. Philadelphia: W. L. Saunders Company, 1944. War Neuroses in North Africa.<sup>1</sup>

patterns of neurotic behavior seem to engulf the newer reactions, and the total picture stands out sharply. The reaction to war is seen to be a repetition of old reactions to previous conflicts.<sup>3</sup> There are no great resistances against the release of the old attitudes which have been mobilized by the new war situation. Hence our therapeutic achievements are frequently more than a removal of recently developed anxiety but often include an unexpected beneficial reorientation of the total personality. The techniques are not difficult nor are they lengthy, but they require a thorough knowledge of the dynamic forces operating in human personality.<sup>4</sup>

## THE MANAGEMENT OF HEAD AND SPINAL CORD INJURIES IN THE ARMY

MAJOR WILLIAM H. EVERTS

Chief Neurology Branch Office of the Surgeon General  
AND

MAJOR BARNES WOODHALL

Chief Neurosurgical Section Walter Reed General Hospital  
MEDICAL CORPS, ARMY OF THE UNITED STATES

The management of head and spinal cord injuries can never be a stereotyped, fixed method in the army. The type and degree of injury, nature of the traumatizing agent, mechanism of the trauma and circumstances under which initial care must be rendered vary so much that good clinical judgment rather than strict procedure is the all important factor in care of such injuries. The echelon for care of these cases in combat is the same for all types of trauma. The wounded soldier passes through the battalion aid station and clearing station of the division, and thence back to an evacuation hospital. A field hospital unit may, under some circumstances, be attached to the clearing station for the definitive attention of the most seriously wounded, but usually such detailed care is rendered at the evacuation hospital. From any one of these medical stations the soldier may be returned to duty with his own unit after receiving necessary care. Patients who cannot be promptly restored to a duty status or any who need prolonged medical care are sent back to a general hospital, from which those who are ultimately restored to a duty status are sent to replacement depots for reassignment as casals to other units. Those who are unfit for any duty or for foreign duty are returned to our named general hospitals in the United States. Most of the latter hospitals are rehabilitation centers where any and all definitive medical and surgical attention can be rendered to our troops. From this echelon, troops are either discharged from the army after receiving maximum hospital benefit or are sent to special convalescent and reconditioning centers to be restored to a duty status.

The management of head and spine injuries in the overseas noncombat areas is essentially like that in the American zone of the interior, viz., hospitalized and definitively treated promptly without the factor of rearward movement away from combat area.

### HEAD INJURY

The general size of the head injury problem may be ascertained from a review of battle casualties for the year 1941-1942. For that year head injuries made up 59 per cent of all wounds sustained. This figure would of course be slightly higher if one included those killed in action for in those, wounds of head, chest and abdomen run high. In general, then it may be said that 6 of every 100 battle casualties are head injuries. If we break this down further, we note that slightly more than three fourths of this total group are closed head injuries with or without a simple skull fracture and the remainder are open head injuries of varying severity.

Closed head injuries in all echelons receive conservative therapy varying according to the necessity or judgment of the medical officer. During the acute phase in the first seventy-two hours the patient is placed on a modest fluid intake, 1,500 to 2,000 cc. and a light diet. A lumbar puncture may be done if deemed therapeutically necessary, otherwise it is usually not done until after the first forty-eight to seventy-two hours, when it may be desirable to know the pressure and whether fluid is blood stained. Sedatives are used with caution, since a simulated stupor can easily be produced in this acute phase following a concussion, or again it may mask bleeding. Hypertonic solutions are not used routinely but are used when edema is evident and producing symptoms after the first day or two of injury. Normal serum albumin is probably the best hypertonic solution and has been widely distributed through army hospitals. X-ray films of the skull are always taken, but until the patient's shock and primary condition is first treated, films are withheld for the first day or two, unless there are very pertinent reasons why an x-ray should be taken sooner. In some of the forward stations closed head injuries have been evacuated in ambulatory fashion as soon as clearly conscious. In general, however, the usual program of bed rest is immediately instituted and maintained for two or three or more weeks according to the severity of the head injury, the latter judgment being based on the duration of loss of consciousness and the degree of disturbance in the temperature, pulse, respirations, pupillary abnormalities and focal neurologic signs. The same criteria are also utilized prognostically as to whether the soldier will be rehabilitated for duty or returned to the zone of the interior. A number of installations here at home have carried out a somewhat more active program in management of the closed head injury group and with gratifying success, viz., starting rehabilitation soon after stabilized, clear consciousness is regained. Thus in milder cases latrine privileges may be permitted after the first twenty-four to seventy-two hours and then a graduated program of activity over a period of the next ten days with return to light duty in about two weeks and full duty in six. Incidence of post-traumatic syndromes appeared especially low when treated in this manner.

We have observed that patients having mild head injuries are often more likely to complain of headache, dizziness, insomnia, irritability and trouble in concentrating than those receiving a more severe injury. Also it must be remembered that treating a head injury patient who may be emotionally unstable, in an overseas theater, is just a bit different prognostically at least from treating the same patient here at home, since the element of secondary gain is a potent factor in production of a neurosis in many of these overseas cases. Particularly does one see this in the group alleged of

3 Grinker R. R. and Spiegel J. P. War Neuroses in Flying Personnel Overseas and After Return to the United States. *Am J Psychiat* to be published.

4 Grinker R. R. and Spiegel J. P. Brief Psychotherapy in War Neuroses. *J Psychosom Med* 6:123 (April) 1944.

Read before the American Neurological Association New York, May 19 1944.

Read in a panel discussion on Neuropsychiatry in the General Scientific Meetings at the Ninety Fourth Annual Session of the American Medical Association Chicago June 13 1944.

actually to have suffered a concussion due to blast. Many of those returning from overseas allege blast concussion as a cause of their persistent headache and associated nervous symptoms. As a matter of fact, concussion due to blast is quite unusual. The individual who has suffered organic brain damage due to blast invariably gives a history of having his breath knocked out, of coughing up bloody sputum, bleeding from the ears and nose and a period of complete loss of consciousness. On examination, these soldiers show flash burns, fissuring of the skin, perforated or hemorrhagic eardrums, conjunctival hemorrhage, signs of intrathoracic or abdominal pathologic changes and focal or general signs of organic damage to the central nervous system. All head injuries receive a most painstaking neurologic survey in the general hospitals, including electroencephalography, pneumoencephalography as indicated, mental tests and psychiatric studies during the course of hospitalization.

As for the outcome of closed head injuries, we have no definite overall figures. However, we do have data on several series of sufficient size to get a fairly good picture of what is happening to this group. In one overseas series of 131 patients, 79 per cent returned to full duty after an average hospitalization of twenty-five days, 15 per cent developed post-traumatic syndromes for which they were evacuated to the zone of the interior and 6 per cent were still being rehabilitated. Of the group that are returned to the zone of the interior, the majority are discharged from the army, many with a pronounced psychogenic display, others with post-traumatic encephalopathies of such degree that they could not be rehabilitated for duty. Approximately the same statistics apply to the continental head injury group as far as we can ascertain, though again we have no accurate data on this.

Open head injuries comprise about one fifth of all head injuries. Few statistics are available at present concerning mortality or morbidity rates in head injuries caused by missiles in the American army personnel. In one series of 22 acute craniocerebral injuries of open type (dura torn, cortex injured, metallic fragments in the brain and several with grossly damaged brain and osteomyelitis of the skull) there were no deaths after operation, 36 per cent were returned to duty, 59 per cent were evacuated to the zone of the interior and 5 per cent remained in the hospital under continued rehabilitation after a period of sixty-eight days.

In all probability, our overall figures will compare favorably with those mortality rates reported by the British. Eden<sup>1</sup> in his posthumous paper, gave a mortality of 23.6 per cent in 102 penetrating wounds of the brain and but one death in 208 nonpenetrating injuries. Ascroft<sup>2</sup> has reported a 15 per cent mortality in 292 penetrating injuries and two deaths in 224 nonpenetrating cranial wounds. In the American forces, serious head injuries sustained in combat are given early definitive treatment either in field hospitals manned by skilled auxiliary surgical units or more often in evacuation hospitals by trained neurosurgeons. The most important complication remaining is that of infection, particularly in those cases in which early and complete debridement of cranial wounds has not been accomplished. In Edens and Ascroft's series total infection supervened in 3.7 per cent and 10.8 per

cent respectively of patients operated on. This may be compared with the figure of 36.5 per cent in Cushing's series of grave head wounds treated on the western front in 1918. British experience has suggested also that chemotherapy with sulfonamides in fresh wounds does not reduce incidence of infection when debridement is delayed.

Two new substances, penicillin for control of infection and fibrin foam for control of hemorrhage, are now receiving clinical trial under combat conditions. In the battle of Sicily, 25 cases of cranial wounds infected from three to eight days were treated with penicillin by British neurosurgeons.<sup>3</sup> Two patients died a few hours after admission to the hospital, and there was a total of five deaths, a remarkably low mortality rate. Obviously, penicillin therapy in such grave infections is a promising method of adjuvant treatment. In 13 brain abscesses and similar formidable cranial infections treated with the aid of penicillin at Walter Reed General Hospital during the past year, there were only three deaths. In these cases it was proved conclusively to attending surgeons that surgical drainage must be continued during the period of penicillin therapy and that penicillin therapy alone is inadequate.

Fibrin foam<sup>4</sup> for control of hemorrhage from central and peripheral nervous systems has been used at Walter Reed General Hospital in approximately 200 cases, including such operations as formal craniotomies for tumor repair of skull defects, compound depressed fractures of the skull with cerebral laceration and in peripheral nerve anastomoses and grafts. It is a promising method of hemorrhage control, particularly from the brain that has been lacerated by trauma or operative manipulation. As the supply increases, overseas neurosurgical units will be supplied and cerebral debridement will be especially facilitated by its use.

When the patient with a healed open head injury reaches the zone of the interior and is admitted to one of our neurosurgical centers, he presents one of two problems, and frequently both. The first comprises an evaluation of the extent of the existing cerebral injury in relation to future military duty or to disposition to another status. This is carried out by detailed neurologic and psychologic studies augmented by electroencephalography and pneumoencephalography. The second problem is that of repairing skull defects in otherwise recovered individuals for the purpose of completing rehabilitation for duty. The repair of such skull defects with tantalum plates 0.015 inch in thickness, by mlay or other technics, has been accomplished on 35 patients at Walter Reed General Hospital during the past year. Half of these patients have thus far returned to a duty status.

Before the skull defect is repaired, evaluation of the existing cerebral scar is attempted. In none of these cases was post-traumatic epilepsy a feature and indeed this complication of an open head injury has thus far been of minor significance. Records of cortical electrical activity taken through the tantalum plates are unchanged when compared with preoperative records. There is no technical aspect of tantalum plating that would preclude craniotomy for resection of an epileptogenic scar at a later date. Prophylactic excision of such scars is not considered feasible.

<sup>1</sup> Eden, H. Mobile Neurosurgery in Warfare. Experience in the Eighth Army Campaign in Cyrenaica, Tripolitania and Tunisia. *Lancet* 689 (Dec. 4) 1943.

<sup>2</sup> Ascroft, P. B. Neurosurgical Experience in Egypt and Libya. *Brit. J. Neurol. & Psychiat.* 51: 29 (March) 1944.

<sup>3</sup> Cairns, H. Gunshot Wound of the Head in the Acute Stage. *Brit. M. J.* 1: 33 (Jan. 8) 1944.

<sup>4</sup> Ingraham, F. D., and Bailey, O. T. The Use of Products Prepared from Human Fibrinogen and Human Thrombin in Neurosurgery. *J. Neurosurg.* 1: 23 (Jan.) 1944.



## SPINAL CORD INJURIES

Spinal cord injuries constitute slightly less than 1 per cent of all battle casualties. No compilation of data is yet available. From one very carefully studied series of 41 cases incurred in battle zones,<sup>5</sup> some pertinent information may be drawn. Eighty-five per cent of this group were incurred in battle, 15 per cent in combat zone accidents. Over one half occurred in the infantry (infantry 15 per cent, field artillery 19 per cent, armored division 10 per cent, medical corps 5 per cent, engineering corps 5 per cent and all other units 15 per cent); one half occurred in the thoracic spine (cervical 7.5 per cent, thoracic 55 per cent, lumbar 35 per cent, sacral 2.5 per cent), three fourths were caused by foreign bodies (shell fragments twice as often as bullets) and the remainder by fracture. Sixty per cent of those caused by fracture occurred at the 1st lumbar and the remaining 40 per cent very near by (9th, 11th and 12th thoracic).

Incomplete lesions of the cord were more common than complete lesions, this referring to a functional and not an anatomic lesion. Lumbar lesions were the least serious, since often it was a compression fracture and only a root involvement in this region. Sensory examination was the most accurate guide as to the level and bladder signs the best guide as to severity of the lesion, this was also a good indication for the urgency of operation. Bedsores developed in cord injuries at any level but most frequently in the complete cord lesions in anesthetic areas. X-ray examinations were a preoperative necessity, though often they did not fully indicate the degree of bony damage. Spinal manometric tests were of value in determining whether and when to operate. Of the 10 cases of fracture, 5 showed a complete block and 3 incomplete, in 2 no spinal tests were performed. The period of elapsed time from injury to surgery in these more severe lesions of the cord varied from eight hours to several weeks; the delay for the most part being due to other severe injuries, presence of infections, late onset of symptoms and, in a few, slow evacuation to the hospital. Operation was performed in a total of 31 cases, of which 12 were complete and 19 were incomplete lesions. There was improvement in all incomplete lesions operated on and no improvement in any of those that were complete. Of those in which operation was not performed, improvement occurred in 1 incomplete case and none of the complete showed improvement. Best results were obtained in those cases in which the pathologic condition was mostly extradural. No definite correlation could be made between good results and a short time interval for operation, since the cord showed a surprising ability to recover after long intervals in the incomplete lesions. The reasons for operation on complete lesions were cerebrospinal fluid leaks, presence of block and x-ray evidence of cord compression. There was a total of four deaths in this group of patients. All were complete lesions of the cord, and death was due to pneumothorax and lung abscess in 1 (at the level of the 2d thoracic), pulmonary emboli in 2 (level of 6th and 12th thoracic) and the fourth patient, with a lesion at the 12th thoracic, died three months after injury, no postmortem being done.

From these cases it was learned that spinal cord injuries suffered mostly from the chain of evacuation. It was not so much the number of hospitalizations but the time spent in traveling which was so damaging to

cord injuries. Bedsores developed frequently during postoperative evacuation or enlarged rapidly if already present. Circular casts were wholly unsatisfactory, and only bivalved casts are now being used during transportation. The majority of such injuries reach the zone of the interior for convalescence and disposition in a stable neurologic status. The original wounds are healed and definitive surgery has been accomplished. In addition to a reevaluation of the neurologic status there remain the problems of bladder infection, decubitus ulcers and supportive nursing care in particular cases.

It is unwise to assume in every instance that the need for restorative neurosurgery has passed. Decompressive laminectomy is futile in late lesions of the spinal cord proper but may be of benefit in the region of the cauda equina. In 2 instances of compression of the cauda equina by incompletely reduced dislocations of the lumbar vertebrae, laminectomy performed at Walter Reed General Hospital has relieved pain and possibly played a role in a subsequent tardy and partial restoration of function. In 1 instance of complete section of the cauda equina by a missile, extremity pain was reduced in intensity by neurolysis of the extensive scar. Stabilization of a fracture-dislocation of the cervical spine may be necessary. In a rehabilitation hospital however, the major task of definitive neurosurgery has passed.

Primary among the problems besetting the spinal injury is that of bladder dysfunction and subsequent bladder infection. Patients are received with indwelling urethral catheters or with perineal urethrostomies or suprapubic cystostomies. The duration of transport and concomitant difficulties of treatment during this period of time may impair the efficacy of urethral drainage. At Walter Reed General Hospital<sup>6</sup> tidal irrigation is practiced through a urethral catheter with maximum and minimum pressure of 12 and 6 mm. of mercury, boric acid being used as an irrigating medium. In cases requiring long continued drainage perineal urethrostomy is performed. Suprapubic cystostomy is reserved for those cases in which urethrostomy is not practical because of stricture, large vesical calculus formation or prostatic abscess. Repeated cystometry is done for evaluation of returning bladder reflex activity.

The use of the Stryker turning frame has prevented the occurrence of fresh decubitus ulcers, promoted the healing of those already present and facilitated to a profound degree the nursing care of these patients. Suspension of the feet, freeing them from contact with the frame or bedclothes, and frequent and effortless turning of the patient promote nutrition and healing of pressure areas. Bed linen change offers no problem on such a frame. Physical therapy of the affected musculature is made easy by the height of the frame and the ease of turning the patient. The frame may be transported readily for x-ray studies and, finally, all necessary nursing and therapeutic movement of the patient may be accomplished by a single attendant.

Early grafting of the decubitus ulcer after surgical and chemical cleansing of the wound reduces bacterial infection and concomitant drain on the patient's resources. Such massive grafting has been carried out with split thickness grafts secured with the Padgett dermatome. Although denervated grafts are peculiarly susceptible to the adverse influences of soiling and pressure, they do well with the aid of the Stryker frame.

5 Klemmperer W. Statistical Report on Spinal Cord Injuries. *N. Bull. N. Africa Theater of Operations* 1:12 (March) 1944.

6 Lewis L. G. Treatment of the Neurogenic Bladder After Acute Spinal Injury. *S. Clin. North America* 23:1505 (Dec.) 1945.



Rehabilitation is in part carried out by the physical therapy department and later in the reconditioning programs for those being prepared for a return to duty. Otherwise, when maximum hospital benefit has been achieved, they are discharged to their homes or to a Veteran's facility. Certainly it cannot be said that any striking advance has been made in the late care of spinal cord injuries, yet application of the factors noted has reduced the subjective distress of these unfortunate individuals and made possible their continued care in large numbers.

#### SUMMARY

It may be said that head and spine injuries occur with moderate frequency in modern war and present a serious problem of management when they are of the open type head injuries or more severe variety of spinal injuries. The description of the echelons of evacuation and the management at each level has made it apparent that early skilled medical attention is rendered to all acute craniocerebral and spinal injuries in every echelon. In general, it may be said that closed head injuries do best if given early progressive activation and early return to light duty. The more unstable of this group thus do not as readily become ensnared in a compensating neurosis. Open head injuries remain a problem from the standpoint of degree of encephalopathy and repair of skull defects. The medical department has anticipated the ever increasing problem of head and spine injuries with the rising tempo of the war, and as time goes on more data regarding definitive treatment and general management will be forthcoming.

### PSYCHIATRIC EVALUATION OF THOSE RETURNING FROM COMBAT

LIEUTENANT COLONEL JOHN M. MURRAY

Consultant in Neuropsychiatry Office of the Air Surgeon  
MEDICAL CORPS ARMY OF THE UNITED STATES

Reports from overseas theaters indicate that the incidence of psychoneurotic manifestations induced by the physical and emotional stresses of war are frequent occurrences. In the theaters of operation various techniques have been devised for the management of these cases with due regard for the severity of the illness and the difficulties of therapeutic endeavors under trying local situations. Oftentimes mere rest and reassurance restore to active duty the men with less severe reactions. Other more serious cases are rehabilitated for non-combat duty in the rear of the fighting lines in the theaters of operation. Still other cases are of such severity that return to this country is necessary. As the war goes on the occurrence of these cases will probably continue. There are also large numbers of men who have completed a prescribed tour of duty in the theaters of operation and who, pursuant to War Department policies are rotated back to this country. A certain percentage of these men show evidences of persistent symptoms akin to those common in civilian psychoneurotic illness. It is clearly evident that the problem of the care of these men is a most important and pressing one and that our programs for this care will soon need to be fully developed.

The Army Air Forces found it necessary early in the war to adopt a rotation policy for its flying crews. The dangers and hardships of modern combat flying are so great that practically all authorities of the A A F and the R A F were in agreement on this need. The human machine can stand just so much and then it needs a period of "being put out to pasture." A certain percentage of these men returning from overseas on rotation policy showed evidence of persistent psychoneurotic symptoms. This state is diagnosed at this time as "operational fatigue," which is by definition a reactive state resulting from the physical and emotional stress of continued danger and hardships. The intensity of operational fatigue may vary from minimal reactions to severe emotional disturbances. Minimal reactions are normal to these stresses and are not clinically significant. Operational fatigue is used as a diagnostic term for the following reasons:

(a) The term neurosis or psychoneurosis ordinarily denotes the presence of symptoms which are basically dependent on unconscious conflicts which arose early in childhood.

(b) Operational fatigue is basically dependent on recent situational experiences and conflicts and as seen at present, has not yet become irreversibly bound to earlier unresolved conflicts over instinctual expressions.

(c) Although there is often a close similarity in the clinical manifestations of operational fatigue and psychoneurosis, the differences mentioned warrant the use of a distinguishing term for those cases which fall in the former category. Later the reactions may spread to and involve earlier residuals and thereby justify the latter diagnosis.

The term "operational fatigue" as used does not denote the existence of an organic factor as a specific agent nor does it implicitly or explicitly deny the basic importance of psychologic conflict in the production of the state designated. Some authorities deny the validity of these reasons for the use of the term "operational fatigue" and feel that organically minded opponents of dynamic psychiatry may use this to deny the essential psychologic origin of the illness as was done by the use of the term "shell shock" in World War I. This truly need not be the case, although there is definitely a factor of fatigue in the production of these states. The exhaustion indeed is an emotional one which is dependent on the situation of living beyond one's psychologic means for long periods of time. Finally the weakened ego has lost the ability to suppress and repress the normal fear reactions. This control mechanism has played itself out. Physical factors play an accessory role but are definitely not the primary ones. At this phase the anxiety responses come in to overwhelm the tired ego and produce the classic syndrome. And so it is believed that there need be no confusion in an essentially dynamic conception of this syndrome because of its designation of operational fatigue.

These cases diagnosed "operational fatigue" after completion of the combat tour, plus the definite psychoneuroses which broke out during the prescribed duty tour plus the group of acute anxiety states which occurred in normal men on account of the overwhelmingly severe or repeated traumatic experiences in combat, gave the Air Surgeon's Office serious problems of psychiatric care and management some months ago. In order to meet this problem effectively the Army Air Forces has organized a Personnel Distribution Command. The mission of this command is to examine properly, evaluate and care for overseas returnees, excepting the cases of injuries and physical illnesses. This command also supervises and operates the A A F

Officers Replacement Pool and supervises and operates rest camps and convalescent hospitals and centers to which A A F personnel are sent for definitive psychiatric care, convalescence and convalescent training, and subsequent reclassification and reassignment to military duty. It also conducts personnel functions and activities required to effect demobilization of military personnel of the A A F.

In order to effect this program redistribution stations are organized to which overseas returnees are sent for a complete medical and psychiatric examination, so that the effect of the war on these men physically and emotionally is accurately determined. Adequate treatment for the restoration to reasonable health of those men who have been injured by the effects of war is promptly instituted. Discharge or retirement is recommended for those who are too sick to be quickly rehabilitated. For dispositional and treatment procedures, the emotional disorders are diagnosed as operational fatigue and classified as

(a) Severe. Hospital centers are organized for the definitive psychiatric treatment of cases so diagnosed. These centers utilize all forms of definitive psychiatric care known to be valuable as aids in the recovery and rehabilitation of persons so suffering. These centers will also be used as teaching facilities, as outlined later.

(b) Moderate. Convalescent centers are organized for the care of moderate operational fatigue. Here the unwinding, retraining and rehabilitation of soldiers within the military setting are carried out. This program consists essentially of ego strengthening and supporting procedures rather than definitive psychiatric care. A mental hygiene unit is established at each post so utilized.

(c) Mild. These cases are not of clinical significance. It is felt that the return to duty in a new unit will be adequate to institute the recovery of these men.

The greatest current difficulty in the development of this program is the scarcity of competently trained psychiatric personnel. This handicap has been met by the institution of a comprehensive program of teaching by "training on the job" methods. All efforts should be focused on understanding the clinical and therapeutic angles of the types of psychoneurosis which are arising in the war and are being sent to the zone of the interior for evaluation and treatment. There are four essentials in the success of this program:

1 Organization of combined training treatment centers as outlined, where the teaching program has available numbers of soldiers with reversible war neuroses. The handling of this clinical material is the basis of the training program.

2 Selection of competent physicians for this training. These men are selected from the group of doctors who are being returned from overseas assignments with fighting units and who, by their war experience, have acquired a definite intellectual hunger for further training and understanding of those problems they have encountered in their front line experience. They must have demonstrated their interest in these problems and certain fundamental capacities for understanding and caring for these types of illnesses. These men are readily selected in one interview by a psychiatrist with experience in teaching post-graduate psychiatry. According to the War Department policy of rotation, numbers of these men are now returning from overseas and will be available for such future training and assignments. These men so selected are sent to the combined training-teaching center, where, under the control of top notch clinical psychiatrists in both the therapeutic and teaching spheres, they receive a course of perhaps eight to ten weeks' intensive instruction in the diagnosis, theory and technics found most useful in the management of these special problems.

3 Assignment to these centers of carefully selected psychiatrists as therapists and teachers. These instructors must have had special training and developed competence for this

particular field of psychiatric endeavor. This is doubly important, as these men must have had enough preliminary clinical psychiatric experience in the care and treatment of the psychoneuroses to reevaluate the old and organize new treatment procedures for this special type of psychiatric problem as current experience shows new technics to be of value. In this manner the most comprehensive and effective therapeutic regimen should be developed.

4 Supervision of these trainees after their assignment to duty as examiners in redistribution stations or as psychiatric assistants in treatment centers which must be maintained by qualified and experienced psychiatrists. In this way their work will be more effective and a continued training program will be conducted as part of their daily routine.

There are numbers of well qualified psychiatric social workers and clinical psychologists available for utilization in this redistribution and rehabilitation program. These men classified as Spec numbers 263 and 289 should be made available readily to take their place in the organization of these centers. In these centers there must be adequate mental hygiene facilities and adequate classification units for proper job classification and placement. A competent Red Cross setup and adequate liaison with the United States Employment Service are essential to the program.

From this discussion it can be seen that the psychiatric program organized for the care of returned overseas soldiers depends essentially on our ability to select and train competent doctors with little or no previous psychiatric training to fulfil the need for junior psychiatric officers in this emergency. The proper selection and training of these men is both the keystone and the cornerstone of the whole program.

The Army Air Forces has found that men who have been overseas and have seen the acute anxiety reactions to battle experiences in statu nascendi have developed, in many cases, a powerfully keen desire for more knowledge and further training in a field of medicine for which their earlier training had poorly prepared them. In one interview it is not a difficult matter to select the doctor who has responded in a positive way to those needs which arose in the heat of the battle situation and who intuitively devised his own technics and ways and means of meeting these situations effectively. With this powerful desire for knowledge and further training, such men have proved to be excellent material for training in psychiatry and take amazing advantage of educational opportunities presented to them. One is agreeably surprised when listening to the high quality of the discussions evoked from a clinical seminar group of these men who have been at work in a hospital as ward clerks with a few hours of lectures and seminars per day for a period of only a few weeks. Such experiences demonstrate that this group is the best available source from which to select those physicians most competent and capable of being trained for the duties essential to the success of the psychiatric program.

Following selection, the nature and type of the training to be given is the next most important consideration. These officers are to be trained on the job. They are brought into the treatment centers as ward assistants and their time excepting for a few hours daily in lectures and clinical seminars is spent in the care and treatment of sick people. The teaching program is directed essentially to the clinical aspects of dynamic psychiatry. What these men need to know are the clinical, diagnostic, theoretical and therapeutic aspects of psychoneuroses. In this emergency we must be willing to accept a competence limited to this special angle of psychiatry. We cannot hope to indoctrinate the men

with broader aspects of neurology and psychiatry. These men will have to take care of psychoneuroses which have arisen as a result of the acute stressors of the battle situation. The illnesses which they are called on to manage are essentially dependent on the terrific impact of the environmental stresses on their patients. An understanding of the conflicts so produced and the anxiety reactions to these conflicts which are the basis of symptom formation, are the matters that these men need to know to be valuable to us in this acute situation. Although it may be desirable to have a knowledge of neuroanatomy, neurophysiology and pathology in the peacetime training of the competent psychiatrist, one must realize that in this crisis we cannot have comprehensively trained psychiatrists in adequate numbers. Such well trained men must be used in the program as teachers, supervisors and consultants to the younger men.

At this time all of our efforts for teaching and training the men who are needed so badly for this special task may well be directed to understanding the elements which are specifically the fundamental and essential ones in the creation of the types of illnesses under consideration. Experienced consultants in psychiatry with a sound comprehensive training, should always be available to the students for problems which are unusual and for guidance and help in developing competence in meeting routine situations. The principles of training recommended here are ones which one does not like to accept in general postgraduate psychiatric training, but at this time the need for fairly competent men quickly trained for this special job is the all impelling motive. A specialist is seldom competent in his chosen field unless his knowledge rests on a sound base of broad clinical training and experience. That must always be so, but we are not trying to train specialists.

A note may be borrowed at this time from an important experience of the Army Air Forces earlier in the war. At that time literally tens of thousands of mechanics were needed to service the tremendous numbers of fighting planes in foreign theaters. This was indeed a colossal problem in view of the intricacies of these modern fighting monsters. Old time mechanics would wish at least three years to train an apprentice competently in such highly specialized work but new "on the job" training techniques were devised—new means of hewing closely to the line of the pure essentials needed for the completion of the task at hand. The thousands of planes which rise to the skies in all of our battle fronts throughout the world daily testify to the success of the conception and execution of this training program. The mechanics have met the requirements from that training. They keep the ships flying, and the combat crews keep the bombs dropping. This is a good example of the old adage that the "proof of the pudding is the eating." These men were trained in three months instead of three years.

At this time a leaf may be taken from the book of this experience. Mechanics are not doctors, but we may similarly outline, organize and streamline the teaching program to meet the basic essentials of what a doctor must know to handle these problems and give that knowledge to him directly in the daily routine treatment of the sick. In this way we may produce the necessary number of men sufficiently qualified to handle this problem, men with minimum training, to be sure but collectively able to produce maximum results in this current emergency.

## PSYCHOSOMATIC PROBLEMS

JACK R. EWALT, M.D.

GALVESTON, TEXAS

In the best concept of the term all human beings are psychosomatic problems. Every patient has both somatic and psychologic problems, excepting those that are dead when the doctor arrives. Draper<sup>1</sup> has stated "If we examine closely the structure of organismic unity which doctors nowadays seem to be striving so hard to preserve for the individual we may find perhaps that its division resides in a contemporary medical attitude and not within the animal at all." Patients in any service show varying degrees of emotional disturbance which alter the course of their illness and these must be evaluated and treated if optimum conditions for recovery are desired.

Psychosomatic problems may be divided into (1) patients with symptoms referred to one of the body systems but without demonstrable evidence of somatic pathologic change and (2) patients with definite structural alterations thought to be at least in part due to psychologic disturbances.

The patients of the first type that is persons with somatic complaints but without observable organic lesions may in turn be subdivided into two groups. The first of these subtypes is the so-called psychoneuroses, that is the ordinary hysterics, the obsessive compulsive states and the neurasthenias. These patients will usually have a long history of maladjustment, and their neurosis is on such a subtly conditioned basis that management by a skilled psychotherapist is necessary for satisfactory relief of symptoms.

The second subtype consists of the simple anxieties, in which the person responds normally to some immediate environmental situation but in such degree and for so long that changes in physiologic function occur and symptoms are produced.

In these patients reacting to immediate situations with anxiety, the extent and type of symptomatology will vary with the past history and the personality pattern of the individual who is subjected to the environmental stress. One thinks of the person of "coon dog temperament" as showing little response to situations that might cause his "fox terrier" brother untold misery in terms of cold sweats, diarrheas and lost sleep. It is probable however that every one has a threshold at which point objectified fears will express themselves as indefinite anxieties, pains and bodily complaints. Into this group fall many of the so-called war neuroses and many of the patients we see in the medical clinics and in the general hospital ward. These individuals, in situations of stress, show an exaggerated response in the autonomic sphere. Noting these sensations they believe they are ill. Consultation with neighbors or review of the family's medical history often reveals persons suffering from heart disease, cancer or some other illness. The patient, fearing he is similarly afflicted, becomes increasingly concerned over his health, this adds to his burden of worry, increasing his symptoms and giving him more to worry about. We

From the Department of Neuropsychiatry, University of Texas School of Medicine.

Read in a panel discussion on Neuropsychiatry in the General Scientific Meetings at the Ninety-Fourth Annual Session of the American Medical Association, Chicago, June 13, 1944.

<sup>1</sup> Draper, G. The Concept of Organic Unity and Psychosomatic Medicine. J A M A 124: 767 (March 18) 1944.

also see "Dr Built" anxiety of a similar sort. Persons applying for insurance or routine physical examinations may be informed they have "leakage of the heart," anemia or some other condition. The doctor gives such information in his attempt to impress the patient with his skill and thoroughness or to assure himself of an alibi in case the patient falls dead of a coronary attack ten to twenty years later. The patient, having it on good medical authority that he is ill, may begin to dwell on his bodily function to the exclusion of most other interests. In the military setting we see persons subjected to new ways of living, prolonged strain, discomfort or danger developing severe anxiety symptoms with complaints referable to the various body systems. Patients in this group can and should be treated in the general medical clinics. They make up a large, unhappy and misunderstood group of patients who shop from clinic to hospital to the quacks and return. The management of such cases has been discussed elsewhere.<sup>2</sup>

The second large group of psychosomatic problems comprises those patients with symptoms similar to the anxiety patients but with definite structural lesions in which the psychogenic factors are felt to play an important etiologic role. Studies have been made on peptic ulcer, hypertension, coronary disease, bronchial asthma, mucous colitis and the arthritic disturbances, to mention a few. In considering these disorders two quotations are apt. Nolan Lewis<sup>3</sup> has stated "Those who neglect to take into account the psychological factors in disease should be reminded that psychological energy acts through physical structures and produces physical effects as otherwise phenomena could not appear." And Dunbar<sup>4</sup> "at least much too often an etiological relationship between the psychic problem and the illness has been assumed rather than demonstrated."

Many of the studies have been devoted to extensive investigations of the emotional growth and the vicissitudes of the patients suffering from various types of organ dysfunction and pathologic change. Most workers have exercised a laudable caution in ascribing a definite cause and effect relationship to their findings yet the occurrence of typical psychodynamic configurations in certain types of disorder has led to the suspicion that these influences play an important if not the principal role in the production of the ailment. If this is true, how can psychologic conflicts produce structural alterations in the tissues? From a physiologic point of view the means must be by alterations in autonomic and endocrine functions secondary to psychologic disturbances. Anatomically this means alterations in the cortical and hypothalamic regions, as these areas appear to be the principal central regulators of autonomic function. The second question is Can alterations in autonomic physiology produce pathologic lesions in any organ system? This question may be most logically answered by considering the results of experimental attempts to reproduce certain pathologic lesions by first organic and second psychologic alterations in autonomic functions.

First I will consider ulcerative lesions of the upper gastrointestinal tract. Organic lesions of the central nervous system may produce ulceration of the mucosa of the upper gastrointestinal tract. This has been reported

in human patients by Cushing.<sup>5</sup> Numerous animal experiments have shown that hypothalamic stimuli or injury frequently produces hemorrhage and erosion of the gastric mucosa. Keller, Hare and D'Amour<sup>6</sup> produced acute lesions of the gastrointestinal tract by producing intraventricular hemorrhage or by section of the brain at the level of the chiasm. They also produced gastric lesions by hypothalamic lesions in cats. Hoff and Sheehan<sup>7</sup> produced multiple hemorrhagic erosions of the mucosa of the stomach by lesions involving the tuberal area in monkeys. Keller and D'Amour<sup>8</sup> report similar findings in the dog and also show that the occurrence of hemorrhage into the mucosa was not prevented by section of the vagus fibers and that ulceration was not prevented if the sympathetic fibers were removed. Watts and Fulton<sup>9</sup> found that gastric and duodenal ulcerations in monkeys were produced by extensive hypothalamic damage. They explained these lesions as being principally due to ischemia of the mucosa brought about by the vasoconstrictor fibers. These reports have several points in common. Mucosal lesions were very rarely found in the control animals in any series. In the experimental groups the lesions occurred in some of the animals but not in all even though the central lesion was the same in all animals of a given series. None of the authors offer an explanation for this difference in response to the experimental lesion, although it seems obvious that some factor present in some animals and absent in others plus the central lesion, was necessary to produce the ulceration.

We thus have abundant evidence in experiments from nature and from the laboratory that central lesions can and do produce structural alterations in the gastrointestinal mucosa of some human beings and some animals. Having established that experimental interference with hypothalamic function is productive of gastrointestinal lesions we may next consider what role the hypothalamics play in emotional adjustment and the organ participation in our daily living.

The material on this phase of the subject is voluminous. Miller<sup>10</sup> has summarized the literature stating "It may be asserted that the hypothalamics regulate emotional as well as visceral and somatic manifestations and all these are frequently concomitant. The consciousness awareness that the individual is himself in the throes of emotion implies an activity on the part of the cortex." Miller, in commenting on the corticohypothalamic relationship, says that "the cortex is to the subcortex as the fine adjustment on a microscope is to the coarse adjustment." Wittkower<sup>11</sup> has made a thorough survey of the literature and presents some original data on the influence of emotions on organ function, showing that physiologic processes of many sorts are altered by various emotional states. One of the most conclusive bits of evidence that emotional factors, by altering autonomic function, profoundly influence the development of gastrointestinal ulcerations

<sup>2</sup> Ewalt J. R. Psychosomatic Medicine. Texas State J. Med. 40: 3 1944.

<sup>3</sup> Lewis N. D. A Short History of Psychiatric Achievement. New York: W. W. Norton & Company, Inc. 1941.

<sup>4</sup> Dunbar I. Emotions and Bodily Changes. ed. 2. New York: Columbia University Press. 1938.

<sup>5</sup> Cushing H. Peptic Ulcers and the Interbrain. Surg. Gynec. & Obst. 55: 1 1932.

<sup>6</sup> Keller A. D., Hare W. K. and D'Amour Marie. Ulceration in the Digestive Tract Following Experimental Lesions in the Brain Stem. Proc. Soc. Exper. Biol. & Med. 50: 772 1933.

<sup>7</sup> Hoff E. C. and Sheehan D. Experimental Gastric Erosions Following Hypothalamic Lesions in Monkeys. Am. J. Path. 11: 189 1935.

<sup>8</sup> Keller A. D. and D'Amour Marie. Ulceration in the Digestive Tract of the Dog Following Hypophysectomy. Arch. Path. 21: 185 (Feb.) 1936.

<sup>9</sup> Watts J. W. and Fulton J. F. The Effect of Lesions of the Hypothalamus upon the Gastrointestinal Tract and Heart in Monkeys. Ann. Surg. 101: 363 1935.

<sup>10</sup> Miller H. R. Central Autonomic Regulations in Health and Disease. New York: Grune & Stratton, Inc. 1942.

<sup>11</sup> Wittkower E. Studies on the Influence of Emotions on the Functions of the Organs. J. Ment. Sc. 81: 533 1935.

is found in the studies of Wolf and Wolff.<sup>12</sup> In a patient with a gastric fistula they observed that emotions of anxiety and hostility produce hypermotility, hyperemia and small areas of hemorrhage in the gastric mucosa. They have demonstrated that these hemorrhagic areas ulcerate readily if exposed to gastric secretion. They have also shown that the small areas of hemorrhage, on exposure to acid secretions, produce more hyperemia and hypermotility. These observations are in keeping with observations that "many peptic ulcer patients show an exaggeratedly aggressive, ambitious and independent attitude."<sup>13</sup> Draper<sup>14</sup> has studied the incidence of peptic ulcer from several angles. Among many facts he has noted a predominance of aggressive trends which were found most frequently in males. He also noted certain anthropologic peculiarities in ulcer patients which further emphasize the correlations between physique, psychologic experience and disease. The observations of Spicer and his co-workers<sup>15</sup> that perforation and hemorrhage from gastrointestinal ulceration increased significantly during the London blitz also suggests the role of emotional states in the cause and course of ulceration of the upper bowel.

Further experimentation similar to that of Wolf and Wolff are indicated. At present we can say that there is abundant evidence to show that autonomic dysfunction, whether organically or emotionally induced, can produce definite alterations in the function and structure of the gastrointestinal system. We have evidence that hostility and anxiety are the emotions productive of such changes and that such characteristics are the ones consistently found in human beings suffering from peptic ulcer as well as those with ulcer-like symptoms but no evidence of mucosal erosion. We also know that the relief of such emotional states favorably influences the course of peptic ulcer and relieves the ulcer-like symptoms of nonulcer patients. Thus the circumstantial evidence becomes rather convincing that ulcers are due to a specific type of emotional reaction in persons of certain constitutional and personality organization. To date we have not produced ulceration by experimentally induced emotional states, unless the German Air Force experiments<sup>16</sup> over London may be so interpreted.

Hypertension and heart disease are the greatest causes of disability and death in persons past 50 years of age. In our clinic these cases are next in frequency to those with gastrointestinal complaints. An abundant literature is accumulating on the subject, but nowhere do we find the complete answer to the cause or the treatment of this group of disorders. The fact that emotional states may produce profound temporary changes in pulse rate, fainting attacks, blushing and similar vascular phenomena has led to an investigation of the role of psychologic disturbance in the production of hypertensive cardiovascular disorders. Animal experiments have offered some interesting data. Fulton<sup>16</sup> has shown that faradic stimulation of areas 4 and 6 of the cortex of cats and monkeys will produce a sharp rise in systolic pressure. This effect is abolished by deep general anesthesia or by local anesthesia of the cortex and is reduced by splanchnic nerve section or by destruction of the stellate ganglion. There are many

reports on the role of the hypothalamus in controlling the level of the blood pressure and in the production of experimental hypertension. The reports vary considerably but in general indicate that stimulation of certain portions of the hypothalamus will produce an increase in blood pressure. Miller<sup>17</sup> has made an excellent survey of the literature on this subject. Allen<sup>17</sup> has observed interesting differences in the blood pressure response, to clamping the pedicle of explanted kidneys in dogs. He explains the differences in blood pressure response as being at least in part due to the personality differences or temperament types of the dogs. Thus animal experiments show that the central nervous system by means of the autonomic and hormonal system may influence the blood pressure level. It must be borne in mind, however, that none of these experiments produce in the animal conditions simulating essential hypertension or the cardiovascular syndromes of man and that essential hypertension has been produced experimentally by the Goldblatt preparations. On the other hand, hypertension has been relieved to some extent by the surgical removal of portions of the sympathetic nervous system in man, yet the same operation in Goldblatt's animals produces no lowering of the blood pressure.<sup>18</sup>

Many studies have been made of the psychologic functions in patients with cardiovascular disease. Wittkower<sup>11</sup> reports changes in the electrocardiogram and heart size due to strong emotional stimuli and makes an extensive review of the literature on the subject. Merritt<sup>19</sup> observed inversion of the T wave in the electrocardiogram of patients with "neurocirculatory asthenia." Weiss<sup>20</sup> considers the etiology of essential hypertension to be an interaction of endocrine, autonomic and psychic factors in persons of a particular constitutional pattern. Psychiatrists have made many detailed studies of patients suffering from the cardiovascular diseases and find that they present a distinct behavior pattern. These behavior traits have been very well described by Dunbar,<sup>21</sup> who has studied this phase of the problem extensively. Alexander<sup>13</sup> states that "the hypertensive individual seems to be continuously balanced between an intense nearly conscious but inhibited rage and equally intensive passive dependent wishes." It has been reported<sup>21</sup> that treatment directed toward solving the patient's emotional problems in the early phases of hypertension produces a good therapeutic result in many cases. In the late phases of the disorder the amount of relief of the distressing symptoms that may be produced by psychotherapy is approximately as great as that produced by surgical and drug therapy. In the case of the cardiovascular syndromes the evidence that emotional factors play a role in the etiology of these states is suggestive but by no means as definite as in the ulcer cases. In no case have we been able to produce essential hypertension or heart disease in animals or man deliberately by chronic psychologic stimuli.

The other psychosomatic problems could be considered in a similar manner, but the ones discussed serve as illustrations. We thus have two groups of psychosomatic problems: (1) patients without organic

12 Wolf S and Wolff H G. Evidence on the Genesis of Peptic Ulcer in Man. *J A M A* 120 670 (Oct 31) 1942.

13 Alexander F. Ten Year Report 1932-1942 of the Institute for Psychoanalysis. Chicago: Institute for Psychoanalysis 1943.

14 Draper G and Touraine G A. The Man Environment Unit and Peptic Ulcer. *Arch Int Med* 49 616 (April) 1932.

15 Spicer C D, Stewart D N and Winsor D M de R. Perforated Peptic Ulcer During the Period of Heavy Air Raids. *Lancet* 1 14 194.

16 Fulton J F. Physiology of the Nervous System ed 2. New York: Oxford University Press 1943.

17 Allen F M. Acute Hypertension with Clamping or Ligation of Explanted Kidneys. *J Urol* 44 834 1941.

18 Goldblatt H, Kahn J R and Lewis H A. Studies in Essential Hypertension. *J A M A* 119 1192 (Aug 8) 1942.

19 Merritt W. Inversion of the T Waves of the Electrocardiogram in 2 Patients with Neurocirculatory Asthenia. *Ann Int Med* 20 773 1944.

20 Weiss E. Psychosomatic Aspects of Hypertension. *J A M A* 120 1081 (Dec 5) 1942.

21 Dunbar F. Psychosomatic Diagnosis. New York: Paul B Hoeber Inc 1943.



lesions with symptoms due to maladaptation to their environment and (2) patients with organic lesions which may be in part due to maladaptation to their environment. It is possible that the two groups represent different methods of reaction to conflict by constitutionally different persons and not two distinct types of disorder. Much careful experimentation and detailed observation remain to be done.

#### CONCLUSION

Psychosomatic problems may be divided into two large groups.

I Patients who react to emotional and environmental stress with bodily complaints and alterations in physiology but without alterations in body structure. These cases are (a) the psychoneuroses and (b) states of simple anxiety.

II Patients with structural and functional alterations of pathologic proportion in which the emotional reaction to environmental stress appears to play an important role. These problems are still in the experimental phase, but it becomes increasingly evident that emotional factors play some role in all the illnesses of man, and these forces must be evaluated in any study of the cause and treatment of human sickness.

## THYROTOXICOSIS TREATED WITH THIOURACIL

WILLIAM S. REVENO, M.D.

DETROIT

Interference with the production of thyroid hormone in animals, first by sulfaguanidine and later by other chemicals, notably thiourea and thiouracil, has been demonstrated by the Mackenzies and McCollum,<sup>1</sup> Richter and Clisby,<sup>2</sup> Kennedy<sup>3</sup> and Astwood and his co-workers.<sup>4</sup> Observations of this effect in human beings and its application in the treatment of hyperthyroidism were first made by Astwood,<sup>5</sup> who reported on the clinical use of both thiourea and thiouracil, and later by Williams and Bissell<sup>6</sup> and by Himsworth,<sup>7</sup> using thiouracil and thiourea respectively. All reported uniformly good results, but some adverse effects were noted also. Two thiouracil treated patients showed evidence of agranulocytosis,<sup>8</sup> while 2 more showed pitting edema with some evidence of renal involvement.<sup>6</sup> Both thiourea<sup>5</sup> and thiouracil<sup>9</sup> produced a skin rash in 5 patients. Mild jaundice was noted once.<sup>10</sup>

While the total reported number of treated patients has been small and the period of observation relatively

brief, there has been close agreement by all observers that disappearance of toxic symptoms occurs coincidentally with a fall in the basal metabolic rate and a gain in body weight after a latent period of one to several weeks. When the chemical is discontinued all toxic signs return quite promptly. Little or no change takes place in the size of the thyroid but there may be some softening of the gland. Iodine has no influence on the action of these drugs, but thyroid extract is directly antagonistic.

Experience in the treatment of 9 ambulatory patients with thiouracil<sup>11</sup> over a period of eight months is herewith detailed. All had toxic adenomas and 5 had been taking Lugol's solution immediately preceding treatment. All except 2 are still under observation.

#### REPORT OF CASES

CASE 1—C. C., a man aged 40, had been under treatment for diabetes mellitus and hyperthyroidism since 1936. Adenoma of the right lobe, with nervousness, tremor, palpitation, weight loss and elevated basal metabolic rate were all present. Diabetes was difficult to control until Lugol's solution was started when it became stabilized on 20.0-20 units of crystalline insulin daily. Nervousness and weight loss stopped, but the tremor, palpitation, elevated blood pressure and increased pulse pressure continued. The basal metabolic rate in March 1940 was plus 35 per cent, in May 1940 plus 16 per cent, in October 1941 plus 18 per cent and in October 1942 plus 11 per cent.

Lugol's solution was continued until Aug. 7, 1943, when thiouracil 0.8 Gm daily was started and continued at this level until April 1, 1944, except for two interruptions of eleven and sixteen days each. As may be noted in chart 1 the basal metabolic rate did not fall in the expected manner during this entire period of observation, nor did it rise during the two intervals when the drug was stopped. The body weight and blood cholesterol levels also failed to show appreciable change. Only the tremor and moist palms showed improvement and the systolic and pulse pressure levels were lower. The diabetes remained under control, and the thyroid gland was unchanged.

All evidence points to a poor response to the drug, and the most that can be said for the effect of thiouracil here is that it performed as well as and no better than Lugol's solution. The prolonged administration of iodine may have been responsible for the poor response since it has been shown that there is delay of thiouracil action with previous iodine administration.<sup>12</sup>

CASE 2—L. B., a man aged 64, was first seen in January 1943 because of weakness and exhaustion. There were warm moist palms with tremor, and a nodular bilateral thyroid enlargement, partly substernal. The blood pressure was 120/60 and the weight 169 pounds (77 Kg). The basal metabolic rate was plus 24 per cent. There was prompt improvement with Lugol's solution, and in four weeks the basal metabolic rate was plus 6 per cent. This treatment was continued until March 31, 1943 and then stopped. The patient was not seen until August 23, when he again complained of a return of his former symptoms. Thiouracil was started on August 24. Chart 2 illustrates the prompt lowering of the basal metabolic rate and the gain in body weight that followed in four weeks. A three weeks interruption in administration of the drug between December 15 and January 10 resulted in a rise of 22 per cent in the basal metabolic rate but an increase in the blood cholesterol level. The figures for this determination are apparently not in accord with the rest of the data and their significance must accordingly be discounted.

The patient continues at his daily work symptom free on 0.4 Gm of thiouracil daily. The thyroid gland is somewhat larger but softer than it was in the beginning.

From the Departments of Medicine, Harper Hospital and Wayne University College of Medicine.

1 Mackenzie J. B., Mackenzie C. G. and McCollum E. V. Effect of Sulfaguanidine on the Thyroid of the Rat. *Science* 94: 518-519 (Nov. 28) 1941. Mackenzie C. G. and Mackenzie J. B. Effect of Sulfonamides and Thioureas on the Thyroid Gland and Basal Metabolism, *Endocrinology* 32: 185-209 (Feb.) 1943.

2 Richter C. P. and Clisby K. H. Graying of Hair Produced by Ingestion of Phenylthiocarbamide. *Proc. Soc. Exper. Biol. & Med.* 48: 684-687 (Dec.) 1941. Toxic Effects of Bitter Tasting Phenylthiocarbamide, *Arch. Path.* 33: 46-57 (Jan.) 1942.

3 Kennedy T. H. Thioureas as Goitrogenic Substances. *Nature* London 150: 223-234 (Aug. 22) 1942.

4 Astwood E. B., Sullivan J., Bissell A. E. and Tyslowitz R. Action of Certain Sulfonamides and of Thiourea on the Function of the Thyroid Gland of the Rat. *Endocrinology* 32: 210-225 (Feb.) 1943.

5 Astwood E. B. Treatment of Hyperthyroidism with Thiourea and Thiouracil. *J. A. M. A.* 122: 78-81 (May 8) 1943.

6 Williams R. H. and Bissell G. W. Thiouracil in the Treatment of Thyrotoxicosis. *New England J. Med.* 229: 97-108 (July 15) 1943.

7 Himsworth, H. P. Thyrotoxicosis Treated with Thiourea, *Lancet* 2: 465-466 (Oct. 16) 1943.

8 Gabrielson J. L. and Kert M. J. Sensitivity to Thiouracil. *J. A. M. A.* 124: 504-505 (Feb. 19) 1944. Astwood E.

9 Gabrielson and Kert. *Sloim and Shorr*<sup>10</sup>.

10 Sloim Margaret H. and Shorr E. Metabolic Effects of Thiouracil in Graves Disease. *Science* 99: 305-307 (April 14) 1944.

11 The thiouracil was supplied by Dr. B. W. Carey of the Lederle Laboratories Inc., Pearl River, N. Y.

12 Rawson R. W., Evans R. D., Means J. H., Peacock, W. C., Lerman J., and Cottrill R. E. The Action of Thiouracil upon the Thyroid Gland in Graves' Disease. *J. Clin. Endocrinol.* 4: 1 (Jan.) 1944.



CASE 3—Mrs R W, aged 45, had enlargement of the thyroid gland for the past twenty years. She was seen irregularly during this time but presented no evidence of thyrotoxicosis until seven years before I saw her, when she showed a basal metabolic rate of plus 22 per cent. In April 1942 the rate was plus 12 per cent, and a circumscribed firm nodule

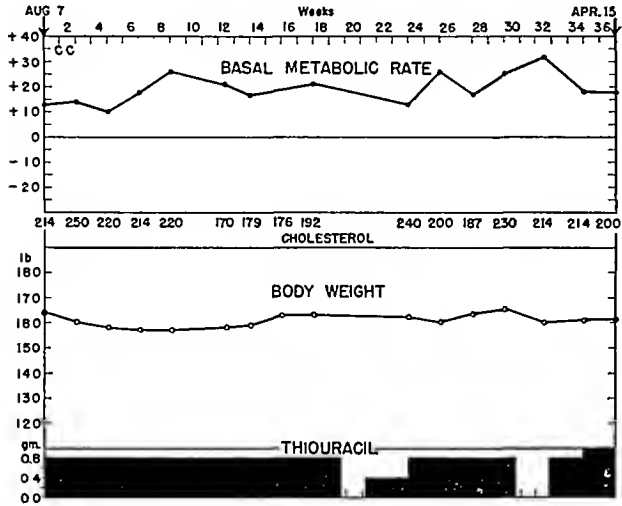


Chart 1—Course with thiouracil in case 1

was palpated in the right lobe of a uniformly enlarged cystic thyroid gland. Sept 3 1943 she first sought help for nervousness, palpitation and tremor, which had appeared three months before along with irregularity in menstruation. Again the thyroid gland showed a bilateral cystic enlargement with a firm nodule in the right lobe. The skin was flushed, there was a fine tremor of the hands and she was obviously restless and disturbed.

Thiouracil was started on September 11, the initial dosage being 0.8 Gm per day. This was reduced to 0.6 Gm daily after nineteen days because of epigastric discomfort and pain. As improvement set in and the basal metabolic rate dropped to minus 3 per cent (chart 3) the dosage was further reduced

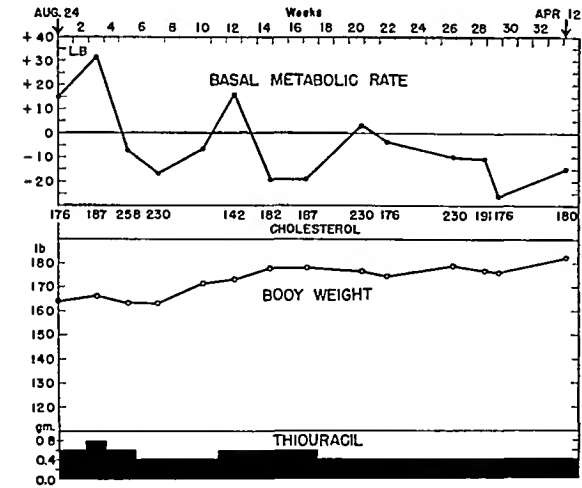


Chart 2—Course with thiouracil in case 2

to 0.4 Gm daily, but with a rise in the basal metabolic rate during the next four weeks, 0.6 Gm was again given daily. She continued symptom free, with little change in the thyroid gland, until March 1, when she noticed an increase in the size of her goiter associated with a choking feeling. This change became more evident during the following four weeks, and the nervousness and tremor returned. No thiouracil was taken for nine days previous to reexamination on March 29.

At this time both lobes of the thyroid showed increase in size, the right more than the left, and there was compression of the trachea with displacement toward the left. Nervousness and palpitation had returned, and the basal metabolic rate was now plus 21 per cent.

Lugol's solution was given and thyroidectomy was performed by Dr Clark D. Brooks on April 6, 1944. Recovery was uneventful. Examination of the specimen by Dr Plinn F. Morse disclosed an irregular, lobulated mass of thyroid tissue weighing about 150 Gm, on the external surface of which were many pedunculated nodules hanging from the capsule in a grapelike manner. These nodules were of varying size, some reaching 2 cm in diameter. On section, many areas of recent hemorrhage and brownish spots due to older hemorrhage were found throughout the structure of the gland. Microscopically the structure was that of a colloid adenoma with large, overfilled, thin walled follicles lined with very flat and compressed epithelium. There were no areas of hyperplasia. In addition to the old and new hemorrhages there were areas of necrosis with beginning organization. No malignant condition was present.

Failure to find hyperplasia, the expected change resulting from thiouracil administration, can be explained only by the fact that no thiouracil had been

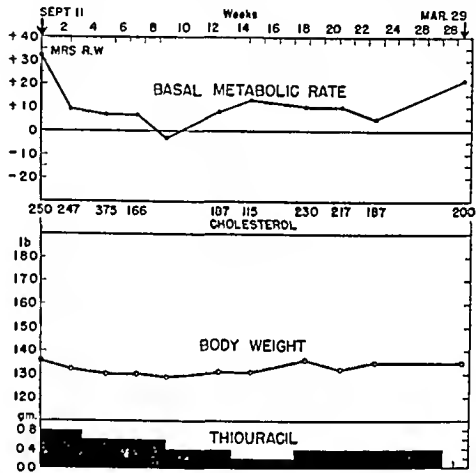


Chart 3—Course with thiouracil in case 3

taken for seventeen days previous to operation, while iodine had been given for six days preoperatively. The interval for the disappearance of thiouracil hyperplasia does seem short, but it may have been made so by the iodine. The latter effect deserves consideration in view of the established observation that iodine has no influence on the change induced by thiouracil.<sup>1</sup> Astwood<sup>5</sup> reports that a patient with a large nodular thyroid and a metabolic rate of plus 20 to plus 30 per cent failed to respond to thiouracil. Carcinoma of the thyroid was found, while the remainder of the gland was composed of colloid filled alveoli with uniformly flat epithelium. A certain degree of similarity to the findings just reported may be noted, but the parallelism ends abruptly since our patient showed no evidence of cancer and, for a time at least, responded to the treatment.

Of important significance is the finding of old and new hemorrhage and areas of necrosis in the gland, and while these may have occurred for other reasons, they may also have been caused by thiouracil.

CASE 4—Miss E. R., aged 76, when first seen in August 1941 was suffering from nervousness, tremor, palpitation, weight loss and ankle edema. There was hypertension (190/80), a hard nodule in the left lobe of the thyroid, auricular fibrillation, tremor and warm moist palms. The basal metabolic rate was

plus 21 per cent. The nervousness and palpitation improved and she gained weight while taking Lugol's solution and digitalis, but she continued to fibrillate, had edema of the lower extremities, and the metabolic rate continued between plus 17 and 35 per cent.

Lugol's solution was stopped Sept 3, 1943 and thiouracil 0.8 Gm per day was started September 15. Digitalis was continued. In spite of a reduction in dosage to 0.6 Gm per day after the first two weeks, improvement proceeded without interruption (chart 4). Digitalis was discontinued after eight weeks and the thiouracil reduced to 0.4 Gm per day. All evidence of hyperthyroidism has disappeared and there has been no reactivation in spite of two attacks of acute upper respiratory infection. There is no fibrillation and no ankle edema. The thyroid gland is slightly larger but somewhat softer than at first.

Thus represents a highly satisfactory result obtained in a patient with severe thyrocardiac involvement.

CASE 5—Mrs B C, aged 62, was seen in May 1943 because of dizziness, blurring of vision and exhaustion. There was tremor, moist warm palms, and a palpable adenoma in the right lobe of the thyroid. The basal metabolic rate was plus 38 per cent and the blood cholesterol 150 mg per hundred cubic centimeters. Some improvement followed administration

diet but tired of this regimen after three months and stopped all medication. In June her weight was down to 167 pounds (76 Kg), all her previous symptoms had returned, and again there was a pulse deficit with the auricular fibrillation. Lugol's solution and digitalis were prescribed but not taken. She returned in November in much the same condition and this time was started on digitalis and 0.6 Gm of thiouracil per day.

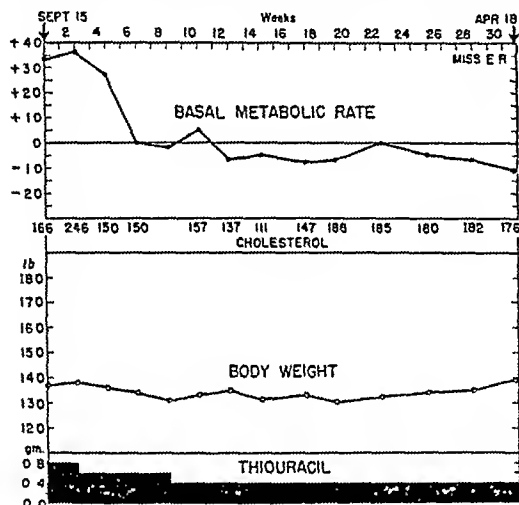


Chart 4—Course with thiouracil in case 4

of Lugol's solution for a period of four and one-half months. The tremor, exhaustion and elevated metabolic rate continued. The thyroid adenoma remained unchanged.

Thiouracil was started October 1. After ten days the patient developed nausea, chills and fever, the drug was stopped for two days and then reduced from 0.8 to 0.6 Gm per day. This dose was continued for eight weeks, then increased to 0.8 Gm per day. There was no ill effect, and a lowering of the basal metabolic rate together with a general improvement followed within two weeks and has continued since then (chart 5). The thyroid adenoma was unchanged except that it felt slightly softer.

CASE 6—Mrs G P, aged 50, complained of being tired, short of breath, and unable to lie down for any length of time. There was an annoying persistent cough, a smothering sensation, palpitation and nervousness. This disturbance had been present for several months previous to January 1943, when she was first seen. Her weight was 191 pounds (87 Kg), the blood pressure 150/90, the heart enlarged to the left with a systolic murmur at the apex and fibrillation with a pulse deficit of 28. Moist rales were noted at the lung bases, and there was edema of both lower extremities. There was an adenoma of the right thyroid lobe, and the basal metabolic rate was plus 24 per cent with a blood cholesterol level of 136 mg per hundred cubic centimeters. She improved while taking Lugol's solution and digitalis and following a reduction

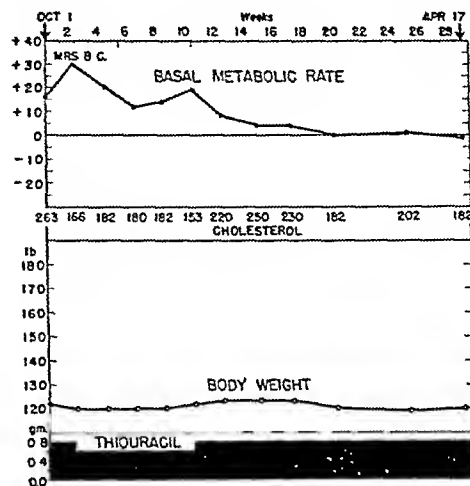


Chart 5—Course with thiouracil in case 5

The response was both prompt and satisfactory subjectively and objectively (chart 6). The pulse deficit had disappeared and the digitalis was discontinued five weeks after the beginning of treatment. From about the eighth week on however the patient showed evidence of failure to follow the treatment and the subsequent observations are accordingly of little value.

CASE 7—A S, a man aged 67, appeared in November 1943 complaining of epigastric discomfort caused by reactivation of a duodenal ulcer. Attacks had occurred several times in the past two years. In addition to the evidence of duodenal ulcer both lobes of the thyroid were palpable, with a small adenoma in the right lobe, and there was a tremor of the hands, with warm moist palms. The basal metabolic rate was plus 9 per cent. Thiouracil 0.6 Gm per day was started November 22 and continued to the present except for two intervals, one

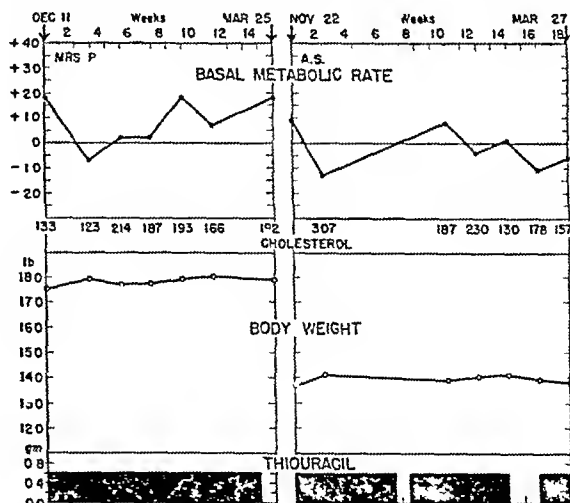


Chart 6—Course with thiouracil in case 6

of one week when he developed an acute upper respiratory infection and one of two weeks when he developed recurrence of severe epigastric pain.

While the response in this patient has been quite satisfactory the reactivation of ulcer symptoms while taking the thiouracil may have resulted either from

local irritation or from pituitary stimulation by the drug. Whichever is true care certainly should be exercised in the administration of thiouracil to patients with peptic ulcer.

**CASE 8**—Mrs E L., aged 82, complained of choking and tightening of the throat, dry cough, nervousness, insomnia and hypertension of long standing when she first appeared in January 1944. There was nodular enlargement of both lobes of the thyroid. The palms were warm and moist and there was a fine tremor. Lid lag and a definite "stare" were present. The pulse was rapid. The blood pressure was 220/120.

Thiouracil 0.6 Gm daily was started January 24, before a basal metabolic rate determination was made. The only difficulty encountered in taking the drug was an initial gastric distress. Subjective improvement, such as decrease in cough and constriction of the throat, with lessening of tremor appeared within three weeks after starting treatment. By the time of the last visit when the basal metabolic rate was minus 3 per cent, the pulse rate, nervousness, tremor and eye signs had subsided manifestly (chart 7).

**CASE 9**—Mrs S A., aged 58, when seen Aug 17, 1943, complained of weakness, palpitation, tremor and profuse perspiration of two years duration. She had had a goiter since the age of 18. There was enlargement of the right thyroid lobe, the skin was moist and flushed and the blood pressure was 144/90. There was no tachycardia.

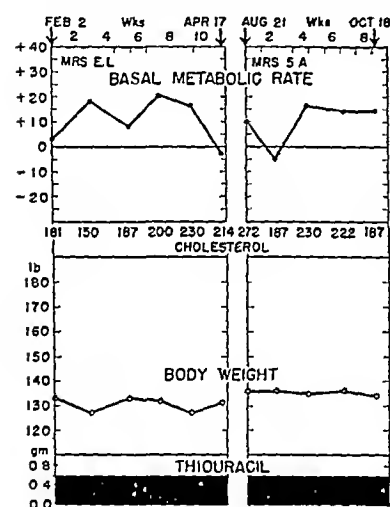


Chart 7—Course with thiouracil in case 8

She had had a goiter since the age of 18. There was enlargement of the right thyroid lobe, the skin was moist and flushed and the blood pressure was 144/90. There was no tachycardia. Thiouracil 0.6 Gm was given daily but caused gastric distress almost immediately. This was overcome by taking the tablets just before meals. Improvement was noted by the patient after two weeks but the basal metabolic rate showed no reduction by the end of eight weeks. The patient has not

appeared for further observation so that no conclusion can be drawn as to the effectiveness of the treatment.

#### COMMENT

In reviewing the treatment of these 9 patients the following points are worth noting:

**1 Dosage**—The initial dose was either 0.6 or 0.8 Gm daily. This was eventually reduced to 0.4 Gm daily in cases 2 and 4. It was maintained at 0.6 Gm daily in cases 3, 6, 7, 8 and 9 and was kept at 0.8 Gm in cases 1 and 5. Tablets of 0.2 Gm each were administered either two, three or four times daily.

**2 Reactions**—Gastric distress in the form of pain, burning and gnawing was noted at the onset of treatment in cases 2, 3, 7, 8 and 9. This was promptly controlled by the taking of food along with the medication. Patient 6 reported nausea with chills and fever ten days after starting treatment. This lasted two days, during which the drug was stopped. No further reaction followed resumption of treatment. Opportunity for determining whether agranulocytosis had occurred was not available since the patient was out of the city at the time of the reaction.

No instances of urticarial or toxic skin rash, agranulocytosis, anemia, edema or jaundice occurred.

The rapid enlargement of the thyroid in case 3, with increase in toxicity and evidence of recent and old hemorrhage in the gland, deserves mention as a possible effect of the drug.

**3 Elapsed Time Before Improvement**—Excepting for case 1, in which no noteworthy effect resulted, the latent interval was two weeks in cases 6, 7 and 9, four weeks in case 2, six weeks in case 4, eight weeks in case 3, ten weeks in case 8 and fourteen weeks in case 5. The long interval in the last instance was undoubtedly due to too low a dosage of thiouracil.

**4 Changes in the Thyroid**—No significant change was noted in the appearance of the gland except a slight softening in every case except in case 3, in which rapid enlargement developed.

**5 Blood Cholesterol Levels**—No reliance could be placed on the results of these determinations, since the figures failed to rise or fall with decrease or increase, respectively, in basal metabolic rate determinations. Perhaps this is due to the fact that all patients in this series had toxic adenomas, a condition in which the inverse relationship between cholesterol level and basal metabolic rate is not as distinct as it is in toxic diffuse goiter.

**6 Previous Medication with Iodine**—Five patients had been treated with iodine before thiouracil was given. With the exception of patient 1, all responded favorably to the treatment. It is possible that patient 1 failed to respond because of prolonged administration of iodine (six years).

#### CONCLUSIONS

Of 9 patients treated with thiouracil 6 showed satisfactory results characterized by cessation of disturbing symptoms, fall in basal metabolic rate and gain in weight. Two of these patients had auricular fibrillation, in 1 of these the use of digitalis was discontinued after eight weeks. The other showed promise of improvement which failed to materialize because of lack of cooperation.

One patient in whom diabetes mellitus coexisted, and who had been taking iodine for six years, failed to respond to therapy.

Another patient responded favorably at first but developed rapid enlargement of and hemorrhage into the gland and was subjected to surgery.

The third failure was of a patient who while showing some clinical improvement, failed to show a drop in basal metabolic rate during the short period she was under observation.

The results in the responsive patients appeared as good as those following successful thyroidectomy.

968 Fisher Building

**Most Eminent Authority on Surgery During the Middle Ages**—Guy de Chauliac (1300-1368) was the most eminent authority on surgery during the Middle Ages. His *Chirurgia magna* was written in 1363. Born in the countryside near Auvergne in France, he took holy orders and was educated in medicine at Toulouse, Montpellier and Paris, with a special course in anatomy at Bologna. He settled in Avignon and was surgeon to the French popes. He operated for hernia and cataract but hesitated to cut for the stone. He employed the cautery for cancer. He treated ulcers by investing them with a collar of steel. His discussion of fractures and dislocations is good. He used Theophrastus's narcotic or soporific inhalant as an anesthetic. He did not believe in the power of nature in healing wounds but in the surgeon's intervention with salves, plasters, etc.—Clendinning Logan. *Source: Book of Medical History*, New York, Paul B. Hoeber, Inc., 1942.

THE TREATMENT OF SULFONAMIDE  
RESISTANT GONORRHEA WITH  
PENICILLIN SODIUM

RESULTS IN 1 686 CASES

LIEUTENANT COLONEL THOMAS H STERNBERG  
AND

COLONEL THOMAS B TURNER

MEDICAL CORPS, ARMY OF THE UNITED STATES

In May 1943, soon after preliminary evidence of the effectiveness of penicillin in the treatment of gonorrhea was obtained by Mahoney and his co-workers<sup>1</sup> and Herrell, Cook and Thompson,<sup>2</sup> studies were inaugurated by the Surgeon General's Office of the U S Army with a view to determining as rapidly as possible time-dosage factors in the penicillin treatment of this disease. The clinical trials were carried out in fifteen selected army hospitals. Altogether, 1 686 patients with sulfonamide resistant gonorrhea were studied.

## METHOD OF STUDY

The hospitals participating in the study and the responsible investigators in each are shown in table 1. Similar requirements as to the selection of patients, methods of treatment and criteria of cure obtained in each.

**Selection of Patients**—Patients admitted to the study were limited to those fulfilling the following conditions:

- 1 A clear history of gonorrhea acquired within the past few weeks or months.
- 2 Typical clinical signs and symptoms of gonorrhea at the time penicillin treatment was begun.
- 3 Smear and culture positive for gonococci immediately prior to penicillin therapy.
- 4 Sulfonamide resistant gonorrhea as determined by failure to respond to two or more courses of sulfathiazole or sulfadiazine, each course consisting of at least 20 Gm of drug administered within a period of five days.

**Plan of Treatment**—No patient was started on penicillin treatment until at least five days after the discontinuance of other medications, including sulfonamides. Solutions of penicillin in sterile saline solution or distilled water were prepared daily from the dried powder and were refrigerated at approximately 4 C when not in use. The individual dose in all cases was either 10,000 or 20,000 Oxford units injected intramuscularly at intervals of three hours, day and night.

As originally projected this study called for the treatment of four groups of patients employing respectively a total dosage of 40,000, 80,000, 120,000 and 160,000 Oxford units, with each group further divided according to whether the individual dose was 10,000 or 20,000 units. The interval of three hours between doses remained constant for all groups.

Later, when it was apparent that favorable results were being obtained with all dosage schedules, two new groups were added, one employing a total dosage of 50,000 units and another employing 100,000. The latter

dosage levels were selected largely because of convenience, arising from the fact that the drug was commonly delivered in ampules containing 100,000 units.

It should be emphasized that no other medication and no local treatment whatever were given concurrently with penicillin or during the observation period.

**Criteria of Cure**—Patients included in this study were routinely retained in the hospital for at least twenty-one days following the completion of penicillin therapy. During this period the following examinations were performed:

- 1 Daily examination for evidence of urethral discharge.
- 2 Daily two glass urine examination.
- 3 Cultures and smears for gonococci within forty-eight hours after the completion of treatment, and on the seventh, fourteenth and twenty-first days. These bacteriologic studies were made on material obtained from the urethra as long as such material was available. If no urethral discharge was present cultures and smears were made on prostatic secretion expressed through prostatic massage. The prostatic secretion was examined either directly or after collection in urinary sediment.

TABLE 1—Hospitals and Investigators Participating in Clinical Trials

| Hospital      | Investigators                            |
|---------------|--|
| Camp Howze    | Major G A Campbell Capt S Bar            |
| Barnes        | Capt L A Gehrie Capt M Giffords          |
| Brooke        | Col J C Woodland Capt F Geiger           |
| Fort Dix      | Major S L Ramey Capt C S Barrett         |
| Perry Jones   | Capt L W Holladay Capt A W Frisbie       |
| Fitzsimons    | Lieut Col R L Smith Major D P Greenlee   |
| Fort Bragg    | Major G Campbell Capt M Bolus            |
| Lawson        | Lieut Col E C Lowry Capt L W Hewitt      |
| Army and Navy | Lieut Col I S Wright Major A W Pinkerton |
| Billings      | Major E H Burford                        |
| Oliver        | Major S T Evans Major I M Flood          |
| O'Reilly      | Lieut Col A I Joyce Capt F F Kurshman    |
| Walter Reed   | Capt R I Murphy                          |
| Lovell        | Major V S Dick Capt R A Snyder           |
| Fort Benning  | Major C C Stillinger Major R F Kelley    |

Patients were termed "cured" and released from the hospital if they were asymptomatic and bacteriologically negative on the twenty-first day after completion of treatment. As indicated later, the vast majority of patients became clinically and bacteriologically negative within the first week. "Failure" was determined by the presence of positive smears or cultures on the seventh post-treatment day or at any time thereafter even though the patient had no urethral discharge. Because of the wide geographic dispersal of patients on release from the hospital, no attempt was made to obtain follow-up examinations beyond the period of hospitalization.

## MATERIAL STUDIED

A total of 1,686 patients with sulfonamide resistant gonorrhea were included in the study. All were men between the ages of 18 and 38 years; the mean age being 23. The average duration of infection was fifty-one days. The average amount of sulfonamide drug received prior to penicillin therapy was 58 Gm. Most of the patients included in the study had received some form of local treatment subsequent to sulfonamide therapy. In addition 236 patients had been treated unsuccessfully with hyperpyrexia, induced either mechanically or by means of typhoid vaccine.

From the Venereal Disease Control Division, Preventive Medicine Service, Office of the Surgeon General, U S Army.

Read before the Section on Practice of Medicine at the Ninety-Fourth Annual Session of the American Medical Association, Chicago, June 14, 1944.

<sup>1</sup> Mahoney, J F, Ferguson, C, Buchholz, M and Van Slyke, C J. The Use of Penicillin Sodium in the Treatment of Sulfonamide Resistant Gonorrhea in Men. *Am J Syphonor & Ven Dis* 27: 525, 1943.

<sup>2</sup> Herrell, W E, Cook, E N and Thompson, L. Use of Penicillin in Sulfonamide Resistant Gonorrheal Infections. *J A M A* 122: 289 (May 29) 1943.

## RESULT OF TREATMENT

*Results According to Total Dose*—In table 2 are shown the results of treatment with one course of penicillin, according to the total dose administered. It is evident that remarkably satisfactory results were obtained with all dosage schedules employed. In the first series of patients treated no important differences

TABLE 2—Results of Treatment According to Dose of Penicillin (One Course Only)

| Total Dose Penicillin | Number Treated | Failures | Per Cent Cured |
|-----------------------|----------------|----------|----------------|
| 160 000               | 144            | 3        | 97.9           |
| 120 000               | 191            | 9        | 95.3           |
| 80 000                | 225            | 10       | 95.6           |
| 40 000                | 137            | 12       | 91.2           |
| 100 000               | 433            | 15       | 96.5           |
| 50 000                | 506            | 77       | 86.2           |
| Total                 | 1 656          | 126      | 92.5           |

in the final result were noted among the groups treated with 40,000, 80,000, 120,000 and 160,000 units respectively.

When larger series were compared employing a total dose of 100,000 units for the one and 50,000 for the other, the results were significantly poorer with the smaller dose.

It should be pointed out that the dosage schedules used are only approximate, since at the time of these studies potency assays were crude and subject to as much as 25 per cent error in either direction in some instances. Furthermore, batches of the drug were shipped to the various hospitals all over the country and it is believed that in some instances, at least conditions of shipment such as exposure to excessive heat may have resulted in a loss of potency. It was definitely noted that in certain hospitals using particular lots of penicillin the results were inferior to those of groups treated with the same dosage schedule elsewhere. This was particularly noticeable in the 50,000 unit group, since here the dosage was probably on the borderline of effectiveness and any loss of potency became evident by an appreciable increase in the percentage of failures. In two hospitals certain lots of the drug resulted in a 50 per cent failure rate at the 50,000 unit schedule of treatment. In the same hospitals using the same dosage schedule but with penicillin of different manufacture the results were similar to those obtained elsewhere. On the other hand, the 91 per cent cure rate obtained in the 137 cases treated with 40,000 units of penicillin may have been due to the use of underassayed drug.

*Effect of Size of Individual Dose*—No significant differences in the final results were noted when a given total dose was administered in individual injections of 10 000 or 20 000 units. For example employing a total dose of 100,000 units, of 261 patients treated with five injections of 20 000 units each, favorable results were obtained in 96.6 per cent while of 172 patients treated with 10 doses of 10 000 each exactly the same percentage responded favorably (table 3).

These observations are of very practical importance from a military and probably a civilian standpoint. When the total amount of drug is administered in five doses at three hour intervals treatment is accomplished within a total period of twelve hours, while with ten

doses at the same interval treatment must extend without interruption through the night. In situations in which hospitals are understaffed or blackout precautions must be observed it is advantageous to complete treatment during the daylight hours and largely during the normal working day.

*Response to Treatment in General*—The response to treatment was ordinarily dramatic, with prompt disappearance of symptoms and reversal of cultures and smears to negative. The average time for the urethral discharge to disappear or change from purulent to mucoid was two days, although in the majority of cases both objective and subjective improvement was noted within a few hours after the beginning of treatment.

In patients responding to treatment, cultures were almost invariably negative within forty-eight hours, although smears taken within this period occasionally showed degenerated coccoid organisms. Smears of this type were rarely noted after forty-eight hours.

In roughly 20 per cent of the patients a slight intermittent mucoid discharge persisted from one to three weeks, gradually resolving over this period. At first it was thought that this indicated failure of therapy, however, since careful study commonly failed to reveal the presence of gonococci and this slight discharge eventually ceased spontaneously, it is now regarded as a normal finding incidental to the healing process.

*Analysis of Failures*—Of the 1,686 patients treated 126 failed to respond to one course of penicillin. Of these failures 84 became manifest by the end of the first treatment week, 31 during the second and 11 during the third. For the most part the 84 failures during the first post-treatment week were those patients receiving the lower total dosages of penicillin. In these cases the clinical response was not conspicuous. Moreover, while twenty-four to forty-eight hour cultures were usually negative possibly because of the presence of excreted penicillin, the smears frequently remained positive and cultures became positive within a few days.

TABLE 3—Results of Treatment (Effects of Size of Individual Dose and Length of Treatment)

| Total Dose | Size of Individual Dose | Length of Treatment Hours | Number Treated | Number of Failures | Per Cent Cured |
|------------|-------------------------|---------------------------|----------------|--------------------|----------------|
| 120 000    | 20 000                  | 15                        | 105            | 3                  | 97.1           |
| 100 000    | 20 000                  | 12                        | 261            | 9                  | 96.6           |
| 80 000     | 20 000                  | 9                         | 124            | 8                  | 93.6           |
| Total      |                         |                           | 410            | 20                 | 95.1           |
| 120 000    | 10 000                  | 33                        | 86             | 6                  | 93.0           |
| 100 000    | 10 000                  | 27                        | 172            | 6                  | 96.5           |
| 80 000     | 10 000                  | 21                        | 101            | 2                  | 98.0           |
| Total      |                         |                           | 359            | 14                 | 96.1           |

thereafter. The majority of the 31 failures which became manifest during the second post-treatment week responded temporarily to treatment and then relapsed both clinically and bacteriologically. Of the 11 failures appearing in the third post-treatment week, 6 were completely asymptomatic and were judged failures on the basis of bacteriologic evidence. Since these 6 patients were promptly and successfully retreated with penicillin, it is not known whether spontaneous bacteriologic cure would have resulted without the second course of penicillin.

*Influence of Duration of Infection*—In 1,154 patients of this series the onset of gonorrhea was less than sixty days prior to the initiation of penicillin therapy, and in 532 infection had been present for longer than sixty days. A successful outcome was observed in 92 per cent of the one group and in 93 per cent of the other, indicating that duration of infection is not an influential factor in determining the response to penicillin therapy.

*Influence of Previous Fever Therapy*—In addition to at least two courses of sulfonamides 236 patients had been subjected to artificially induced hyperpyrexia for sulfonamide resistant gonorrhea. Of these 92.2 per cent responded to one course of penicillin as compared with a response rate of 92.7 per cent for those who had not had previous fever therapy.

*Influence of Race*—Of 139 Negro patients in the entire series of 1,686, 125, or 90 per cent, responded favorably to one course of penicillin, as compared with a favorable response of 92.8 per cent in the white group. This small difference in the results in the two groups is not considered significant.

*Response of Patients with Complications*—In general it can be said that the complications of gonorrhea responded well to treatment with penicillin. In most instances improvement began shortly after the penicillin was administered and continued until the patient was well. Of 47 patients with acute epididymitis at the time penicillin therapy was initiated, 43 responded to one course and 4 required a second course. Of 14 patients with severe acute prostatitis 13 responded immediately, while the additional case responded to a second course of penicillin.

Included in this series of patients were 9 who had mild to moderately severe articular involvement associated with a persistent gonococcal urethritis. Presumably the joint lesions were gonococcal in origin. Of these 9 cases 3 responded to one course of penicillin and 2 to an additional course. In 4 cases there was no substantial improvement to two courses of penicillin, although the coexisting urethritis responded satisfactorily.

Not included in this series are 5 patients with sulfonamide resistant gonorrhea and severe acute arthritis, presumably gonococcal in origin, who, because of the severity of the disease, were given considerably larger doses of penicillin. The results were excellent in each case. Among the complications of gonorrhea observed was 1 case of gonococcal conjunctivitis, proved by culture, which responded to 160,000 units, and a case of keratoderma blennorrhagicum, which responded to 120,000 units.

*Retreatment of Failures*—Of the total of 126 failures to one course of penicillin 85 were retreated, a total dose of 100,000 units being used in each. Of these, 78, or 91.8 per cent, were cured. In 4 of the 7 cases which failed to respond, a third course of 100,000 units of penicillin was given with a satisfactory outcome in all. No true instance of penicillin resistance was observed.

*Reactions to Treatment*—No serious reaction to penicillin treatment was observed. In 98 patients soreness at the site of injection was noted, but 42 of these patients were in a group of 50 who were treated with one lot of the drug. Other reactions listed were mild fever in 7, slight nausea in 5, headache in 4, chilliness in 4 and dizziness in 3. However, since the conditions

of the study required that all untoward signs or symptoms occurring during or immediately after penicillin treatment be recorded, it is probable that in many instances the symptoms noted were coincidental and not true reactions to the drug.

#### COMMENT

It is evident from the foregoing results that penicillin is remarkably effective in the treatment of gonorrhea. Doses totaling more than 80,000 to 100,000 units appear to offer little advantage over these amounts and indeed, the results obtained with 40,000 and 50,000 units are sufficiently good to warrant the use of these total doses when supplies of the drug are limited.

It is quite possible that somewhat better results might be obtained by varying the time-dosage relationship. Perhaps a two hour interval between doses would be more effective than the three hour interval employed in these studies. Likewise larger initial doses followed by smaller doses might offer advantages over the schemes described here but these variations appear to be questions of detail rather than ones of major importance.

In this series of cases penicillin was administered by the intramuscular route, which on the basis of studies by Rammelkamp and Keefer<sup>3</sup> appears to be superior for this purpose to intravenous administration. The practical advantages of intramuscular over intravenous administration are obvious. In order further to simplify the mechanics of treatment a practicable method of prolonging absorption and excretion of penicillin is needed. In this connection experiments are now in progress employing penicillin incorporated in oil vehicles in the hope that satisfactory results may be obtained by the administration of one or two large doses of penicillin.

While at the very onset of these studies it was evident that penicillin was greatly superior to the sulfonamides in the treatment of gonorrhea it was nevertheless expected that a proportion of cases treated would prove to be resistant. This expectation of penicillin resistance failed to materialize, since all patients in this series subjected to three courses of treatment responded favorably. Furthermore of the many thousands of soldiers treated for gonorrhea with penicillin during the past six months, instances of penicillin resistance have been extremely rare. The recent report of Cohn and Seijo<sup>4</sup> tends to confirm this observation, since in their *in vitro* experiments penicillin concentrations of 1 to 10,000 killed all gonococcus strains tested.

The ability of the gonococcus to develop resistance to penicillin through initial exposure to small concentrations of the drug is still undetermined. The evidence afforded by this series indicates that this happens rarely if at all, since 92 per cent of failures to the first course of treatment responded to a second course. Furthermore, of the 77 cases which failed following initial therapy with the small first course of 50,000 units of penicillin, 57 were retreated with a 100,000 unit schedule, of which 52, or 91.2 per cent, responded favorably. Of the 5 failures to the second course 3 were given a third course of similar dosage, with satisfactory results in all.

The possibility of penicillin treatment of gonorrhea masking or delaying the appearance of manifestations

<sup>3</sup> Rammelkamp, C. H. and Keefer, C. S. The Absorption, Excretion and Distribution of Penicillin. *J. Clin. Investigation* 22: 425, 1943.  
<sup>4</sup> Cohn, A. and Seijo, I. H. The *In Vitro* Effect of Penicillin on Sulfonamide Resistant and Sulfonamide Susceptible Strains of Gonococci. *J. A. M. A.* 124: 1125 (April 15) 1944.



of early syphilis must be borne in mind. While most of the patients in this series were beyond the incubation period of primary syphilis, several cases were observed in which it is possible that penicillin affected the development of early syphilis. The most definite instance was that of a patient with a small ulcer at the frenum, to whom 100,000 units of penicillin was administered before the lesion was studied by dark field examination. The dark field examination was negative the day following and the lesion healed rapidly. Six weeks later a typical dark field positive chancre appeared in the same location. The patient denied further sexual exposure. Because of the known effect of penicillin on *Treponema pallidum*, patients receiving penicillin therapy for gonorrhea should be observed clinically and serologically for evidence of syphilis for a period of at least three months.

#### SUMMARY AND CONCLUSIONS

Studies have been carried out in fifteen selected army hospitals with a view toward determining as rapidly as possible time-dosage factors in the treatment of sulfonamide resistant gonorrhea with penicillin. A total of 1,686 patients refractory to at least two courses of a sulfonamide and in some cases to artificially induced fever were treated with total dosages varying from 40,000 to 160,000 Oxford units per case, the individual dose being 10,000 or 20,000 units intramuscularly every three hours.

These studies showed penicillin to be a remarkably effective drug in the treatment of gonorrhea usually causing disappearance of symptoms and reversal of bacteriologic findings within forty-eight hours. One course of treatment with a dosage of 160,000 units per case effected cures in 98 per cent, 80,000 to 120,000 units in 96 per cent and 50,000 units in 86 per cent. No significant differences in the final results were noted when a given total dose was administered in individual injections of either 10,000 or 20,000 units. Furthermore, little advantage was gained by prolonging the time of treatment schedules beyond twelve hours.

Factors such as duration of infection, previous fever therapy and race appeared to have no effect on the results of therapy.

Of the total of 126 failures to one course of penicillin 85 were retreated, using a 100,000 unit dosage. Of these, 78, or 91.8 per cent, were cured. Thus, by retreatment of failures with a second course, 99 per cent cures were obtained. No case in the entire series proved to be penicillin resistant.

Complications of gonorrhea responded well to penicillin, although the more serious forms of complications required prolonged treatment with higher dosage.

Reactions to penicillin were inconsequential, and in no instance was it necessary to discontinue treatment for this reason.

Because of the known effects of penicillin on *Treponema pallidum*, the possibility of masking or delaying the development of early syphilis must be considered.

Finally, it should be recognized that the treatment of gonorrhea has been completely revolutionized in the past few years, first by the introduction of the sulfonamides and more recently, by the development of penicillin. It is clear that the management of gonorrhea now belongs within the sphere of the chemotherapist, and that local treatment is rarely necessary and may do more harm than good.

#### ABSTRACT OF DISCUSSION

LIEUTENANT COLONEL IRVING S. WRIGHT, M. C., U. S. A. This compilation of important data represents an encouraging example of cooperation in clinical research. This should encourage others to embark on similar studies when maximum data are needed in the shortest space of time. A few comments based on experiences at the Army and Navy General Hospital and at many hospitals later visited may prove of interest. In some patients, both male and female, the cultures became negative within four to six hours after the initial dose. Certain of these patients had had profuse discharges, with positive cultures for six months or more. The possibility that the excretion of penicillin in the discharge is a factor in inhibiting the culture growth must be considered. Two patients, both men, had had profuse discharges for months. Smears from each were positive in the usual sense of interpretation, that is, many gram negative intracellular diplococci, which could not be differentiated from gonococci, were found. Cultures failed to grow the organism. One of these patients had twenty-seven negative cultures in a laboratory that grew practically 100 per cent positive cultures in the remainder of the gonorrhea patients. These 2 patients were treated with five and eight courses of sulfonamides respectively, with hyperthermia and with two courses of penicillin of 100,000 units each. This therapy had absolutely no effect on the discharge or on the organisms seen in the smears. The findings suggest that the organism may not be a true gonococcus, but that is as far as we are able to go. I should like to ask Colonel Turner whether he knows of other examples of this group. We have tried penicillin in the treatment of rheumatoid arthritis which arose during the acute phase of gonorrhea and continued after the discharge had ceased. The etiologic classification of these cases is difficult. They differ from the so called acute gonorrheal arthritis reported in the paper under discussion. The treatment of patients with typical rheumatoid arthritis has been disappointing in our hands. The broader implications arising from the findings of this and similar studies cannot be overestimated. Once more the scientific approach is leading the way, but the problems of its application must be carefully considered. This is easy for members of the armed forces and relatively easy for the professional prostitute. Today, however, our great source of infection is from the amateur pick-up, the girl who comes from a surprising cross section of our population. The widespread use of penicillin in this group must be the result of careful but intense educational programs. A note of caution must be raised, however, against the widespread increase of promiscuity which may arise with its resultant serious dislocations to our social structure.

DR. JOHN F. MAHONEY, U. S. P. H. S. It would be an error not to call attention again to the point that the use of penicillin in the treatment of gonorrhea may have the effect of masking or greatly altering the symptoms of the invasion of a concomitantly acquired syphilis. As the product becomes more generally available and more generally used an increasing number of instances of faulty and delayed recognition of the latter disease probably will be encountered. Repeated serologic tests for syphilis for at least two months following treatment appears to offer the best safeguard, and this feature may well become an important part of follow-up work. In much of the early work with penicillin, investigators have been faced with the necessity of working with limited amounts of the product. This has called forth efforts to refine the dosage to a point where the utmost in results would be produced by each unit available. In the future, and especially if the material becomes as plentiful as now appears certain the concept that "the dangerous dose is the small dose" will probably gain adherents. The objective will then be to use a sufficient amount of the drug to produce a clinical response as rapidly as possible. In view of the non-toxic character of the substance the utilization of larger amounts may be accomplished without an appreciable risk of producing untoward symptoms. The questions of total dosage, the duration of treatment, the interval between injections and the number of injections cannot be considered as established at the present even in the light of the favorable results which have been recorded in the present report. Products of greater purity and the development of preparations which are absorbed and excreted less rapidly may have the effect of permitting treatment

ment schedules to be utilized which are less burdensome and as effective as those in use at the present. The impact of the therapy on incidence of gonorrhea and especially on the public health approach to the disease forms an interesting field of speculation. Should the experiences of the future confirm the impressions which are inescapable on the basis of the material at hand, then surely control of the disease through the medium of the venereal disease clinic will require reorientation. A different type of facility may be needed to implement the new therapy. That gonorrhea may cease to be of major public health importance in the none too distant future seems to be an entirely reasonable assumption.

LIEUTENANT COLONEL THOMAS H. STERNBERG, M. C., A. U. S. The existence or development of penicillin resistant cases of gonorrhea has been a possibility of great interest and of some concern to the Army. In the data presented by Colonel Turner it is of interest that no true instance of penicillin resistant gonorrhea was encountered, provided three courses of penicillin were administered. Since the termination of these studies many thousands of individuals with gonorrhea have been treated with penicillin in various army hospitals and particular efforts have been made to uncover cases not responding to adequate penicillin therapy. While such cases are not infrequently reported, investigation reveals that usually they have been labeled as penicillin resistant on the basis of either inadequate penicillin treatment or persistence of a mucoid discharge, which is bacteriologically negative and later proves to be nongonococcal in origin. I have just completed an extensive trip throughout the southwestern portion of the country, visiting numerous army hospitals routinely using penicillin in the treatment of gonorrhea. During these visits the relatively few instances of so-called penicillin resistant gonorrhea were investigated. In most instances the total dosage of penicillin did not exceed 200,000 units, and in no case was it possible to isolate a strain of gonococcus which was resistant *in vitro* to the more concentrated dilutions of penicillin. To date the army experience indicates that the incidence of truly penicillin resistant gonorrhea is at least unusual and further suggests that the term penicillin resistant gonorrhea should be applied cautiously and only after failure to respond to comparatively large doses of penicillin as determined by adequate clinical and laboratory studies.

DR. ALFRED COHN, New York. May I report the essential findings of a study on penicillin therapy in 100 women and 20 men who suffered from sulfonamide resistant gonococcal infections. This study is still in progress in collaborations with my associates Dr. Boris A. Kornblith and Dr. Isaac Grunstein. The 100 women were hospitalized for penicillin treatment at the gynecologic service of Dr. Howard C. Taylor Jr. at Bellevue Hospital. Our studies were directed first toward evaluating the optimal total dosage and second to determine an adequate time schedule for cure. The results of administering various amounts of penicillin in the female group point to the fact that a minimum total dosage of 100,000 Oxford units intramuscularly is both necessary and sufficient for bacteriologic cure. The time schedule that was found to be most satisfactory without failure averaged between six and nine hours. The penicillin was administered either in four intramuscular injections of 25,000 units each or by an initial injection of 50,000 units followed by two injections of 25,000 units each. Twenty ambulatory men who suffered for a number of months from sulfonamide resistant gonococcal infections with chronic complications, 18 with prostatitis and 2 with epididymitis were treated at the Central Clinic of the Department of Health, City of New York. A total dosage of 100,000 Oxford units of penicillin was administered intramuscularly to all 20 patients. Two schedules of therapy were employed. 1. An initial injection of 50,000 units was followed by two subsequent injections of 25,000 units each at three hour intervals, total time of therapy, six hours. 2. An initial injection of 40,000 units was followed by two subsequent injections of 30,000 units each at two hour intervals, total time of therapy, four hours. Thus far no failure of therapy has been encountered in any of these 20 patients who have been followed up by repeated urethral and prostatic smears and cultures over a period of between two and four weeks. Urethral cultures taken at one hour intervals

after the initial injection of penicillin became negative between the third and fourth hour after treatment. Smears of urethral discharges showed involution and disintegration of the gonococci and leukocytes by the end of five hours in most cases. Our findings indicate that an adequate minimal dosage of 100,000 units of penicillin administered over a period of from four to six hours to ambulatory patients is a satisfactory routine in the treatment of sulfonamide resistant gonococcal infection.

COLONEL THOMAS B. TURNER, M. C., A. U. S. In reply to Colonel Wright's question about observing the organisms which do not grow out on culture we have observed a similar thing in our hospitals. We assume that it is due to the presence of penicillin and that they do not grow out.

## PENICILLIN FOR THE TREATMENT OF CHEMORESISTANT GONORRHEA IN THE FEMALE

ROBERT B. GREENBLATT, M.D.

Surgeon (R) U. S. Public Health Service

AND

ANITA R. STREET

Laboratory Director, Southeastern Medical Center, Oatland Island,  
SAVANNAH, GA.

With the advent of the sulfonamides the eradication of gonorrhea from the human race seemed quite likely. The promise contained in the earlier reports for the treatment of gonorrhea with sulfonamides however has not been completely fulfilled. Moreover the therapeutic results for the female have not been so good as for the male, because of vagaries in her anatomic makeup. The physiologic mucoid alkaline secretions of the cervix aid and abet the growth of the gonococcus. The anatomic arbor-like arrangement of the cervical glands conceal this micro-organism in protective depots for survival. Even against such odds the sulfonamides brought under control a very large number of women with acute and chronic gonorrhea. The exceptions were the females who harbored resistant strains or in whom, because of chronicity of long duration the gonococcus had taken tenacious hold in the subepithelial layers of the mucosa lining Skene's ducts, Bartholin's glands, the endocervix or the fallopian tubes. Chronicity and chemoresistant strains proved a barrier that sulfonamides frequently failed to overcome.

The early reports of 85 per cent cures of gonorrhea with sulfonamides no longer hold, for the persistence of certain strains which have gradually permeated a selected stratum of the populace has reduced the effectiveness of sulfonamides to little better than 55 per cent. It is further true that improved bacteriologic techniques have helped to uncover many carriers of gonococci in spite of complete absence of clinical signs and symptoms.<sup>1</sup> The sign on the door, namely a purulent urethral discharge, is not a worthy criterion on which to base a clinical diagnosis of gonorrheal infection. Too frequently, particularly in the old infected case, is it lacking. Too frequently, in spite of a frank urethral discharge, gonococci are not to be found and other organisms, among them the trichomonad, are common offenders.

Pelouze, the prophet of doom in the sulfonamide wilderness was haunted by the specter of the carrier and the chemoresistant strain. He continually exhorted medical authorities to beware of the false security into which we have been lulled by sulfonamides. Shall we

<sup>1</sup> Koch, R. A., Mathis, E. V., and Geiger, J. C. Ven. Dis. Inform. 25: 35, 1944.

be lulled into a similar state of complacency with penicillin? This much is known that penicillin is an extremely effective bacteriostatic and bactericidal agent, many times more powerful and efficient than the sulfonamides. Much had been expected of other drugs in the past. Penicillin offers much now because it is effective against sulfonamide resistant strains. Will penicillin fast strains develop? Time is of the essence.

#### MATERIAL

This series comprises 551 females ranging in age from 3 to 48 years, studied at the Southeastern Medical Center during a given period. Of this number 54 per cent were of the Negro race and 46 per cent were white. It is revealing and surprising that 82 per cent of the white females had bacteriologically proved gonorrhea, while a similar diagnosis could be established in only 41 per cent of the Negro women (table 1). Although, comparatively, a far greater number of Negro than white women had clinical evidence of gonorrhea, such as urethritis, induration of the broad ligaments, scarring of the cul-de-sac or pelvic inflammatory masses, nevertheless, the diagnosis was confirmed bacteriologically twice as frequently in white females. Each patient had a minimum of six cultures in an effort to establish a diagnosis of gonorrhea.

One hundred and nine patients in this series were treated with penicillin, and of these 93 per cent had

TABLE 1—Analysis of Patients Treated with Penicillin

| Race  | Females Studied for Venereal Diseases |            | Bacteriologically Proved Gonorrhea |            | Penicillin Treated |            |
|-------|---------------------------------------|------------|------------------------------------|------------|--------------------|------------|
|       | Number                                | Percentage | Number                             | Percentage | Number             | Percentage |
| White | 248                                   | 46.8       | 213                                | 82.1       | 84                 | 39.4       |
| Negro | 293                                   | 54.2       | 122                                | 41.6       | 26                 | 20.5       |
| Total | 551                                   | 100        | 335                                | 60.8       | 100                | 39.5       |

had one or more courses of sulfonamides. Several gonorrheic females received penicillin without a full course of sulfonamides because of sensitivity to them. Penicillin was administered on a few occasions without a prior course or completion of a course of sulfonamides because of certain considerations, such as pelvic peritonitis or acute exacerbation of a chronic salpingitis. Penicillin was dissolved in a few cubic centimeters of distilled water or saline solution and administered intramuscularly in 10,000 to 20,000 units at three hour intervals until 60,000 to 150,000 units had been administered. One 3 year old girl received a total of 25,000 units and two 9 year old girls each received 50,000 units. One patient had concomitant granuloma inguinale and received 1 million units (table 2). There were no untoward reactions resulting from penicillin therapy.

It is of interest that proportionately one and one-half times as many white females received penicillin as did Negro females. Following penicillin therapy four or more cultures were taken in 85 per cent of the cases. Cultures were taken daily for the first few days and then at intervals of one, two or more days. On the average 6 to 15 cultures were obtained in the greater number of instances (table 3). In 3 instances follow-up cultures were not obtained, as the patients were sent back for observation to the referring agency immediately after therapy and reports were not available at the time of writing. Five patients received a second course of penicillin because positive gonococcus cultures were obtained after a lapse of five or more days following

the administration of the first course. One of these, however, was not considered as a relapse but rather as a reinfection. The second round of penicillin varied from 120,000 to 300,000 units. These patients remained bacteriologically negative during the period of observation following the second course of therapy and were

TABLE 2—Dosage and Results of Penicillin Therapy

| Dosage of Penicillin | No. of Courses | Relapses |
|----------------------|----------------|----------|
| 25,000 units         | 1*             | 0        |
| 50,000 units         | 2†             | 0        |
| 60,000 units         | 3‡             | 1        |
| 75,000 units         | 3              | 0        |
| 100,000 units        | 1              | 0        |
| 120,000 units        | 2              | 0        |
| 150,000 units        | 7§             | 4        |
| 250,000 units        | 2              | 0        |
| 300,000 units        | 1              | 0        |
| 1,000,000 units      | 1              | 0        |
| Total                | 114‡           | 5        |

\* 4 to 3 years

† Two 9 year old girls

‡ In all 109 patients received a second course of penicillin therapy

dismissed after 6 to 12 cultures as bacteriologically negative for gonorrhea.

The analysis of statistical data in this series reveals two important facts that require further study.

1. A laboratory diagnosis of gonorrhea was established in twice as many white as Negro patients, although the ratio of white to Negro in this series was practically 1:1.

2. Proportionately one and one-half times as many white patients as Negroes received penicillin therapy because of chemoresistance to sulfonamides.

Several questions arise.

1. Is a bacteriologic diagnosis more readily made in white gonorrheic women?

2. Are gonorrheic Negro females more responsive to sulfonamides?

3. Is there a racial factor?

Certain facts must be considered before drawing conclusions. White women are more apt to be seen during the acute phase of gonorrhea, and bacteriologic proof is probably easily obtained during this period. Then again, chronicity of long duration in the Negro group, as evidenced by chronic pelvic inflammatory disease, makes for greater difficulty in establishing laboratory proof of gonorrhea. Failure to obtain a positive gonococcus culture in such cases does not constitute a priori evidence of absence of gonorrhea. In 3 Negro females in whom gonorrhea was suspected, positive cultures were obtained only after the thirteenth, seventeenth and twenty-fourth culture respectively.

TABLE 3—Cultures Following Courses of Penicillin

|       | None | 1-3 | 4-5 | 6-10 | 11-15 | 16-20 | 21 or more |
|-------|------|-----|-----|------|-------|-------|------------|
| White | 3    | 12  | 10  | 33   | 21    | 2     | 1          |
| Negro | 0    | 2   | 2   | 1    | 7     | 1     | 2          |
| Total | 3    | 14  | 12  | 51   | 28    | 3     | 3          |

Are sulfonamides more specific for gonorrhea in the Negro race? It is the opinion in military circles that this is so, and this view is shared by Pelouze.<sup>2</sup> This phenomenon may be more apparent than real and is worthy of further study. If such a racial factor exists it may explain the proportionately larger number of white females for whom the administration of penicillin was required because of chemoresistance to sulfon-

amides We feel, however, that this discrepancy is not a real one The study of the Negro female for a longer period of time, under more rigid tests, such as slight cauterization of the cervix, mild dilatation of the cervical os and repeated pelvic examinations, may yield a greater number of positive cultures in this group during the carrier and asymptomatic state

#### ANALYSIS OF RESULTS WITH PENICILLIN THERAPY

Following penicillin therapy the cultures obtained within twelve to twenty-four hours usually were negative In 9 instances positive cultures were obtained twenty-four hours after penicillin, in 3 after forty-eight hours, in 3 after seventy-two hours and in 4 after ninety-six hours Patients in whom a positive smear or culture was obtained after the fifth day were considered to be therapeutic failures In 4 patients positive cultures were obtained on the fourth and ninth days, fifth and seventh days, sixth and ninth days and the eighth day respectively In 2 others positive smears but negative cultures were obtained, in 1 on the fourth and eighth days and in the other on the tenth day In reality, 6 patients gave evidence that the gonococcus was not eradicated by the fifth day following penicillin Positive cultures were obtained in 5 other patients who received penicillin therapy on being checked at various intervals by the referring agency after their dismissal from the hospital Positive cultures were obtained on the tenth, seventeenth, twenty-first, twenty-fourth and sixtieth days respectively In each instance it was believed that reinfection rather than a relapse occurred

It must be said that, following penicillin urethral discharge and symptoms of vaginitis, salpingitis and pelvic peritonitis frequently abate within twenty-four to forty-eight hours On the other hand, purulent urethral and cervical secretions continued in many despite absence of bacteriologic proof of gonococcal infection

#### CONCLUSIONS

Penicillin is an effective drug for the therapy of chemoresistant gonorrhea in the female One hundred and nine patients received courses of penicillin, of these, 84 were white women and 25 were Negroes Five hundred and fifty-one women (46 per cent white and 54 per cent Negroes) were studied for venereal diseases and in 61 per cent laboratory evidence to support the diagnosis of gonorrhea was obtained Proportionately, one and one-half times as many white women received penicillin for chemoresistant gonorrhea The impression that Negro women are more responsive to sulfonamides is more apparent than real During the period of observation in this series, therapeutic failures were obtained in 5 women following penicillin A favorable response was obtained after a second course of therapy

The excellent results that are being obtained now with penicillin will not engender, it is hoped, too great a degree of optimism<sup>3</sup> The dosage of penicillin should

not be reduced to the minimum necessary for good results It should be maintained at a sufficiently high level so that the development of penicillin resistant strains may be thwarted<sup>4</sup> To this end it is recommended that 150 000 units be used although good results may be obtained with as little as 60 000 units A warning note is sounded that asymptomatic carriers may develop and that penicillin resistant strains of gonococci may appear

#### THE ROLE OF THE SKIN AND CORNEAL LAYER IN EDEMA FORMATION

G E BURCH, MD

AND

TRAVIS WINSOR, MD

NEW ORLEANS

With the present exacerbation of interest because of the war, in the physiology of shock of burns of blood vessels and edema and of water and electrolyte balance it was considered advisable to review the role of the skin and especially the thin dead corneal layer of the epidermis in these states

In the evaluation of the factors concerned with the regulation of edema formation, the role of the skin is neglected The importance of the skin becomes apparent when the extravascular physical factors involved in edema are considered The importance of tissue pressure in the regulation of edema formation is generally accepted today<sup>1</sup> Tissue pressure becomes increasingly important as edema fluid accumulates,<sup>2</sup> ultimately becoming one of the most important factors inhibiting further progress of the edema This is obviously true, for when the volume of intracellular and extracellular fluid accumulates the tissues become separated and the volume of the part increases Because of the fibrous connective tissue, trabecules, blood vessels, nerves, lymphatics, tendons, muscle and other structures, the tissues tend to be held together and resist separation thus resulting in an increase in the hydrostatic pressure of the tissues As greater volumes of edema fluid gather, the absolute value of the tissue pressure increases, attaining extremely high values at times

It was also shown previously<sup>3</sup> that the skin is an important factor which limits the accumulation of edema fluid As edema fluid gathers in the tissues the part distends, the tissue pressure increases and the skin is stretched, exerting a counter force against the tissues and fluids within This counter force contributes to the tissue pressure and thereby tends to limit edema formation The resistance to distention or stretching offered by the skin reflected by the aforementioned counter force is most probably maintained to a larger extent by the fibrous connective tissue of the corneum, with the layers of the epidermis contributing a lesser but significant part The role of the skin in the physical

4 Mahoney J F Communication to Medical Director Venereal Disease Division United States Public Health Service

From the Department of Medicine, Tulane University School of Medicine and the Charity Hospital of Louisiana

1 Peters J P Body Water The Exchange of Fluids in Man Springfield Ill Charles C Thomas Publisher 1935 p 52 Burch G F Formation of Edema in the Evidels of Man Arch Int Med 65 477 (March) 1940 Warren J V Merrill A J and Sterd E A Jr The Role of the Extracellular Fluid in the Maintenance of a Normal Plasma J Clin Investigation 22 635 1943 Burch and Sodeman

2 Burch G E and Sodeman W A The Estimation of the Subcutaneous Tissue Pressure by a Direct Method J Clin Investigation 16 845 1937

3 Sodeman W A and Burch G E A Method for the Estimation of Skin Distensibility with Its Application to the Study of Vascular States J Clin Investigation 17 785 1938

3 Cohn, A Studdiford W E and Grunstein I Penicillin Treatment of Sulfonamide Resistant Gonococcal Infections in Female Patients J A M A 124 1124 (April 15) 1944 Herrell W E Cook E N and Thompson L Use of Penicillin in Sulfonamide Resistant Gonorrheal Infections Ibid 122 289 (May 29) 1943 Cook E N Pool T L and Herrell W E Proc Staff Meet Mayo Clin 18 433 (Nov 17) 1943 Mahoney J F Ferguson C Buchholz M and Van Slyke C J Am J Syphonor & Ven Dis 27 525 (Sept) 1943 Robinson N J Brit M J 2 635 (Nov 20) 1943 Van Slyke C J Arnold R C and Buchholz M Am J Pub Health 33 1393 (Dec) 1943 Penicillin in War Wounds A Report from the Mediterranean Lancet 2 743 (Dec 11) 1943 The Treatment of War Wounds with Penicillin, Brit M J 2 755 (Dec 11) 1943 Strauss H Am J Obst. & Gynec 47 271 (Feb) 1944

limitation through the medium of tissue pressure is well known to every one who has seen the shiny smooth skin of the edematous leg and the wrinkled rough skin of the same leg after the edema has disappeared.

Once a part such as a leg has become fully distended and the skin has reached its limits of distention, the escape of fluid from the blood vessels cannot be any greater than the return of tissue fluid to the blood vessels unless the skin breaks and allows the escape of fluid to the outside. This phenomenon is well known clinically in patients with pronounced edema of the legs in whom the epidermis of the skin of the legs cracks and "weeps" edema fluid continuously until the edema state is relieved. It is usually only under such conditions that one is aware of the role of the epidermis in the limitation of quantity of water lost from the blood vessels. The epidermis of the skin, however, is continuously active as a factor inhibiting water loss from blood vessels in that it inhibits the loss of fluid from the tissues outside and in turn from the vascular system by preventing diffusion and oozing of water into the atmosphere. The importance of this influence is well known in burns and has been studied recently in living and dead skin.<sup>4</sup> Although this role of the skin is active in the normal subject, its influence becomes even more significant quantitatively in the presence of edema, increasing in importance as the edema increases.

It was found<sup>5</sup> that the corneal layer of the epidermis, a layer of microscopic thickness except in the palms and soles, was the layer of the skin that was of greatest importance in the inhibition of water loss by diffusion from the underlying tissues of the part. Nicheing the corneum of the skin of an edematous part permits the underlying edema fluid literally to flow at times as it escapes from the body. This is more vividly exemplified by the puncture of a blister cap, with the rapid escape of blister fluid. These simple experiments as well as others<sup>4</sup> indicate the significant and peculiar role of the corneum in holding fluid within the body, thereby maintaining tissue pressure, inhibiting edema formation and the loss of vascular fluid.

In normal physiologic states<sup>6</sup> little water diffuses through the epidermis of the skin. This is true even in the presence of much underlying edema fluid and the existence of pronounced distention of the corneum. This is again illustrated nicely by a blister.<sup>4</sup>

Were it not for the overlying very thin layer of corneum, fluid that escapes into the tissue spaces would diffuse through the skin to the outside and tissue pressure would not rise appreciably if at all. Fluid would also continuously escape from the blood vessels, upsetting water balance and electrolyte balance and resulting in pronounced disturbances in normal physiologic states. Further action of the corneal layer of the epidermis and the skin as a whole in local and general water and electrolyte balance is obvious from the previous discussion.

It is therefore well to remember that the "dead," keratinous ever desquamating, thin corneum enjoys a

significant role in human physiology not only by protecting the body from trauma, bacterial invasion and the like but also in the maintenance of a normal water and electrolyte balance, the latter functions of the corneum are rarely if ever appreciated. There is a need for a better understanding of the physiology of the skin as well as a need for more careful and scientific care of the skin both in health and in disease and especially by quantitative and qualitative evaluation of its part in edema formation. Because as a general rule the corneum remains intact is no reason why it should be neglected in the consideration of problems of water balance.

## Clinical Notes, Suggestions and New Instruments

### ORBITAL CELLULITIS TREATED SUCCESSFULLY WITH PENICILLIN

H. O. SLOAN, M.D., PHILADELPHIA

Associate in Ophthalmology, Jefferson Medical College, Ophthalmologist to the Doctors Hospital

Orbital cellulitis is an inflammation of the retrobulbar tissue. It is an acute disease and usually begins with serious general symptoms: fever and pain. The lids are swollen, the conjunctiva is chemotic and the eyeball is usually displaced in the direction of the orbital axis and its mobility is impaired. This is due partly to mechanical protrusion and partly to simultaneous infiltration of the muscles and paresis of the nerves. Pain is dull in character and increased by movements of and pressure on the eyeball, but there are no points of tenderness, such as are encountered in periostitis and sinusitis.

The course of the disease may vary; the condition may appear threatening, yet no suppuration takes place. In other cases, pus perforates in a very short time through the lid or conjunctiva, producing a fistula which may heal quickly or last a long time.

#### ETIOLOGY

This condition may be caused by traumatism. A foreign body such as a sharp stick or the point of a pencil may be driven through the conjunctiva into the orbit and broken off where it may be hidden and leave no visible wound or other trace.

Mumps, tonsillitis, puerperal fever and other infectious diseases may also cause the condition, as well as dacryocystitis, thrombophlebitis of the facial veins or a panophthalmitis. In 60 per cent of the cases (according to Foster) it originates from an inflammation of one of the accessory sinuses. The direction in which the eyeball is displaced is helpful in determining which sinus or sinuses are involved.

#### BACTERIA

The principal bacteria found are the staphylococcus and streptococcus, but the pneumococci and the typhoid and pyocyanus bacilli may also be found.

#### COURSE OF THE DISEASE

This is a dangerous disease and may lead to blindness and even loss of life. Blindness may be caused by thrombosis or embolism of the retinal vessels. Hemorrhages and optic atrophy may be observed. The condition may be produced by circulatory disturbances, compression of the optic nerve or toxic effects. Thrombophlebitis of the central vein plays an important part.

There may also be corneal complications, with perforating ulcers and phthisis bulbi.

Read before the Section of Ophthalmology, College of Physicians, April 20, 1944.

The medical department of the Jefferson Hospital assisted in the treatment of the patient.

4 Burch, G. E. and Winsor, T. Rate of Insensible Perspiration (Diffusion of Water) Locally Through Living and Dead Human Skin. Arch. Int. Med. to be published. Winsor and Burch.<sup>5</sup>

5 Winsor, T. and Burch, G. E. A Study of the Relative Role of the Layers of the Human Epigastric Skin on the Diffusion Rate of Water. Arch. Int. Med. to be published.

6 Erisman, F. Zur Physiologie Wasserverdunstung von der Haut. Ztschr. f. Biol. 11, 1, 1875. Burch, G. E. and Winsor, T. Unpublished observations. Winsor and Burch.

## OTHER COMPLICATIONS

Meningitis, abscess of the brain or thrombosis of the cavernous sinus may cause death and, according to Birch Hirschfeld, does so in about 17 per cent of the cases

## REPORT OF CASE

*History*—Charles C. aged 12 attended school on (Tuesday) Jan 25, 1944. During the afternoon he complained of feeling ill and having a headache and some fever. He was visited by his family physician (Dr Joseph A Seiden), who could find nothing definitely wrong except that the child had an increase in temperature. On the following day, January 26 the lids of the left eye began to protrude and there was considerable proptosis of the eyeball accompanied by chemosis of the conjunctiva and pronounced edema of the lids.

I was called in consultation on Friday January 28. On examination I found pronounced redness, swelling and edema of the lids of the left eye with an extensive chemosis of the conjunctiva. The eyeball was proptosed about 15 mm anterior to the right eye and was immobile. The pupil was dilated to 8 mm but reacted to light. The tension of the eyeball was normal.

The ophthalmoscopic examination of the right eye revealed no pathologic change. The left eyeground showed a definite fulness of the optic disk, with considerable hyperemia. The veins were distended, broad and tortuous. The disk outlines were distinct. There were no hemorrhages or exudates present at this time.



Fig 1—Appearance of patient with cellulitis of the left eye on Feb 1 1944 the fifth day of disease

I made a diagnosis of cellulitis of the left orbit and sent the patient to the Jefferson Hospital for further study and surgical treatment.

He was admitted to the hospital on January 29. His temperature was about 102 F. The pulse and respiration were rapid. He was examined by Dr Warren B Davis of the ear, nose and throat department the next morning, who found exophthalmos with lateral displacement of the left eyeball,

edema of the conjunctiva and inflammation of both lids. The upper, middle and lower turbinates in both nostrils were boggy and obstructed drainage. The left nasal passage was filled with purulent exudate. Dr Davis advised a good sized opening of the left antrum under the turbinate with removal of the left middle turbinate and part of the left wall of the ethmoid. Dr Davis felt it probable that pressure from the purulent



Fig 2—Appearance on March 29 after treatment with penicillin

exudate had shoved the periosteum of the ethmoid away from the bone, thus pushing the orbital structure forward then laterally.

The patient was seen also by Dr Wagers, who agreed with Dr Davis and who arranged to operate on the following afternoon.

X-ray findings at this time January 29, reported by Dr Tepliek, showed a large amount of fluid in the left antrum and the left ethmoid quite cloudy. There was no evidence of osteomyelitis or bone destruction. The right antrum and ethmoid were relatively clear. The frontal sinus was undeveloped.

*Blood Studies*—When the patient was admitted a white cell count was made and found to be 12,000. On January 31 another blood study was made which disclosed hemoglobin 71 per cent, white blood cells 9,300, lymphocytes 21, monocytes 1. Blood culture showed no growth in forty-eight hours. A conjunctival swab taken on February 1 showed *Staphylococcus aureus* and *Bacillus aerosis*. A swab taken from the maxillary antrum showed 240 colonies of *Staphylococcus aureus*.

*General Examination*—The boy was severely ill. Aside from the cervical adenopathy on the left side and the condition of his left eye, everything proved to be normal.

His past history revealed that he had mumps, measles, chicken pox and bronchopneumonia. The family history was negative.

*Treatment*—When I first saw the patient, I immediately ordered sulfadiazine in fairly large doses. This was continued from January 28 until the 31st, when he was given penicillin. The sulfadiazine was discontinued as he appeared to show no improvement from its use. During the first twenty-four hours 100,000 units of penicillin was administered intravenously, there-



after 50 000 units every twenty-four hours daily. This treatment was given from January 31 to February 9 inclusive. He received a total of about 500,000 units of penicillin.

*Course of the Disease.*—Following the first injection of penicillin the patient began showing improvement both locally and generally. The temperature showed improvement and continued to waver between 99.3 F and normal. The pulse was correspondingly down from 110 to 80, varying, however, sometimes going up to 100 or more.

The local condition of the eye continued to show improvement. The edema and chemosis subsided gradually, the eyeball began to recede, and some motility was present on the third day after the penicillin was started. On February 12 the left eye was open. No photophobia or diplopia was present. Eye swelling, redness and chemosis were very much less. The temperature, pulse, respiration and blood pressure showed a normal range. The last culture of the left maxillary antrum showed no growth in the last forty-eight hours.

X-ray examination on February 10, as reported by Dr Toplick, revealed complete clouding of the left antrum, also of the left ethmoids, although not as cloudy as on the previous examination.

The patient remained in the hospital until February 19. At this time the local condition of the eye was nearly normal. The eye-ground showed much improvement. The optic disk was almost entirely clear and the color was normal. There was some tortuosity of the veins still present but not pronounced. The motility of the eye was good in all directions, and the patient could open and close his lids at will. Vision in both eyes was normal.

#### SUMMARY AND COMMENT

In a case of orbital cellulitis of the left eye in a boy of 12 the cause was established to be sinusitis involving the left ethmoids and the maxillary antrum. Operation was contemplated both for the sinus condition and locally to establish drainage and relieve the inflammation and swelling of the orbital tissues. However, under the continued use of penicillin intravenously for a period of ten days the condition cleared up completely, so that it was unnecessary to operate. Sulfadiazine in fairly large doses was tried without affecting the disease in any way and was discontinued when penicillin was administered. Local treatment was limited to applications of hot magnesium sulfate solution continuously and instillation of atropine sulfate 1 per cent three times daily.

1717 Pine Street

#### BRONCHIAL ASTHMA AS A MANIFESTATION OF SULFONAMIDE SENSITIVITY

THERON G. RANDOLPH, M.D., CHICAGO AND FRANK F. A. RAWLING, M.D., ANN ARBOR, MICH.

As far as can be determined, convincing evidence of bronchial asthma as a manifestation of sulfonamide sensitivity has not been described, although it has been mentioned in this respect.<sup>1</sup>

We report 2 cases, each with a history of asthma following the ingestion of a sulfonamide drug. In 1 instance the trial ingestion of sulfathiazole produced a severe paroxysm of asthma; in the second case the trial ingestion of sulfadiazine, although not producing clinical asthma, resulted in a definite diminution in the vital capacity.

**CASE 1**—F. F., a man aged 44, a metal worker, was admitted to the University Hospital in status asthmaticus Sept 21, 1943. The history as obtained from the patient and his local physician revealed that seven days prior to admission he had sought advice regarding a chronic nasal infection presumably resulting from plucking nasal hairs. Large white tablets were prescribed

with instructions to take two every four hours, also ephedrine nose drops containing 2.5 per cent sulfathiazole.

Within twenty-four hours he developed a generalized rash, rhinorrhea, nasal stuffiness and conjunctival injection with periorbital edema. The unidentified tablets were then changed to sulfathiazole 0.65 Gm every four hours, which was continued for a period of three days. The sulfathiazole nose drops were used in addition for a total period of seven days.

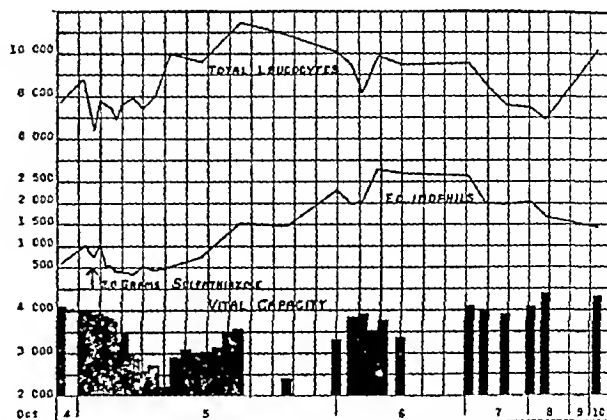


Chart 1—Blood and vital capacity response following the trial ingestion of sulfathiazole (2 Gm) in case 1.

His reactive symptoms were most pronounced the second day, thereafter subsiding to the point that he was feeling well by the fifth day and he returned to work on the sixth. At 10 p.m. of the seventh day of sulfathiazole therapy, September 20, he suddenly started to cough, followed by wheezing and dyspnea. These symptoms progressed alarmingly and were not relieved by epinephrine, ephedrine or morphine. He was admitted at 4:30 a.m. September 21.

There was no evidence of asthma or other allergic manifestations in his past or family history. There had been no previous treatment with sulfonamides as far as the patient or his physician was aware. Previous sulfonamide therapy cannot be excluded, however, as he had treated his nasal condition locally with numerous unidentified proprietary medications for the preceding six months.

On admission he exhibited extreme dyspnea and wheezing. Examination revealed the typical features of bronchial asthma, and there were no abnormal cardiac findings. The blood pressure was 130 mm of mercury systolic and 100 diastolic. Laboratory data including stereoscopic x-ray examination of the chest, were not outside normal limits.

He remained in status for three days in spite of rigorous treatment including oxygen therapy, aminophylline intravenously and ether and oil by rectum. He did not become symptom free until a week after admission.

On his fifteenth hospital day, after he had been asymptomatic for a week, he voluntarily ingested 2 Gm of sulfathiazole in a fasting condition. Within seven hours his vital capacity dropped from an initial level of 4,000 to 2,150 cc. At two hours he first complained of somnolence. At two and one-half hours he noted a sensation of heaviness in his chest. Four hours after ingestion he developed his initial coughing and dyspnea, sibilant rales were detected on chest examination for the first time and his vital capacity fell to 2,950 cc. Symptoms of asthma persisted for a total of twelve hours; cyanosis was present when the vital capacity was at the lowest level. With the exception of a reading of 2,350 cc obtained on awakening the patient at 3 a.m., the vital capacity gradually returned to the preingestion normal within a period of forty-eight hours.

Total leukocyte and eosinophil counts were determined every half hour for the first three hours, hourly during the next three hours and at less frequent intervals for a total of 127 hours. A diluent of phenol and methylene blue dissolved in equal parts of propylene glycol and water, previously described by

Technical assistance was rendered by Miss Carol L. Stanton from the Allergy Clinic, Department of Internal Medicine, University of Michigan Medical School. This study was financed in part by the Parke-Davis and Company.

<sup>1</sup> Ratner, B. Allergy, Anaphylaxis and Immunotherapy. Basic Principles and Practice. Baltimore: Williams & Wilkins Company, 1943. Leftwich, W. B. An Intradermal Test for the Recognition of Hypersensitivity to the Sulfonamide Drugs. Bull. Johns Hopkins Hosp. 74: 26, 1944.

one of us,<sup>2</sup> was used in these determinations. With this method the eosinophils stain in the counting chamber, their enumeration in the same sample as used in determining the total leukocyte count gives more accurate values than obtained in the differential counts from stained films.<sup>3</sup> The number of eosinophils per cubic centimeter of blood was obtained by counting the cells in nine squares of the counting chamber and multiplying by 222. Control counts were made from Wright stained films.

Variations in the blood findings and vital capacity are shown in chart 1. The preingestion total leukocyte count of 8,750 fell to 6,400 cells per cubic millimeter at one half hour and then returned to the previous level. A count of 9,950 was obtained thirty minutes after the first food was taken at 4 p. m. Higher counts were obtained later, but a return to the preingestion normal did not occur until the third day.

The eosinophils showed a slight rise in the first hour (112 to 132 per cent), at the end of three hours they fell to 41 per cent, from which there was no significant change until ten and one half hours. Successive counts thereafter showed a surprising rise to 29 per cent at thirty-five hours. A high level was maintained for the succeeding forty-four hours and was still elevated (140 per cent) at the conclusion of the period of observation. In chart 1 the eosinophil counts are plotted in absolute numbers.

The patient has remained free from asthma for the ensuing eight months period.

CASE 2—M. M., a white woman aged 34, a secretary gave a history of infantile eczema occurring during the winter months from the age of 5 to 7.

In May 1937 she moved to an old house and in August developed rhinorrhea, sneezing, itching of the nose and eyes and intermittent nasal obstruction. Asthma occurred for the first time in November and continued intermittently through the winter in spite of house dust hyposensitization and wheat avoidance. Trial ingestion of wheat precipitated increased rhinitis and asthma. In February 1939 she moved to a new house, and although the rhinitis continued it remained distinctly less troublesome and she had only two attacks of asthma after making this change.

In October 1941 she was hospitalized because of a complaint of chest pain accompanied by a temperature of 102.5 F. X-ray evidence suggested pneumonia. Pneumococci could not be

more pronounced and persisted for eleven days. On the fifth day a sore throat developed, followed on the seventh by nausea, backache and extreme fatigue, and the ninth day by a fine macular erythematous rash over the arms, back and buttocks. At this time cyanosis and dyspnea became more pronounced and she was placed in an oxygen tent. In spite of this measure the difficulty in breathing increased, the rash also became more prominent and generalized. Sulfadiazine was discontinued at this point. In the following twenty-four hours her breathing became easier and the cough more productive. Forty-eight hours after the drug had been stopped the headache and rash subsided. The fever, which had ranged between 100.0 and 101.0 F., returned to normal coincident with general improvement. However, extreme fatigue persisted for several days.

A total leukocyte count of 6,600 cells per cubic millimeter on admission prior to sulfadiazine therapy decreased to 4,800 on the fifth day but later returned to an average count of 7,000. The maximum count was 8,700 cells per cubic millimeter.

In December 1942 she had an upper respiratory infection associated with soreness of the throat of two weeks' duration. She received one dose of sulfadiazine (0.5 Gm.) at 1 p. m. At 4 o'clock she noticed flushing of the face and mild dyspnea which progressed into severe asthma, her first attack in over three years. By 6 o'clock she had a fever of 101.0 F. and complained of fatigue, backache and generalized joint pains. Asthma persisted throughout the night. The following morning all symptoms had subsided except for residual fatigue and incidentally, the soreness of the throat, which had not changed. Blood counts were not taken.

She had had no other sulfonamide therapy until she volunteered to take 0.5 Gm. of sulfadiazine at 9:30 a. m. Feb. 5, 1944. The drug was taken fasting, and similar studies were made as in the preceding case.

As may be noted in chart 2, a precipitous fall in the total leukocyte count occurred at one half hour. From a preingestion level of 3,200 cc the vital capacity fell to 2,300 two and one-half hours after ingestion, at which time she noticed flushing of the face. A frontal headache developed at three hours, this gradually became more severe and finally wore off at ten hours. Somnolence and fatigue followed. There were no residual symptoms the following day, although the vital capacity did not return to normal until forty-eight hours had elapsed. Aside from this measurement there was no other evidence of bronchial asthma. The temperature remained normal throughout the period of observation. As may be noted from chart 2, the initial neutropenia was followed by an increase to the pre-ingestion level, from which the count gradually fell to between 6,000 and 7,000 per cubic millimeter. The eosinophil count decreased from a preingestion value of 37 per cent to 2.6 per cent at the height of symptoms at three and one-half hours, from which it increased to a maximum of 7.4 per cent twenty-five hours after taking the drug.

#### COMMENT AND SUMMARY

Two cases of bronchial asthma resulting from sulfonamide sensitivity were observed. In 1, status asthmaticus developed in a person with a negative past and family history of allergy on the seventh day of sulfathiazole nasal therapy. Two weeks after cessation of the drug and after the patient had been asthma free for a period of a week a trial dose of sulfathiazole reproduced a typical asthmatic paroxysm, as measured by a drop in the vital capacity and confirmatory physical findings.

In a second case with a previous history of atopic dermatitis, allergic rhinitis and bronchial asthma, there was a recurrence of asthma after the first dose of the second attempt to prescribe sulfadiazine. Trial ingestion of the drug a year later resulted in a diminution of the vital capacity but no other evidence of asthma.

The eosinophils in both cases diminished during the stage of reactive symptoms but increased to relatively high levels twenty-four to forty-eight hours after ingestion.

700 North Michigan Avenue, Chicago—University Hospital, Ann Arbor, Mich.

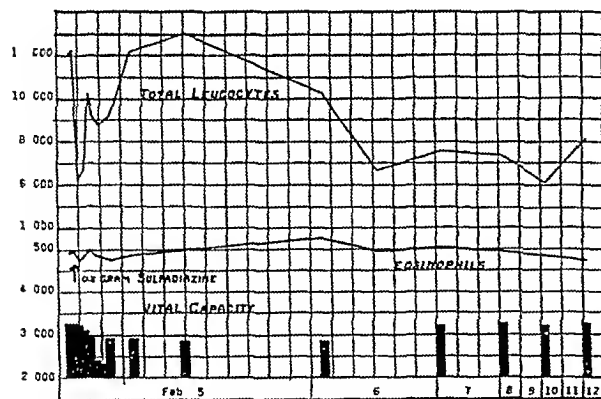


Chart 2—Blood and vital capacity response following the trial ingestion of sulfadiazine (0.5 Gm.) in case 2.

demonstrated as the causative organism, and a diagnosis of streptococcal pneumonia was made. She was treated with 6 and later 8 Gm. of sulfadiazine daily for a ten day period, receiving a total of 67 Gm. Twenty-four hours after the drug was started she complained of a dull headache which gradually became

<sup>2</sup> Randolph T. G. Enumeration and Differentiation of Leukocytes in the Counting Chamber and Propylene Glycol Aqueous Stains. *Proc. Soc. Exper. Biol. & Med.* 52:20, 1943. Blood Studies in Allergy. *J. The Direct Counting Chamber Determination of Eosinophils by Propylene Glycol Aqueous Stains.* *J. Allergy* 15:89, 1944.

<sup>3</sup> Randolph T. G. and Stanton C. A Comparison of the Counting Chamber and Film Methods of Enumerating Eosinophils to be published.

## Council on Foods and Nutrition

*The Council on Foods and Nutrition has authorized publication of the following report*

GEORGE K. ANDERSON, M.D., Secretary

### MARGARINE FORTIFIED WITH VITAMIN A

Margarine, sold under the legal designation "oleomargarine," is manufactured in forty-three plants primarily as a table fat or spread for bread, although it is also offered for baking and cooking. Present day margarine is the product developed through (1) improved methods of refining and processing fats resulting from the additional knowledge of the chemistry of fats and oils, and (2) the application of nutritional research.

The first commercial production of margarine is recorded as by the Frenchman Mege-Mouries in Paris in 1870, who had earlier developed the product. The French government had assigned to him experimental work with fats as part of the effort to produce a cheaper product which would serve in place of butter in the domestic economy. The early product was made principally with lard oil, but soon neutral lard and vegetable oils were used. With the development of hydrogenation first coconut oil and then other vegetable oils soon dominated the field. The accumulated knowledge and skill have made possible the utilization of the many domestic fats and oils which have been made available under present wartime conditions.

The legal definition and standard of identity of oleomargarine permits the use of animal or vegetable fat, oil or stearin or combinations of them to give not less than 80 per cent fat in the finished product. The fat ingredients are usually mixed with skim milk although dried skim milk and water, milk or cream are permitted. Optional ingredients which are usually present and must be declared on the label are sodium benzoate (preservative), artificial flavoring, diacetyl or starter distillate, lecithin or monoglycerides and diglycerides, and salt. The use of artificial coloring has recently increased appreciably. The addition of vitamin A as fish liver oil or as a concentrate of vitamin A from fish liver oil is authorized, but this is still on an optional basis, although, when added, the finished product must contain not less than 9,000 U. S. P. units of vitamin A per pound.

The oils and fats used in the manufacture of margarine have varied widely over the years, and this may be expected in the future as availability and low prices are controlling factors. The factor of suitability is becoming a relatively less serious problem as technology overcomes the difficulties presented by the use of certain oils. This is currently being demonstrated by the improved keeping quality of margarine containing large amounts of soybean oil. The variation in the fat component of margarine as an indication of the industry's ability to adapt to changing conditions is illustrated by the consumption of foreign and domestic oils. In 1933 more than 75 per cent of the oil used in margarine was imported coconut oil. During that year the use of soybean oil was negligible, and only 9 per cent of cottonseed oil was used. In 1942 the use of coconut oil had dropped to 1 per cent and none was used during 1943. In the latter year 90 per cent of the oil used in margarine consisted of cottonseed (50.4 per cent) and soybean (39.6 per cent) oils.

Margarine has long been a factor in the diet of a substantial group of persons, and with the wartime shortages of other spreads for bread it has increasing nutritional importance to a very large percentage of the population. The production of margarine has increased from the ten year (1930-1939) average of 312,675,325 pounds and 300,803,741 pounds in 1939 to 613,974,107 pounds in 1943 or 196.4 per cent of the production four years ago. Margarine contributed last year 3.2 pounds per capita of a total food fat disappearance of 45.8 pounds per capita and of total table fat consumption of 15.2 pounds per capita.

Thus, margarine represented 7.0 per cent of the total food fat and 21.1 per cent of the total table fat. The digestibility (rate or completeness of digestion) of the various food fats shows only small differences. In the case of the table fats factors of 96 to 97 found throughout scientific literature indicate equal digestibility.

The early deficiency of vitamin A in margarine has been corrected, primarily because of the application of the full force and influence of nutritionists throughout the country on the problem. The beginning of the widespread use of vitamin A in margarine dates from the authorization of its use in margarine manufactured in plants under Federal Meat Inspection in February 1941 and adoption of the Definition and Standard of Identity for Oleomargarine in June 1941. It is estimated that 85 per cent of the margarine was fortified by vitamin A during 1942. This increased to over 90 per cent in 1943, and industry reports indicate that now more than 99 per cent of the margarine sold to civilians contains not less than 9,000 U. S. P. units of vitamin A per pound. All of the nearly 90 million pounds purchased by federal agencies in 1943 was required to be so fortified. A small percentage of the total production classed by industry as "industrial sales" and sold to bakers and other establishments is unfortified. The Bureau of Human Nutrition and Home Economics recently estimated for 1943 an average of 7,000 international units of vitamin A per capita daily to have been available from food. Fats and oils, the bureau estimates contributed approximately one tenth of this amount, but practically all of it was from table fat as the vitamin A from other food fat is negligible. The compulsory addition of vitamin A is a needed safeguard equal in importance to the minimum fat requirement of the official standard.

The fact that margarine is cheaper to produce than butter is nutritionally important, and attempts to stigmatize it or restrict its distribution are undesirable. The Council is concerned wholly with nutritional value, and no consideration has been given to the economic effect of taxes reducing the margin of cost between the two products or their elimination. A continued demand that the two products be clearly identified may be expected and this should be required, but the drastic, though effective, control of misrepresentation through fiscal measures of license and tax is still in controversy.

Many of the brands of margarine fortified with vitamin A have carried on the labels the seal of acceptance of the Council, indicating the accepted nutritional value of the product and the cooperation of the firms in adding vitamin A. In July 1943 the Council voted to restrict its scope primarily to those "special purpose foods which have a definite relation to specific medical and health problems. Because of this action the seal will not be authorized on general purpose foods including margarine after the interval permitted to dispose of present stocks of containers. Advertising of these products which is concerned with nutritional education will continue to be considered and permitted to carry the seal on acceptance of the nutritional statements.

The Council takes this opportunity to reaffirm its confidence in the nutritional value of margarine containing vitamin A as follows:

1. Margarine contributes primarily fat to the diet.
2. The fat is equal in digestibility and caloric value to other food fats.
3. The standardized vitamin A content of fortified margarine was so set that it contributes this nutritional factor in amount equivalent to average butter in accordance with information available at that time. (Recent surveys indicate a higher average value for butter.)
4. The milk solids other than fat (1 per cent) present in both butter and margarine are of negligible nutritional importance.
5. When margarine is fortified with vitamin A the investigations that have been made lead to the conclusion that it can be substituted for butter in the ordinary diet without any nutritional disadvantage.

**Capsules Menadione 1 mg**

# THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

535 NORTH DEARBORN STREET - - CHICAGO 10, ILL.

Cable Address

Medic, Chicago

Subscription price

Eight dollars per annum in advance

Please send in promptly notice of change of address giving both old and new always state whether the change is temporary or permanent Such notice should mention all journals received from this office Important information regarding contributions will be found on second advertising page following reading matter

SATURDAY, SEPTEMBER 16 1944

## THE HISTORY OF PENICILLIN

Recently the *British Medical Journal* said editorially<sup>1</sup> that the history of penicillin is essentially the story of three distinct developments "The first was Fleming's discovery,<sup>2</sup> the second was the victory of Florey and his colleagues, who showed how to obtain penicillin in a relatively pure form and who demonstrated its clinical use",<sup>3</sup> the third 'victory,' the editor generously points out, lies in the American success in large scale production of the drug Sir Howard Florey<sup>4</sup> in the same issue of the *British Medical Journal* gives a detailed survey of the development of penicillin studies He mentions that in 1877, prior to Fleming's disclosure, Pasteur and Joubert<sup>5</sup> had observed that cultures of anthrax ceased to grow when contaminated with air bacteria, this, Florey believes, was the first evidence that a substance produced by one organism is capable of arresting the growth of another In the years that followed, many other 'antibiotics' were discovered, one, an extract from *Bacillus pyocyaneus*, was placed on sale in Germany in 1930 as an unguent for local application to the skin lesions arising from anthrax<sup>6</sup>

After noting conspicuous inhibition of growth in a colony of staphylococcus contaminated by mold, Fleming subcultured the mold in broth and found that a strong antibiotic, nontoxic to animals, passed into the broth from the mold,<sup>7</sup> the mold was later identified by Thom in this country as *Penicillium notatum*, and Fleming designated the antibiotic agent "penicillin" He found that penicillin inhibited the test tube growth of many gram positive bacteria known to be highly pathogenic to man, he also noticed that his penicillin-containing broth did not disturb white blood cells, on applying the solution to several clinical cases of local skin infection he reported<sup>8</sup> that the results "appeared to be superior to dressings containing potent chemicals"

Several years later Clutterbuck, Lovell and Raistrick,<sup>9</sup> stimulated by Fleming's study, attempted to extract penicillin, but their efforts were largely unsuccessful, they concluded that the penicillin was too "labile" to be of clinical use In this conclusion Sir Alexander Fleming reluctantly concurred If one may judge by his published work, Fleming then abandoned further study of the agent until 1941,<sup>8</sup> except as he used it for differential culture<sup>9</sup>

The successful isolation of penicillin, the clearcut proof of its clinical usefulness, its assay and dosage, as well as the mode of its excretion from the body are credited to Howard Florey and his resourceful associates at Oxford In 1929, the year of Fleming's first paper, Florey began work on lysozyme,<sup>10</sup> an antibiotic discovered by Fleming in 1922 and ultimately crystallized by Roberts in 1937<sup>11</sup> During the next ten years Florey continued his study of various antibiotics, firm in the conviction that one nontoxic to human beings would be found which would be of value in treating human infections The discovery of the clinical effectiveness of penicillin was thus an outcome of a broadly conceived program of study and not an advance immediately associated with the war Ultimately the war immeasurably expedited the development of penicillin but during the early stages of the work wartime restrictions considerably impeded the study, for, once it had been disclosed how penicillin might be successfully extracted, it proved impossible in England (in 1940) to initiate large scale production

Florey first directed his attention to penicillin in 1938, when he was joined by an able continental biochemist, Dr E Chain, between them a plan was laid for a systematic study of penicillin and other naturally occurring antibacterial agents Drs Florey and Chain were presently joined by Drs E P Abraham, A D Gardner, Norman G Heatley, M A Jennings, J Orr-Ewing, A G Sanders, C M Fletcher and also by Lady Florey, a physician of competence who has been largely responsible for studying the effectiveness of penicillin applied to locally infected areas The ultimate success of the research largely depended on the development of a reliable procedure for assay The test adopted was worked out by the microchemist of the team, Dr Norman Heatley, and consisted in determination of the rate of inhibition of growth of a standard bacterial culture Through the use of an ingenious extraction method involving the passing of impure acid penicillin broth from a watery solution into an organic solvent (ether or amyl acetate) and the subsequent passing of the purified agent again into water (shaken with alkali), they obtained sufficient penicillin for clinical trial The

7 *Biochem J* 26 1907 (Nov.) 1932

8 *Nature London* 148 757 1941

9 Fleming writes I have used penicillin constantly since 1929 for differential culture but its use for practical therapeutic purposes remained in abeyance until the Oxford workers started their investigation (*Brit M Bull* 2 5 [Jan] 1944)

10 *Brit J Exper Path* 11 251 (Aug.) 1930

11 *Quart J Exper Physiol* 27 89 1937

1 *Brit M J* 2 186 (Aug.) 1944 *Brit M Bull* 2 4 (Jan) 1944

2 *Brit J Exper Path* 10 226 (June) 1929

3 *Lancet* 2 226 (Aug 24) 1940

4 *Brit M J* 2 169 (Aug.) 1944

5 *Compt rend Acad d Sc* 85 101 1877

6 *Zt chr f Hyg u Infektion kr* 31 1 1899

first patient was treated on Feb 12, 1941, the response was dramatic, but the supply of penicillin ran out and shortly thereafter the patient had a relapse and died. As might have been expected, the Oxford team encountered difficulty in obtaining suitable cases for clinical trial, and patients eventually turned over to them were generally moribund with advanced septicemia. By June 1941 6 such patients had been treated intravenously, all had responded, but 2 had died when the penicillin supply became exhausted.<sup>12</sup>

Undeterred by difficulties and an apathy that would have caused many to abandon the work until after the war, Florey, accompanied by Dr Heatley, came to this country in July 1941 under the auspices of the Rockefeller Foundation, requesting that the National Research Council in Washington lend a hand in the medical study of penicillin, and more particularly in the attack on the problem of production. Through the foresight of Ross G. Harrison, chairman of the National Research Council, Florey was put in touch at once with the fungus laboratories of the Department of Agriculture, and through the cooperation of Dr Coghill, director of the Fermentation Division of the Department of Agriculture's research laboratory at Peoria, new methods were worked out for increasing yield, within a few months large scale production of penicillin was begun by a group of enterprising American drug houses. The earliest patient to be studied in this country under the auspices of the Office of Scientific Research and Development was first treated with penicillin on March 14, 1942 in New Haven, Conn. an advanced case of hemolytic streptococcus septicemia, which responded most dramatically to the drug.<sup>13</sup>

Dr Florey had returned to England in September 1941. Dr Heatley remained in this country for some twelve months to assist in the negotiations for the large scale production of the drug, during this time Heatley rendered invaluable assistance in supervising assay of the early yields. Professor Florey devoted the following year (1942) to studying ways of purifying penicillin and, in association with Lady Florey, conducted a highly significant investigation on local application of penicillin, since supplies were still low there was too little available for general administration.<sup>14</sup> In the summer of 1943 Florey and Brigadier Hugh Cairns, consulting neurosurgeon to the Royal Army Medical Corps, were sent to North Africa by the British War Office to study the uses of penicillin in war wounds. They returned three months later with a radical report which insisted<sup>15</sup> that open flesh wounds and wounds of the head can be safely and tightly closed if dealt with early provided penicillin solution is admin-

istered locally in the wound after thorough debridement. Their initial experience has been strongly vindicated during the past year by other British medical officers as well as by medical officers of our own Army and Navy. To quote a conservative report<sup>16</sup> "The percentage of scalp and brain wounds that heal by primary union has always been a high one when operation is performed at special neurosurgical units. In Italy, with greater infectivity of the terrain this standard tended to deteriorate whenever penicillin was in short supply but was maintained when penicillin-sulfathiazole powder was insufflated to surface wounds and into depths of brain." Less conservative but not less significant, is Florey and Cairns' original statement<sup>17</sup> that of 171 recent (three to twelve days) soft tissue wounds 104 closed by primary union, 60 closed with some degree of granulation and 7 were classified as failures. None of the patients," they add, "in this series has been placed in danger [i.e. there were no fatalities]. This is a remarkable fact when we consider that the wounds closed included large and purulent wounds of the worst type—for example, large buttock wounds infected with hemolytic streptococci and clostridia. Only once was it necessary to release the stitches, this was in a penetrating chest wound and cellulitis of the chest wall. Cases with complete union (104) call for no comment. In cases with subtotal union (60) the gaping area usually healed rapidly by granulation. The failures (7) occurred in the early stages of the investigation and could usually be attributed to errors in technique of skin closure and rarely to persistence of pyogenic cocci. These patients came to no harm, and the attempt at closure did not interfere with their healing by granulation." A wound which heals by primary intention requires three weeks, if granulation occurs six to twelve weeks may elapse. The military significance of this is too obvious to require comment. Indeed many have come to feel that penicillin will transform our entire concept of management of wartime injuries, and it will no doubt have a similarly far reaching effect on civilian traumatic surgery.

Sir Howard Florey had scarcely returned from North Africa when he was summoned early in 1944 to Moscow, where he was able to give our Soviet allies first hand information concerning penicillin, particularly with regard to local administration in war wounds, on his return from the Soviet Union, Australia, the country of his birth, requested his counsel.

The *British Medical Journal* gives deserved and generous credit to Dr A. N. Richards, chairman of the Committee on Medical Research, and to the Office of Scientific Research and Development for sponsoring the medical aspects of the penicillin program in this country. One can only add that part of Dr Richards' wise direction of the program lay in his fortunate selection of the Division of Medical Sciences of the National Research Council working through the Committee on

<sup>12</sup> *Lancet* 2: 177 (Aug. 16) 1941.

<sup>13</sup> *Tr. A. Am. Physicians* to be published. *Yale J. Biol. & Med.* 15: 507 (Jan.) 1943.

<sup>14</sup> *Lancet* 1: 387 (March 27) 1943.

<sup>15</sup> Florey H. W., and Cairns Hugh. A Preliminary Report to the War Office and the Medical Research Council on Investigation Concerning the Use of Penicillin in War Wounds [London] War Office (A. M. D. 7) October 1943.

<sup>16</sup> *Brit. M. J.* 2: 1 (July 1) 1944.



Chemotherapeutic and Other Agents with its succession of able chairmen (Col Perrin Long until July 1942 and thereafter Dr Chester S Keefer) as the official body responsible for supervising and directing both the formidable production schedule and the various research projects, two of the most significant of which were reported upon in last week's number of *THE JOURNAL*. The story of penicillin will long exemplify the highest traditions of medical research and incidentally, the rich fruits of a sound international cooperation in wartime

#### THIOUREA AND THIOURACIL IN TREATMENT OF THYROTOXICOSIS

After a study of the life cycle of persons with thyrotoxicosis, Fitz<sup>1</sup> concluded that the operative treatment of toxic goiter is generally successful but that the ultimate result is uncertain. The removal of the thyroid interrupts a vicious circle but does not reach the fundamental cause of the disorder, thus it is not a curative procedure. Two complications following operation are so frequently encountered as to be a definite hazard—the development of hypothyroidism or of recurrences.

The recent discoveries reported by the MacKenzies and McCollum<sup>2</sup> and Astwood<sup>3</sup> point to the inhibition of function in an endocrine gland by the administration of certain chemical compounds. The MacKenzies, while investigating the possibility that sulfaguanidine when fed to rats on a purified diet containing synthetic B vitamins, might prevent the synthesis of additional essential nutrients by the intestinal flora, observed that animals which received the drug for periods varying from six weeks to sixteen weeks showed without exception hypertrophy and hyperemia of their thyroid glands. The glands were from three to eight times larger than those of control animals which received the same diet without sulfaguanidine. The thyroid hypertrophy was accompanied by a definite fall in the basal metabolic rate. Both these changes were prevented or cured by administration of thyroxin but not by increasing the iodine content of the diet. At about the same time Richter and Clisby observed enlargement of the thyroid associated with loss of weight and other toxic reactions in rats fed phenyl thiourea in their drinking water. Accompanying this increase in weight of the thyroid, microscopic changes characterized by the continued heightening of the acinar epithelium and its encroachment on the concomitantly diminishing and vacuolated colloid were observed. The basal metabolic rate in adult rats which received sulfaguanidine for five to seven days dropped 10 per cent,

by the tenth to the fourteenth day it was —20 per cent, a level which was maintained to the end of the experiment at forty days. Addition of vitamin C and paraaminobenzoic acid enhanced the thyroid effect of sulfaguanidine. The addition of sodium iodide did not interfere with the thyroid effect of sulfaguanidine. In contrast with the foregoing results desiccated thyroid and thyroxin, when added to the diet, entirely prevented the thyroid enlargement and the microscopic changes. Kennedy found that oral administration of allyl thiourea to rats produced not only thyroid hyperplasia but an alteration of the cellular pattern of the anterior pituitary as well. Gersh and his associates established that the presence of the hypophysis is essential for the production of thyroid hyperplasia and hypertrophy by sulfaguanidine. They concluded that the sulfonamides and thioureas probably exert a depressing influence primarily on the functional activity of the thyroid and hence on the basal metabolic rate, and that thyroid hyperplasia is a reflection of increased pituitary activity resulting from the depression of thyroid function.

Astwood<sup>3</sup> repeated these experiments and found that the hypertrophied glands rapidly regressed toward a normal condition on the cessation of treatment. Vascularity quickly decreased, the epithelium became flattened, colloid accumulated, and the size of individual follicles and the total size of the glands decreased. These retrogressive changes occurred fully as rapidly as the hyperplasia. Astwood likewise found that hypophysectomized rats did not develop thyroid hyperplasia on a 2 per cent sulfaguanidine diet. In spite of the histologic picture of overactivity these animals did not present signs of hyperthyroidism, in fact, after a variable period of time the animals whose thyroids were hyperplastic began to exhibit distinct signs of hypothyroidism, that is, subnormal growth and development, lessened food intake and lowered basal oxygen consumption. The coexistence of thyroid hyperplasia and a lowered rate of metabolism suggested that the drug either exerted an action which inhibited the normal effect of the thyroid hormone on tissues in general or else that it interfered in some way with the adequate production of normal thyroid hormone. In either case the goiter would be the result of a compensatory hyperplasia which could not completely make up for the induced deficit. The mechanism of the goitrogenic action of these substances apparently resides in an interference with the synthesis of the thyroid hormone. The mode of action of these drugs, according to Astwood, appears to be an interference with the enzymatic synthesis of thyroid hormone. The exact site of block is still not known but it is definitely established that the thyroid is rendered incapable of utilizing iodine for these processes. The resultant thyroid insufficiency leads via anterior pituitary stimulation to an ineffectual hyperplasia of the thyroid acinar cells. Of

<sup>1</sup> Fitz Reginald. A Panoramic View of Thyrotoxicosis. *J A M A* 125: 943 (Aug 5) 1944. A Panoramic View of Thyrotoxicosis. *ibid* 125: 1026 (Aug 12) 1944.

<sup>2</sup> MacKenzie Julia B. MacKenzie C G and McCollum E V. The Effect of Sulfaguanidine on the Thyroid of the Rat. *Science* 54: 518 (Nov 28) 1941. MacKenzie C G and MacKenzie Julia B. Effect of Sulfonamides and Thioureas on the Thyroid Gland and Basal Metabolism. *Endocrinology* 32: 185 (Feb) 1943.

<sup>3</sup> Astwood E B. Sullivan J. Bissell Adele and Tyslowitz, R. Action of Certain Sulfonamides and of Thiourea on the Function of the Thyroid Gland of the Rat. *Endocrinology* 32: 210 (Feb) 1943.

more than a hundred compounds investigated by Astwood<sup>4</sup> ~~2-thiourea~~ was found to be the most highly active. The minimal lethal dose of this substance for rats was more than a hundred times the dose necessary to produce a detectable thyroid effect. Thiourea and thiouracil appear to be the most promising. There appears to be a variable latent period following the initiation of treatment before the metabolic rate begins to fall and a similar though somewhat shorter period before clinical improvement is subjectively and objectively apparent.

Astwood<sup>5</sup> administered to 3 patients with thyrotoxicosis thiourea in doses of 1 to 2 Gm per day or of thiouracil in doses of 0.2 to 1 Gm with a resulting relief of symptoms and a return to normal of serum cholesterol and the basal metabolic rate. A latent period of one to two weeks occurred before a sustained improvement during treatment and a return of hyperthyroidism when therapy was discontinued. One of the patients developed agranulocytosis on the thirty-seventh day of therapy but recovered in seven days on withdrawal of the drug. Himsworth<sup>6</sup> administered thiourea or thiouracil to 6 patients with thyrotoxicosis, and the results were as striking as those of Astwood. He did not observe any toxic effects of the drug. Williams and Bissell<sup>7</sup> found that thiouracil is rapidly absorbed and is rapidly excreted. They treated 9 thyrotoxic patients with thiouracil and noted clinical improvement, which continued until all the symptoms disappeared within four to seven weeks. The basal metabolic rate fell progressively downward. The enlargement of the thyroid associated with thiouracil treatment which occurred in 3 of their patients and the increase in the pathologic state of the eyes in 1 patient suggest that in human beings, as in animals, thiouracil leads to excess thyrotropic hormone activity. Rawson and his collaborators<sup>8</sup> administered thiouracil to 19 patients with toxic diffuse goiter. They report lowering of the basal metabolic rate, relief of symptoms, increase of hyperplasia of the thyroid with loss of colloid and increase in vascularity and in some instances increased lymphoid hyperplasia. They have also noted a decreased avidity for iodine by the thyroid gland, as shown by greatly impaired correlation of radioactive (tracer) inorganic iodine, with increased elimination in the urine. Impairment in the physiologic activity in the thyroids of persons treated with the drug was seen when tested on patients with myxedema. In patients previously treated with iodine the thyroid effects were delayed. They

conclude that these facts are consistent with the theory that thiouracil acts by preventing or blocking the utilization of iodine in the synthesis of thyroid hormone within the thyroid gland. Apparently, under the influence of thiouracil new active thyroid hormone is produced. Cessation of active thyroid hormone production is believed to stimulate the thyrotropic activity of the pituitary and this in turn causes further hyperplasia of the thyroid which however does not overcome the thiouracil block to active thyroid hormone production. Paschlis and his collaborators<sup>9</sup> treated 21 cases of thyrotoxicosis with thiourea or thiouracil. Improvement was usually noticed after four to six days of treatment, with complete suppression of thyrotoxic manifestations after two to three weeks. One gram of thiouracil was effective in most cases. The drug proved particularly valuable in cases in which operation was deemed inadvisable. An attempt was made to establish a permanent dosage level rather than to employ intermittent treatment. After full effect was achieved doses as small as 0.1 to 0.2 Gm proved satisfactory. Myxedema developed in 2 cases and subsided after the drug was temporarily discontinued. Toxic manifestations from thiouracil consisting of skin eruptions, fever, arthralgia, leukopenia and jaundice were observed in 3 cases.

Gabrilove and Kert<sup>10</sup> treated 9 patients, 3 of whom developed toxic effects. One patient developed fever, general lymphadenopathy and skin eruption. Another patient presented fever and skin eruption, while the third patient showed moderate leukopenia. St Johnston<sup>11</sup> administered thiourea for thyrotoxicosis to 3 patients and reports that all 3 developed toxic symptoms which were strikingly similar. The symptoms consisted of pyrexia from 101 to 104°F occurring eight to ten days after administration of the drug, mild leukopenia with monocytosis, and a maculopapular eruption.

Elsewhere in this issue (page 153) Reveno reports 9 cases of toxic adenoma treated with thiouracil. Six showed a satisfactory response, while 3 were failures. One of the latter patients had diabetes and had been taking iodine for six years. The second responded favorably at first but developed a hemorrhage into the gland and thyroidectomy was done. The third was a patient who, while showing some clinical improvement, failed to show a drop in basal metabolic rate during the short period under observation.

Whether or not thiouracil will prove to be a satisfactory substitute for surgical treatment of toxic goiter cannot be stated on the basis of present limited experience. The drug promises to be of great value in cases in which operation is inadvisable or contraindicated.

4 Astwood E B. The Chemical Nature of Compounds Which Inhibit the Function of the Thyroid Gland. *J Pharmacol & Exper Therap* 78:79 (May) 1943.

5 Astwood E B. Treatment of Hyperthyroidism with Thiourea and Thiouracil. *J A M A* 122:78 (May 8) 1943.

6 Himsworth H P. Thyrotoxicosis Treated with Thiourea. *Lancet* 2:465 (Oct 16) 1943.

7 Williams Robert H and Bissell Grosvenor W. Thiouracil in the Treatment of Thyrotoxicosis. *New England J Med* 229:97 (July 15) 1943.

8 Rawson Rulon W, Evans R D, Means J H, Peacock W C, Ierman J and Cortell R E. The Action of Thiouracil on the Thyroid Gland in Graves' Disease. *J Clin Endocrinol* 4:1 (Jan) 1944.

9 Paschlis, K E, Cantaron, A, Rakoff, A E, Walking, A A and Tourish W J. Thiourea and Thiouracil in Treatment of Thyrotoxicosis. *J Clin Endocrinol* 4:179 (May) 1944.

10 Gabrielove J L, and Kert, M J. Sensitivity to Thiouracil. *J A M A* 124:504 (Feb 19) 1944.

11 St Johnston C R. Toxic Reaction to Thiourea. Report on 3 Cases. *Lancet* 2:42 (July 8) 1944.

## Current Comment

### NEUROFIBROMATOSIS AND OSTEITIS FIBROSA CYSTICA

An extensive study and reevaluation of the apparent relations of neurofibromatosis (von Recklinghausen) and osteitis fibrosa cystica has been presented recently by Thannhauser.<sup>1</sup> On the basis of reports of simultaneous occurrence of nodular cutaneous neurofibroma, pigmented areas of the skin and osteitis fibrosa cystica in a single patient, a coherence of neurofibromatosis and osteitis fibrosa cystica is suggested, since the occurrence of these symptoms of two rare diseases in one person is not likely to be mere coincidence. Thannhauser says Fibrocystic involvement of localized areas of the skeleton, especially the long bones, occurs in neurofibromatosis together with café au lait spots and cutaneous neurofibromas. Although microscopic examination of the osseous fibroma does not reveal nerve structures within the fibroma, whorls of spindle cells are occasionally found and may be considered to reflect its neurofibromatous origin. Thannhauser believes that hyperpigmented areas are the expression of underlying neurofibromatosis even without the appearance of neurofibromatous nodules. The presence of similar endocrine symptoms, especially the concurrence of precocious puberty and pigmented blotches of the skin in neurofibromatosis and also in osteitis fibrosa cystica disseminata offers additional corroboration of the belief that the two disturbances are related. The implication is strong that the anatomic structures which underlie the endocrine symptoms in cases of simple neurofibromatosis are the same as those of osteitis fibrosa cystica disseminata.

### SYNTHESES IN THE INTESTINE

The first demonstrations of vitamin K deficiencies were made with chicks as experimental animals. In this species the failure to produce prothrombin through lack of vitamin K can be brought about by dietary adjustment alone. Later similar experiments were carried out with canaries, pigeons and ducks. Ordinary laboratory mammals—dogs, mice, rats—do not readily show a reduction in prothrombin level in the blood when restricted to experimental rations lacking vitamin K. However, if sulfanilylguanidine and succinylsulfathiazole are added to these diets, hemorrhages can be produced in rats.<sup>1</sup> In a recent study Daft and his co-workers<sup>2</sup> have extended the list of sulfonamides used and have shown that when the hemorrhages occur there appears also a severe hypoprothrombinemia. At a level of 1 per cent in the diet sulfapyrazine, sulfadiazine and sulfathiazole were much more effective in this respect than were sulfaguanidine, sulfanilamide and succinylsulfathiazole. The fact that the order of effectiveness of the sulfonamide drugs in producing the vitamin K deficiency is much like that observed in their bacterio-

static action on *Escherichia coli*, together with the observation that this group of organisms is particularly active in the synthesis of vitamin K, emphasizes anew the point of view that various types of intestinal bacteria exert a beneficent influence. The synthesis of vitamins of the B complex group, early reported in experimental animals, was recently<sup>3</sup> cited again as a contributing factor in human nutrition, and attention has been called to the possibility of amino acid production by these organisms.<sup>4</sup> Further investigation will doubtless reveal other ways in which this symbiotic activity in the intestine is of value to the host.

### DIET AS PREDISPOSING FACTOR IN RHEUMATIC FEVER

In a recent report by Peete<sup>1</sup> observations are summarized on patients seen in clinic and private practice over a four year period who showed any signs of rheumatic fever or rheumatic heart disease. The patients were given a list of foods with instructions to check after each meal all the foods eaten and to write in any additional ones taken which did not appear on the list. The survey included a comparison of the dietetic habits of 50 patients, some with acute and some in the chronic state of rheumatic fever, as compared with 25 normal school children. A comparative study showed that the average diet of the rheumatic patient was low in those foods which supply vitamins A and D and minerals, especially calcium, phosphorus and iron. Some deficiency in proteins and an excessive intake in starchy foods and refined sugars also was apparent. The diets of both groups showed a restricted use of eggs. It was significant, Peete believed, that the average number in families of 75 rheumatic patients was 7.5 members per family, whereas the average in the control group of better economic status was 4.5. Among the conclusions of this study were that the incidence of acute rheumatic fever and rheumatic heart disease increases as exposure to the sun decreases, few recurrences of active infection developed when families cooperated satisfactorily in the correction of the deficient diet and in addition of cod liver oil to these diets, poor dietary habits were found among those even with adequate financial means. Finally, this investigator felt that the deficiency leading to the development of rheumatic infection closely follows the incidence of clinical rickets and that it alters immunity to the infective organism that produces the clinical picture of acute rheumatic fever. He emphasizes the importance of adequate amounts of vitamins A and D, milk, protein and sun bathing in the prophylaxis and prevention of recurrences of this disease. The conclusions expressed should be accepted with reserve. The genesis of rheumatic fever has not yet been explained. Most features of the disease would appear to label it as due to a specific agent not yet identified, although numerous precipitating or predisposing factors presumably occur, among which diet may be included.

1 Thannhauser S J Neurofibromatosis (von Recklinghausen) and Osteitis Fibrosa Cystica Localisata et Disseminata (von Recklinghausen), *Medicine* 23 105 (May) 1944

1 Daft F S Ashburn L L and Sebrell W H *Science* 96 321 (Oct 2) 1942

2 Kohnberg A Daft F S and Sebrell W H *Pub Health Rep* 59 832 (June) 1944

3 Najjar V A and Holt L E Jr The Biosynthesis of Thiamine in Man *J A M A* 123 683 (Nov 13) 1943

4 Martin G J *Proc Soc Exper Biol & Med* 55 182 (March) 1944

1 Peete Don Carlos Rheumatic Fever Diet as a Predisposing Factor *Ann Int Med* 21 44 (July) 1944

# MEDICINE AND THE WAR

## ARMY

### REORGANIZE AIR SURGEON'S OFFICE

The War Department recently announced the partial reorganization of the Air Surgeon's office and reassignment of key officers of the Medical Service, Army Air Force. Brig Gen Charles R Glenn, surgeon of the Army Air Force Training Command, was assigned deputy air surgeon on the staff of Major Gen David N W Grant, the Air Surgeon, effective August 15. He succeeded Col Walter S Jensen, who has been assigned to an important post overseas. Other new assignments include those of Col Henry C Chenault, executive officer, who has been named director of professional services, Col Oliver K Niess, base surgeon and commanding officer of the Regional State Hospital, Mitchel Field, N Y, who has been named director of administration, and Col Richard L Meiling, who will act as special assistant to the Air Surgeon.

The reorganization places the Director of Administration over the Operations, Personnel and Supply Divisions, while the Director of Professional Services will supervise the Professional, Aviation Medicine, Convalescent Training, Research and Statistics Division. Two divisions have received new designations. The Medical Services Division will be called the Professional Division, and the former Professional Division will be known as the Aviation Medicine Division.

The status of the division chiefs remains unchanged. The chiefs are Col George L Ball, Aviation Medicine Division, Col Howard A Rusk, Convalescent Training Division, Col George F Baier III, Operations Division, Col E L Gann, Personnel Division, Col William P Holbrook, Professional Division, Col Lloyd E Griffiths, Research Division, Col Joseph Berkson, Statistics Division, Col Gustave E Ledfors, Supply Division, and Major William H Perkins, Office Services.

### 36TH GENERAL HOSPITAL UNIT COMMENDED

The 36th General Hospital unit, organized under the auspices of the Wayne University College of Medicine, Detroit, and staffed by Detroit and Michigan men and women, has been commended by the commanding officer of Headquarters Peninsular Base Section in Italy. The 36th General Hospital was stationed at Naples during the early months of the Italian campaign. The quarters it occupied, however, have now been returned to Italian civilians, and the unit, recently detached from the Peninsular Base Section, expects immediate assignment to another war area. Dr Edgar H Norris, dean of Wayne University College of Medicine, made this information public on receipt of a letter from Lieut Col Wyman C C Cole, formerly of Detroit, who is medical director of the 36th General Hospital. The commendation, dated August 16, came to Colonel Cole from Col Richard T Arnest, surgeon, Headquarters Peninsular Base Section, and read as follows:

"Upon the separation of your organization from the Peninsular Base Section I wish to express to you, your officers, nurses and enlisted personnel my sincere appreciation of the excellent performance of your various duties while assigned to this base.

"It has indeed been a pleasure to have your organization with this command and I regret your separation from the Peninsular Base Section. The professional ability and untiring devotion to duty of the members of your organization have done much to add to the comfort and well being of casualties admitted to your hospital. You should each be justly proud of a task well done."

The 36th General Hospital unit has been overseas for eighteen months. It was organized under the auspices of Wayne University College of Medicine by authority of the Secretary of War, and its roster includes 52 physicians, 105 nurses and about 500 enlisted personnel. Virtually all of these are from Detroit and Michigan.

### REGISTRY OF VETERINARY PATHOLOGY ESTABLISHED

Recently an arrangement was approved by the Surgeon General of the U S Army and the board of governors of the American Veterinary Medical Association for the establishment and maintenance at the Army Institute of Pathology, Army Medical Museum, Washington, D C of a Registry of Veterinary Pathology. This registry will become a unit of the American Registry of Pathology, an organization operating by the authority of the Surgeon General under the sponsorship of the National Research Council. Material submitted should be addressed to Director, Army Institute of Pathology, Army Medical Museum (attention Registry of Veterinary Pathology), 7th and Independence Avenue SW, Washington 25 D C. The director will be glad to furnish further instructions to contributors for submission of material to the Registry of Veterinary Pathology. The members of the Special Committee on Registry of Veterinary Pathology are W H Feldman, Mayo Foundation, chairman, Capt Charles L Davis, V C Army Institute of Pathology, Harry W Schoening, chief Pathological Division U S Bureau of Animal Industry, and, member ex officio, Lieut Col Balduin Lucke, M C, deputy director Army Institute of Pathology.

### WHOLE BLOOD SHIPPED TO FRANCE

The first shipment of whole blood from the United States to soldiers wounded in France was made by the U S Army Medical Department by an army plane August 21. Daily shipments have been made since, 250 pints a day the first week and 500 pints a day the second week, 750 pints a day will be shipped soon. Type O blood is being collected by the Red Cross for the shipments in response to appeals from Major Gen Norman T Kirk, Surgeon General of the Army and Rear Admiral Ross T McIntyre, Surgeon General of the Navy. The whole blood is prepared for shipment on the day it is drawn, and twenty-one hours after it leaves the United States it is available for transfusion in France. Brig Gen F W Rankin and Col B N Carter of the Surgical Consultant Division with Lieut Col Douglas B Kendrick, consultant to the Surgeon General on transfusions and plasma, developed the program for the Army Medical Department and new developments in the preservation and refrigeration of whole blood were worked out to make the plan effective.

### ARMY AWARDS AND COMMENDATIONS

#### Major Henry T Earhart

The Bronze Star Medal was recently awarded to Major Henry T Earhart, formerly of Mulberry, Ind. The citation accompanying the award read "At Hollandia, Dutch New Guinea, from April 26 to May 18, 1944 he was outstanding in performance of duty in a place of great responsibility as surgeon of a signal battalion. By his conspicuous efficiency above and beyond the regular call of duty he rendered invaluable service in the handling of the sick, injured and wounded men from a command of over 600 men, with a very limited number of Medical Department personnel." Dr Earhart graduated from Indiana University School of Medicine, Indianapolis, in 1939 and entered the service March 21, 1941.

#### Colonel Edgar C Jones

The Legion of Merit Award was recently presented to Col Edgar C Jones, McConnelsville, Ohio, for "service as assistant surgeon, Fifth Corps Area surgeon Fifth Corps Area, and later as chief of the Medical Branch and Surgeon Fifth Service

Command during a period of expansion and reorganization from Oct 22, 1940 to June 30, 1944. In the performance of his duties he displayed in the highest degree the qualities of intelligence, loyalty, devotion to duty, sound judgment and a thorough understanding of his mission. His contribution to the war effort has been a most effective one, rendered always with a most unselfish devotion to the Nation's welfare." Dr Jones graduated from Jefferson Medical College of Philadelphia in 1906. He was in the regular army of the United States until Oct 31, 1938, when he retired and returned to active duty Oct 21, 1940.

#### Captain Emile G Schuster

The Distinguished Service Cross was recently awarded to Capt Emile G Schuster, formerly of Oakland, Calif. The citation accompanying the award read "During the capture and defense of hill positions of Mount Patano, Italy, from Nov 29 to Dec 3, 1943 he gave medical aid to the wounded while under mortar and artillery fire and at times under direct machine gun and rifle fire. On one occasion he advanced in front of forward position under fire to an enemy mine field and rendered his services to men wounded by antipersonnel mines. During daylight hours he administered plasma in the midst of enemy fire. On one occasion while performing this task the flask was shot from his hand and the tree beside him cut down by machine gun fire. However, he secured more supplies and calmly continued his treatment. His fearless actions under

enemy fire alleviated much suffering and saved many lives." Dr Schuster graduated from McGill University Faculty of Medicine, Montreal, in 1940 and entered the service April 6, 1942.

#### Colonel Alfonso M Libasci

The Legion of Merit Award was recently given to Col Alfonso M Libasci, formerly of Brooklyn, for his "resourcefulness, perseverance and ingenuity" in organizing and directing the medical supply system of the Army in the Southwest Pacific area. He was cited for his achievement in organizing a supply system by means of which medical goods were swiftly and automatically routed to combat areas. He was also credited with simplifying the accounting and requisitioning systems and with developing the portable surgical hospital unit, which saved many lives in the South Pacific island jungles. Dr Libasci graduated from Long Island College of Medicine, Brooklyn, in 1931 and has been on active duty with the Army since 1933.

#### Colonel Ashley W Oughterson

The Legion of Merit was recently awarded to Col Ashley W Oughterson, formerly associate professor of surgery at Yale University School of Medicine, New Haven, Conn., for "exceptionally meritorious conduct in the performance of outstanding services in the South Pacific area from Dec 1 1942 to June 13 1944. Dr Oughterson graduated from Harvard Medical School, Boston, in 1924 and entered the service in January 1942.

## NAVY

### NAVY AWARDS AND COMMENDATIONS

#### Lieutenant Samuel E Elmore Jr

The Silver Star Medal was recently awarded to Lieut Samuel E Elmore Jr, formerly of New Orleans. The citation accompanying the award read "For conspicuous gallantry and intrepidity while attached to the Third Marine Division during the landing attack at Cape Torokina, Solomon Islands, on Nov 1, 1943. When the fighting was most desperate and many of our wounded were lying helpless within dangerous proximity to the enemy, Lieutenant Elmore unhesitatingly entered the area of the Japanese defensive position and gave expert medical attention to the injured despite an incessant rain of enemy fire. While engaged in this vital work, he was suddenly and viciously attacked by a Japanese soldier and mindful of the need for uninterrupted medical care, engaged the enemy in hand to hand combat, killing him and thereby removing an imminent threat to the lives of the men who depended on his assistance. The professional skill and outstanding valor displayed by Lieutenant Elmore throughout this engagement inspired courage and confidence among the wounded and were in keeping with the highest traditions of the United States Naval Service." Dr Elmore graduated from Harvard Medical School, Boston, in 1940 and entered the service in September 1942.

#### Commander James J Sapero

The Distinguished Service Medal was recently presented to Comdr James J Sapero, now on temporary duty in the Bureau of Medicine and Surgery, Navy Department, Washington, D C. The citation accompanying the award read "For exceptionally meritorious service to the government of the United States in a duty of great responsibility while serving as malaria and epidemic disease control officer on the staff of the commander South Pacific Area and South Pacific Force, from Aug 17 1942 to Jan 2, 1944. Displaying exceptional medical skill and distinctive leadership, Commander Sapero conceived and developed the malaria control unit in the area and, as a result of his untiring efforts and those of his organization, the incidence of malaria among the military and naval forces was drastically reduced. The excellent principles and methods established by Commander Sapero in the control of this disease prevented a tremendous loss of manpower and served as a guide for checking the epidemic in other military areas. His brilliant initiative and outstanding ability contributed materially

to the superb physical conditions and high morale of our fighting forces in this vital area." Dr Sapero graduated from Stanford University School of Medicine, San Francisco, in 1932. He has been in the service since June 1931.

#### Lieutenant Arthur T Willetts

Lieut Arthur T Willetts, formerly of Verona, Pa., was recently awarded the Silver Star Medal "for conspicuous gallantry and intrepidity as battalion surgeon attached to the Third Marine Division during the landing attack at Cape Torokina, Solomon Islands, on Nov 1, 1943. On finding that perilous enemy fire was endangering the lives of our wounded men who had fallen on the beachhead, Lieutenant Willetts promptly requested a nearby assault unit to attack an adjacent enemy infested jungle area and, after the site was cleared of hostile troops, established an aid station in order to attend the injured men under cover of the jungle growth. Although his medical post was attacked by enemy machine guns six times during the day, he skilfully treated many serious wounds, consistently maintaining a calm courage which concealed from the patients under his care the danger of their situation. Lieutenant Willetts's professional ability and heroic devotion to duty were in keeping with the highest traditions of the United States Naval Service." Dr Willetts graduated from the University of Pittsburgh School of Medicine in 1937 and entered the service March 9, 1942.

### EXHIBIT OF NAVAL MEDICINE AT NATIONAL GALLERY OF ART

A collection of one hundred paintings and drawings of naval medicine were put on view at the National Gallery of Art, Washington, D C, September 10 where it will remain until October 8, after which the collection will be sent on tour throughout the United States. The artists who participated in the program and the phases of naval medicine which they covered are as follows: Hospital Corps Training, depicted by David Stone Martin and Irwin Hoffman at the Navy Medical Field Service School, Camp Lejeune, North Carolina; Combat Action, depicted by Joseph Hirsch and Kerr Eby at Pearl Harbor, New Caledonia, New Guinea, Guadalcanal, Tarawa and Bougainville; and Treatment of Convalescents, depicted by Carlos Andreson and Julian Levy at the U S Naval Hospital, Portsmouth, Va, and National Naval Medical Center, Bethesda, Md.

## MISCELLANEOUS

## WARTIME GRADUATE MEDICAL MEETINGS

The following subjects and speakers for Wartime Graduate Medical Meetings have just been announced

At Rhoads General Hospital, Utica, N Y in conjunction with the Oneida County Medical Society War Wounds of the Extremities Clinical Demonstration Major Robert Perlman, October 10

At Camp McCoy, Wisconsin Symposium on Organic Neurology, Dr T C Erickson, October 4, Dermatologic Diseases, Dr G A Cooper, October 18

At Truax Field, Wisconsin Endocrinology, Dr Elmer L Sevringhaus, October 4, Virus and Rickettsial Diseases, Dr Marcos Fernan-Nunez, October 18

In Canada the Committee on Wartime Graduate Medical Meetings is cooperating in the presentation of the Dalhousie Refresher Course, Halifax, Nova Scotia, from October 9 to 13 by sending the following guest speakers, who besides conducting clinics will present two scientific papers "Gout and 'Diagnosis of Adrenal Insufficiency,' Dr George W Thorn "Cancer of the Prostate and "Sex Hormones in Clinical Practice," Dr Charles Huggins, "Tuberculosis in Children" and "Blood Dyscrasias," Dr Ralph Tyson, "The Recognition and Management of the Psychoneurotic Patient and "Some Common Psychosomatic Disturbances and Their Treatment," Dr Thomas A C Renne

AMERICAN PHARMACEUTICAL ASSOCIATION  
RECEIVES AWARD FOR  
QUININE POOL

The War Production Board recently awarded a scroll of appreciation to the American Pharmaceutical Association on behalf of the nation's pharmacists in contributing their quinine stocks to a national pool for the armed forces. In gratitude for the more than 152,000 ounces of cinchona products collected, the government officials expressed "thanks to the pharmacists of America whose contributions made a success of the quinine pool, to the Philadelphia College of Pharmacy and Science, which first inaugurated and proved the feasibility of the pool within the commonwealth of Pennsylvania to the personnel of the Institute of Pharmacy and to the American Pharmaceutical Association which assumed the burden of the nationwide effort and carried it through to a commendable conclusion."

The presentation was made at the American Institute of Pharmacy by two pharmacists of the War Production Board, Fred J Stock, chief of the Drugs and Cosmetics Branch of the Chemicals Bureau, and Henry W Heine, chief of the Botanicals and Imports Unit of the Drugs and Cosmetics Branch of the Chemicals Bureau. The pharmacists were co-signers of the scroll with Donald M Nelson, chairman of the War Production Board.

NEW BRITAIN GENERAL HOSPITAL  
LENDS PATHOLOGIST TO U S

Dr H Weston Benjamin, managing director of New Britain General Hospital, New Britain Conn, recently announced that the board of directors acceded to a request from the Office of Scientific Research and Development Committee on Medical Research for the services of Dr Paul D Rosahn, pathologist in charge of laboratories at the hospital. Dr Rosahn will act as technical aide to the committee assigned to contracts in venereal disease under the direction of the deputy division chief in charge, Dr Joseph Earle Moore of Johns Hopkins Hospital and University. His work is primarily the supervision of studies of the effect of penicillin in syphilis now in progress under the O S R D auspices at the request of the armed forces. He will also have certain other duties in connection with the contracts entered into between the Office of Scientific Research and Development Committee on Medical Research and various universities dealing with other research problems in the field of venereal disease. Dr Rosahn will continue to be in charge of the laboratories at New Britain General Hospital but will spend part of each week in Baltimore, Washington,

New Britain and other cities where his duties associated with this new project may call him. During his absence from the hospital Dr M C Wintermiz professor of pathology at Yale University will work with Dr Rosahn in supervising the pathologic and laboratory routines of the hospital.

HOSPITALS NEEDING INTERNS  
AND RESIDENTS

The following hospitals have indicated to the Council on Medical Education and Hospitals that they have not completed their house staff quota allotted by the Procurement and Assignment Service

(Continuation of list in THE JOURNAL, September 9 page 109)

## ALABAMA

Children's Hospital Birmingham Capacity 50 admissions 1329  
Mrs Victoria K Wilman RN Superintendent (resident—pediatrics)

## CALIFORNIA

St Luke's Hospital San Francisco Capacity 225 admissions 667  
Dr Howard H Johnson Medical Director (1 intern)

## ILLINOIS

St Joseph's Hospital Joliet Capacity 334 admissions 154 Sister  
M Henrica RN Superintendent (interns)

## KENTUCKY

St Elizabeth Hospital Covington Capacity 36 admissions 593  
Sister M Alacoque Administrator (1 intern)  
Louisville General Hospital Louisville Capacity 587 admissions,  
9805 Dr John Walker Moore Medical Director (1 resident—  
medicine 1 intern)

## MARYLAND

Johns Hopkins Hospital Baltimore Capacity 1034 admissions  
17699 Dr Winford H Smith Medical Director (1 assistant  
resident 1 resident—roentgenology)

## MICHIGAN

Charles Godwin Jennings Hospital Detroit Capacity 108 admissions  
2304 (3 interns Nov 1 1944 3 interns July 1 1945)

## MINNESOTA

St Mary's Hospital Duluth Capacity 320 admissions 944 Sister  
M Patricia Superintendent (interns)  
St Mary's Hospital Minneapolis Capacity 340 admissions 1002  
Sister Conchessa Superintendent (interns)  
Bethesda Hospital St Paul Capacity 180 admissions 6093 Rev  
L B Benson Superintendent (interns)  
St Joseph's Hospital St Paul Capacity 308 admissions 10335  
Sister M Ignatius RN Superintendent (interns)

OPEN PSYCHIATRIC REHABILITATION  
CLINIC AT MOUNT ZION  
HOSPITAL

A psychiatric rehabilitation clinic for the treatment of ex-servicemen and women discharged from the armed forces on account of neuropsychiatric disabilities has been established at the Mount Zion Hospital San Francisco. The clinic will utilize both individual and group therapy and will be staffed by psychiatrists internists, psychiatric social workers vocational advisers and dietitians. It will be open both during the day and in the evening for the benefit of men and women who are employed in industry. A close contact will be maintained with the United States Army and Navy hospitals the Red Cross the United States War Manpower Commission the State Bureau of Vocational Rehabilitation and the various social agencies of the city of San Francisco. The project was made possible by a grant from the Columbia Foundation of San Francisco. Dr J S Kasanin is director of the clinic.

## MERCY SHIPS

Three Netherlands liners specially converted for the purpose are being used as hospital ships to evacuate American wounded from the northern Netherlands New Guinea coast to base hospitals. The ships whose white hulls have become familiar sights along the invasion beaches, are the *Maetsuycker* the *Abel Tasman* and the *Jansen*.



# ORGANIZATION SECTION

## WASHINGTON LETTER

(From a Special Correspondent)

Sept 11, 1944

### Hearings on Poliomyelitis

Use of the airplane to evacuate victims of infantile paralysis in sparsely settled states like Nevada and Wyoming is recommended by Dr Frank R Ober of Boston, professor of orthopedic surgery at Harvard Medical School. Dr Ober told the Kelley committee investigating aid to the physically handicapped that excellent work is being done throughout the country in rehabilitation of patients with infantile paralysis. The war had created difficulty in getting orthopedic surgeons, but, when hostilities cease, surgeons now in the Army will be available to carry on the work more successfully, he said. Lack of publicity was one reason for failure of people to take full advantage of facilities now in existence for treatment of the disease. While expressing the view that adequate clinical facilities were now operating in such states as Massachusetts, New York and Pennsylvania, Dr Ober admitted that sparsely settled sections are without adequate means for treatment of the disease. Asked if he thought regional clinics should be set up he said "It seems to be that is the way to take care of it." In the early stages of poliomyelitis, Dr Ober said, nursing is required to relieve the painful symptoms and to prevent deformities. After painful symptoms have disappeared, active methods must be applied toward restitution of the functions and improvement of muscles which is done by physical therapy under direction of a physician who understands the problems. Rehabilitation is complicated by the fact that treatment may be required indefinitely. Maximum recovery is within twelve to twenty-five months, yet he had seen recovery take place after thirty-five years. Dr Ober described in detail the organizations that had been set up in Vermont and Massachusetts for the physically handicapped.

Other witnesses at the hearings on poliomyelitis were Dr Charles Armstrong, chief of the Division of Infectious Disease, U S Public Health Service; Dr A L Van Horn, director of the Division of Health Services, Children's Bureau, Department of Labor; and Dr Don W Gudakunst, medical director of the National Foundation for Infantile Paralysis.

Samuel Barker, general counsel for the committee headed by Augustine B Kelley (Democrat Pennsylvania) on the physically handicapped said hearings would continue September 12 to 14 on problems of the deaf and hard of hearing.

### \$10,000,000 Asked for Infantile Paralysis Study

A resolution authorizing the expenditure of \$10,000,000 for the study of the causes and cure of infantile paralysis has been proposed for immediate consideration by Senator Langer (Republican North Dakota). Author of the measure which he introduced because of the unusual prevalence of the disease in the Eastern states this year, particularly in the District of Columbia and nearby communities. Senator Langer stated that he would urge Senator Thomas (Democrat Utah) to call a meeting of the Education and Labor Committee to get action if possible before the impending recess of Congress.

### Wartime Health Program Hearings Resume

Health needs of veterans will be one of the subjects to be investigated when the second series of public hearings on the National Wartime Health Program resume September 18, 19 and 20, Senator Claude Pepper (Democrat, Florida) announced today. He is chairman of the Senate Special Subcommittee on Wartime Health and Education. Other topics to be taken up are the significance of the Selective Service physical examination data, methods of improving the distribution and quality of medical care, hospital planning and construction. "At the first series of hearings," said Senator Pepper "the committee heard testimony of medical and dental experts of the Army, Navy Selective Service System and U S Public Health Service. Startling data were disclosed relating to the tragic fact that

nearly 5,000,000 of the nation's young men have been found physically and mentally unfit for service in the armed forces of their country. Constructive proposals have been offered to improve the people's health so that in the future, whether in war or in peace, the nation will not be similarly handicapped."

Senator Pepper indicated that at the September 18-20 hearings representatives of the organized medical profession, industry and labor will testify. Witnesses will include Dr Roger I Lee, President-Elect, Dr Harvey Stone and Dr R L Sensenich of the American Medical Association, Dr John P Peters, secretary, Committee of Physicians for Improvement of Medical Care, Dr E I Robinson, president, National Medical Association, Dr Ernst P Boas, chairman, Physicians Forum, Dr John R Boling, president, Florida State Medical Society, Dr Victor Heiser, chief medical consultant, National Association of Manufacturers, Dr Leverett D Bristol, chairman, Health Advisory Council, U S Chamber of Commerce, and representatives of the American Federation of Labor and the Congress of Industrial Organizations. Mayor Fiorello H LaGuardia will testify concerning the projected health insurance plan for New York City.

### Venereal Disease Problem

A national conference on venereal disease control will be held in St Louis, November 9 to 11, Dr J R Heller Jr, chief of the Venereal Disease Division of the U S Public Health Service, has announced. "The war has brought large increases in venereal disease infections in many parts of the world," he said. "Simultaneously, however, science has produced new drugs, and medical research has produced new methods to combat syphilis and gonorrhea. A major purpose of the conference will be to consider how these new methods can be applied promptly on the large scale necessary to halt what might become a worldwide postwar venereal disease epidemic."

"The seriousness of the venereal disease problem throughout the world," he said, "is exemplified by reports indicating that infections are spreading even in the Scandinavian countries which for many years have been almost free of venereal disease. Dr Heller said that with millions of Americans returning from foreign lands, and an enormous expected increase in travel to and from the United States, effective venereal disease control will require international cooperation. The eighth postgraduate course in venereal disease control will be conducted at the Public Health Service Medical Center, Hot Springs, Ark., October 19 to November 8. The postgraduate training course will be given to health officers and to private physicians cooperating with state and local health department venereal disease control programs."

Dr Heller, in a letter to venereal disease control workers, said that an enormous new venereal disease control responsibility will face state and local health departments throughout the country on demobilization. He said that a plan had been agreed on by the Surgeon General of the Army and the Surgeon General of the Public Health Service which would assure return of soldiers to civilian life practically free of infectious syphilis "and thus preclude the introduction of new chains of infections in home communities." The plan is already in operation at army separation centers and will be used when large scale demobilization begins.

### Social Hygiene Instruction in Schools

A program of social hygiene instruction in public schools "to begin with the preschool child, continue throughout public school training and carry over into the education of adults, particularly parents," is recommended in a resolution of the board of managers of the National Congress of Parents and Teachers. Dr Thomas Parran, Surgeon General of the U S Public Health Service, was advised that the congress supports the efforts of federal, state and local educational authorities to institute such a program. The congress believes that the program will help

in 'providing adequate juvenile protection, preventing the spread of venereal infection and providing more adequate personal, family and community living'

#### Music as an Aid to Treatment

Music as an adjunct to medicine is being tried out at Walter Reed General Hospital here. The Surgeon General of the United States Army has authorized the Institute of Applied Music to conduct an experiment in developing the potentialities of music in relation to medicine. The institute, a group of professional musicians, was organized to work out the problem on patients to determine the effect of music on certain types of mental and nervous disorders. The group is engaged in the experiment under the guidance of Miss Frances Paperte, former member of the Chicago Opera Company and soloist with the New York Philharmonic and Cincinnati symphony orchestras. Participating musicians are working in close collaboration with army psychiatrists treating the patients. The institute plans to learn how the slightest gain, if any, is accomplished, to determine if it will work again and if it can be accepted as a rule. All music presented will be checked against a table of variables and applied in a predetermined manner, subject to the requirements of the doctor in charge. Probability curves have been charted, and these will be checked against actual results obtained. From this, greater refinements can be plotted, until cause and effect principles have been established.

"As in any scientifically controlled experiment," says Miss Paperte, "it is obvious that it must be proved beyond any doubt that the system followed is dependable. The work, of course, is too new to permit of conclusions. Various methods have been explored and at present it may be safe to say that indications are encouraging." She said that music as an aid to treatment has been tried before, but it has never been properly or adequately controlled, nor has its application been evaluated

scientifically. The music itself presented by the highest type of professional musicians is regarded solely as an aid to treatment and not, as popularly regarded, as merely an entertainment or recreational performance. Miss Paperte states that most people are unaware of the deep understanding required in considering the psychologic significance of music as utilized in the work. Dealing with the instinctive tendencies of human beings is a serious matter, with physical, psychologic and social values at stake, and these factors are too significant to allow of any but technically sound and objective handling.

#### FWA Grants Washington Hospitals \$4,100,000

The Federal Works Administration grant of \$4,100,000 to George Washington and Georgetown universities for two new 400 bed hospitals in the capital may obviate necessity for the proposed 1,500 bed medical center, according to Representative Thomas D'Alesandro Jr. (Democrat, Maryland). He expressed the hope that grants would also be made to Gallinger, Providence and Emergency hospitals. The FWA grants came as a result of congressional activity to increase Washington's badly needed hospital facilities. Construction is to start soon, and the two hospitals should be ready for occupancy in a year. Order for allocation of funds has been signed by President Roosevelt and priorities have been approved. Georgetown University was granted \$1,400,000 for a building to be erected on a university owned site on Reservoir Road. The university will furnish \$600,000 in funds to replace its old buildings of 265 bed capacity, some 50 years old. George Washington University was granted \$2,700,000 for construction of a nine story building and purchase of a site near Washington Circle. The university will post \$350,000 for the project and pay the government money derived from sale of its present 92 bed building. Abandonment of the universities' present hospital buildings will mean a net gain of 443 new hospital beds for the District of Columbia.

## MEDICAL ECONOMIC ABSTRACTS

### THE MILWAUKEE MEDICAL SOCIETY EXPANDS PREPAYMENT PLAN

According to reports in the *Milwaukee Journal and Sentinel* the Milwaukee Medical Society has decided to expand a plan which it has had in operation for the last seven months for the 300 employees of one company into a general plan to be offered to all industrial organizations. Only surgical and obstetric care in a hospital will be covered.

The monthly rates charged are for the individual \$0.90, for husband and wife, including maternity, \$1.75, and for the complete family \$2.50. While it is expected that most enrolments will be through pay roll deductions, arrangements will be made for other groups where possible. The income limit for an individual is \$1,800 a year and for a family \$2,400, plus \$200 for each child under 18. For subscribers above this income the indemnity plan will be used with the physician entitled to make an additional charge if desirable.

### CHANGES IN NEW JERSEY PLAN CONTRACT

The Medical-Surgical Plan of New Jersey has revised its contract, making it possible for physicians to make additional charges under the following conditions:<sup>1</sup>

If the patient shall have been admitted to a hospital for a private accommodation not exceeding one bed per room.

If the patient shall have been admitted for semiprivate or ward accommodations and shall have agreed to pay the participating physician an additional amount, except that additional amounts shall not be payable if under the "single contract" the annual income of the subscriber is less than \$2,000 or under the "family contract" the annual income of the subscriber is less than \$2,000 plus \$500 for the first enrolled dependent plus \$250 for each additional enrolled dependent.

If the income of the subscriber is more than that stated in the preceding paragraph but he has failed to divulge the existence of the contract to the physician.

The amounts payable for obstetric care shall not be considered as including payment for antepartum and postpartum care rendered outside the hospital.

Amounts payable by the plan will be paid for obstetric deliveries occurring in the home or elsewhere outside the hospital under conditions beyond the control of the patient.

Services rendered at the time of full term obstetric deliveries or for tonsillectomies will not be eligible for payment unless rendered at least nine months after the effective date of the subscriber's contract.

Amounts up to \$25 will be payable for emergency services rendered in caring for accidental injuries which would ordinarily be hospitalized, if services are rendered in outpatient departments or elsewhere outside the hospital provided the services are rendered within twenty-four hours of the accident.

Medical services (not surgical) eligible for payment will be limited to such services rendered during twenty-one days of hospitalization during any one contract year.

### PREPAYMENT PLAN IN GEORGIA

According to the bulletin of the Fulton County (Ga.) Medical Society for June 1 the Fulton County society presented a skeleton plan for medical and surgical care to the house of delegates of the Medical Association of Georgia at its recent meeting. The plan provided that the control be vested in the Medical Association of Georgia and was favored by the reference committee and adopted by the association.

According to the bulletin, voluntary health plans of other states will be studied and the cooperation of state county and municipal authorities solicited in the formation of a workable pattern to assure the people of our state better distribution and accessibility of medical and surgical care and adequate hospitalization."

<sup>1</sup> J. M. Soc. New Jersey 41:316 (Aug.) 1944

## Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES NEW HOSPITALS EDUCATION AND PUBLIC HEALTH)

### CALIFORNIA

**Psychiatric Rehabilitation Clinic**—The department of psychiatry of the Mount Zion Hospital of San Francisco has opened a psychiatric rehabilitation clinic for the treatment of ex-servicemen and women discharged from the armed forces because of neuropsychiatric disabilities.

**Surcharge Over Existing Industrial Accident Fees**—The state industrial accident commission has approved a surcharge of 15 per cent over existing industrial accident fees, effective August 1. The surcharge will be effective for the duration of the war. According to the *Bulletin* of the Los Angeles County Medical Association, the commission proposes to establish a study committee to consider "a permanent medical fee schedule to become effective after the 'duration'." The commission has had under consideration for some time a proposed schedule of medical and surgical fees for some 547 procedures which might be undertaken in compensation work. While the proposed schedule has not been approved, the surcharge of 15 per cent for existing fees was approved. The provision covering the surcharge states that "cases under treatment before and after Aug 1, 1944 shall have their medical and surgical charges segregated, so that services rendered before Aug 1, 1944 shall be charged at the existing rates and services rendered after August 1 shall be billed at existing rates plus the 15 per cent surcharge."

### DISTRICT OF COLUMBIA

**Personal**—Sir Howard Walter Florey, professor of pathology at the University of Oxford, England, who is largely concerned with the development of penicillin and its use, visited Washington during the first week in August.—Dr J Winthrop Peabody, Washington, has been elected an honorary member of the Sociedad Chilena de Fisiologia.

### ILLINOIS

**Society News**—Dr Alexander J. Kotkis, St. Louis, discussed "Some Problems of Physical Medicine in the Field of Therapeutics" before the Madison County Medical Society in Granite City, September 1.

#### Chicago

**Food in International Relations**—The twentieth annual institute of the Norman Wait Harris Memorial Foundation was held at the University of Chicago, September 4-8. The theme of the meeting was 'Food in International Relations' and speakers included Conrad A. Elvehjem, Ph.D., Madison, Wis.; Karl Brandt, Dr. Agr., Stanford University, Calif.; and Paul H. Appleby, LL.D., assistant director of the Bureau of the Budget, Washington, D.C. Among other speakers at the meeting were Dr. Frank G. Boudreau, chairman of the food and nutrition board, National Research Council; John D. Black, Ph.D., Harvard University, Cambridge, Mass.; Dr. Andrew C. Ivy, head of the department of physiology and pharmacology, Northwestern University Medical School; Dr. Paul R. Cannon, chairman of the department of pathology, University of Chicago School of Medicine; Leonard A. Maynard, Ph.D., School of Nutrition, Cornell University, Ithaca, N.Y.; and Ancel B. Keys, Ph.D., University of Minnesota, Minneapolis.

### KANSAS

**New Secretary of Sedgwick County**—Mr. Martin Baker, Wichita, formerly instructor in music at the Wichita North High School, has been chosen executive secretary of the Sedgwick County Medical Society. He fills the vacancy that occurred when Mr. Oliver Ebel resigned to become executive secretary of the Kansas Medical Society.

**New Building for Research in Psychiatry**—On July 24 the Menninger Foundation opened a new building for research and education in psychiatry at 3614 West Sixth Avenue, Topeka. The new building has twenty-five rooms, including soundproof laboratories, class rooms and offices and a large conference room, and houses the work of the research, teaching

and administrative departments of the foundation. The educational work of the foundation consists at present in the teaching of resident physicians in psychiatry, the postgraduate training of nurses and the teaching of psychologists, therapists and psychiatric social workers. Plans are being completed for postwar instruction of physicians in psychosomatic medicine. The Menninger Foundation was established in 1942 as a non-profit organization to advance research and education in neuro-psychiatry. It announces the publication soon of the results of a three year research project on the "Validation and Evaluation of Psychological Testing Technics." This will be the second report of the foundation's research project to appear in book form, the first being a monograph entitled "Emotions and Memory." Among projects under way at the present time are "An Investigation of the Applications of Hypnosis in Modern Psychiatry" and "An Investigation of the Clinical Syndrome of Firesetting." A preliminary report of the former was presented at the 1944 session of the American Psychiatric Association.

### KENTUCKY

**Personal**—Dr. William J. Walter, Pikeville, has been appointed director of the Pike County Health Department.

**State Medical Meeting in Lexington**—The Kentucky State Medical Association has designated its 1944 meeting at the Phoenix Hotel, Lexington, September 18-20, the Benjamin Rush Palmer Memorial Meeting in honor of the ninth president of the association who served from 1860 to his death in 1865. The meeting will be under the presidency of Dr. James H. Pritchett, Louisville. Speakers will include:

Dr. John A. Toomey, Cleveland, Chemotherapeutics in Pediatrics  
Dr. Maurice Levine, Cincinnati, Psychosomatic Medicine  
Col. Anthony J. Lanza, M.C., Present Status of Industrial Medicine  
Major Gen. David N. W. Grant, M.C., Current Problems in Aviation Medicine  
Dr. Frederick H. Falls, Chicago, The Present Status of Pain Relief in Labor  
Dr. William D. Stroud, Philadelphia, Cardiovascular Diseases  
Dr. Ralph Pemberton, Philadelphia, Arthritis  
Brig. Gen. Fred W. Rankin, M.C., Medical Service in a Theater of War  
Dr. Irvin Abell, Louisville, Surgical Aspects of the Chronic Dyspepsia  
Col. John B. Youmans, M.C., Nutrition—Its Relation to Deficiency Diseases

The oration in medicine will be delivered Tuesday by Dr. Frederick G. Speidel, Louisville, on "Conservatism and Liberalism in Medicine" and the oration in surgery Wednesday by Dr. James Farra Van Meter, Lexington, on "Penicillin—An Early Evaluation in Surgical Complications." A public meeting will be held Tuesday evening in the auditorium of the U. S. Public Health Service Hospital, at which the speakers will include Drs. Oscar O. Miller, Louisville, president-elect of the state society, on "Some Aspects of the Tuberculosis Problem"; Roger I. Lee, Boston, President-Elect of the American Medical Association, "Accelerated Medicine Today and Tomorrow," and Edward H. Cary, Dallas, "The Medical Profession and Federal Legislation." One session will be devoted to chemotherapy (penicillin), the civilian aspect to be presented by Dr. Donald G. Anderson, Boston, medical aspects Brig. Gen. Hugh J. Morgan, M.C., surgical aspects, Col. Burr N. Carter, M.C., and venereal disease treatment by Lieut. Col. Thomas H. Sternberg, M.C. There will be a symposium on tropical diseases Wednesday at which the speakers will be Rolla E. Dyer, assistant surgeon general, U. S. Public Health Service, Capt. Alphonse McMahon (MC), and Brig. Gen. James S. Simmons, M.C. The twenty-second annual meeting of the Woman's Auxiliary to the state medical association will be held at the Lafayette Hotel, Lexington, September 18-20.

### MICHIGAN

**State Medical Meeting in Grand Rapids**—The seventy-ninth annual session of the Michigan State Medical Society will be a postgraduate conference on war medicine at the Civic Auditorium and the Pantlind Hotel, Grand Rapids, September 27-29, under the presidency of Dr. Claude R. Keyport, Grayling. Included among the speakers will be:

Dr. Geza de Takats, Chicago, Vascular Disease  
Dr. Earl D. Osborne, Buffalo, The Treatment of Eczema (Dermatitis) Based on Etiology  
Dr. Robert A. Moore and Edward Mallinckrodt, Jr., St. Louis, The Pathology of Rickettsial Diseases  
Dr. John W. Harris, Madison, Wis., The Place of the General Practitioner in the Practice of Obstetrics  
Dr. Arthur W. Proetz, St. Louis, Allergy in the Ear, Nose and Throat  
Dr. Tom D. Spies, Birmingham, Ala. and Cincinnati, Vitamins and the Practice of Medicine  
Dr. Max M. Zimniger, Cincinnati, Gallbladder  
Dr. Albert D. Ruedemann, Cleveland, The Protruding Eye  
Dr. Joseph L. Baer, Chicago, Prolonged Labor

Dr. Emery A. Roventine, New York: The Preanesthetic Preparation of the Surgical Patient.  
Dr. Frank H. Krusen, Rochester, Minn.: A Rehabilitation Program for Military Veterans.  
Dr. Abel A. Applebaum, Toledo, Ohio: Primary Atypical Pneumonia.  
Dr. Sidney Farber, Boston: Some Organic Digestive Disturbances in Early Life (Nature, Diagnosis and Treatment).  
Dr. S. William Becker, Chicago: Penicillin in the Treatment of Syphilis.  
Dr. Arthur C. Curtis, Ann Arbor, Mich.: Recent Advances in the Treatment of Syphilis.  
Dr. Charles A. Aldrich, Rochester: A Preventive Medical Program as Applied to Pediatrics.  
Dr. Frederick H. Falls, Chicago: Obstetrical Hemorrhages.  
Dr. James L. Wilson, New York: Advance in the Prevention and Treatment of Poliomyelitis.

#### Military speakers will include

Brig. Gen. Charles C. Hillman, M. C. Tropical Medicine.  
Capt. Arthur W. Frisch, M. C. Sulfonamide Resistant Gonorrhea.  
Major Frank H. Mayfield, M. C. Herniated Nucleus Pulposus.  
Herman E. Hilleboe, medical director and Eugene J. Gillespie, senior assistant surgeon, U. S. Public Health Service: The Role of the General Practitioner in Tuberculosis Control.  
Col. William C. Menninger, M. C. Neuropsychiatry and the General Practitioner: Lessons Learned from the Army.  
Charles J. Chirk, flight surgeon and Harry Britton, assistant flight surgeon: What We Have Learned About Aviation Medicine.  
Brig. Jonathan C. Menkins, R. C. M. C.: What a Modern Army Health Service Should Be.

On Wednesday evening Preston Bradley, J. L. D., Chicago, will deliver the Andrew P. Biddle Oration on "When Doctors Disagree." Thursday evening has been designated "State Society Night" and speakers will include Dr. Robert L. Novy, professor of clinical medicine, Wayne University College of Medicine, Detroit, and John F. Hunt, executive and director of research, Foote, Cone and Belding advertising agency, Chicago, on "What the People of Michigan Think of Medicine." Features of the annual session will include a series of seventeen discussion conferences (quiz periods) covering general practice and the various specialties. The county secretaries conference will be held Wednesday evening, September 27. The speakers will be Dr. L. Fernald Foster, Bay City, on "The Michigan Picture in Medicine"; Mr. M. C. Smith, Lincoln, Neb., Nebraska's New Medical Practice Act; and Dr. Freeman A. Brockenshire, Windsor, Ont., Canada, "Health Insurance Proposals in Canada." The Woman's Auxiliary will meet at the Panlind Hotel, September 26-28. The lecture by Dr. Hilleboe is sponsored by the Michigan Tuberculosis Association. The American College of Chest Physicians, Michigan chapter, and the Michigan Pathological Society will meet during the session.

#### NEW YORK

**Rheumatic Heart Disease Program**—The Yonkers Tuberculosis and Health Association recently launched a program for the control and treatment of rheumatic heart disease in Yonkers involving the establishment of a special clinic for prevention, control and study of the disease and a coordinated citywide educational project, according to the *Westchester Medical Bulletin*. The clinic is to be located at St. John's Riverside Hospital, Yonkers, equipped and financed by the hospital, and will include a fluoroscope, laboratory and electrocardiographic facilities. The tuberculosis and health association will provide a salary for a specially trained worker who will study the work with the patients at the clinic, the home background of rheumatic children and will assist in an advisory and teaching capacity with the nurses of the city health department, the Visiting Nurse Association and the hospital and school nurses.

**Report on Mental Patients**—The temporary commission on state hospital problems in a recent report recommended that steps be taken to make insulin shock therapy available in the future to dementia precox patients in all state hospitals for the insane. In order to obtain a consistent use of the new treatment the commission urged that a consulting service be established in the state department of mental hygiene to assure adequate records, to hold consultations with hospital staffs and to make follow-up studies. The offering of special courses to train personnel at the New York State Psychiatric Institute and Hospital also was urged. The report stated that 1,128 dementia precox patients treated at the Brooklyn State Hospital "did substantially better in all respects than 876 patients in other state hospitals in the metropolitan area who were not so treated. Fifty-five per cent of the patients who were given insulin shock therapy were enabled to become useful members of the community, 79.5 per cent of the insulin treated patients were able to leave the hospital compared with 58.8 per cent of the nontreated group and after a shorter stay.

#### New York City

**Otto Loewi Receives Cameron Prize**—Dr. Otto Loewi, research professor in pharmacology at New York University College of Medicine, has been awarded the Cameron Prize in Practical Therapeutics of the University of Edinburgh in recognition of his fundamental work on the chemical transmission of the nervous impulse. *Science* reports.

**Course in Industrial Medicine**—On October 31 the Medical Society of the County of Queens will initiate a series of lectures in industrial medicine. The opportunities in industrial health will be discussed by Dr. James G. Townsend, U. S. Public Health Service, and Dr. William A. Sawyer, Rochester, N. Y. Ten lectures will be offered and a certificate will be issued to those who attend the sessions showing their completion of the course.

**Diabetes Association to Develop New Camp**—The New York Diabetes Association on August 23 announced that it had taken title to the former Golden Rule Inn property on Mirror Lake, 4 miles below Kingston, N. Y., and will convert the buildings into a camp for poor diabetic children of greater New York. Dr. George E. Anderson, Brooklyn, president of the association, estimated that \$10,000 would be needed to convert the buildings to meet the requirements of a diabetic children's camp according to the *New York Times*.

**Institute of Clinical Oral Pathology**—The New York Institute of Clinical Oral Pathology will hold a symposium on Fluorine in Dental Public Health at the New York Academy of Medicine, October 30. Included among the speakers will be:

Frederick S. McKay, D.D.S., Colorado Springs, Colo.: Fluorine and Mottled Enamel: A Historical Survey.  
Henry Trendley Dean, senior dental surgeon, U. S. Public Health Service: The Epidemiology of Fluorosis and Dental Caries.  
Dr. Wallace D. Armstrong, Minneapolis: The Fluorine Content of Enamel in Relation to Resistance of Teeth to Caries.  
Basil G. Bibby, D.M.D., Boston: Effects of Topical Application of Fluorides in Dental Caries.  
David B. Ast, D.D.S., Albany, N. Y.: The Practicability, Efficiency and Safety of Fluorinating a Communal Water Supply Deficient in Fluorine to Control Dental Caries.

#### NORTH CAROLINA

**Physician Wills Library to County Medical Society**—The will of the late Dr. Charles H. Cocke, Asheville, provided that his medical library, magazines and other publications be given to the Buncombe County Medical Society Library in Asheville. Dr. Cocke died August 3.

**Bennett College Extends Health Service**—A grant of \$21,310 has been given by the General Education Board to cover a three year period to the Bennett College for Women, Greensboro, to enlarge its health program. According to the *New York Times*, the annual home making institute held at the college has made available to a larger community results of studies in health, home and family life. When the new project is set in operation in September a full time community worker will direct it, using all the resources of the college to make available the maximum facilities in personnel. The program aims to give Bennett students an understanding of how a knowledge of health can function in the community and to make the community more aware of health problems.

#### OHIO

**Bureau of Industrial Hygiene Created**—The Cleveland City Health Department has created a bureau of industrial hygiene. Mr. Herbert G. Dyktor, for more than four years chief engineer of the bureau of industrial hygiene of the Michigan Department of Health, Lansing, has been named chief of the new Cleveland bureau.

**Personal**—Dr. Ewing H. Crawford, assistant superintendent and psychiatrist at the Lima State Hospital, Lima, has been appointed superintendent of the Cleveland State Hospital, succeeding Dr. Hans P. Lee, who resigned to return to the Toledo State Hospital, Toledo.—Dr. John G. Schwarz has been named superintendent at the Ohio Hospital for Epileptics, Gallipolis.

**Academy of Medicine Program**—On September 19 the annual meeting of the Academy of Medicine of Cincinnati will open its regular season. Dr. Chester S. Keefer, Boston, will speak October 3 on "Penicillin." Subsequent programs in the society's schedule include the following:

Dr. Lawrence S. Kubie, New York: Psychotherapy in Medical Practice, October 17.  
Dr. Herbert C. Maier, New York: Surgical Treatment of Pulmonary Suppuration, November 7.  
Dr. Shields Warren, Boston: The Early Diagnosis of Cancer, November 21 (joint meeting with the cancer council).

Dr. Eugene A. Stead Jr. Atlanta, Ga. Mechanism and Treatment of Shock and Circulatory Collapse December 5 (joint meeting with the heart council)

Dr. Frederick C. Irving Boston Cesarean Section December 19  
Dr. Otto K. Engelke Ann Arbor Mich. The Relations Between the Health Department and the Doctor Jan. 2 1945

Lieut. Comdr. Alvin F. Coburn (MC) The B. K. Rachford lectures on Therapy and Prevention of Rheumatic Fever January 16 and 17  
Dr. Merrill C. Sosman Boston X-Ray Diagnosis, February 6

The Roger Morris Lecture of the society will be delivered February 20 by Dr. George J. Heuer, New York

## OREGON

**Personal**—Carlisle P. Knight, Portland, medical director of the U. S. Quarantine and Hospital Service in Oregon, was recently given a banquet in Portland on the occasion of his retirement after thirty-six years with the U. S. Public Health Service.—Dr. Lamar A. Byers, Jackson, Tenn. has been named health officer of Coos County with headquarters in Coquille

**Survey of Child Guidance Clinics**—Dr. Milton E. Kirkpatrick, director of the division on community clinics of the National Committee for Mental Hygiene, New York, will conduct a survey of community child guidance clinics in Oregon. The survey was instituted by a number of interested agencies in the state and will determine the status of the existing program in the state and particularly in the Portland area

## TEXAS

**Progress of Medical Library Plans**—Tentative plans for the construction of a new medical library building in Houston include the housing under one roof of the activities of the Houston Academy of Medicine, the Harris County Medical Society, the Postgraduate Medical Assembly, the Medical and Dental Service Bureau, the *Medical Record and Annals* and the woman's auxiliary. The proposed building would be a three story construction and contain the combined libraries of the Houston Academy of Medicine, the Baylor University College of Medicine, the M. D. Anderson Foundation for Cancer Research and the Texas University College of Dentistry. In addition, there will be an auditorium accommodating about 400 persons. It is anticipated that the construction would cost around \$450,000. At a meeting July 19, fellows of the Houston Academy of Medicine pledged their incomes for from twelve to fifteen days to assist in obtaining needed funds

**Changes in the Faculty at Texas Medical Branch**—D. Bailey Calvin Ph.D., has been promoted to professor of biologic chemistry and associate dean at the University of Texas Medical Branch, Galveston. New appointments include

Thurlo B. Thomas Ph.D. appointed assistant professor of anatomy  
Dr. Wesley F. McKinley Jr. appointed assistant professor of internal medicine

Henry J. Ralston Ph.D. San Francisco appointed assistant professor of physiology

Dr. Carl U. Dornel appointed to assistant professor of industrial hygiene in the department of preventive medicine and public health

Promotions at the school include

Dr. Jack R. Ewalt promoted to professor of neuropsychiatry  
Col. Robert M. Moore M.C. (on leave for military service) promoted to professor of surgery

Dr. Stephen Weisz promoted to associate professor of neuropsychiatry  
Dr. Julius L. Jenkins promoted to associate professor of obstetrics and gynecology

Dr. Henry H. Sweets Jr. promoted to associate professor of pathology and director of the John Sealy Clinical Laboratory

Major Truman G. Blocker Jr. M.C. (on leave for military service) promoted to associate professor of surgery

Dr. A. J. Jenkins promoted to assistant professor of obstetrics and gynecology

Dr. Norman D. Schofield promoted to assistant professor of pathology

## WASHINGTON

**Personal**—Dr. Thomas H. Biggs has been appointed health officer of Kelso in addition to his work as health officer of Cowlitz County.—Dr. Joseph H. Fitz, Montesano has resigned as county coroner of Grays Harbor.—Dr. William Ernest Rownd Jr. was recently appointed police surgeon of Bremerton.—Dr. Emil E. Palmquist, Seattle, health officer of King County, was recently elected president of the Washington State Social Hygiene Association

## WEST VIRGINIA

**District Health Conference**—"Control of Tuberculosis in West Virginia" will be the theme of the annual Southern District Health Conference covering twenty-four counties in the state, which will be held September 29 at the Daniel Boone Hotel, Charleston

## WISCONSIN

**Personal**—Dr. Arthur V. de Neveu recently resigned as medical director of the Johnston Emergency Hospital, Milwaukee, to enter private practice, he held the position for eighteen years

**Kellogg Gift for Health Education**—A grant has been given by the W. K. Kellogg Foundation of Battle Creek, Mich., to be available for five years for a program of health education in Wisconsin. The fund will be administered by the Wisconsin department of public instruction, newspapers reported.

**First County Mental Hygiene Program**—Brown County has made plans to employ a psychiatrist to hold a child guidance center to further mental hygiene. This action is an extension of the program that has been carried on by the Wisconsin State Board of Health for the past two years. The county is said to be the first in the state that has inaugurated a mental hygiene program. Two members of the seven member psychiatric committee of the Brown County Board of Supervisors which has set up the program are Drs. George M. Shummers, health commissioner of Green Bay, and Marshall W. Meyer, district health officer of the state board of health

## HAWAII

**Penicillin Center**—Queen's Hospital, Honolulu, has been designated as the central distributing center for penicillin for civilian use in the Territory of Hawaii. A total of 50 million units has been allotted for distribution for the first month the order having been placed through the War Production Board as of June 15

**Health in Hawaii**—In 1942 there were 10,422 live births reported for the Territory of Hawaii. The crude birth rate was 236 per thousand of estimated population, as compared with the rate of 230 per thousand of estimated population in 1941. Of the 10,422 live births 3,754, or 36 per cent, were Japanese, 2,764, or 27 per cent, were part Hawaiian, 1,845 or 18 per cent, were Caucasian, 1,044, or 10 per cent, were Filipino, 548, or 5 per cent, were Chinese and 246, or 2 per cent, were Hawaiian. There were 3,397 deaths from all causes in 1942 a death rate of 77 per thousand of estimated population. This rate is considerably lower than the rate of 122 per thousand of population for 1941, when war casualties from the air raid on Pearl Harbor greatly increased the crude death rate. A comparison which excludes deaths among military personnel and civilians due to operations of war in 1941 shows that the crude death rate in 1942 was slightly higher than that recorded in 1941. The ratio of births to deaths reported for the Territory of Hawaii in 1942 was 307 births to 100 deaths. This ratio has been increasing steadily in the Territory of Hawaii in recent years up to 1941, when war casualties caused a large decrease. The ratio was 253 in 1937, 281 in 1938, 299 in 1939, 305 in 1940 and 189 in 1941. There were 405 deaths of infants under 1 year of age in 1942 an infant mortality rate of 38.9 per thousand live births. This rate was 35 per cent lower than that for 1941 and is the lowest infant mortality rate ever recorded for the Territory of Hawaii. The rapid decline in the infant mortality rate for the Territory of Hawaii is most impressive, during the past ten years it has been practically cut in half. The six principal causes of death and their death rates in the Territory of Hawaii in 1942 were diseases of the heart 132.7, accidents other than motor vehicle 90.9, cancer and other malignant tumors 64.9, tuberculosis 62.8, nephritis 58.5 and pneumonia (all forms) and influenza 47.5 per hundred thousand estimated population. These causes accounted for more than 59.6 per cent of all deaths. Relatively large decreases in the death rate were reported in 1942 for cancer and other malignant tumors and for intracranial lesions of vascular origin. Increases in the death rate were recorded for tuberculosis, cerebrospinal (meningococcal) meningitis, diseases of the heart, pneumonia (all forms) and influenza, nephritis, suicide, homicide, motor vehicle accidents and other accidents. The death rate for cerebrospinal (meningococcal) meningitis reached epidemic proportions in 1942 in the territory, as on the mainland of the United States. Because of the increased military activity in the Hawaiian theater of operations the increase in the accident death rate was not unexpected. A large increase in deaths from air transport accidents accounted for the greater part of the increase in the accident death rate. The suicide death rate in 1942 was one of the highest recorded for the territory since its admission to the registration area. The suicide death rate increased from 14.8 per hundred thousand of population in 1941 to 22.4 in 1942. This high rate is an unusual occurrence in a war year.



## GENERAL

**Tropical Medicine Society Admitted to National Research Council**—At a recent meeting of the executive committee of the division of medical sciences National Research Council, it was voted unanimously to admit the American Society of Tropical Medicine to membership in the division.

**Fellowships in Child Psychiatry**—A limited number of fellowships are being offered for training in extramural child psychiatry. Selection for these fellowships is made by the National Committee for Mental Hygiene, by which eligible applicants are to be recommended for appointment, the term and plan of the fellowship to be determined by the peculiar needs of the applicant. Candidates should have at least a general internship and two years of psychiatry in an approved mental hospital in addition to other qualities fitting them for extramural service. The stipends vary slightly with location and status of the fellow but in general range between \$2,000 and \$2,400. Additional information may be obtained from Dr. Milton E. Kirkpatrick, National Committee for Mental Hygiene, 1790 Broadway, New York.

**The G. I. Joe Literary Award**—E. P. Dutton and Company, Inc., New York, announces the G. I. Joe Literary Award of \$5,000 for the best book manuscript submitted by a service man or woman of any rank, in any branch of the U. S. Service, wounded in action in the present world war. Half of the cash award will be paid on acceptance of the manuscript and the other half on its publication, all as an advance against royalties, under a publisher's regular contract. Professional correspondents are excluded. In making the announcement, E. P. Dutton and Company states:

Whether these books tell the story of hope or disillusionment is not the publisher's concern. They are looking for the best selection possible of fiction or nonfiction and poetry which is definitely going to be written—is being written today—by the men and women who feel that they must get down in print what they think and feel about their shattered world. And it is to the wounded first to return from the battle fronts that the publishers offer this award.

**Prize Contest for Physician Artists**—The American Physicians Art Association, through the cooperation of Mead Johnson and Company, announces a prize contest for medical officers in the armed forces and civilian physicians. "Courage and Devotion Beyond the Call of Duty" has been designated the theme of the contest and physicians may use any one of the following mediums: painting in oil or tempera, water colors, transparent or opaque, sculpture in any medium, drawing, any medium, prints, etching, engraving, lithograph, wood block or linoleum block, and photography, including bromure, tinted and kodachrome. The purpose of the competition is to memorialize the heroism and devotion of the medical profession. The prize winning subjects will remain the property of the physician artist, but the American Physicians Art Association shall have reproduction rights and also the privilege, for a period of three years after the close of the contest of displaying prize winning objects at art museums, libraries, county medical societies, medical schools and similar institutions. That association shall also have the right to offer the prize winning works to any of these groups to use as murals, cornerstones, architectural designs and the like to memorialize the importance of the medical profession in war and in peace. The contest will expire May 20, 1946 in order that the prize winning objects may be ready for hanging at the annual session of the American Medical Association in June 1946. Any physician member of the American Physicians Art Association, including medical officers in the armed forces of the United States and Canada, are eligible to compete in the contest. A list of forty-two prizes will be divided equally, one set of prizes to be awarded to medical officers in the armed forces and the other to civilian physicians. Additional information may be obtained from Dr. Francis H. Redewill, secretary, American Physicians Art Association, Flood Building, San Francisco.

**Suicide Rate Declines**—The suicide rate in the United States is now about one fifth lower than before the war, according to statisticians of the Metropolitan Life Insurance Company, who base their conclusions on the company's mortality records. In a release, July 27, it was stated that it is a familiar fact that suicides decline during wartime. From the two years following Pearl Harbor, 1942-1943, the suicide rate among the industrial policyholders was lower by about one fifth than the rate for the preceding three years. In 1943 the suicide death rate among these insured established a new low record. The death rate last year among this group at ages 1 to 74 was 68 per hundred thousand as compared with 77 in 1942 and 82 in 1941. The current records indicate that the death toll from suicide is still being further reduced. Among white male policyholders the greatest decline in sui-

cides in 1942-1943 about one third as compared with prewar years was at the later ages where the toll is the heaviest. Among white women the greatest percentage decline also about one third, occurred at the younger ages 15 to 24 where the suicide rates are at their lowest. The Metropolitan statisticians attribute the general decline in the suicide rate in recent years principally to the 'prevalence of favorable economic conditions and the psychological effect of the war.' It is pointed out that the sharp decrease in the number of suicides committed by men at older ages 'has probably been due for the most part, to the opportunities for employment at relatively high wages. And the economic factor has also undoubtedly played a large role in reducing suicides among adolescent girls and young women. This is particularly gratifying since it might have been expected that the wartime conditions which have increased delinquency among young girls might also have adversely affected their suicide rate.' The statisticians also express the conviction that a psychological factor has played a part in reducing the toll from suicides 'by the subordination of petty personal considerations to the broader needs of the nation at war.'

**Report of Academy of Pediatrics**—A far reaching program to develop medical and health services for children is reflected in the report of various committees of the American Academy of Pediatrics published in the *Journal of Pediatrics* for August. In all its activities the academy emphasizes the cooperation of its members through its state fellowship. The committee for cooperation with nonmedical groups sees a new field for cooperation with the General Federation of Women's Clubs of America in which two million young girls are enrolled and which devotes much of its teaching and training along health lines. The committee on governmental and medical agencies which over a period of years developed a seven point program demonstrating how a state academy fellowship could be of constructive service to better child health through cooperation with state governmental and medical agencies plans to present to the academy of pediatrics at its November meeting a proposed study whereby the services to these many agencies could be improved. Some of the activities needing increased integration are hospital ward service, hospital clinic service, public health conferences, preschool and child health conferences, school health services, child guidance and mental hygiene program, adolescent hygiene programs, the pediatric part of tuberculosis case finding, immunization clinics, the pediatric part of crippled children's clinics, the pediatric services involved in voluntary health insurance programs and the medical supervision of children's camps. The report of the committee on Pan American scholarships indicates that the main difficulty of persons receiving these scholarships which were made available by several sponsoring groups was an insufficient knowledge of English, a problem which has been recognized and since controlled. At the second Congress on Pediatrics in Mexico City, March 26-April 1, fifteen fellowships in the academy were awarded to persons residing in Mexico. The activities of the committee on national defense continue to be centered on the medical supervision of refugee children in cooperation with the United States Committee for the Care of European Children. Groups of physicians have been organized to examine and to provide medical care for these children at various reception centers before placement. Examinations have included Schuck and Mantoux tests and chest x-rays of positive reactors. At intervals from April 1, 1943 to the time of the report, seven groups comprising 80 children were received in three centers located in Pleasantville, N. Y., Bronx, N. Y. and Newark, N. J. To assure the best results the coordination and perhaps consolidation of various committees and agencies concerned with the care of children is urged. The integration of effort is particularly important both for the present emergency and for the future development of the nursery and child care centers. In the formulation of plans for particular areas the consultation of members of the academy is urged. The special committee on rheumatic fever has pledged itself to cooperate in the rheumatic fever problem and to aid in the program to be carried out by the newly organized Council on Rheumatic Fever (*THE JOURNAL*, September 2, p. 42).

## CORRECTION

**Hospitalization of Dependents of Naval Personnel**—In the first item appearing on page 1047 of *THE JOURNAL* August 12 is the statement "For each patient admitted and for each day in the hospital, the member of the Navy or Marine Corps concerned shall pay \$775." The amount should have been \$175 instead of \$775.



## Foreign Letters

### LONDON

(From Our Regular Correspondent)

Aug 12, 1944

#### Casualties in Normandy Flown Across the English Channel

Since D day 10,000 wounded have been brought from Normandy to England in Dakota planes flown by the British Transport Command. On the outward journey the planes carry ammunition and supplies. On the return journey each plane carries 18 stretcher cases and 6 walking wounded. Because they carry supplies on the outward flight, the ambulance machines do not bear the Red Cross insignia and claim no immunity from attack, even though they are not armed. The wounded are in charge of a woman nursing orderly. Priority cases find themselves in English hospitals at home within six or seven hours of being picked up on the battle field. The nursing orderly is qualified to administer oxygen or morphine during the flight. The United States Army has a similar aerial ambulance service to the battle front. Its flying nurses are given officer status and officer pay.

#### Improved Vital Statistics During the War

Dr Percy Stocks, medical statistician of the General Register Office, has described the vital statistics of 1943 (*Lancet* 2 65 [July 8] 1944). But for the influenza epidemic at the end of the year the vital statistics of England and Wales might have been as noteworthy as those of 1942. In the first three quarters of 1943 the death rate was 11.3 per thousand, compared with 11.8 and 11.7 in the corresponding periods of 1942 and the prewar year of 1938. The rates for the years 1938-1943 were 8.52, 8.49, 9.90, 9.32, 8.09 and 8.24. In 1943 new low records were established for infant mortality (49.0 per thousand live births, compared with 50.6 in 1942 and 52.8 in 1938) and for ages 1 to 5 (3.34 per thousand living compared with 3.42 in 1942 and 5.28 in 1938). The crude birth rate rose to 16.5 per thousand in 1943, giving an approximate reproduction rate of 0.903, compared with 0.810 in 1938 and 0.853 in 1942. The tuberculosis mortality, which is usually increased by war, was much the same as before the war. Comparison with 1938 shows that deaths from respiratory tuberculosis were 619 more than those in 1938 for males but 561 less for females. The cause of the improved vital statistics during the war seems to be the abolition of unemployment.

#### Information to Be Disclosed to Military Authorities as to the Source of Venereal Disease

A regulation of the Ministry of Health which has given rise to much criticism provides that any one reported to the health authorities by two persons for having transmitted venereal disease can be compelled to undergo examination and treatment. The ministry has now informed military authorities that information so obtained may be disclosed to medical authorities of the British American or other allied forces so far as it is needed to secure examination and treatment of persons alleged to be sources of infection.

#### Forcible Vaccination of a Soldier

A labor member asked the secretary of state for war in the House of Commons whether or not the forcible vaccination of a soldier at the command of a medical officer with the aid of four men was contrary to the regulations. The secretary replied that the man in question was vaccinated in spite of his protests that he did not wish to be vaccinated. His left wrist was held by one man and his right elbow by another. The man had no conscientious objection to vaccination but refused because on a

previous occasion he suffered from a sore arm, and in his view the vaccination and inoculations he had received had done him no good. The officer concerned had clearly no right to use force, and in normal circumstances disciplinary action would be taken against him, the secretary said. But this vaccination was carried out at the Anzio bridgehead, it was pointed out, reinforcements were arriving from Naples, where there was an outbreak of virulent smallpox, and the possibility of an outbreak on the bridgehead was causing great anxiety. In these exceptional circumstances the officer's action had been considered an error of judgment committed in good faith to safeguard the health of the troops in a dangerous medical situation. The secretary therefore would not take any disciplinary action.

#### Radium Precautions

The Radium Committee of King Edward's Hospital Fund for London has made some important recommendations. In the future, it is recommended that the clinical supervision of radium work in hospitals should be entrusted to the Radium Commission, which already exercises this function throughout the whole of Great Britain outside the metropolitan area. Radium and irradiation work generally have too often resulted in considerable suffering. To eliminate or at least to minimize that danger it is important that such work shall be carried out only in hospitals and institutions which can provide a full team of experts—specialists, physicians, surgeons, radiotherapists and physicists. That policy should be integrated over the whole country, the committee states.

### AUSTRALIA

(From Our Regular Correspondent)

July 3, 1944

#### Pharmaceutical Benefits—"Free Medicine" for Australia

As part of the social security plans of the commonwealth government, a bill to provide pharmaceutical benefits was passed by the Senate on March 2. Such benefits are defined as "(a) un compounded medicines the names of which, and medicinal compounds the formulae of which, are contained in a prescribed formulary to be known as the Commonwealth Pharmaceutical Formulary, and (b) materials and appliances (not being un compounded medicines or medicinal compounds) the names of which are contained in a prescribed addendum to the Commonwealth Pharmaceutical Formulary," these benefits, available to "every person ordinarily resident in the Commonwealth," from an approved pharmaceutical chemist or, in special circumstances, a medical practitioner "on presentation of a written and signed prescription or order (which shall be in accordance with the prescribed form and written on a form supplied by the commonwealth) of a medical practitioner."

The British Medical Association feels that its members will be hampered by being restricted to a formulary. If the prescription does not conform to the formulary the medicine will not be free. To meet this objection the government will establish a permanent committee of doctors and pharmaceutical chemists to investigate all new drugs so they may be included when necessary to keep the formulary up to date. The expense of a drug will not in itself debar the drug from being included in the formulary, provided its therapeutic efficiency is established.

The procedure will be for a patient to obtain from a doctor a prescription written on a special form, in which the doctor orders whatever medicine is necessary for treatment. This prescription will be presented to an approved chemist. The fears of the Friendly Societies that their dispensaries would be excluded from the operation of this act have been overcome by an invitation to all chemists and dispensaries to apply for approval to operate under the act.

Mr G G Jewkes has been appointed director of pharmaceutical services in the Commonwealth Health Department. Mr Jewkes was formerly chief chemist under the lapsed national health insurance scheme, and he has been attached to the Social Services Department. Mr Jewkes's appointment will be followed soon by the formation of a pharmaceutical administrative staff in each state. These staffs will comprise a chief chemist assisted by technical officers and an organization to fix prices for prescriptions. The 'free medicine' plan is expected to start early next year, as soon as preliminary administrative details have been completed. The estimated annual cost is £2,100,000.

At a Friendly Societies' conference held in Canberra it was decided that the pharmaceutical benefits taken from Friendly Societies by the commonwealth government under the free medicine plan would be replaced by other benefits. Among these would be ambulance services, home and clinical nursing and care for the aged and convalescent. State associations of Friendly Societies will press for any state legislation necessary. It was also decided to consider the possibility of a change in the present system of contract medical service to eliminate income limits. This is contrary to a long established policy of the British Medical Association, which feels, with justification, that contract medical practice should be limited to those whose income does not permit them to receive medical attention by private arrangement with their doctor.

The first reaction of the medical profession to this new pharmaceutical bill was a varying degree of opposition. The Victorian branch threatened to refuse to cooperate. Previous to the passing of the bill the Australian president of the British Medical Association (Sir Henry Newland) had met government representatives and later had issued a statement that the medical profession must be untrammelled. In January the Federal Council of the British Medical Association endorsed this view and added that all prescribed medicine should be given free. The general secretary of the Federal Council of the British Medical Association (Dr John Hunter) spent some months in Canberra before the bill was considered, in an effort to have the act improved.

The British Medical Association is concerned about clause 15 (a) of the act. By this clause the director general of health may appoint a medical man in any area on a salary basis for the purpose of writing prescriptions so that the public may obtain free medicine. It is felt that this clause will enable the director general of health to appoint a doctor in any area where the medical men are not prepared to cooperate. Should this happen, not only would the people be able to have free medicine but they would also be able to have free prescriptions and possibly free medical attention as well. The medical profession regards this clause as a sinister step toward the introduction of a cheap form of national medical service.

#### Typhoid Epidemic in Victoria

In March 1943 a classic milk borne epidemic of typhoid broke out in an outer suburb of Melbourne. The report of this epidemic has now been published by the Victorian Department of Public Health. There were 440 cases, with a death rate of 5 per cent. Nearly all were primary cases. Milk was established as a vehicle of infection in a few days after the epidemic commenced. As a result of the zoning system of milk distribution the milk was distributed throughout the affected area by one dairy, the milk being sold either to the public directly or by shops or depots. Milk had been received from the dairy farms in cans, mixed and cooled in bulk and then returned to the rinsed can. The pooling of milk delayed detection of the source of infection, but the investigation ultimately resulted in the discovery of a woman carrier of typhoid. This carrier was unclean in her personal and domestic habits, and the dairy was insanitary.

The incidence of those infected was highest in the 5-14 age group, followed by the 15-24 age group. Infants under 12 months were either immune to or protected against infection. Mass inoculation against typhoid was not practiced because of want of information about its efficacy in patients already infected. Inoculation was advised in individual cases for newcomers to the district, in families with a member already a patient and for persons at continued risk such as those attending the sick or handling infected material. One interesting point was that no soldier returned from the war of 1914-1918 developed the disease, even though there were over 200 exposed to the risk. These men have had inoculations against typhoid.

The milk which was the cause of the epidemic had not been pasteurized, and this epidemic has provided a valuable object lesson in the necessity for pasteurization. Unfortunately even this dramatic lesson seems to have failed to impress the public and the politicians with the need for this modern essential of milk distribution. Medical men and scientists have been most outspoken in their views, but the 'practical' dairymen and an apathetic public have so far won the day. However insistence by the services for pasteurized milk is having its effect.

#### BRAZIL

(From Our Regular Correspondent)

RIO DE JANEIRO July 31, 1944

#### Teaching of Hygiene in Brazil

The Institute of Hygiene at São Paulo University has served as the state school of hygiene in connection with the São Paulo Medical School since 1931. It has granted several kinds of certificates recognized throughout Brazil. According to the reorganization plans for the university schools in Brazil still under consideration by the Ministry of Education, the teaching of Hygiene will be made through the School of Hygiene and Public Health organized at the universities and in the medical schools in which departments of hygiene and public health have already been developed. The reorganization of the Institute of Hygiene at São Paulo University has been approved by the University Council as well as by the National Council on Education. The teaching and future development program has been approved also by Dr Gustavo Capanema, minister of Brazilian education, as a new and valuable element in the preparation of professional personnel and for the promotion of scientific progress.

#### The Rio de Janeiro Institute of Psychiatry

The Institute of Psychiatry, under the direction of Professor Henrique Roxo, is a part of the University of Rio de Janeiro, where Dr Roxo teaches psychiatry with the assistance of Associate Professors Flavio de Souza, Rodrigo Ulysses, A. Moraes Coutinho and Ibrahim Jorge and the collaboration of a few specialists in allied branches of medicine. The institute is provided with about 200 beds, which serve a large number of mental patients. As the most modern therapeutic methods (including insulin therapy, malariotherapy, metrazol shock, electric shock, occupational therapy, physical therapy, vitamin therapy and calcium therapy) are fully used at the institute, the results of treatment are considered excellent, having reached the rate of about 30 per cent cures during the last year. A main feature of the institute is that it is devoted to research as well as to teaching. Dr Flavio de Souza has lately published several papers in which he presents the results of his studies on vitamins and mental diseases, the convulsive therapy by dicrotoxin associated with metrazol, improvements in convulsive therapy by metrazol (35 per cent dextrose solution), comparison between the clinical results of the metrazol shock and electric shock treatment and circulatory velocity and metrazol shock. Dr Paulo Lacaz, in charge of the laboratory of

the institute, has recently published papers on the Takata-Ara reaction in neuropsychiatry, biochemical aspects of metrazol convulsions, glycid metabolism in schizophrenia, and some results in the application of interferometry. Basal metabolism in mental diseases is the special field of Dr Ulysses, and Dr Novais Filho deals with electroencephalographic studies in the diagnosis of psychoses.

#### Hospital News

The mayor of Rio de Janeiro, Dr Henrique Dodsworth, himself a physician, has ordered that the Cascadura Maternity Hospital shall be known hereafter as the Fernando Magalhães Maternity Hospital. Dr Magalhães was a leading obstetrician and professor at the University of Rio de Janeiro, whose death was reported in *THE JOURNAL*, April 8.

The administration of the city of São Paulo has completed the necessary arrangements to buy from the Bank of Brazil, custodian of enemy properties, the hospital now known as the Japanese Hospital of that city.

Dr Fernando Paulino Jr, a noted young surgeon of Rio de Janeiro, recently resigned the post of director of the Miguel Pereira Hospital. This municipal hospital, with 50 beds, is a specialized institution for the surgical treatment of tuberculosis.

A fire has destroyed a section of the Municipal Hospital of the city of São Paulo. Firemen saved 40 hospital patients from injury.

#### Blood Typing of Brazilian Soldiers

Major Rodolfo Pereira dos Santos has cited the incidence of different blood groups among Brazilian soldiers of the Italian expeditionary forces. The blood was classified of 10,811 soldiers. Results were

|                              | Number | Per Cent |
|------------------------------|--------|----------|
| O type (universal donor)     | 5 047  | or 46.63 |
| A type                       | 4 101  | or 37.94 |
| B type                       | 1 285  | or 11.88 |
| AB type (universal receiver) | 378    | or 3.50  |
|                              | 10 811 | 100.00   |

#### Cesarean Section Because of Diaphragmatic Hernia

Professor Clovis Salgado of Belo Horizonte, Minas Gerais, observed a pregnant woman with diaphragmatic hernia in whom a cesarean section was performed at the onset of labor. The patient had a known tuberculous lung abscess six years previously, which emptied without operation. A left phrenectomy was performed one year later. An x-ray of the digestive tract revealed the diaphragmatic hernia showing the stomach herniated into the thorax. Tubal sterilization was performed at the time of the cesarean section.

#### Operability of Cancer of the Rectum

Dr R Pitanga Santos has a large proctologic practice in Rio de Janeiro and has investigated cancer of the rectum. At the last meeting of the National Academy of Medicine he presented several of his cancer patients. Speaking on the special topic of the operability of cancer of the rectum, Dr Pitanga Santos pointed out his policy, followed during his long practice, of always operating in this condition, whatever the state of the patient. He declared that he has obtained good results in many cases considered hopeless by other doctors. Dr Pitanga Santos insisted on the point that the mere age of the patient should not be considered a contraindication to surgery; he presented a woman of 84 who had been operated on at the age of 70 when she was considered by several other physicians as in a desperate plight. He presented several more aged patients who had been cured of cancer of the rectum. As a rule he employs a special surgical technic that he devised himself, using the peritoneal route, through a wide incision in three directions, thus affords an ample operating field to enable the use of the electric knife, which he frequently employs.

#### Pathology and Clinical Treatment of the Thyroid

Under the direction of Dr J Peregrino Junior, the endocrinologic department of the Policlínica Geral of Rio de Janeiro, a medical institution which operates several large medical and surgical outpatient clinics, is now giving an extensive course on the pathology and clinical treatment of the thyroid. Drs Moreira da Fonseca, Luis Feijo, Frederico MacDowell, Raymundo Brito and Xavier Pedrosa are teaching the different parts of the course. The emphasis given to the thyroid this year is explained by the increasing importance of this subject in Brazil. Of a thousand cases of glandular diseases attended at the endocrinologic department of the Policlínica, 38.7 per cent were diseases of the thyroid. In several thousand school children in the state of São Paulo Arruda Sampaio has found 18.2 per cent with goiter, and the rate reaches 60 per cent in some localities of the same state. Moreover, in spite of the fact that the thyroid is the best known of all the endocrine glands, it is in the diagnosis and treatment of its diseases that the general physician errs the most.

#### Brief Items

Dr Annibal Varges, a specialist in physical medicine practicing in Rio de Janeiro since 1909, died recently at the age of 64. He was the first to suggest the simultaneous production of faradic and galvanic electric currents in the same apparatus as a therapeutic procedure.

Dr Joaquim A de Brito, head surgeon of the Municipal Emergency Hospital of Rio de Janeiro, and Dr Flavio P de Figueiredo, physician of the Division of Tuberculosis of the Department of Health of the same city, have left for the United States to spend some time, respectively, at the Massachusetts General Hospital and at the Municipal Tuberculosis Sanitarium of Chicago.

Major Arlino C de Carvalho has been appointed ad interim director of the Brazilian Army Medical School.

Under the direction of Dr Paulo Cesar de Andrade, the old Misericórdia Hospital of Rio de Janeiro is being progressively enlarged and refitted and the services improved. The latest addition in the plan of improvement is the publication of a medical magazine under the title *Anais da Santa Casa de Misericórdia do Rio de Janeiro*, to record the study of the cases treated in the hospital.

Dr A Saint-Pastous, president of the University of Porto Alegre, state of Rio Grande do Sul, recently resigned this position.

Dr Raul Moreira, dean of the school of medicine of the University of Porto Alegre, has resigned his post. Dr J Pereira Filho, professor of medicine at the same school, has been appointed dean.

Col Emmanuel Marques Porto, now stationed somewhere at the war front in Europe, has been appointed head of the Medical Service of the Brazilian Expeditionary Force. Lieut Col A Marques Torres has been appointed head of the medical service of the first infantry division of the same force.

## Marriages

TOM GROVER ORR JR, Kansas City, Mo., to Miss Jean DeVore Robertson of Marysville, June 24.

ROBERT MATTHEW BERNE to Miss Beth Adele Goldberg, both of New York, August 18.

DAVID OLAN MEEKER to Miss Marion Louise Ingraham, both of New York, August 8.

CHARLES O PETERS to Mrs Mabel Rindernecht, both of Erie, Pa., April 27.

WILLIAM C F SMITH, Erie, Pa., to Miss Louise Falk of Warren, May 20.

## Deaths

**Groesbeck Francis Walsh** \* Fairfield, Ala Northwestern University Medical School, Chicago 1902 specialist certified by the American Board of Internal Medicine, fellow of the American College of Physicians, member of the American Public Health Association, American Academy of Tuberculosis Physicians, National Tuberculosis Association American Trudeau Society, American Association of Industrial Physicians and Surgeons, American Academy of Physical Medicine, American Association for the Advancement of Science Southern Medical Association and the Alabama Academy of Science entered the medical service of the Isthmian Canal Commission in 1905 and remained in the service until 1910, during varying periods of the time had been in charge of the line hospitals at Culebra, Las Cascades, Miraflores and La Boca served as adviser in health matters to the republic of Nicaragua and for many months as American Consul in the Nicaraguan port of Corinto, attached to the medical department of the Madeira Mamore Railroad, engaged in constructing a line around the cataracts of the Madeira River, from 1910 to 1911 during the major portion of the time had been in charge of surgical work at Candelaria Hospital, Amazonas, North Brazil life member of the Madeira Mamore Society, formed by the survivors of this expedition, for a year had been in charge of the medical work of the Butters Mining Company at Divisadero in the republic of Salvador, chief of the laboratory division, Naval Operating Base Hampton Roads, Va during World War I, and was attached to the U S S *Sierra* and the U S S *Montgomery* serving six months overseas on the Naval Transport U S S *Orizaba* assistant superintendent of the health department of the Tennessee Coal, Iron and Railroad Company since 1913 and chief of the medical clinic of the Employees' Hospital since 1919, died September 1 aged 66, of carcinoma of the urinary bladder

**Jerome Kingsbury**, New York Bellevue Hospital Medical College, New York, 1897, member of the Medical Society of the State of New York American Dermatological Association and the American Academy of Dermatology and Syphilology specialist certified by the American Board of Dermatology and Syphilology professor of dermatology and syphilology at the New York Polyclinic Medical School and Hospital, for five years a member of the Seventh Regiment of the New York National Guard served in France with the American Expeditionary Forces during World War I, colonel in the medical reserve corps, surgeon of the city patrol corps, formerly on the staff of the New York Skin and Cancer Hospital director of dermatology at the Midtown Hospital consulting dermatologist to the Harlem Eye and Ear Hospital New York City Hospital, Welfare Island, North Eastern Dispensary and the Northern Dispensary attending dermatologist to the New York Polyclinic Hospital, where he died July 15, aged 73 of cerebral hemorrhage

**Edward Milum Barnes**, Tampa, Fla Memphis (Tenn) Hospital Medical College, 1913, on the courtesy staff of the Tampa Municipal Hospital, died July 19, aged 62 of coronary thrombosis

**Bert Montrose Barringer**, Emden, Ill, Illinois Medical College, Chicago, 1904, member of the Illinois State Medical Society on the staffs of the St Clara's Hospital and the Evangelical Deaconess Hospital Lincoln, where he died July 26 aged 77, of heart disease

**Edward Theodore Bower**, Boise Idaho, College of Physicians and Surgeons of Chicago School of Medicine of the University of Illinois, 1908 member of the Idaho State Medical Association for two years a member of the health department of Chicago for many years on the staff of St Luke's Hospital died July 22, aged 69

**Alexander Walter Burke**, Chicago Loyola University School of Medicine, Chicago, 1916, served in the medical corps of the U S Army in France during World War I temporary medical examiner for the administrator of civil aeronautics from May 1943 to May 1944 flight surgeon at the Municipal Airport died in a hospital at Memphis Tenn June 4 aged 57, of heart disease

**Joseph Butler**, San Francisco College of Physicians and Surgeons of San Francisco 1905 died in the Southern Pacific Hospital in July, aged 71

**Edwin Myron Case** \* Canton, Ohio University of Nebraska College of Medicine Omaha 1933 served an internship at the St Louis City Hospital St Louis, formerly a

member of the Civilian Conservation Corps in Middle River Minn and Crystal Springs Ark. on the staff of the Aultman Hospital where he died July 22, aged 44

**James Horace Chism** Carthage Tenn Vanderbilt University School of Medicine Nashville, Tenn 1908 died in June aged 59

**James Brewer Cochran**, Dyersburg Tenn University of Tennessee College of Medicine Memphis 1933 member of the Tennessee State Medical Association served an internship and residency at the Methodist Hospital in Memphis on the staff of the Baird-Brewer Hospital where he formerly served as medical superintendent died July 18 aged 34 of coronary occlusion

**William Henry Copeland** La Jolla Calif Bellevue Hospital Medical College New York 1885 died July 3 aged 84

**John Joseph Cummings** \* Worcester Mass Columbia University College of Physicians and Surgeons New York 1899 member of the New England Obstetrical and Gynecological Society, for many years on the staff of St Vincent Hospital died in Misquamicut R I July 9, aged 74 of heart disease

**Lucius M Ellis**, Houston Texas Baylor University College of Medicine Dallas 1912 member of the State Medical Association of Texas died July 8 aged 65

**Homer Harvey Ewing Willard** Ohio Cleveland Homeopathic Medical College 1898 member of the Ohio State Medical Association past president of the Huron County Medical Society chairman and for many years a member of the board of health of Huron County on the staff of the Willard Municipal Hospital where he died July 20 aged 75 of pneumonia

**Charles William Louis Hacker** \* Albany N Y Albany Medical College 1905 served at his alma mater as clinical assistant and instructor in surgical pathology assistant in pathology and bacteriology lecturer instructor in surgery and since 1937 associate in surgical pathology member of the American Urological Association fellow of the American College of Surgeons associate attending surgeon Albany Hospital where he died July 7, aged 60, of acute peritonitis following chronic cholecystitis

**Otto William Hinn** \* Cicero Ill Bennett Medical College, Chicago 1912 on the staffs of the Loreto and Waltham Memorial hospitals, Chicago died July 20 aged 59 of heart disease

**Bertalan Hoch**, Jersey City N J Magyar Kiralyi Erzsébet Tudományegyetem Orvostudományi Pecs Hungary 1923 formerly assistant in medicine at his alma mater and its hospital, served an internship at the Jersey City Hospital died July 10 aged 46 of coronary thrombosis

**John Dan Hogue** \* Altoona, Pa Jefferson Medical College of Philadelphia, 1905, specialist certified by the American Board of Otolaryngology, member of the American Academy of Ophthalmology and Otolaryngology fellow of the American College of Surgeons served overseas during World War I member of the staff of the Mercy Hospital examiner for the Civil Aeronautics Authority, died in the Altoona Hospital July 19, aged 62, of carcinoma of the prostate

**Thomas J Hollingsworth** \* South Haven Kan (licensed in Kansas in 1901) past president of the Sumner County Medical Society died July 10 aged 89, of arteriosclerosis

**José E Igartua** \* Aguadilla, P R University of Maryland School of Medicine Baltimore, 1911, past president of the Aguadilla District Medical Association examiner for draft board during World War I, senior medical officer, department of radiology, Aguadilla District Hospital died May 15 aged 54 of cardiovascular renal disease

**Dominick Philip Douglas Jackson** \* Little Falls N J University of Toronto Faculty of Medicine Toronto Ont Canada 1932 on the staffs of the St Joseph's Hospital Paterson and the Community Hospital, Montclair, died suddenly July 9 aged 39, of coronary thrombosis

**Milton Carr John** \* Stuttgart Ark University of Nashville (Tenn) Medical Department, 1903, served as president of the Arkansas County Medical Society, formerly councilor of the Third District of the Arkansas Medical Society a member of the board of trustees of the Arkansas Tuberculosis Sanatorium, State Sanatorium died June 9, aged 67

**George Brinton Kessler**, Elgin Ill Tennessee Medical College, Knoxville, 1899 at one time health officer of Cowley County, Kan a member of the Selective Service board in Sullivan during World War I died in St Joseph Hospital July 28 aged 79 of chronic myocarditis and arteriosclerosis

Frank Dietrich Kilgore, Philadelphia University of Pennsylvania Department of Medicine Philadelphia, 1898 served during World War I died June 24, aged 68

Quintin Solomon Kocher, Bridgeville, Pa., University of Pennsylvania Department of Medicine, Philadelphia, 1892 school physician on the staff of the Canonsburg General Hospital Canonsburg died in the Mercy Hospital, Pittsburgh, June 16, aged 73, of diabetes mellitus

Amos D Krewson, Philadelphia Hahnemann Medical College and Hospital of Philadelphia, 1889 on the staffs of the Frankford and Northeastern hospitals died July 8 aged 82 of angina pectoris

Ralph Curtis Lowe, Media, Pa., Hahnemann Medical College and Hospital of Philadelphia, 1928, member of the Medical Society of the State of Pennsylvania served an internship and residency at the Women's Homeopathic Hospital, Philadelphia died in the Hahnemann Hospital, Philadelphia, July 2, aged 42

August E Lundgren, Chicago, American College of Medicine and Surgery, Chicago 1905 for thirty-eight years an examiner for the Metropolitan Life Insurance Company on the staff of the University Hospital, where he died July 27 aged 71 of carcinoma of prostate

William J Merdian, Detroit, Detroit College of Medicine, 1890, formerly health officer of Grosse Pointe Park, physician for the draft board during World War I, died June 18, aged 75

Marie A Olsen @ Chicago, Woman's Medical College, Chicago, 1891 an Affiliate Fellow of the American Medical Association, on the staff of the Norwegian American Hospital, where she died July 11 aged 80, of cerebral hemorrhage

Edmund Joseph O'Shaughnessy @ New Canaan, Conn University and Bellevue Hospital Medical College, New York 1899 served during World War I, major in the medical reserve corps, not on active duty, chief, emergency medical service New Canaan defense council on the staff of the Stamford Hospital, Stamford where he died July 2, aged 76 of cerebral hemorrhage

Ernest Abram Moore, Bay Minette, Ala., Louisville (Ky.) Medical College, 1906 served during World War I, formerly mayor of Bay Minette died June 19 aged 62 of acute dilatation of the heart and chronic myocarditis

Ralph Marcellus Morrill, Lincoln, Neb., Bennett Medical College, Chicago, 1900 died suddenly June 30, aged 69

Ellwood Oliver @ Pine Plains N Y Albany Medical College, 1894 on the courtesy staff of the Vassar Brothers' Hospital, Poughkeepsie died July 6, aged 73, of diabetes mellitus and nephritis

James William Parker @ Chicago, University of Illinois College of Medicine, Chicago, 1920 served an internship at the Grant and Chicago Lying-In hospitals, formerly a fellow in surgery at the Mayo Foundation in Rochester, Minn served during World War I, on the staff of the Chicago Memorial Hospital died in the Illinois Central Hospital July 16 aged 49, of chronic intestinal obstruction

George Alpha Potter, Danville, Ill Barnes Medical College St Louis 1903 member of the Illinois State Medical Society on the associate staff of the Lake View Hospital where he died July 9, aged 68 of carcinoma of the prostate

Jesse David Price, Michigan City Ind., Louisville (Ky.) Medical College, 1906 member of the Indiana State Medical Association on the staff of St Anthony Hospital, where he died July 3 aged 72, of cerebral hemorrhage

Otis L Ray @ Raleigh, N C University College of Medicine, Richmond, 1899, for many years a member and chairman of the county board of commissioners on the staff of the Rex Hospital where he died July 4 aged 65

Wilbur Fish Reed, Cheboygan Mich., University of Michigan Department of Medicine and Surgery Ann Arbor, 1877, member of the Michigan State Medical Society for many years city health officer and county coroner, at one

time physician at the State House of Correction and Reformatory, Ionia died June 30, aged 93, of senility

Fred Hooper Rhoades @ Hanover, Kan., University Medical College of Kansas City, Mo., 1905, past president and secretary of the Washington County Medical Society, at one time secretary of the board of health in Altoona, clerk of the local school board for twenty-one years, health officer of Washington County surgeon for the Union Pacific Railroad for many years, died in the Lutheran Hospital, Beatrice, Neb., June 19, aged 64

Como Perry Richards, Everett, Wash., University of Oregon Medical School Portland, 1893, died May 20, aged 84, of uremia

W Herbert Scholtz, La Crescenta, Calif., California Medical College, San Francisco, 1889, College of Physicians and Surgeons of San Francisco, 1901, died in Los Angeles June 9, aged 80

Edgar Lane Tiner, Crystal City, Texas University of Texas School of Medicine, Galveston, 1929, member of the State Medical Association of Texas served an internship at the Santa Rosa Infirmary San Antonio, city and county health officer, died in the Crystal Hospital June 22, aged 40, of chronic myocarditis and uremia

Thomas Henry Trainor @ Maple Park, Ill., University of Michigan Department of Medicine and Surgery, Ann Arbor 1888, died July 5, aged 81, of heart disease

Herbert Dillon Walker @ Elizabeth City, N C., University of Maryland School of Medicine, Baltimore 1902 past president of the Seaboard Medical Society honorary member and past vice president and treasurer of the Medical Society of the State of North Carolina, for many years associated with the U S Public Health Service, on the staff of the Albemarle Hospital died in the Norfolk General Hospital, Norfolk Va., July 7, aged 67, of cerebral hemorrhage

Charles M Walrath, Ellicottville N Y, University of Buffalo School of Medicine, 1885, formerly a druggist, served as attending physician to the Erie County Penitentiary, formerly a trustee of the village, where he served as mayor, postmaster health officer and member of the school board, died July 9 aged 83 of chronic myocarditis and arteriosclerosis

John William Weber, Beverly Hills Calif Columbia University College of Physicians and Surgeons, New York, 1918, at one time on the staffs of the New York State Hospital in Ray Brook and the Santa Clara County Hospital in San Jose formerly medical director of the Alhambra

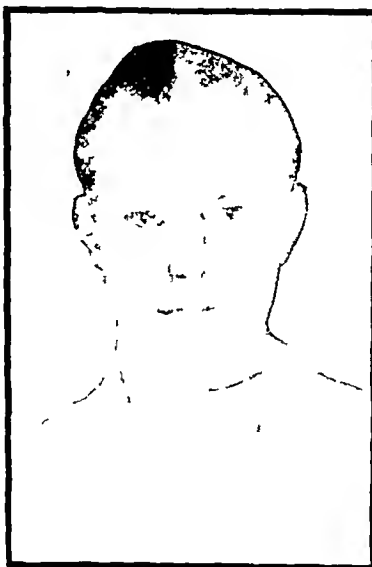
Tri-County Tuberculosis Sanatorium in Alhambra, partner and medical director of aircraft workers medical plan at the Douglas Aircraft Company, Santa Monica, died in Long Beach July 4, aged 51, of coronary occlusion

Arthur Ellwood Whittaker @ Zelenople, Pa., University of Pittsburgh School of Medicine, 1912, served in the medical corps of the U S Army during World War I, on the staffs of the Rochester General Hospital Rochester, and the Ellwood City Hospital Ellwood City author of "History of Ellwood City" died July 4, aged 56, of coronary occlusion

Joseph Carlin Williamson @ Columbus, Ohio, Medical College of Ohio, Cincinnati, 1899, died July 5, aged 69

## KILLED IN ACTION

John Hall Bates, New Preston, Conn Yale University School of Medicine New Haven, 1941, served an internship at the Royal Victoria Hospital, Montreal, Que., Canada, commissioned a lieutenant (jg), medical corps U S Naval Reserve, on April 20, 1942, began active duty on July 15, 1942 aged 31, killed in action in the Pacific area, presumptive date of death February 2, according to the Navy Department



LIEUT (JG) JOHN H BATES (MC),  
USNR, 1912-1944



## Bureau of Investigation

### STIPULATIONS

#### Agreements Between Federal Trade Commission and Promoters of Various Products

Following are abstracts of stipulations in which promoters of "patent medicines," medical devices or cosmetics have agreed, following action by the Federal Trade Commission to discontinue certain misrepresentations in their advertising. These stipulations differ from the "Cease and Desist Orders" of the Commission in that such orders definitely direct the discontinuance of misrepresentations. The abstracts that follow are presented primarily to illustrate the effects of the provisions of the Wheeler-Lea Amendment to the Federal Trade Commission Act on the promotion of such products.

**Aseptex**—In December 1943 Solinger & Sons Company Inc. New York stipulated with the Federal Trade Commission that it would cease representing that certain mattress ticking which it treats with this product possesses such bactericidal, germicidal or fungicidal properties as to make the fabrics resistant to germs, bacteria, fungi or vermin. The respondent also agreed to cease using the words "Sanitary" and "Aseptex" to describe such ticking so as to imply that the fabrics will be effective in preventing checking or removing agencies such as filth and infection which are injurious to health.

**Formula SBS 11**—The Sugar Beet Products Company of Saginaw, Mich., which puts this out, entered into a stipulation with the Federal Trade Commission in January 1944 agreeing to discontinue certain misrepresentations in its advertising. Among these were that its product is effective in the prevention or treatment of skin irritations, dermatitis, chapping or soreness; that it will remove all bacteria from the skin or can be depended on to prevent infections or act as an antiseptic under the conditions of use; or that all commercial liquid soaps contain alcohol. The concern further agreed to cease representing that Formula SBS 11 will remove 21.3% more bacteria than any other products available; or making any other claim attributing to the product an effectiveness either in the removal of bacteria from the surface of the skin or in the prevention of skin infections which is exaggerated or for which there is no proper support based upon any recognized or accepted scientific test.

**Kulver's East Indian Hair Dressing**—In February 1944 Wilfred Scott, trading as Decco Barber Supply Company, Roxbury, Mass., stipulated with the Federal Trade Commission that he would cease representing that this product is a hair grower, produces long hair or in any way facilitates the growth of hair and designating such preparation as "East Indian Hair Dressing" or otherwise representing that it is a product of or contains ingredients imported from East India or any other foreign country.

**Lee's Periodic Pills and Lee's Periodic Capsules**—In December 1943 one Milton L. Lieberman, trading as Lee Products and as Chemi-Culture Laboratories, Chicago, stipulated with the Federal Trade Commission that he would cease using the word "Periodic" or other similar connotation as a part of the trade designation of these products or referring to the menstrual period in any way which might indicate that such preparations have predictable or reliable influence on that period. Further, he agreed to cease representing that either of the preparations is based on a well known formula that has been used successfully for such purpose to cease using such designations as "XXX" or triple strength as indicative of the extra strength or unusual potency of such preparations or employing the word "Laboratories" as a part of his trade name until such time as he may actually own or operate a laboratory for his business. Lee also stipulated that in regard to any of his preparations containing a laxative he would discontinue any advertisement which did not clearly reveal the potential danger in using such products in the presence of symptoms of appendicitis, as to any of his preparations containing opium or pennyroyal he agreed to discontinue any advertisements which did not disclose that the use of such products may produce irritation of the kidneys. It was provided, however, that if directions for use of each of such preparations whether on the label or in the labeling should contain specific and adequate warnings of its potential danger to health, such advertisements need bear only the warning "Caution: Use Only as Directed."

**Orjone Pure Shampoo, Vi Vu Scalp Treatment, V Kol and Couleur de Ton**—These are put out by the Orjone Company of New York. In a stipulation that it entered into with the Federal Trade Commission in November 1943, it agreed to cease representing that the shampoo is a cure or remedy for dandruff or is of any help in that condition beyond the removal of dandruff scales; that Vi Vu will promote or restore a healthy growth of hair, remove local scalp irritations or renew life-giving nutriment; that V Kol is a cure for itching scalp or skin eczema or dandruff or will aid nature in growing healthy hair. The respondent further agreed to discontinue any advertisement of Couleur de Ton which did not conspicuously reveal that the product contains ingredients which may cause skin irritation in certain individuals and that the preliminary test outlined in the directions should first be made that the product should not be used for dyeing the eyelashes or eyebrows lest it cause blindness, provided, however, that it would be sufficient to advertise "Caution: Use Only as Directed on Label" if such label should bear first mentioned caution conspicuously and the accompanying labeling should give adequate directions for such preliminary testing before each application.

**Presto Face Cream**—This is put out by T. L. Miller, trading as the T. L. Miller Manufacturing Company, New Orleans. In December 1943 he entered into a stipulation with the Federal Trade Commission agreeing to cease representing that the use of this cosmetic will produce a clear, smooth skin or by use of the word "Manufacturing" or similar words in its trade name or otherwise that he owns or operates a company engaged in the business of manufacturing or compounding the preparation. Further, he agreed to discontinue any advertisement which represented that Presto Face Cream is safe to use or failed to reveal that it should not be applied to an area of the skin larger than the face and neck at any one time; that too frequent applications or use over excessive periods of time should be avoided; that adequate rest periods between series of treatments should be observed; that the product should not be applied to areas where the skin is cut or broken and that prior to its use a proper patch test should be made to determine whether the user is allergic or sensitive to the cream. It was provided, however, that such advertisements need only contain the statement "Caution: Use Only as Directed" if the directions in the labeling carry a warning to the same effect.

**Ultraviolet Ray Lamps**—In November 1943 Science Laboratories, Inc. and Sperry Electric Company, Inc., Cincinnati, entered into a stipulation with the Federal Trade Commission agreeing to discontinue the following advertising misrepresentations for their models IC 77 and HI 41 lamps or any of similar construction. That conditions of the modern age are such that the public is deprived of most of the benefits of sunlight or (by inference) that health depends on obtaining such radiation by artificial means; that the low death rate in summer as compared with the high death rate in winter is an index to the deficiency of ultraviolet light in winter; that the lamps offered for sale without adequate filter equipment produce ultraviolet rays or that such radiation is comparable to sunshine. Further, they agreed to discontinue the misrepresentations that these lamps are indispensable for expectant or nursing mothers; that the lamps are an aid to skin health or to a clear, unblemished complexion in general; or that their irradiation relieves all types of pains and aches or is an effective treatment or remedy for every variety of soreness and congestion.

### MISBRANDED PRODUCTS

#### Abstracts of Notices of Judgment Issued by the Food and Drug Administration of the Federal Security Agency

[EDITORIAL NOTE—These Notices of Judgment are issued under the Food, Drug and Cosmetic Act and in cases in which they refer to drugs and devices they are designated DDNJ and foods FNJ. The abstracts that follow are given in the briefest possible form: (1) the name of the product; (2) the name of the manufacturer, shipper or consigner; (3) the date of shipment; (4) the composition; (5) the type of no-trum; (6) the reason for the charge of misbranding; and (7) the date of issuance of the Notice of Judgment.]

**Gloria Laxative Pills or BX S368230 Pills**—Parke Davis & Company, Detroit, manufacturer, and John A. Smith Company, Oconomowoc, Wis., distributor. Various shipments between Jan. 13, 1941, and July 14, 1942. Composition: aloin and an extract of cascara sagrada. Misbranded because labeling failed to give any directions for use or to warn that pills were not to be taken in the presence of abdominal pain, nausea, vomiting or other symptoms of appendicitis and that frequent or continued use might result in dependence on laxatives. Further misbranded because label failed to give common or usual name of active ingredients since Cascarin Bitter is not the common or usual name of any substance.—[DDNJ, FD C 761, September 1943.]

**My X Ym—Mj X Ym Food Enzymes Products**—Chicago, Shiff, March 2, 1942. Composition: essentially ground senna, fols, powdered milk, yeast, wheat bran, corn starch, cacao powder, soybean tissue and sugars including dextrose and sucrose. Misbranded because labeling failed to warn adequately that as a laxative the product should not be taken in cases of nausea, vomiting, abdominal pain or other symptoms of appendicitis or that frequent or continued use of a laxative might establish a habit also misbranded because label falsely represented and suggested that Mj X Ym was an enzyme product and when used as directed would balance the weight of the body, be efficacious for health and supply a factor whose absence would result in many ailments; would cause the glandular system to function properly and would restore energy and vigor, would detoxify the system and prove an adequate treatment for a long catalog of disorders including allergic eczema, pancreatic indigestion, acidosis, colitis, gallbladder trouble, neuritis, obesity and hemorrhoids and prevent catarrhal conditions in many parts of the body.—[DDNJ, FD C 765, September 1943.]

**Vita Port Vitamin B<sub>1</sub> Tonic**—Seized in May 1942 when offered for sale by Super Cut Rate Drugs, Washington, D. C. Composition (claimed): Each fluid ounce contains thiamin hydrochloride (Vitamin B<sub>1</sub>) 4 mg. (Equivalent to 1330 International units). Alcohol 20 Per cent. Misbranded because label statements "Here's Health!" "Recommended for Underweight"—Loss of Appetite, Nervousness were false and misleading since the product would not be an effective treatment for such conditions.—[DDNJ, FD C 787, September 1943.] Also declared misbranded under the provisions of the law applicable to foods as reported in FNJ 3841.



## Correspondence

### RESEARCH IN THE SAN DIEGO ZOO

*To the Editor*—In THE JOURNAL, July 8, page 729, is an item on the research center planned by the New York Zoo with the mention that the plan is "unique, the first time any zoo has tried to collaborate with science." For the record would you please at some time note that there has been such a research hospital here for many years and that the New York authorities have been in communication with Mrs Belle Benchlev, in charge of the San Diego Zoo ("Life in a Man Made Jungle," "My Friends, the Apes") regarding the layout here

We believe that this San Diego research institute has been unique. For many years any science worker whose project was approved by the committee could be assigned free laboratory space and the use of considerable equipment while his work progressed toward completion and publication, with whatever help he might ask from a committee of widely varied interests. For several years up until the war there were two research students who received a yearly fund for work applicable to zoo problems. Among workers who have published articles from this research institute are Dr Jackson Kiser, Dr Lawrence Penner, Dr Robert Udall, Dr Charles Schroeder, Dr Leo Conti, Dr George Kilgore, Dr M Wiener, Dr F D McKinney, Dr Jacob Traum, Dr Joshua Bailey, Mr Willys Doetschman and one of the founders, Dr Harry Wegeforth. A note in THE JOURNAL might be of interest to medical men who wish to do research and would be glad to avail themselves of our facilities.

RAWSON J PICKARD, M D, San Diego  
Chairman, Biological Research Institute of the Zoological Society of San Diego, Balboa Park.

### TREATMENT OF HEMANGIOMAS

*To the Editor*—In THE JOURNAL, August 5, Dr Merlin T R Maynard discussed my communication (May 27, p 302) in which I commented on the article by Dr George V Kulchar on the treatment of hemangiomas in his article on "Benign and Malignant Tumors of the Foot" (March 18, p 761).

Dr Maynard insists that all angiomas sensitive to radiation should be treated from the day they are discovered if they show any tendency to grow. I want to reassert that simple strawberry and cavernous angiomas, contrary to general dermatologic opinion, do not require any treatment for the reason I previously stated (May 27, p 302). This will be the subject of an article to appear in the *Journal of Pediatrics*. I should like to call the attention of pediatricians and all other physicians who care for children to the article by W A Lister (The Natural History of Strawberry Naevi, *Lancet* 1 1429 [June 25] 1938) in which he relates that 93 strawberry and cavernous angiomas followed for a period of from one to seven years spontaneously involuted by the fifth year of life.

Dr Maynard relates the case of a vascular lesion on the head of an infant enlarging to the size of a grapefruit at the end of a year and requiring surgery because of hypertrophy of the heart. I cannot conceive, from a physiologic point of view, how a simple strawberry or cavernous angioma could produce a cardiac hypertrophy. If the vascular lesion actually was responsible for the cardiac hypertrophy, an arteriovenous aneurysm or communication must have been present and a bruit should have been detected on auscultation of the lesion.

C RUSSELL ANDERSON, M D, Los Angeles

### CANCER NOT ASCRIBED TO SINGLE INJURY

*To the Editor*—There have been two recent editorials on Workmen's Compensation for Cancer Ascribed to Single Injury. The following quotation from C A Joll in *Selected Papers for the Royal Cancer Hospital (Free)*, vol 2, 1939-1940 is pertinent.

"Reliable evidence that a single trauma can produce in its train, early or late, a malignant tumor is entirely lacking, both experimentally and clinically. In my own twenty-five years' experience at the Royal Cancer Hospital and elsewhere, I have never seen a case of 'traumatic' cancer which on critical examination could be substantiated."

ISABELLA H PERRY, M D,  
Division of Pathology,  
University of California Medical School,  
San Francisco

### "FIRST INSTITUTION FOR EPILEPTIC"

*To the Editor*—In the July 29 issue of THE JOURNAL at the foot of page 897 is an item entitled "First Institution for the Epileptic." Unless one was well acquainted with the institutional treatment of epileptic patients one might be misled by this article. In the first place "the first institution specifically for epileptics was established in Gallipolis, Ohio, in 1890 and opened in 1893." This statement is true as far as the United States is concerned. Much older institutions were established for the epileptic at Ghent, Belgium, and at Bielefeld, Germany, where I visited the Bethel colony in 1908. One of the earlier institutions established in our country was the State Hospital for Epileptics at Parsons, Kan., in 1903. I happen to be quite well acquainted with this institution in that I was assistant physician and assistant superintendent there from January 1904 for almost three years. The Kansas institution was the fourth institution established for the treatment of the epileptic in the United States, if my memory serves me correctly. This institution admits and treats sane and insane epileptic patients.

A L SKOOG, M D, Kansas City, Mo

## Medical Examinations and Licensure

### COMING EXAMINATIONS AND MEETINGS

#### BOARDS OF MEDICAL EXAMINERS BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Examinations of boards of medical examiners and boards of examiners in the basic sciences were published in THE JOURNAL Sept 9 page 126

#### NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS Parts I and II Various centers Nov 13 15 Part III Various centers September or October Exec Sec Mr E S Elwood 225 S 15th St Philadelphia

#### EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF ANESTHESIOLOGY Written Part I Various centers Jan 19 Final date for filing application is Oct 21 Sec Dr P M Wood 745 Fifth Ave New York 22

AMERICAN BOARD OF INTERNAL MEDICINE February Final date for filing application is Dec 15 Asst Sec Dr W A Werrell 1301 University Ave Madison 5 Wis

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY Written Part I Various centers Feb 3 Sec Dr Paul Titus 1015 Highland Bldg Pittsburgh 6

AMERICAN BOARD OF OPHTHALMOLOGY Los Angeles January Final date for filing application is Oct 1 New York June Chicago October 1945 Final date for filing application is Dec 1 Sec Dr S Judd Beach 56 Ivie Road Cape Cottage Maine

AMERICAN BOARD OF OTOLARYNGOLOGY Oral Chicago Oct 47 Sec Dr Dean M Lierle University Hospitals Iowa City Ia

AMERICAN BOARD OF PEDIATRICS Oral New York April 14 15 Final date for filing application is Dec 15 Chicago May 19 20 Final date for filing application is Jan 19 Sec Dr C A Aldrich 115½ First Ave S W Rochester Minn

AMERICAN BOARD OF PSYCHIATRY & NEUROLOGY Oral New York December Final date for filing application is Sept 30 Sec Dr Walter Freeman 1028 Connecticut Ave NW Washington 6 D C

## Bureau of Legal Medicine and Legislation

### MEDICOLEGAL ABSTRACTS

**Workmen's Compensation Acts Workman's Right to Procure Physician at Employer's Expense on Employer's Failure to Furnish Physician**—In the course of his employment in May 1942 Caldwell sustained a low back sprain. Because he commuted from his home in New York City to his employer's plant in Bridgeport Conn., the employer's first aid department instructed him to consult his family physician in New York City for necessary medical aid. The employer later paid compensation to the workman through Aug 13, 1942, including the fees of Dr Cohen Caldwell's family physician. About the latter date the workman was sent to Bridgeport by his physician for further treatment by the employer's physician and was in turn discharged by him August 15 and sent home. Two weeks later the workman was unable to return to work in Bridgeport because of pain and disability, and on August 18 he resumed treatments with Cohen. Cohen notified the employer of the facts and requested authority to treat the patient but the employer made no reply until September 23 when a letter was received by Cohen stating that the workman had not yet been discharged by the employer's physician and that the employer disclaimed liability for Cohen's bill. Cohen nevertheless continued to render necessary care for the workman and eventually submitted a bill for \$163 which admittedly was reasonable. Later the workman instituted proceedings for compensation under the workmen's compensation act of Connecticut and was awarded compensation including the amount of Cohen's bill, by the commissioner who heard the matter. The employer appealed to the superior court of Fairfield County, Conn., which remanded the case back to the commissioner for a finding as to whether or not there was expressed or implied authority given by the employer for the treatments or whether or not in view of the previous conduct of the parties the employer was estopped from denying that he had authorized Cohen to render the necessary treatment to the workman. The commissioner found an estoppel and the employer again appealed to the superior court which vacated the award of compensation to the extent of Cohen's bill. The workman then appealed to the Supreme Court of Errors of Connecticut.

On the second appeal the trial court considered only the narrow question of estoppel. Much broader considerations, said the Supreme Court of Errors, were involved. The applicable part of the workmen's compensation act (General Statutes Act 5232) provides as follows:

The employer as soon as he shall have knowledge of any such injury shall provide a competent physician or surgeon to attend the injured employee and in addition shall furnish such medical and surgical aid or hospital service as such physician or surgeon shall deem reasonable or necessary. In the event of the failure of the employer promptly to provide such service the injured employee may provide such service at the expense of the employer.

This was the basis of the original award. That award still stands the commissioner merely adding certain further findings when the matter was referred back to him by the trial court. When the employee was unable to go to his work at Bridgeport and went back to his New York physician that physician reported the need of treatment yet the employer did nothing from August 18 to September 23. Under these circumstances the commissioner could properly consider that under the statute the employee was entitled to get treatment from his own doctor at the employer's expense. The liberality with which we treat the employee's rights under the statute said the court is apparent in *Bongialatte v H Wales Lums Co* 97 Conn 548 550, 117 A 696 697. In that case the medical bills were incurred before the employer had notice of the injury. Nevertheless the court said:

If in the absence of an immediate notice to the employer of the injury he fails to provide medical aid through ignorance of the injury or other wise and the employee employs medical aid the employer is required to reimburse the employee for such expenditure if the same is reasonable as to amount and if the competency of the aid so employed is also reasonable so that the employer is not prejudiced thereby.

In the instant case immediate notice was given and the competency of the physician is not in question. See also *Thompson v Toile* 98 Conn 738 740 120 A 503 *Henderson v Mazzotta* 113 Conn 747 753 157 A 67. The underlying reason for the statute sec 5232 is stated in *Carr v Plimpton Mfg Co* 111 Conn 401, 405 150 A 305, 307: it recognizes the legislative idea that the employer as well as society benefit by the early restoration to health of the injured employee. The employer's appeal should have been dismissed.

Accordingly the Supreme Court of Errors ordered in effect that the trial court dismiss the employer's appeal from the commissioner's award of compensation which award included the physician's bill—*Caldwell v United States Aluminum Co* 38 A (2d) 6 (Conn 1944).

## Society Proceedings

### COMING MEETINGS

- American Academy of Ophthalmology and Otolaryngology Chicago Oct 8-12 Dr W L Benedict 102 Second Ave SW Rochester Minn Secretary
- American Academy of Pediatrics St Louis Nov 9-11 Dr Clifford C Grulice 636 Church St Evanston Ill Secretary
- American Hospital Association Cleveland Oct 2-6 Mr George P Bugbee 18 East Division St Chicago Executive Secretary
- American Pediatric Society Atlantic City N J Sept 25-27 Dr Hugh McCulloch 325 N Euclid Ave St Louis 8 Secretary
- American Public Health Association New York Oct 3-5 Dr Reginald M Atwater 1790 Broadway New York 19 Executive Secretary
- American Roentgen Ray Society Chicago Sept 24-29 Dr H Dabney Kerr University Hospitals Iowa City Secretary
- Association of American Medical Colleges Detroit Oct 23-25 Dr Fred C Zapffe 5 S Wabash Ave Chicago Secretary
- Association of Military Surgeons of the United States New York Nov 2-4 Col James M Phalen Army Medical Museum Washington 25 D C Secretary
- Colorado State Medical Society Denver Sept 27-29 Dr John S Bouslog 537 Republic Bldg Denver 2 Secretary
- District of Columbia Medical Society of the Washington Oct 5-7 Mr Theodore Wiprud 1718 M St NW Washington Secretary
- Indiana State Medical Association Indianapolis Oct 3-5 Mr T A Hendricks 23 East Ohio St Indianapolis 4 Executive Secretary
- Inter State Postgraduate Medical Association of North America Chicago Oct 17-20 Dr Arthur G Sullivan 16 N Carroll St Madison Wis Managing Director
- International College of Surgeons U S Chapter Philadelphia Oct 3-5 Dr Desiderio Roman 250 South 17th St Philadelphia Secretary
- Kansas City Southwest Clinical Society Kansas City Mo Oct 2-4 Dr William M North 1115 Grand Ave Kansas City 6 Mo Secretary
- Kentucky State Medical Association Lexington September 18-20 Dr P E Blackerby 620 S Third St Louisville Secretary
- Michigan State Medical Society Grand Rapids Sept 27-29 Dr L Fernald Foster 2020 Olds Tower Lansing 8 Secretary
- Midwestern Section of American Federation for Clinical Research Chicago Nov 2 Dr Richard H Lyons University Hospital Ann Arbor Mich Secretary
- Mississippi Valley Medical Society Peoria Ill Sept 27-28 Dr Harold Swanberg 510 Maine St Quincy Ill Secretary
- Oklahoma City Clinical Society Oklahoma City Oct 23-26 Dr L C McHenry 512 Medical Arts Bldg Oklahoma City Secretary
- Omaha Mid West Clinical Society Omaha Nebraska Oct 23-27 Dr J D McCarthy 1036 Medical Arts Bldg Omaha 2 Secretary
- Pennsylvania Medical Society of the State of Pittsburgh Sept 19-21 Dr Walter F Donaldson 500 Penn Ave Pittsburgh 22 Secretary
- Radiological Society of North America Chicago Sept 24-29 Dr Donald S Childs 607 Medical Arts Bldg Syracuse N Y Secretary
- Virginia Medical Society of Richmond Oct 23-25 Miss Agnes V Edwards 1200 E Clay St Richmond 19 Secretary
- Wisconsin State Medical Society of Milwaukee Sept 18-20 Mr Charles H Crownhart 110 E Main St Madison 3 Secretary

## Current Medical Literature

### AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1934 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (\*) are abstracted below.

#### American Journal of Clinical Pathology, Baltimore

14 253-306 (May) 1944

- Myasthenia Gravis. Report of 2 Cases with Necropsy Findings. A S Giordano and J L Haymond—p 253
- \*Pathologic Findings in Nerve and Muscle in Poliomyelitis. W B Dublin, B A Bede and B A Brown—p 266
- Phenol Studies. VII. Chronic Phenol Poisoning with Special Reference to Effects on Experimental Animals of Inhalation of Phenol Vapor. W B Deichmann, K V Kutzmiller and S Witherup—p 273
- Influence of Purified Diets on Toxicity of Promin. G M Higgins—p 278
- Jaundice in Amyloidosis of Liver. D M Spain and R L Riley—p 284
- Postmortem Studies in Mental Patients. Frequent Findings in Paranoid States. O J Pollak—p 289
- Carcinoid Tumors of Ileum (Argentaffinomas). C E McLeod—p 301

**Nerves and Muscles in Poliomyelitis**—Dublin and his co-workers studied biopsy specimens of muscle from 3 patients with poliomyelitis with the method of Ranvier. A boy aged 6 years, who was considered to have anterior poliomyelitis of nonparalytic type and to show "spasm" and "alienation," was studied by biopsy thirty-five days after the onset of symptoms. A youth aged 18 years with a moderate degree of paralytic weakness was studied by biopsy forty days after the onset of symptoms. A girl aged 12 years with severe flaccid paralysis was studied by biopsy forty-eight days after the onset of symptoms. Degeneration of nerve fibers, motor end plates and muscle fibers was seen in degree commensurate with the degree of paralysis. The irregularity of distribution was in keeping with the irregularity of distribution of injury to nerve cells of the gray matter of the spinal cord. Degeneration of nerve fibers consisted largely of failure to stain axons together with preservation of cellular elements of capsules of motor endings and of sheaths of Schwann. Atrophy of muscle fibers appeared in the form of pyknosis introduced by loss of cross striations and increase of longitudinal markings. Degeneration of nerve and muscle probably was secondary to injury to nerve cells of the spinal cord.

#### American J Digestive Diseases, Fort Wayne, Ind

11 173-204 (June) 1944

- \*Inhibition of Peptic Activity in Treatment of Peptic Ulcer. F Steigmann and A R Marks—p 173
- Vitamins and Hormones in Nutrition. B F Sieve—p 179
- Changes in Sensitivity to Allergenic Foods in Arthritis. J A Turnbull—p 182
- Role of Fat Soluble Vitamins A and D in Nutrition. J Buckstein—p 190
- Hypoglycemic Reaction with Convulsions in Ascariasis (Case Report). L L Frank—p 195
- Regional Enteritis. J R Phillips—p 197

**Inhibition of Peptic Activity in Peptic Ulcer**—Steigmann and Marks carried out the following procedures on patients admitted to Cook County Hospital with diagnosis of peptic ulcers. A Rehfuß tube was introduced into the stomach of the fasting patient, and an attempt was made to aspirate the entire gastric contents. With the tube in situ the patient ate four Uneda crackers and drank one glass (200 cc) of water. Samples of gastric juice were aspirated every fifteen minutes for two hours. The  $pH$  and peptic activity were determined in each of the specimens. On succeeding days the same procedure was repeated but the patient received, shortly after taking the crackers and water, either (a) one capsule (100 mg) of sodium lauryl sulfate, (b) two capsules of sodium lauryl sulfate, (c) 2 Gm of calcium carbonate, (d) 8 cc of an aluminum hydroxide preparation or (e) two tablets of a magnesium hydroxide compound. Each patient was tested on five successive days. A

similar group of patients were given the usual ulcer diet plus one capsule of sodium lauryl sulfate every hour for twelve doses or more, depending on the patient's symptoms. These patients were observed during their stay in the hospital and later as outpatients. The authors found that calcium carbonate and aluminum hydroxide preparations, magnesium hydroxide and sodium lauryl sulfate caused decreased peptic activity simultaneously with a rise in the  $pH$ . Calcium carbonate, the aluminum hydroxide preparation and magnesium hydroxide caused more pronounced peptic inhibition than sodium lauryl sulfate. The authors were unable to confirm the reported observations that sodium lauryl sulfate inhibits peptic activity in the presence of an unaltered  $pH$ . Clinical use of sodium lauryl sulfate on a small number of patients on the usual dietary peptic ulcer management failed to reveal any superiority of this medication over some of the other medications used.

#### American Journal of Diseases of Children, Chicago

67 429-534 (June) 1944

- Initial Stabilization of Diabetic Child. J M Brush—p 429
- \*Erythroblastosis Fetalis. Proposed Definition and Clarification of Term. Midge Thurlow Macklin—p 445
- Oral Moniliasis in Newborn Infants. Nina A Anderson, Dorothy N Sage and E H Spaulding—p 450
- \*Atelectasis Complicating Acute Poliomyelitis with Involvement of Respiratory Muscles. M Cooperstock—p 457
- Röntgenograms of Chest Taken During Pertussis. J L Kohn, I Schwartz, J Greenbaum and Mary M I Daly—p 463
- Levinson Ratio and Tryptophan Test. Comparative Value in Diagnosis of Tuberculous Meningitis. F A Kriete, H C Epstein and J A Toomey—p 469
- Prophylactic Value of Sulfathiazole Against Neonatal Gonococcal Conjunctivitis. M Gleich, M L Blumberg and A S Mason Jr—p 472
- Comparison of Westergren and Kato Erythrocyte Sedimentation Rate Readings. Relation to Clinical Status of Children with Rheumatic Fever. J B McKinley and R L Jackson—p 474

**Erythroblastosis Fetalis. Clarification of Term**—Macklin defines erythroblastosis as a condition in which the blood of the fetus exhibits immature cells of the erythrocytic series which are not normal, either as to type or as to quantity, for the stage of development of the fetus. This condition may be elicited by numerous factors, may or may not be accompanied with hemolysis and may or may not be accompanied with extramedullary hemopoiesis. It includes hemolytic disease of the newborn as well as erythroblastosis due to factors other than hemolysis. When it is due to an antigen antibody reaction there will be hemolysis with accumulation of iron in the fetal liver, and there will usually be persistent extramedullary hemopoiesis. This form of erythroblastosis is hemolytic disease of the newborn. In the majority of instances the hemolysis appears to be due to the Rh factor complex. Factors such as anoxemia cause erythroblastosis, as here defined, but not hemolysis. If they begin to operate early in development, extramedullary hemopoiesis will persist, if they begin just before term, formation of blood may be restricted to the bone marrow. A tentative explanation of the failure to find antibodies in the blood of the mothers of some fetuses showing erythroblastosis is advanced. It is based on a supposed immaturity of the antigen as it exists in the immature red cell, with a corresponding specificity of the antibody for this particular antigen. At present the demonstration of the antibody depends on its reaction with the antigen as it exists in the mature red cell. Testing of the blood of the mother with that of the fetus may demonstrate the presence of such antibodies. Another possible explanation is based on the recently discovered fact that there are at least six different Rh factors. Preparations of only the two commoner types of antigen are employed in the usual tests.

**Atelectasis Complicating Acute Poliomyelitis**—According to Cooperstock a number of factors predispose to the development of atelectasis in paralysis of the respiratory muscles due to poliomyelitis. Foremost among them is the reduction of vital capacity. Also important is the fact that the ability to cough is impaired in poliomyelitis. Failure to rid the bronchial airways of exudate leads to bronchial occlusion and atelectasis. Should the obstructing material contain infective agents, as it invariably does, the situation is then fertile for the development of secondary pneumonia. It is thus apparent that in poliomyelitis with paralysis of the respiratory muscles there exists a constant threat of the development of grave pulmonary complications. For a patient already encumbered with serious liabilities,

the advent of such complications may well spell disaster. It is therefore of interest to record 4 instances, in 3 of which unexpected recovery took place. In all 4 atelectasis developed after the acute phase of the disease had passed, the pulmonary complications occurring from three weeks to one year after the admission of the patient to the hospital. Three of the patients were still in the respirator, and for the fourth patient the use of the respirator had been discontinued only four days prior to the occurrence of atelectasis. The patients had extensive paralysis of all extremities in addition to involvement of the muscles of respiration. The favorable outcome in the 3 patients who recovered followed the occurrence of a critical clinical picture due to the development of secondary pneumonia. Recovery appeared to depend on the favorable effect of sulfonamide compounds on the pneumonic process, permitting ultimate spontaneous clearing of the atelectasis. In the prophylaxis against pulmonary complications, avoidance of exposure to infections of the respiratory tract is of utmost importance. With the occurrence of such infections the early institution of chemotherapy may be effective in preventing the development of more serious complications. The continued use of the mechanical respirator under such circumstances is essential. Although not employed in the cases reported here, the early use of bronchoscopy for the relief of bronchial occlusion may minimize pulmonary complications under such circumstances. It is of interest that in patients already so seriously handicapped by poliomyelitis spontaneous clearing of atelectasis is possible.

### American Review of Soviet Medicine, New York

1 389-480 (June) 1944

Medical Organization for Military Offensive. A. Georgetschi, Y. Krichievski and B. Gorski.—p. 389

\*Tick Borne Encephalitis. A. A. Smorodintsev.—p. 400

Acute Primary Hemorrhagic Meningoencephalitis. M. S. Margulis, V. D. Soloviev and A. K. Shubladze.—p. 409

Psychologic Changes in Tick Borne or Spring Summer Encephalitis. Ida B. Galant.—p. 428

Modern Data on Frostbite. S. S. Gurgolov.—p. 437

Retrograde Changes in Spinal Cord in Frostbite of Extremities. D. I. Panchenko.—p. 440

Uses of Greases and Ointments in Prevention of Frostbite. I. G. Krotkov.—p. 443

Intravenous Injections by Drop Method in Treatment of Shock. A. F. Lepukaln.—p. 447

Comparative Value of Three Blood Substitutes. I. P. Petrov, P. N. Veselkin, M. L. Dernovskaya and T. E. Petkun.—p. 450

**Tick Borne Encephalitis**—Smorodintsev reviews the work done in Russia on isolation of the virus causing tick borne or spring-summer encephalitis. The disease is characterized by an incubation period of eight to eighteen days, a temperature rise to 100.4 to 104 F, violent headache, pain in the nape of the neck, vertigo and vomiting. The predominant physical signs are meningismus and focal lesions of the central nervous system rapidly followed by paralysis of the limbs, neck and back. In some cases an ascending paralysis involves the cervical segments of the spinal cord, reaching the medulla, to develop bulbar palsy associated with dyspnea, cardiac arrhythmia, dysphagia and aphonia. The mortality rate ranges from 20 to 30 per cent. Death usually occurs between the third and the eighth day. Many convalescents are physically disabled by paralysis and atrophy of the cervical muscles and shoulder girdle. The patients who recover do not display Parkinson's syndrome occurring in von Economo's lethargic encephalitis. Spring-summer encephalitis in the European part of Russia takes a milder course, with a mortality rate of only 10 per cent. The histopathology of spring-summer encephalitis is characterized by intense inflammatory and degenerative changes of the nervous systems. The pia mater of both brain and spinal cord is always involved. The disease may be classified as an acute nonsuppurative meningoencephalopolyomyelitis. An acute serous exudate appears on the meninges, and the brain is softened and congested, while numerous hemorrhages appear on the brain stem, the medulla, and in the horns of the spinal cord. The causative agent is a virus which passes through the finest Berkefeld and Chamberland filters. It belongs to type B of seasonal encephalitis. The virus cannot be neutralized by the serums of patients recovered from the lethargic Economo encephalitis. It also differs from the St. Louis virus in its antigenic and immunogenic properties. According to recent observations by

Casals, spring-summer encephalitis virus bears a close relationship to louping ill virus through complement fixation neutralization and intraperitoneal cross resistance tests. Intracerebral cross resistance tests on the other hand, were negative. Neither spring-summer encephalitis nor louping ill virus appeared to be related to the viruses of Japanese, St. Louis and West Nile types of encephalitis. Tick borne encephalitis is distinctly seasonal. It begins at the end of April and assumes epidemic proportions in May. Prior to May and after August there occur only sporadic cases. Moderate atmospheric temperature and relatively high humidity favor the development of the disease. The greatest incidence and mortality occur in new settlements situated in slightly cultivated forests. The clinical and epidemiologic characteristics of tick borne spring-summer encephalitis distinguish it from the Japanese and the St. Louis types, which are most prevalent during the dry, hot months of August and September. The authors list epidemiologic and experimental data that indicate transmission of the disease through ticks, especially *Ixodes persulcatus*. The transmission of the virus can be traced from infested larvae and nymphs to rodents or birds, which in turn transmit the virus to larvae and nymphs, thus completing the cycle. Every new animal species, including man, entering the forests is exposed to encephalitis. The possibility of producing artificial immunity in men is supported by the fact that convalescence from encephalitis is linked with a lasting immunity. There are prospects for the prophylaxis and treatment of encephalitis by serums obtained from convalescent or hyperimmunized animals. Serotherapy of encephalitis was studied in the endemic areas during the last five years. The serums obtained from convalescents or hyperimmunized horses produced favorable results in a number of cases when intraspinal injection of 10 to 15 cc was supplemented with intramuscular injection of 30 to 50 cc of serum. Immediate intramuscular injection of 40 to 50 cc of serum is indicated for persons bitten by ticks in the endemic areas.

### Archives of Neurology and Psychiatry, Chicago

51 501-596 (June) 1944

Sweat Secretion in Man. VI Spinal Reflex Sweating. C. F. List and A. D. Pimenta.—p. 501

\*Effects of Variations in Intracranial Pressure. A. J. Kahn.—p. 505  
Suppression of Motor Response in Man. H. W. Carol and P. C. Bucy.—p. 528

Abscess within Spinal Cord. Review of Literature and Report of 3 Cases. P. K. Arzt.—p. 533

Psychic Deafness in Children. E. Froeschels.—p. 544

Prolonged Insulin Coma in Treatment of Schizophrenia. T. D. Rivers and H. P. Rome.—p. 550

Fatal Circulatory Failure Caused by Electric Shock Therapy. H. W. Jetter.—p. 557

Racial and Sexual Incidence of Primary Intracranial Tumors. Statistical Study of 133 Cases Verified by Autopsy. H. P. Newbill and G. C. Anderson.—p. 564

Use of Turmethide in Testing Sweat Secretion in Man. S. A. Guttmann.—p. 568

Colloid Cyst of Third Ventricle. E. W. Shannon.—p. 570

**Effects of Variations in Intracranial Pressure**—In the first part of this study Kahn is concerned with the effect of raised intracranial pressure on consciousness, which he studied in dogs. Distilled water was perfused into the anatomic central end of the common carotid artery, and observations were made on whether or not this procedure would render the animal comatose. Kymographic records were simultaneously taken of the respiration, the general carotid blood pressure, the cerebrospinal fluid pressure in the cisterna magna and the pressure in the brain tissue (intracerebral pressure). It was at first assumed that the pressure in the lateral ventricles was being accurately recorded by measurement of the cisternal pressure. The fallacy of this assumption was later demonstrated by some chance measurements of the intraventricular pressure. In subsequent experiments the intraventricular pressure was simultaneously recorded with a mercury manometer. Perfusion of distilled water into the anatomic central end of the common carotid artery resulted in elevation of the intracerebral and intraventricular pressures to levels above the cisternal pressure. When the intracerebral and the intraventricular pressure approached the level of the diastolic blood pressure, dire respiratory and circulatory effects were produced, ending in the death of the animal. Respiration first became labored and then stopped, and circulatory failure was preceded by pronounced

slowing of the pulse (heart rate) and terminal hypertension in 50 per cent of the experiments. The experiments reported in the second part of this paper were undertaken to study the mechanism involved in the production of these effects on respiration and circulation. It was found that the respiratory and circulatory embarrassment associated with high levels of intraventricular and intracerebral pressure could be relieved by ventricular drainage, which sharply lowered both the intraventricular and the intracerebral pressure. No circulatory or respiratory embarrassment occurred when both the cisternal and the intraventricular pressure were at high levels, but medullary embarrassment appeared soon after the cisternal pressure was lowered, the intraventricular pressure alone remaining high. In animals in which the intraventricular pressure was abruptly raised while measures were taken to keep the cisternal pressure low, the general tendency was toward a distinct slowing in heart rate. The hemodynamic effects in these experiments were not constant, the general tendency being toward a decrease in the blood pressure. The respiratory depression and the circulatory effects resulting from these abrupt increases in intraventricular pressure were eliminated by raising the cisternal pressure or by lowering the intraventricular pressure. The ill effects of increased intraventricular pressure are due to herniation of the medulla into the foramen magnum. This herniation was experimentally observed in dogs. The possibility also exists that the respiratory and circulatory effects were due to a herniation of the mesencephalon through the incisura tentorii. The fallacy of the cisternal pressure being regarded as a measure of the intraventricular and the intracerebral pressure when cerebral edema and/or the possibility of internal hydrocephalus exists receives emphasis from the results of the water perfusion experiments. In internal hydrocephalus consequent to severe cranial trauma use of lumbar puncture as a means of relief of intracranial tension is invalid and contraindicated. Ventricular drainage is indicated for such a condition. Ventricular drainage, together with artificial respiration and administration of isotonic solution of three chlorides (infused into the central end of the common carotid artery), was efficacious in restoring respiration and increasing the blood pressure after severe medullary trauma in the water perfusion experiments.

### Archives of Physical Therapy, Chicago

25 321-384 (June) 1944

- Medicolegal Aspects of Physical Medicine. H. H. Buckelew —p 327
- Resuscitation of the Drowned Today. F. C. Eve —p 332
- Rationale for Electrodiagnosis and Electrical Stimulation in Denervated Muscle. S. L. Osborne, F. S. Grodins, E. Mittelman, W. S. Milne and A. C. Ivy —p 338
- \*Induced Resistance to Prolonged Sun Exposure. J. L. Rudd —p 345
- Psychobiologic Factors in Kenny Concept of Infantile Paralysis. C. Bohnengel —p 350
- Present Status of Ultraviolet Blood Irradiation (Knott Technique). G. Miley —p 357

**Induced Resistance to Prolonged Sun Exposure**—Rudd investigated whether sunburn and its complications might be prevented by the use of small graduated doses of artificial ultraviolet radiation by the mercury vapor quartz lamp. He describes 3 cases as examples of the reaction to solar radiation after a series of hot quartz lamp applications of ultraviolet radiation. He stresses that such protection is particularly important to the person with light, tender skin or with any other form of sensitivity to solar radiant energy. If large numbers of service men needed this protection, mass treatments could be given with little cost or loss of time from duty.

### Bulletin of Johns Hopkins Hospital, Baltimore

74 229-274 (April) 1944

- Significance of Electrocardiographic Abnormalities in Young Adults. Caroline Bedell Thomas —p 229
- Congenital Chickenpox with Disseminated Visceral Lesions. Ella H. Oppenheimer —p 240
- \*Observations on Histidine Deficient Diet in Man. A. A. Albanese, L. E. Holt, Jr., Jane E. Frankston and Virginia Irby —p 251
- Proper Attention to Role of Emotional and Social Factors in Illness as a New Step in Public Health. G. C. Robinson —p 259

**Histidine Deficient Diet in Man**—Albanese and his collaborators studied the human requirement for histidine in 3 normal adult males submitted to an experimental diet consisting of fats, starches and certain fruits and vegetables of low

protein content which provided approximately 10 per cent of the daily nitrogen intake. The remaining 90 per cent was supplied as a histidine deficient casein digest. None of the three subjects developed clinical symptoms or changes in their blood chemistry or morphology. They all lost weight. The nitrogen balance remained positive throughout, and the excretion of histidine in the urine showed no reduction. The histidine deficient state was characterized by the appearance of an abnormal metabolite in the urine, a substance giving a green reaction with the Sharlit indican test. The results indicate that histidine is not essential for the maintenance of nitrogen equilibrium in the adult human being. The authors hesitate to conclude that histidine is unessential for man until further studies have clarified the picture. The loss of weight remains to be explained. The abnormal metabolite in urine in the histidine deficient period does not provide evidence of the essentiality of histidine. Apart from the question of the essentiality of the histidine for the adult is the question of the need of the growing organism for this amino acid.

### Georgia Medical Association Journal, Atlanta

33 167-200 (June) 1944

- \*Pneumoperitoneum. Form of Compression Therapy in Treatment of Pulmonary Tuberculosis. Review of 154 Cases. H. E. Crow —p 167
- Madura Foot. Report of Youngest Case on Record. D. R. Venable and J. H. Giston —p 174
- Treatment of Thrombophlebitis. C. E. Rushin —p 178
- Importance of Rectal Examinations. A. M. Phillips —p 183
- Treatment of Hemorrhoids. H. H. Asken —p 186

**Pneumoperitoneum in Treatment of Pulmonary Tuberculosis**—Crow reports 154 cases treated at the Georgia State Tuberculosis Sanatorium between August 1937 and June 1942. Pneumoperitoneum with consequent elevation of the diaphragm produces partial and often optimum compression of one or both lungs. Temporary phrenic nerve interruption prior to inducing pneumoperitoneum aids in securing greater elevation of the diaphragm. The majority, namely 122 of the 154 cases, were far advanced with a poor or hopeless outlook. There were 26 deaths during the treatment, 47 patients discontinued the treatment after a few refills and some could not be reached. Of the 77 cases in which treatments were continued, 10 were unimproved, 41 were improved and 26 were quiescent. Exudative lesions, particularly those in the middle third of the lung, showed the greatest amount of response. The effects on the lung and pleurae from pneumoperitoneum are much less likely to result in serious complications than are those of pneumothorax. A well established pneumoperitoneum will not reduce the apicobasal diameter of the lung more than 40 to 60 per cent and the total volume from 50 to 65 per cent, but the remaining partially inflated portion of the lung above the paralyzed hemidiaphragm is well splinted and the pressure against it is practically constant. The paralyzed hemidiaphragm, once it is well elevated, almost always remains practically stationary, regardless of the position of the patient.

### Journal of International College of Surgeons, Chicago

7 171-256 (May-June) 1944

- Activities of Veterans Administration. F. T. Hines —p 171
- Anesthesia in War Surgery. F. Graña —p 175
- Present Treatment of Wounds and Burns. R. Hayden —p 179
- Surgeons and Events. M. Thorek —p 191
- \*Blast Injuries. B. W. Hogan —p 193
- Mediastinal Wounds Caused by Explosives. E. Erkul —p 200
- Electrosurgical Treatment of Carcinoma of Rectum. A. H. Roffo and F. F. Carranza —p 202
- Transplantation of Omentum in Closure of Cerebrospinal Fluid Fistula. F. Mandl —p 219
- Generalization of Spinal Anesthesia. D. F. Pierro —p 221
- Occurrence of Pseudotumors in Synovial Membrane of Knee Joint. H. Milwidsky —p 227
- Hypernephroid Tumor of Right Kidney with Metastatic Lesion in Right Scapula. C. E. Nagel —p 235
- Acute Cholecystitis. F. S. Mainzer —p 241

**Blast Injuries**—Hogan discusses some observations on 35 cases of blast injuries admitted to the hospital after Pearl Harbor. He recommends conservative treatment but states that recent perforation, gangrene of a segment of bowel and abscess formation demand surgical intervention. "War neurosis" and psychotic interludes have been attributed to exposure to concussions. Optic injuries, corneal and retinal hemorrhage, retinal



separation and presence of exudates have all been attributed to the effect of "blast" but have never been seen in animal experimentation. Injury to the ears is common. Underwater concussion may cause hemorrhage within any of the sinuses, sphenoidal as well as malar and frontal. Apparently injury to these sinuses may be of such violence as to fracture the bone. Fractures are supposedly due to the violent displacement of the limbs against some hard object rather than due to blast per se. Since the blast wave falls off in intensity very rapidly, every effort should be made to swim as far away from a source of concussion as possible, even a few yards theoretically constituting the difference between safety and fatal injury. The intensity of the concussion wave generated by explosions in air is greatly diminished in depressions, trenches and foxholes, so that "hitting the dirt" is a protection from blast as well as from the resulting shrapnel.

### Journal of the Mount Sinai Hospital, New York

11 1-64 (May-June) 1944

- William Henry Welch Lectures. I. Studies on Dehepatized Animal Review. F. C. Mann—p. 1.  
\*Effect of Certain Quinones, Aldehydes and Ketones on Blood Pressure of Hypertensive Mammals. B. S. Oppenheimer, S. Soloway and B. E. Lowenstein—p. 23.  
Essays on Biology of Disease. E. Moschowitz—p. 29.  
Massive Pulmonary Embolism. I. Based in Part on Study of 88 Fatal Cases. H. Neuhauf and S. H. Klein—p. 32.  
Life's Later Years. Studies in Medical History of Old Age. F. D. Zeman—p. 45.

**Effect of Quinones, Aldehydes and Ketones on Blood Pressure.**—According to Oppenheimer and his associates there are five quinones which have more or less antipressor properties when tested on hypertensive mammals. These are (1) sodium rhodizonate, (2) sodium 2-hydroxyquinone sulfonate, (3) sodium beta-naphthoquinone-4-sulfonate, (4) 2,6-dichloroquinone and (5) 2-methyl-alpha-naphthoquinone. The first three of these proved to be toxic when tested on hypertensive dogs. Oral administration of sodium beta-naphthoquinone-4-sulfonate to 3 hypertensive dogs was ineffective. A search among the dialdehydes and diketones for effective antipressors on hypertensive rats and dogs has yielded one promising lead in 1,4-cyclohexandione. In the doses employed so far, 1,4-cyclohexandione has not produced toxic effects. Further studies are now in progress.

### Journal of Nutrition, Philadelphia

27 435-522 (June) 1944

- Study of Riboflavin and Thiamine Requirements of Children of Preschool Age. Helen Oldham, Frances Johnston, Sarah Kleiger and H. Hedderich Arismendi—p. 435.  
Vitamin Interrelationships. III. Influence of Suboptimum Doses of Thiamine on Urinary Excretions of Riboflavin. B. Sure—p. 447.  
Associative Dynamic Effects of Protein, Carbohydrate and Fat. E. B. Forbes and R. W. Swift, with technical collaboration of Ann Greenwood Buckman, Jane E. Schopfer and Mary T. Davenport—p. 453.  
Bioassay of Vitamin E. Gladys A. Emerson and H. M. Evans—p. 469.  
Congenital Malformations Induced in Rats by Maternal Nutritional Deficiency. VI. Preventive Factor. J. Warkany and Elizabeth Schraf fenberger—p. 477.  
Absence of Rapid Deterioration in Men Doing Hard Physical Work on a Restricted Intake of Vitamins of B Complex. A. Keys, A. Henschel, H. L. Taylor, O. Mickelsen and J. Brozek—p. 485.  
\*Dietary Protein and Physical Fitness in Temperate and Hot Environments. G. C. Pitts, I. C. Consolazio and R. E. Johnson, with technical assistance of J. Poulin, A. Razoyk and J. Stachalek—p. 497.  
Studies on Comparative Nutritive Value of Fats. IV. Negative Effect of Different Fats on Fertility and Lactation in Rat. H. J. Deuel, Jr., E. Movitt and Lois I. Hallman, with the technical assistance of Evelyn Brown—p. 509.

**Dietary Protein and Physical Fitness in Temperate and Hot Environment.**—According to Pitts and his associates recommendations for the daily protein intake of men who are doing hard physical work have ranged from 50 to 165 Gm. The present figure given by the National Research Council of 70 Gm daily represents a compromise. For men working in hot environments recommendations are commonly made that protein intake be restricted on the ground that its high specific dynamic action imposes an unnecessary load on the heat dissipating mechanisms of the body. However, men who are accustomed to working in the heat prefer a diet containing liberal quantities of meat. Good examples are harvesters, miners and baseball players. The authors made a study of subjects

subsisting on three levels of protein intake. Particular attention was paid to the subject's physical fitness for work in temperate and in hot environments. Three subjects were studied under both temperate and tropical conditions while reclining, standing and marching. The urinary nitrogen excretion in grams per day averaged 18.5 during the high protein period, 9.5 during the low protein period and 12.9 and 13.5 during the normal periods before and after the experiment respectively. There were minor changes in body weight with a maximum during the high protein period. The plasma protein level showed no significant changes. Physical fitness under temperate conditions showed no changes attributable to dietary protein level. Performance of work in both hot dry and hot moist environments showed no changes attributable to dietary protein level. In both cases however, improvements due to training and acclimatization were observed. Metabolism while reclining and while standing was not significantly different in the high and low protein periods. Metabolism while marching was slightly lower in the low protein period. However, this was a physiologically insignificant change. It is concluded that even though protein does have a high specific dynamic action the theoretical objections heretofore raised against a high protein diet in hot environments are unjustified. Protein intake may vary widely from 75 to 150 Gm daily without effect on performance of intermittent work in the heat.

### Journal of Pediatrics, St. Louis

24 603-730 (June) 1944

- Comparison of Newborn Infants with Erythroblastosis Fetalis with Those Born to Diabetic Mothers. H. C. Miller, R. D. Johnson and S. H. Durlacher—p. 603.  
Prescribed Diets for Normal Children. J. D. Boyd—p. 616.  
Promin in Treatment of Tuberculous Meningitis. W. J. Morrow, H. C. Epstein and J. A. Toomey—p. 623.  
Respiratory Shift in Epigastric Abdominal Wall—Physical Sign Seen with Complete Unilateral Paralysis of Diaphragm in Infants and Children. J. S. Light—p. 627.  
Autonomic Nervous System Imbalance of Whole Gastrointestinal Tract in Newborn Infant. G. N. Krost—p. 635.  
\*Development of Antibody Following Vaccination of Infants and Children Against Pneumococci. H. L. Hodes, J. F. Ziegler, Jr. and Helen D. Zepp—p. 641.  
Gonorrheal Peritonitis in Children. D. L. McGuire, Jr.—p. 650.  
Purulent Pericarditis Complicating Pneumonia. Recovery in an Infant Following Therapeutic Aspiration and Development of Pneumopericardium. M. Cooperstock—p. 656.  
Rheumatic Pericarditis in Early Childhood. S. L. Ellenberg and H. Cook—p. 662.  
Whooping Cough Mortality. M. J. Fox and Elizabeth M. Knott—p. 671.  
Fulminating Meningococcemia (Waterhouse-Friderichsen Syndrome). Report of 3 Cases with Autopsy and 1 with Recovery. M. H. Strick—p. 675.  
Sedimentation Rate and White Blood Count in Acute Poliomyelitis. S. Rosin, W. P. Frank and P. M. Hamilton—p. 679.  
Role of Surgical Mask in Prevention of Cross Infections in Hospital Nurseries for Newborn Infants. H. Abramson—p. 684.  
Medical Social Work in Epidemic of Poliomyelitis. Alice A. Grant—p. 691.

**Development of Antibody Following Vaccination Against Pneumococci.**—Hodes and his collaborators studied the production of pneumococcus mouse protective antibodies in the serum of a number of infants and children following vaccination with heat killed type I and type VI pneumococci. Most of the subjects were given the vaccine by intradermal inoculation. In a small group type I vaccine was administered by inhalation of a fine mist sprayed from a nebulizer. The patients were children admitted to the Harriet Lane Home or to Sydenham Hospital in Baltimore. The group was made up in part of children who had recently recovered from an acute infection and in part of those admitted to the hospital for study of some neurologic or metabolic disorder. The ages of the children varied from 2 weeks to 13 years. Among children over 2 years of age intradermal inoculation of a dose of heat killed type I pneumococci which did not cause systemic reactions or serious local reactions was followed in nearly every instance by an abrupt rise in serum mouse protective antibody titer. The level of antibody attained appears to be of the same order of magnitude as has been reported in adults following type I pneumococcus pneumonia treated with sulfonamides. The rise in antibody titer following vaccination persisted for at least several months. With few exceptions no rise in antibody titer following intradermal vaccination with type I pneumococci was



demonstrated among infants under 2 years of age. Inhalation by children over 2 years of age of a spray of killed type I pneumococci was followed in a few instances by a significant rise in mouse protective antibody titer. However, this method of vaccination was unreliable and cumbersome. Intradermal vaccination with type VI pneumococcus vaccine yielded equivocal results. Among children over 2 years of age a high pre-vaccination titer of mouse protective antibody against type VI pneumococcus was found much more often than against type I pneumococci.

### Journal Pharmacology & Exper Therap, Baltimore

81 101-208 (June) 1944

- Treatment of Experimental Renal Hypertension with Renal Extracts G E Wakerlin C A Johnson W G Moss and M L Goldberg —p 101
- Adrenolytic and Sympatholytic Actions of Yohimbine and Ethyl Yohimbine I F Yonkman D Stilwell and R Jeremias —p 111
- Toxicologic Studies of Phthalylsulfathiazole P A Mattis W M Benson and E S Koelle with technical assistance of Ethel Williams and S E McKinney —p 116
- Inhibitory Effect of Sulfonamides on Action of Nicotine in Isolated Intestine E P Pick G W Brooks and K Unna —p 133
- Toxicity and Treponemoidal Activity of Amide Substituted Phenyl Arsenoxides and Their Derivatives H Eagle R B Hogan G O Doak and H G Stemman —p 142
- Pharmacology and Chemistry of Substances with Cardiac Activity. III. Effect of Simple Unsaturated Lactones and *t* Butyl Hydrogen Peroxide on Isolated Frog Heart R Mendez —p 151
- Plasma Concentrations Following Oral Administration of Single Doses of Principal Alkaloids of Cinchona Bark E P Hiatt —p 160
- Studies on Shock Induced by Hemorrhage. VII. Destruction of Cozymase and Alloxazine Adenine Dinucleotide in Tissues During Shock Margaret E Greig —p 164
- Antispasmodic Activity of Some 4 Morpholinealkyl Esters. I. Toxicity, Isolated Smooth Muscle Effects and Spasmodic Activity on Ileum of Anesthetized Dogs H F Chase A J Lehman and I F Yonkman —p 174
- Comparative Anoxic Effects from Carbon Monoxide Hemoglobin and Methemoglobin D Lester and L A Greenberg —p 182
- Chemotherapy of Filariasis in Cotton Rat by Administration of Neostam and of Neostibosan J T Culbertson and H M Rose —p 189
- Relationship of Chemical Structure of Sympathomimetic Amines to Ven-tricular Tachycardia During Cyclopropane Anesthesia O S Orth J W Stutzman and W J Meek —p 197
- Evaluation of Influence of Succinate and Malonate on Barbiturate Hypnosis K H Beyer and A R Latven —p 203

### Maine Medical Association Journal, Portland

35 81-106 (May) 1944

- Tabulated Report of 8 Bacterial Endocarditis Cases C W Steele and J Gottlieb —p 81

35 107-134 (June) 1944

- Preserve Present System of Medical Care A H Scolten —p 107

### Medicine, Baltimore

23 105-214 (May) 1944

- Neurofibromatosis (von Recklinghausen) and Osteitis Fibrosa Cystica Localisata et Disseminata (von Recklinghausen). Study of Common Pathogenesis of Both Diseases. Differentiation Between 'Hyperparathyroidism with Generalized Decalcification and Fibrocystic Changes of Skeleton and Osteitis Fibrosa Cystica Disseminata' S J Thurnhauser —p 105
- Filariasis Due to Wuchereria Bancrofti L E Napier —p 149
- Meningeal and Vascular Syphilis of Spinal Cord R D Adams and H H Merritt —p 181

### New England Journal of Medicine, Boston

230 749-784 (June 22) 1944

- Management of Blood Bank at Massachusetts Memorial Hospitals. New Problem of Rh Typing I E Barton —p 749
- Functional Vomiting as Interpreted by Auscultation of Abdomen N C Stevens —p 753
- Practical Details in Management of Sterility with Special Reference to Endocrine Factors S R Meaker C H Lawrence and S N Vose —p 755
- Boston Medical Library H R Viets —p 760
- Liver Intoxication C M Jones —p 766

230 785-818 (June 29) 1944

- Perforated Peptic Ulcer. Follow Up Study of 100 Cases A C Williams —p 785
- Polyomyelitis on Isthmus of Panama C E Taylor —p 790
- X-Ray Therapy of Heart in Patient with Leukemia. Heart Block and Hypertension. Report of Case H Blotner and M C Sosman —p 793
- Spontaneous Threatened and Habitual Abortion. Their Pathogenesis and Treatment A T Hertig and R G Livingstone —p 797

### New Jersey Medical Society Journal, Trenton

41 221-262 (June) 1944

- Common Disorders of Digestive Tract. Clinical and Roentgenologic Study of Additional 500 Private Cases S W Johnson —p 226
- Vincent's Angina—Public Menace C V Craster —p 230
- Veneral Disease Control in Industry G S Usher —p 234
- Analysis of 100 Puerperal Deaths in Essex County A Meurlin —p 239

### New York State Journal of Medicine, New York

44 1281-1390 (June 15) 1944

- \*Measures to Prevent and Control an Epidemic of Ringworm of Scalp G M Lewis S H Silvers A C Cipollaro E Muskatblat and H H Mitchell —p 1327

**Measures to Control an Epidemic of Ringworm of Scalp**—Lewis and his associates state that an epidemic of tinea capitis in New York City caused by *Microsporon audouinii* and involving several thousand children has been spreading for more than a year. The report of a school nurse in this district regarding an unusually large number of children with infected scalps induced the district health officer to establish a diagnostic center to find the extent of the infection, to assist in diagnosis and to advise practitioners. All known infected children were asked to come to the diagnostic center for examination. They were examined under the filtered ultraviolet rays, a culture was taken and clinical records were kept. All child contacts were examined. New cases were soon found. The past treatment was appraised and, if unsatisfactory, the physician was told of the advantages of referring the patient to a skin clinic or to a dermatologist for the special care required. Each case was followed up by the diagnostic center until cured. Follow-up treatment had to be instituted in cases in which the x-ray epilation was incomplete. Absence from school became a problem, because it involved several hundred children in the district. Special classes formed for infected children functioned to the satisfaction of the children, the parents and the school and health authorities. After the patient was considered cured, two consecutive negative examinations by the diagnostic center a week apart, were required before the child could return to school. Follow-up examinations were made at intervals of from two weeks to three months. Over a period of a little more than a year 432 children with tinea capitis were registered at the diagnostic center. Of these, 411 had an infection with *M. audouinii*. By April 1, 1944 362 of these were known to be cured, while 70 cases were still active. New cases have decreased considerably. The authors make recommendations on measures to control the epidemic in New York City. The health department should lead by declaring the disease reportable, surveying all schools periodically, setting up diagnostic clinics in districts where the disease is prevalent and disseminating information to the general public. Filtered ultraviolet rays (Wood light) are essential in case finding and in determining when cure has taken place. Infections caused by *M. audouinii* should promptly receive the benefit of x-ray therapy.

### War Medicine, Chicago

5 267-348 (May) 1944

- \*Emotional Albuminuria J H Ahronheim —p 267
- The Guardhouse Inmate with Brief Discussion of Psychopathic Personality W Rotterman —p 271
- Strain of Right Rectus Muscle Simulating Acute Appendicitis E D Babbage C W McLaughlin Jr and R L Frum —p 280
- Canadian Army Night Vision Training and Testing Unit D McEachern and B D B Layton and E G Burr —p 283
- Aedes Scutellaris Hebrideus Edwards A Probable Vector of Dengue in New Hebrides R H Daggy —p 292
- Complications of Scabies L Goldman —p 294
- Sanitary Control and Operation of Swimming Pools M Lieber —p 299
- Hyperventilation Syndrome in Flying Personnel R F Rushmer and D D Bond —p 302
- \*Migraine like Syndrome Complicating Decompression Sickness G L Engel J P Webb E B Ferris Jr J Romano H Ryder and M A Blankenhorn —p 304

**Emotional Albuminuria**—Ahronheim noted that applicants for training as air cadets who after withdrawal of blood for a Kahn test had fainted or had felt faint almost invariably had considerable amounts of protein in the urine although a specimen of urine obtained prior to the withdrawal of blood had been free of albumin in a good percentage of cases. The regularity with which this phenomenon appeared in such persons as well as the increase in albumin in the second specimen following

a first specimen containing albumin suggested a relationship between the emotional upset precipitating fainting and the presence of protein in the urine. In order to substantiate this conception, the author made investigations on 1000 young men between the ages of 17 and 26 who seemed to be perfectly healthy. Two specimens of urine were obtained during a period of about fifteen minutes, the second voiding being preceded by withdrawal of blood for a Kahn test. Only 446 of the 1000 men gave negative reactions for albumin in both specimens; the other 554 men had positive reactions in one or both specimens, and in 504 of these albuminuria appeared after withdrawal of blood for the Kahn test. Of the 127 men who had fainted, only 3 had negative reactions in both specimens. The author thinks that the albuminuria was precipitated by emotional factors. There was no relationship between emotional albuminuria and the Schneider index. The intensity of albuminuria decreases with advancing age. Albuminuria in apparently healthy persons with a normal history is insignificant. It is possible that emotional albuminuria may be utilized as a test for emotional instability.

**Migraine-like Syndrome Complicating Decompression Sickness**—According to Engel and his co-workers visual disturbances are common among subjects experiencing decompression sickness during exposure to simulated high altitudes in a decompression chamber. Blurring of vision or scotomas are usually followed by headache. This report is based on a series of 1,361 exposures of 155 subjects to simulated altitudes of 30,000 to 38,000 feet. Seventeen subjects experienced scotomas a total of 46 times, 36 instances occurred in 971 exposures at 35,000 feet, 9 in 383 exposures at 38,000 feet and 1 in an exposure at 30,000 feet. Anoxia was not present. It is apparent that these symptoms occurred repeatedly in some persons and not at all in others. The reaction always occurred after decompression sickness had developed, but it was unrelated to altitude, most often it developed five to thirty minutes after descent, but when it developed at altitude its course was uninfluenced by remaining at altitude or by descent. Although complicated by syncopal symptoms in some instances, the reaction was not related to syncope. Visual field studies revealed that the scotomas were homonymous, that they shifted rapidly in position, always moving peripherally, and that they were sometimes multiple. Headache, which was always contralateral to the scotomas, began when the scotomas had disappeared and was sometimes associated with nausea and vomiting. Electroencephalograms during two reactions revealed focal abnormalities in the cortex corresponding to the focal neurologic signs. The close similarity of the reaction to clinical migraine led the authors to inquire into the past history of migraine among the 115 subjects. A highly significant incidence of migraine headaches was found among the subjects susceptible to the reaction. These visual disturbances obviously represent a hazard during flying and landing operations. The fact that scotomas may exist for some time before the subject becomes aware of them and the frequency with which they seem to develop during descent suggest the possibility that they may be potentially responsible for landing accidents. Two steps would greatly decrease the incidence of those reactions among flying personnel engaged in high altitude work: (1) adequate preselection to eliminate persons susceptible to decompression sickness and (2) elimination of candidates with a history of clinical migraine unless their susceptibility to decompression sickness is low.

### Wisconsin Medical Journal, Madison

43 603 644 (June) 1944

- Upper Urinary Tract Problems in Infants and Children N W Bourne —p 603  
Experiences with Parenteral Use of Amino Acids A R Curren and O V Hibma —p 609  
Importance of Early Recognition of Congenital Dislocation of Hip V C Turner —p 613  
Cancer of Bowel Some Remarks on Diagnosis and Treatment C F Dixon —p 618  
Diabetes in Pregnancy G S Kilkenny —p 622

43 665 764 (July) 1944

- Present Status of Hemorrhagic Diseases F W Madison —p 688  
Inaccuracy of Pelvic Examinations E F Melke —p 693  
Heart in Pregnancy and Labor W C Danforth —p 698  
Faulty Posture in Children D J Ansfield —p 703  
Electroencephalography in Children M G Peterman —p 708

### FOREIGN

An asterisk (\*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

### British J Children's Diseases, Dorking, England

41 31-70 (April-June) 1944

- \*Meningitis in Children Refractory to Sulfonamides R Gros Heisler and E Davis —p 31

- \*Pathogenesis and Clinical Symptoms of Tuberculous Meningitis S Engel —p 34

**Meningitis in Children Refractory to Sulfonamides**—Gros-Heisler and Davis point out that an impression prevails that treatment of meningitis other than tuberculous has been revolutionized by the sulfonamides. They describe 6 refractory cases they saw in the course of the last eighteen months. The ages of the children ranged from 3 months to 7 years. Two of the 6 patients had adrenal hemorrhage and 1 of them fell into the category of the so called Friedrichsen-Waterhouse syndrome. Four patients with streptococcal and staphylococcal meningitis died despite intensive therapy with various sulfonamides. It is suggested that as soon as penicillin becomes available it should be used for such cases.

**Pathogenesis and Clinical Symptoms of Tuberculous Meningitis**—According to Engel tuberculous meningitis occurs most frequently in young children and often in the first few months after the primary infection. Macroglindular caseation may pave the way for the secondary spread. The route of infection does not run directly from the primary complex to the meninges via the blood stream. The brain and plexuses in 13 cases of tuberculous meningitis in children have been investigated. Cortical foci and tuberculomas could not be found. Choroid plexus changes were present in every instance but they were of a peculiar nature and not typical tubercles. The changes of the choroid plexuses suggest that they infect easily the ventricular fluid, they are numerous although minute by themselves but more likely to infect the fluid than solid tubercles or large caseous masses. Giant cells and caseation were present in advanced cases. Usually it is the final stage that presents itself at necropsy, but the author was able to observe a case in the initial stage. In spite of the early stage of the meningeal process the choroid plexuses showed the typical changes, but tubercle bacilli were abundant this time contrary to the former findings. The choroid plexuses it seems breed initially an enormous number of bacilli which drop from the decaying villi into the ventricular fluid and proceed from there through the natural communications to the basal spaces thus producing basal meningitis. Tuberculous meningitis cannot be considered as an isolated occurrence in tuberculosis; it is always part of miliary tuberculosis. The author emphasizes that the so-called classic picture of tuberculous meningitis applies only to a minority of cases among young children. In children of school age it is more frequent. It is advisable to use the dromographia test in doubtful cases which is usually intense in cases of brain pressure.

### Journal of Endocrinology, London

3 323-410 (May) 1944

- Staining Basophil Cells of Human Hypophysis with Special Reference to Abnormal Basophil Cells of Cushing's Syndrome N G B McLetchie —p 323  
\*Pituitary Basophilism Syndrome of Harvey Cushing N G B McLetchie —p 332  
Carcinoma of Adrenocortical Rest Associated with Hypophysial Abnormality N G B McLetchie and L D W Scott —p 347  
Disturbances of Water Balance in Rat on Removal of Adrenal Medulla L Stein and E Wertheimer —p 356  
Nature of Hyperostification Observed in Long Bones of Rats Treated with Excessive Doses of Estradiol Benzoate H N Lippman and J B de C M Saunders —p 370  
Production of Ovulation in Immature Rat I W Rowlands —p 384  
Additional Studies of Extrathyroidal Metabolism of Iodine A Chapman G M Higgins and F C Mann —p 392  
Aldoluria Dwarfism with Normal Sexual Function Result of Hypopituitarism T F Hewer —p 397  
Observations on Estrogenic Potency of Stilbestrol in Guinea Pig P Baesch and G M Wyburn —p 401

**Cushing's Pituitary Basophilism**—McLetchie reports the history of a man aged 32 who presented symptoms indicative of Cushing's syndrome. Necropsy revealed that here the pituitary basophilism was not associated with hypophysial, adrenal

or thymic tumor and that there was no adrenal hyperplasia. The abnormalities present in the anterior pituitary were (1) a conspicuous degree of basophil cell hyalinization, (2) an excessive degree of basophil cell vacuolation, (3) multifocal basophil cell vacuolation in the individual cells associated with excessive disappearance of granules and with the revelation of a refractile cytoplasmic envelop surrounding the vacuoles (cobweb vacuolation), (4) nuclei of the basophil cells normal but in many cells cobweb vacuolation associated with displacement of the nuclei to the periphery of the cells and with compression and scalloping of the nucleus by the vacuoles with numerous binucleate basophil cells, (5) the basophil cells increased in size and (6) the acidophil cells greatly reduced in size. These findings are contrasted with those in 2 other cases of basophilism, with those in nonbasophilism cases and with those of other recorded descriptions of the abnormal basophil cells of basophilism. The author stresses that the abnormalities of size and vacuolation found in the chromophil cells are (1) inconstant in basophilism and (2) not associated with a particular pathologic type of basophilism. The cobweb vacuolation and nuclear scalloping in the basophil cells is similar to what Severinghaus and others have interpreted as nuclear 'blistering'. It is suggested that the abnormalities of size and vacuolation in the chromophil cells represent a phase of reaction to hypogonadism and are of only secondary importance in the morbid process of basophilism. The author briefly discusses the correlation between the different pathologic types of basophilism. He also directs attention to the relation of the morbid process of Cushing's syndrome to the changes produced in rats fed on a diet containing a high proportion of Brassica seeds. He thinks that basophil cell hyperactivity is the essential abnormality of Cushing's syndrome and that basophil cell hyalinization is a cytoplasmic change resulting from hyperactivity.

## Journal Obst & Gynaec of Brit Empire, Manchester

51 85-180 (April) 1944

- \*Some Recent Studies and Investigations in Sterility A Sharman —p 85
- Pattern of Contractions of Pregnant Uterus Under Spinal Anesthesia and the Attendant Changes in Reactivity of Myometrium P Malpas —p 112
- Occurrence and Significance of Clostridium Welchii in Female Genital Tract R Salm —p 121
- Case of Osteomalacia in Pregnancy H R MacLennan —p 127
- Postclimatic Kyphosis G Bierer —p 130
- \*Hogben Pregnancy Test with Note on Breeding of Xenopus for Test F W Landgrebe and L Sampson —p 133
- Trichlorethylene and Midwifery W Clavert —p 140
- Amyoplasia Congenita Causing Malpresentation of Fetus Mildred I Ealing —p 144
- Primary Melanosarcoma of Vagina Case Report I M Bromberg and A Brzezinski —p 147
- Self Retraction of Uterus After Portes Operation H Hofmann —p 150

**Investigations on Sterility**—Sharman discusses certain selected aspects of sterility, namely (1) the estimation of tubal patency, (2) anovular menstruation as assessed by endometrial biopsy, (3) endometrial tuberculosis, (4) the causation of tubal occlusion, (5) seminal analysis and (6) the results obtained by a follow up investigation. The observations are based on a consecutive and unselected series of 500 cases of primary sterility which have been followed up for several years and a number of more recent cases which have been the subject of particularized research. Estimation of tubal patency was done on 480 women, of whom about half had two or more insufflations. Insufflation revealed nonpatency in 38 per cent of the cases. Of 358 patients in whom biopsy was performed premenstrually, 64 per cent exhibited anovular cycles. Of 392 patients in whom biopsy was performed, 51 per cent showed unsuspected tuberculous endometritis. Seminal examination of 114 husbands revealed normal characters in 68.4 per cent pronounced deficiency in 13.2 per cent and azoospermia in 18.4 per cent. Of 409 cases traced pregnancy occurred in 116, i.e. 28.3 per cent. Pregnancy did not occur where anovular cycles or endometrial tuberculosis or azoospermia was present (with the exception of 2 cases of anovular cycles after treatment). In 152 of 293 sterile marriages infertility factors were found that would render pregnancy impossible or unlikely. The author thinks that if a greater number of cases had had endometrial biopsy and seminal examination performed there is little doubt that the infertility factors

of anovular cycles, tuberculous endometritis and azoospermia would have appreciably reduced the figure of 141 cases in which, as far as investigation went, no reason was discovered for the infertility of the marriage. His studies on tubal patency by means of insufflation on a series of 1,063 revealed that true non-patency exists in from 25 to 30 per cent of cases of primary sterility. The percentage of error in insufflation and in hystero-salpingography is about equal, but the error in the former is reliance on a single test, which error can be avoided by repeating the test whereas the error in hysterosalpingography is in the reading of the plates and is not always remediable. In a further 491 consecutive and unselected cases of primary sterility 27 (5.5 per cent) have shown unsuspected endometrial tuberculosis. This gives a total incidence of 5.3 per cent in 883 cases. In cases in which gross tubal damage is not present, tubal occlusion is rarely due to gonococcal salpingitis or to congenital hypoplasia. Evidence is produced to show that blockage in a considerable number of cases is due to subclinical tuberculous salpingitis.

**Hogben Pregnancy Test, Breeding of Xenopus**—According to Landgrebe and Sampson the South African clawed toad *Xenopus laevis* was first introduced as an assay animal by Hogben in 1930, who observed ovulation of *Xenopus* after injection of anterior pituitary lobe extract. The authors describe their experiences with the Hogben test. Of a total of 258 tests they were able to check 220 against ultimate clinical observations and of these 218 were found correct. The 2 exceptions were patients with menopausal symptoms. The authors emphasize that the Hogben test for pregnancy using the Scott technic for extraction of the urine, is as reliable as any other test, provided at least ten days elapse since the first missed period. Menopausal urines extracted by precipitation technic often gives a positive Hogben test in the absence of pregnancy but with the Scott extraction method the test gives a negative result in these cases and also gave a negative result in 2 pregnant patients showing menopausal symptoms at the time of the test. The Hogben test is more rapid and requires much smaller demands on laboratory routine than other tests. At 22°C a result is obtained within eighteen hours, and the animals require feeding and cleaning only once a week. The test is much less expensive than the Friedman or the Aschheim Zondek in both food and animal costs. Two toads are sufficient for each test if they are in good condition. Each toad was used over twenty-four times and still respond satisfactorily. Laboratory bred *Xenopus* toads can be used for the test and are capable of producing a second generation which will also respond to pregnancy urine extracts.

## Transactions Royal Soc Trop Med and Hyg, London

37 347-452 (May) 1944

- \*Heat Effects in British Service Personnel in Iraq T C Morton —p 347
- Lizard Filariasis Experimental Study T B Menon B Ramamurti and D S Rao —p 373
- Portal Cirrhosis in Iraq R S Stacey —p 387
- Lobar Pneumonia in African Soldiers T Simpson —p 399
- Kala Azar in East Africa A C E Cole —p 409
- Cutaneous Leishmaniasis in Nigeria B G T Elmes and R N Hall —p 437
- Abdominal Pain in Diagnosis of Early Kala Azar E Burke —p 441
- Unusual Case of Kala Azar Successfully Treated with Stilbamidine M A Shellim —p 447
- Asthma Produced by Ascaris Infestation K V Earle —p 451

**Heat Effects in British Service Personnel in Iraq**—Morton divides heat effects into heat syncope, heat exhaustion and heat hyperpyrexia, because the clinical picture is as a rule clearcut and the prognosis and treatment are radically different. Syncope occurs in temperate climates, in hot stuffy atmospheres and also in heavily overladen soldiers on the march. It is a temporary cardiovascular collapse which, like other faints, may progress to severe prostration with giddiness, a small soft fluttering pulse, shallow breathing dilated pupils, a cold skin and subnormal temperature. The patient is bathed with a cold clammy sweat, and severe headache and mental confusion may follow. Death may occur in cases of heart disease. Treatment consists in dorsal decubitus in a cool place, the loosening of tight clothing and the bathing of the face with cold water together with the application of ammonia to the nostrils and a small dose of sal volatile. Electrolyte imbalance and dehydra-

tion appear to be of primary importance in the genesis of heat exhaustion. The lean, spare type with a low systolic pressure is particularly prone to heat exhaustion. The quantitative estimation of the urinary chlorides is a simple and reliable test in the differential diagnosis of these cases, and sodium chloride and glucose are a safe and effective remedy. If intravenous therapy is indicated, this must be controlled by charting the intake and output and estimating the hemoconcentration, otherwise there is a risk of pulmonary edema. The prognosis in heat exhaustion is excellent, provided the condition is recognized in time and adequately treated. Heat hyperpyrexia is always a grave syndrome; the mortality is usually at least 30 per cent and may be considerably more. Alcohol and age are accessory and adverse factors, and the condition is more frequent in the fat and plethoric. The essential factor is the failure of the heat regulating center with the suppression of sweating, although in the more protracted cases it is probable that an auto-intoxication is responsible for the prolonged pyrexia. Thermantidote measures and the nursing of these patients in artificially cooled wards are the basis of treatment. Ample cool drinking water containing 10 grains (0.65 Gm) of sodium chloride to the pint, together with a total consumption of at least 1 ounce (30 Gm) of sodium chloride a day is a paramount necessity in all endemic areas during the hot weather. The provision of air conditioned or artificially cooled wards in hospitals in endemic areas is essential.

### Helvetica Medica Acta, Basel

#### 11 1-334 (April) 1944 Partial Index

- Diabetic Glomerulosclerosis O Spuhler—p 27  
Clinical Aspects of Malignant Nephrosclerosis F Wulfrum—p 31  
Elimination of Sulfathiazole in Renal Insufficiency M Demole and P Guye—p 39  
Rudimentary Infarct of Anterior Wall as an Acute Process M Holzmann—p 47  
Gastroduodenal Ulcers and Coronary Syndromes R Junet—p 75  
Spinal Varicosities E Uehlinger and O Gsell—p 85  
Frequent Occurrence of Temporary Eosinophilic Pulmonary Infiltrates F Leutenegger—p 111  
Cutaneous Tests with Ascarides Extract in Temporary Eosinophilic Pulmonary Infiltrates E Zweifel—p 117  
Pulmonary Function in Silicosis E Jequier Döge and M Lob—p 123  
Cirrhosis of Liver and Central Nervous System E Martin G de Morsier and P Alphonse—p 141  
Quinine and Bone Marrow J P Chapuis and G Hemmeler—p 195  
New Investigation on Iron Metabolism Variations in Iron Content of Serum During Course of Day G Hemmeler—p 201  
Pathology and Therapy of Nonspecific Inflammatory Arterial Diseases A von Albertini—p 233  
Thrombosis of Internal Carotid Artery and Its Relation to Endangitis Obliterans of Winiwarter Buerger H Krajenbuhl and G Weber—p 289

**Spinal Varicosities**—According to Uehlinger and Gsell, dilatation and serpentinization of the veins of the spinal cord may cause changes in the medulla and irritation of nerve roots. Clinically it becomes manifest in two syndromes (1) as an apoplectic form and (2) as a neuralgic paralytic form. The authors describe 2 cases observed by them during the past year. The first belonged to the group of juvenile apoplexy. The patient, who died at the age of 28, had a first apoplectic attack after a scare at the age of 18 and a second fatal stroke ten years later, both from complete well-being. The first acute spinal apoplexy resulted in flaccid tetraplegia, singultus, priapism, impairment of voluntary urination and defecation and in disturbance of sensibility. Meningitic symptoms were absent. The clinical course was that of a typical hematomyelia in the lower cervical cord with perforation of the hemorrhage into the subarachnoid space. The paralytic symptoms commenced to regress after a few hours. The attack terminated in complete restoration of motility and sensibility of the left arm and the legs, but in the right arm and shoulder region an atrophic paresis remained. After an interval of ten years a second spinal apoplexy suddenly developed. The attack was followed by death within ninety minutes. There was pulmonary edema but again no loss of consciousness. Necropsy explained both attacks as acute hematomyelia, originating in a varicose network on the cervical spinal cord. Whereas the first attack had destroyed only some segments of the right lower cervical spinal cord, in the second attack the hemorrhage extended upward and downward with perforation into the ventricle and the central canal of the spinal cord. The second patient, a man aged 48, experi-

enced acute pain in the lumbar region which developed into a syndrome of radicular sciatic neuritis first unilaterally and later bilaterally, death was caused by transverse lumbar myelitis. Necropsy disclosed spinal varicosities near the cauda. Spinal varicosities may be a partial manifestation of a status varicosus or it may be limited to the spinal cord. The condition is more frequent in the male than in the female as was demonstrated by Globus and Doshay in 1929. The apoplectic form usually appears earlier in life than the neuralgic paralytic form. The presence of extraspinal varicosities, such as varicose veins or hemorrhoids, may be of help in the diagnosis. Laminectomy with spinal decompression may lead to the arrest or even the regression of the symptoms of spinal varicosities. Observations so far do not indicate resection of the spinal varicosities, since the effect of this intervention cannot be foreseen.

### Schweizerische medizinische Wochenschrift, Basel

#### 73 989-1012 (Aug 14) 1943 Partial Index

- Nephrotic Hypertension Syndrome in Diabetes and Kimmelstiel's and Wilson's Intercapillary Glomerulosclerosis M Auroi—p 989  
Castellani's Bronchospirochætosis Case S Moeschlin—p 995  
Atrophy of Left Kidney Due to Ascending Venous Thrombosis Case A Müller—p 998  
Study of Loss of Tendon Reflexes in Lower Extremities in Course of Cerebral Tumors M Schächter—p 999  
Toxicity of Sulfonamides and Vitamin B<sub>1</sub> A Fleisch and T de Preux—p 1001  
Anesthesia of Short Duration Induced with 1 Methyl-5,5 Allyl Isopropyl Barbiturate Sodium (Narcounal Roche) G Remmann Hunziker—p 1003

**Nephrotic Hypertension Syndrome in Diabetes and Kimmelstiel's and Wilson's Intercapillary Glomerulosclerosis**—Auroi describes 4 cases of women 64, 54, 45 and 60 years of age with diabetes presenting Kimmelstiel's and Wilson's nephrotic hypertension syndrome. The condition in these and in similar cases described in literature is anatomically characterized by a peculiar primary independent hyalinization of the glomeruli. It may remain clinically latent or albuminuria, arterial hypertension with its sequels in the circulatory apparatus and renal insufficiency, i.e. the common picture of glomerular disease may be presented depending on the degree and extent of the lesions. The nephrotic syndrome (hypoalbuminemia and edema) should be considered coordinated or subordinated to the glomerular process, in correspondence to the findings in diffuse glomerulonephritis with nephrotic type of edema. Diabetes associated with advanced age may safely be assumed to be the etiologic factor. There were only a few exceptional cases in which the intracapillary glomerulosclerosis was not associated with diabetes. Latent diabetes however, or aglycosuric diabetes resulting from an increase in the renal threshold was probably present in those instances. A masked diabetes should be watched for in individuals of advanced age presenting the nephrotic hypertension syndrome. The finding of intracapillary glomerulosclerosis at necropsy strongly suggests the premortal presence of diabetes. The course of the fully developed intracapillary glomerulosclerosis is rapid and death from cardiac insufficiency, uremia or apoplexy will occur within two to three years.

### Revista de la Policlínica Caracas, Caracas

#### 13 93-156 (March-April) 1944 Partial Index

- Therapy of Parkinson's Syndrome by Vitamin B<sub>6</sub> (Pyridoxine) A Sanabria and L A Muro—p 125

**Vitamin B<sub>6</sub> Therapy of Parkinsonism**—Sanabria and Muro administered vitamin B<sub>6</sub> to 11 patients with parkinsonism. The drug was given intravenously on ten consecutive days in daily doses of 50 mg. The treatment was continued after the ten days only on patients who improved during its administration. It was given intravenously every other day in doses of 50 mg and also by mouth in 10 mg doses on the days on which the drug was not injected. By the end of the treatment tremor was almost completely controlled, and muscular rigidity and muscle tone were greatly improved in 4 cases. Walking was regained in 1 of the 4 cases. Tremor alone was controlled in 1 case. No effect from the treatment was observed in 6 cases. Sialorrhea was not affected in any case. Best results were obtained in early cases. The fact that the drug is expensive makes its use less available than that of the alkaloids of belladonna.

## Book Notices

**Clinical Tropical Medicine** By Twenty Seven Authors Edited by Z. Taylor Bercovitz M.D. Ph.D. F.A.C.P. Assistant Clinical Professor New York Post Graduate Medical School Columbia University New York With foreword by Wilbur A. Sawyer M.D. Director International Health Division Rockefeller Foundation New York Cloth Price \$14 Pp 957 with 141 illustrations New York & London Paul B. Hoeber Inc 1944

This attractive volume is a useful addition for any medical library. It is handsomely printed, and there is an agreeable and rare paucity of typographic errors. The form is monographic and the authors' list includes many accepted authorities such as C. F. Craig, Lee Foshay, Howard Fox, A. W. Grace, A. V. Hardy, G. W. McCoy, K. F. Meyer, Morris Moore, Henry Pinkerton, J. F. Siler, F. L. Soper, E. B. Vedder and W. H. Wright, to mention only some.

The volume is too large for easy handling, and its values are spotty. It might have been improved by condensation of certain subjects such as rabies, psittacosis and tularemia, and by omission of such subjects as poliomyelitis, smallpox, varicella, typhoid, epidemic encephalitis and trachoma. A few sections could well be amplified and brought up to date. In the latter group are the short, almost fragmentary sections on personal hygiene and sanitation in the tropics, where specific recommendations would be of more value than trite generalizations. Mosquito control is barely mentioned in this section. Acclimatization, environmental effects of geography and social climate and medical geography are not discussed and hardly clearly mentioned. Yet on these will depend much of what mankind accomplishes in the future in regions of warm climate. Problems of housing, food supply and future transport and communications could have their medical groundwork laid now, and this would have been within the field of a monographic review of tropical medicine.

More in detail the following comments occur to the reader. The discussion of sprue, beriberi, pellagra and scurvy by E. B. Vedder is splendid. It is preceded by a clear, comprehensive and up to date description of the vitamins. Outside of trichina, filaria and schistosomes, helminths are well covered as to epidemiology, prevention and treatment. Trichinosis is poorly covered, especially in respect of subclinical infection, epidemiology, geography, animal sources, digestion of biopsy material and suspected meat, and prophylaxis by refrigeration. The space allotted to *Wuchereria bancrofti* is far less than that for trichinosis. This section is poor, as is also the sketchy review of schistosomes.

While the biology and diagnosis of amebiasis are discussed at length, the bacteriologic diagnosis of bacillary dysentery is only mentioned and not described. The review of treatment of bacillary dysentery is sketchy and incomplete without critical comparison of sulfonamide drugs. The paragraph on transfusion could better have been omitted. The special diet list and instructions are redundant, unnecessary and inaccurate, while the advice on bacteriophage is equivocal. In fact the section on the treatment of bacillary dysentery is poor and not up to the level of most chapters in the book.

The discussion of cholera by Joseph F. Siler is unusually satisfactory. Malarial sections in general are diffuse not clear, often inexact and ambiguous and the presentation of distribution is quite inadequate. Reference is made to Sir Andrew Balfour as if he were still alive in Khartoum. In connection with the differentiation of malaria and kala azar, it is scarcely correct to say that it is by microscopic examination of the blood alone. Some odd spellings have slipped by, as 'comatous' for 'comatose' and (on page 3) 'oesophagostomum' for 'oesophagostome'. One questions the usefulness of a clinical classification of subtertian malaria by symptoms rather than by underlying pathologic changes, and it is not allowable to refer to gametocytes as developing from schizonts.

The treatment of malaria should be revised and better organized. Many would not agree with the flat rules that any person from an endemic area should receive 10 grains daily of quinine for eight weeks, that sufficiently long use of quinine will eliminate "malarial infections" or that "when it is impossible to administer quinine by mouth, atabrine should be used."

There is no discussion of varying objectives of treatment under different conditions, as for instance various military and civilian requirements, or of varying requirements of different plasmodia or of utilization of malarial immunity in treatment. In spite of the aforementioned quotation, the statement is also made that all who "return by ship from tropical or highly endemic areas" should receive atabrine 0.1 Gm thrice daily for five to seven days and then 0.1 Gm daily for two months. Discussion is lacking of the basic pharmacology of the antimalarial drugs and of the relation of transfusion to malarial transfer. Mosquito control and malaria prophylaxis (suppression) are sketchy and quite inadequately presented. Reference is not made to species attack or to spraying, and final advice is given that "people who live in malarial districts should not leave their houses between sunset and sunrise."

A distorted clinical picture follows mention of gallstones as a complication of blackwater fever. Under trypanosomiasis, synonyms of "Bayce 205," e.g. "germanni" should be given. American trypanosomiasis by this time should certainly be divorced completely from thyroid disease and the chapter brought within range of present day knowledge.

The date of publication of the volume should have included the final demonstration of the sandfly vector of leishmaniasis by Swaminath, Shortt and Anderson in 1942. American leishmaniasis is not clearly presented, nor the geographic spread of oriental sore. Howard Fox, in valuable reviews of pinta and yaws carefully but firmly pays his respects to Admiral Butler while maintaining the difference between yaws and syphilis.

The discussion of the rickettsioses by Pinkerton is clear and of sound clinical value. Soper on yellow fever has given an authoritative and useful survey. The clinical discussion of mycoses by Morris Moore is excellent, as are also the short chapters on snake bite by J. A. Oliver and Dudley Jackson. The material on noxious arthropods is scattered and not easily assembled for use, and in general the descriptions are not sufficient for rough identification.

This volume is therefore of variable and spotty value. The major part is excellent, well written by authorities. Other parts fall short of this level. For the purpose of a monographic clinical presentation of tropical medicine it needs additions, deletions and some rewriting, as already noted.

**Chemical Analysis. A Series of Monographs on Analytical Chemistry and Its Applications.** Editorial Board: Beverly L. Clarke, I. M. Kolthoff and Hobart H. Willard. Volume I: *The Analytical Chemistry of Industrial Poisons, Hazards and Solvents*. By Morris B. Jacobs. Ph.D. Senior Chemist, Department of Health, City of New York. Second revised reprint. Cloth. Price \$7. Pp 661 with 110 illustrations. Volume III: *Colorimetric Determination of Traces of Metals*. By E. B. Sandell. Ph.D., Assistant Professor of Analytical Chemistry, University of Minnesota, Minneapolis. Cloth. Price \$7. Pp 487 with 73 illustrations. New York: Interscience Publishers, Inc. 1944.

Physicians encountering industrial health problems and especially those who are concerned with the prevention of industrial disease will find volume I valuable. Designed primarily to summarize practical applications of analytical chemistry in industrial hygiene, it also serves as a reference work on the occurrence of hazard, physical properties, toxicity and physiologic response and methods of detection of a large number of substances currently employed in modern industrial production. The monograph is well organized. The analytical methods are clearly stated and well supported by adequate references to the original literature. The introductory portion of the text is devoted to the general consideration of industrial hygiene and industrial poisons, sampling, gasometry and methods for the handling and examination of dusts. Subsequent chapters give information on silica, various metals, compounds of sulfur, phosphorus and nitrogen, oxygen and ozone, halogen compounds, carbon monoxide, carbon dioxide, hydrocyanic acid and cyanogen. Almost half of the book is utilized to present the properties, actions and modes of estimation of some one hundred and twenty-five organic substances, including industrial solvents, raw materials of manufacture and chemical warfare agents. An appendix contains useful tables, among which are several concerned with the probable safe concentration limits of exposure for gases, vapors, metallic and other dusts and fumes.

Volume III was designed to present a number of useful modern methods for the determination of small amounts of



each of forty-five different elements, exclusive of the information provided on the rare earth elements. In the first part of the text a critical discussion of colorimetric trace analysis is given. General methods for the separation and isolation of small quantities of the elements by chemical and physical means are outlined and evaluated. There follows a logical treatment of colorimetric and spectrophotometric measurements with discussion of their place in the estimation of trace elements. Nineteen colorimetric reagents which find practical application in trace analysis and the nature of their reaction types and specificity are described in the final chapter of this general part of the book. The remaining three fourths of the text is devoted to the discussion of the various elements encountered in practical trace analysis. Each element is considered in detail—separations, methods of determination and application of the methods given are presented. Although colorimetric methods for the determination of substances have been frowned on by some investigators as being peculiarly subject to error, such methods prove to be invaluable in the hands of investigators who take the trouble to consider the underlying principles involved. An understanding of the limitations of colorimetric and photometric techniques, coupled with knowledge of the fact that annoying but surmountable interferences may occur in many chemical reactions, permits of a wide range of their application. This book on trace metal determination is well written, it contains many carefully chosen references to the original literature and to earlier compilations in the field of colorimetry. The author has made judicious use of structural formulas, tables and charts to clarify the subject and to illustrate the practical limitations of many of the procedures. Although the book is not directed specifically to the needs of the clinician, it should prove to be of great value to those investigating the influence of trace elements in biologic phenomena.

**The Hogg Foundation Reports. A Summary of Three Years Work—A Forecast of Next Steps.** Robert L. Sutherland, Director, Hogg Foundation for Mental Hygiene. Paper. Pp. 32 with 4 illustrations. Austin: Hogg Foundation for Mental Hygiene, University of Texas, 1944.

This pamphlet describes the work of the first three years of the Hogg Foundation and presents plans for the future. Established through a gift of Will Hogg to the University of Texas, the foundation is dedicated to an improvement of mental hygiene in Texas by bringing together knowledge of sound principles of human development from the specialized fields of psychiatry, physiology, psychology and sociology and applying them to the "conditions of growth and development of all persons." The work of the foundation is carried on at three levels. The first level consists of lectureships "to carry the basic principles of mental health to many fields of interest as well as to many localities." At the second level the foundation provides planned instruction in mental hygiene for professional leaders who are engaged in, or are preparing to enter, human relations work. This includes the professions of medicine, nursing, school guidance, industrial personnel, case work, group work and the ministry of the religious counselor. At the third level the foundation is assisting in the establishment of diagnostic clinics to detect the signs of maladjustment at an early stage and provide treatment. The foundation plans to continue and expand its work and will carry out studies and provide assistance in the adjustment problems of the returning veterans. The program of the foundation is educational, stressing prevention and early diagnosis and treatment. Such an approach to health problems deserves further development in other fields of health. It is especially important in the field of mental health, of which our wartime experiences have made us acutely conscious.

**Guiding the Normal Child. A Guide for Parents, Teachers, Students and Others.** By Agatha H. Bowley, Ph.D. With a foreword by D. R. McClellan, M.D. Cloth. Price \$3. Pp. 174. New York: Philosophical Library, 1943.

This small work by an English psychologist is designed primarily for teachers but is also intended for parents. The dynamic psychology now current in our psychiatric thinking offers the theoretical background for the author. The Child Guidance Center and Nursery School provide the material for her observations of children and her practical and clinical

presentations. The book will appeal more to educators and to psychologists than to parents. It is authentic in content but not too well organized. An abundant but not too discriminating bibliography is offered. The typography is easily readable. The unappealing format is perhaps to be attributed to wartime restrictions in book making. A glaring error in the table of contents startles the reader.

**The Art and Science of Nutrition. A Textbook on the Theory and Application of Nutrition.** By Estelle E. Hawley, Ph.D., and Grace Carden. B.S. Second edition. Cloth. Price \$3.75. Pp. 668 with 139 illustrations. St. Louis: C. V. Mosby Company, 1944.

In this edition the inclusion of the most recent advances in the science of nutrition constitutes the main addition. The present status of knowledge of vitamins and minerals is concisely and accurately recorded with the recommended daily allowances of these elements listed. The material in the book is developed on the foundation of a thorough but direct and readily understandable presentation of the fundamental facts of normal nutrition. The abnormal states of vitamin deficiencies are gone into in some detail, with numerous excellent pictures demonstrating these conditions. The nutritional principles set forth in earlier chapters are later applied to the feeding of various population groups, from the family as a whole to its specialized members, such as infants, growing children and the aged. Consideration is given to the special physiologic requirements of pregnancy and obesity. Probably the strongest section of the book is that covering diet therapy. Here discussion is found of the dietary indications for every possible condition in which benefit may be expected from the use of a suitable diet. In addition to a statement of the principles involved, simple directions are given as to what foods to use and what to avoid. In many cases the discussion goes beyond the limits of nutrition by going into the etiology of the diseases and their symptomatology and differential diagnosis. The wisdom of this is questioned. The last section deals with the art of nutrition in the way of preparing foods for consumption. This part of the book consists of menus, lists of foods and reference tables of food values. Its didactic form leaves much to be desired for an artful presentation of the subject or the foods. It contributes little to the interest in the book, although it may be of value for reference. Altogether the entire work with its profusion of illustrations can be recommended as an excellent textbook for the instruction and practical use of nurses as well as practicing physicians.

**A Textbook of Inorganic Pharmaceutical Chemistry.** By Charles H. Rogers, Sc.D., Dean of the College of Pharmacy and Professor of Pharmaceutical Chemistry, University of Minnesota, Minneapolis. Third edition. Cloth. Price \$7.50. Pp. 704 with 52 illustrations. Philadelphia: Lea & Febiger, 1943.

The earlier editions of this textbook, appearing in 1930 and 1936, served as commentaries on the inorganic compounds which were to be found as official drugs in the tenth and eleventh editions of the United States Pharmacopeia and in the fifth and sixth editions of the National Formulary. The present volume has been revised to include all the inorganic salts of organic acids as well as the inorganic substances recognized by the U. S. P. XII and the N. F. VII. As in earlier editions, the elements are considered in an order which makes the volume suitable as a textbook on inorganic chemistry. The history and occurrence, physical and chemical properties, qualitative tests, method of preparation and, in addition, pharmacologic action and general uses of the substances are included. This edition is well printed, and excellent use is made of chemical equations in the presentation of chemical properties. It might be argued that some additional material could well be added to certain chapters; for example, the chapter on gold and gold compounds might include a discussion of the chemistry and pharmacologic action of sodium gold thiosulfate. Designed primarily for the student of modern pharmacy, the book, nevertheless, should serve as a useful source of information for physicians who are interested in gaining familiarity with the history and chemistry of many of the drugs which they may daily prescribe.



## Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

### TOPICAL APPLICATIONS OF SULFONAMIDES AND PENICILLIN

**To the Editor**—What are the therapeutic possibilities in injecting suspensions of sulfadiazine, sulfathiazole or other sulfonamides directly into or around the sites of localized infections? Mention of such treatment has not been found in available literature. It is understood that the soluble sodium sulfonamide preparations employed for intravenous therapy could not be used in this manner because they are intensely irritating and cause tissue necrosis. However, the less irritating and less soluble sulfonamides injected in suspension might be more valuable because of their low solubility, the gradual solution of the crystals in the tissues producing prolonged high concentration in the area of the infection. It is conceivable that administration of sulfonamides by this route might have value in many localized infections including furuncles, carbuncles, felon, cellulitis, gas gangrene, suppurative arthritis and infected cysts. Perhaps by this method effective concentrations of sulfonamides might be brought to bear on such infections while their relative concentration in the blood and the rest of the body would be low, thus avoiding the unfavorable reactions of large doses of the drugs by mouth. Might it be indicated to attempt to develop preparations of sulfonamides especially for this use, the desirable characteristics sought being a minimum amount of irritation to the tissues and the property of dissolving into the tissues slowly? 1. Has there been any work along these lines of either experimental or clinical nature and if so what were the results? 2. What are the drawbacks and contraindications? Specifically would the injection of small amounts of crystalline sulfathiazole or sulfadiazine suspended in water or isotonic solution of sodium chloride produce local irritation or necrosis? 3. If the procedure is not contraindicated, what dosage and form of administration is suggested for typical cases? If this method of approach has not already been tried and found worthless, what are its possibilities? Does it justify a program of investigation? Could penicillin be administered in a similar manner? M. D. California

**ANSWER**—1. There apparently is no extensive series of published data relating to experimental or clinical investigations of this type. However, suspensions of sulfanilamide in isotonic solution of sodium chloride have been injected into infected pleural cavities. This procedure has been associated with some improvement. Likewise, such suspensions have been introduced into the peritoneal cavity where suppuration has been present. Although observations have not been too extensive, the results appeared to be favorable. Suspensions of sulfanilamide and sulfathiazole have been used in the nasal and aural cavities with apparent clinical improvement.

2. It is difficult to see how such a procedure would be of much benefit in the therapy of soft tissue infections such as carbuncles, cellulitis or infected cysts. The main object in therapy is to keep such infections localized and it is now the consensus of many authorities that this can be best accomplished by oral or parenteral administration of adequate doses of sulfadiazine or sulfathiazole. The pendulum appears to be swinging away from the routine topical application of the sulfonamides in the therapy of localized, suppurative lesions. The main objection to the routine injection of sulfonamide suspensions is that it might not accomplish the anticipated therapeutic response. Such a procedure might well cause some local irritation, but no considerable degree of necrosis.

3. Since oral or parenteral sulfonamide therapy combined with adequate surgical drainage appears to produce desired therapeutic responses in comparison with the local use of the drugs, one cannot become too enthusiastic about the proposed investigation.

Now that penicillin is becoming available in larger quantities more profitable lines of investigation are opening up. Solutions of penicillin have been introduced into the pleural cavities in instances of suppurative infections with remarkable clinical improvement. It is unlikely that the injection of penicillin solution into soft tissue infections will offer any advantage over systemic treatment.

### VITAMIN A FOR ACNE VULGARIS

**To the Editor**—A dermatologist has prescribed 100,000 units of vitamin A to be taken daily for six months for the treatment of acne vulgaris. Is it dangerous for an 18-year-old girl to take such large amounts of vitamin A for six months? What is the efficacy of such treatment? M. D. Tennessee

**ANSWER**—A hundred thousand units of vitamin A daily seems a moderate dosage. Lehman and Rapoport (*THE JOURNAL*, Feb. 3, 1940, p. 386) mention a single dose of 2,000,000 units given as a test for visual deficiency, and the authors themselves gave from 100,000 to 300,000 units daily for months to children with no bad effect. Harm from overdosage does not

seem likely. Long continued treatment is necessary in most cases to obtain benefit from vitamin A. Its value in acne vulgaris has not yet been proved to the satisfaction of dermatologists generally. An excellent paper on the subject is that of Straumfjord (*Northwest Med.* 42:219 [Aug.] 1943). He reports that 36 patients were entirely freed from lesions and 43 others were cleared except for an occasional papule or pustule. Of 28 of those wholly freed, 64 per cent were cleared in nine months or less and 89 per cent in twelve months or less. Some remained well without further dosage of the vitamin, others relapsed and had to resume the vitamin consumption. There were more of the latter group among those who had cleared comparatively early. Thus it is seen that the treatment is slow but harmless, and it is successful in a good percentage of cases—even some that had failed to improve on other methods of treatment. Scarring acne should receive other more rapid methods of treatment which can well be combined with the vitamin method.

### TREATMENT OF WHOOPING COUGH

**To the Editor**—What if any value has Sauer's vaccine following exposure to pertussis or during a current epidemic? A pertussis vaccine is available through the state laboratory service and is widely used by the local pediatricians in the treatment of pertussis. To date I have advised the parents of the children whom I have seen as follows: Isolate their children from exposure to the disease if possible. If they should develop symptoms, have the therapeutic series of treatments with the state provided vaccine if not wait until the epidemic subsides and then have the prophylactic series using Sauer's preparation. I have based this advice on the assumption that it would take three to four months to develop immunity using Sauer's vaccine. In the meantime if the children should develop symptoms, would they be sensitized to the extent that use of the therapeutic vaccine would be ill advised? M. D. New York

**ANSWER**—It is doubtful whether any pertussis vaccine is of value as a therapeutic agent, i. e., in the treatment of the disease. The Sauer vaccine, made with human blood, can be used repeatedly, if necessary, without any risk. Its chief use is as a preventive agent, especially in infants past 7 months of age.

In treatment of infants and frail young children ill with the disease, either after definite exposure or at the onset of definite symptoms, two doses of the human hyperimmune (lyophilized) pertussis serum may be beneficial. It is prepared by the Serum Exchange at the University of Philadelphia and is by far the most desirable therapeutic product available. The subject is discussed by Brennemann in his *Practice of Pediatrics*, volume 2, chapter 34.

### "ENLARGED PORES" OF SKIN

**To the Editor**—A woman aged 19 had been working in a defense plant. She had been exposed to excessive heat over a period of six months. She stopped working because the pores of her face (on the forehead and the tip of the nose) had become excessively enlarged and remained that way. Many preparations have been used in the last five months but to no effect on these enlarged pores of the skin, especially of the nose.

J. T. Nardo, M.D., Somerville, Tenn.

**ANSWER**—The texture of the skin can be changed by age, disease or alterations of the secretions of the endocrine glands. Sweating is a normal function of the skin, and no evidence has been found that excessive sweating can cause enlargement of the hair follicles. Efforts to lessen the size of the pores by external applications are not likely to succeed. Patting the skin or the application of heat, according to H. G. Goodman (*Cosmetic Dermatology*, New York and London, McGraw-Hill Book Company, 1936, p. 217) causes a temporary swelling of the skin and lessening of the size of the follicular openings. Astringents have the same effect in a greater degree by causing a slight inflammation. Even so vigorous a measure as skin peeling is likely to result in only temporary effect. Unless the large pores are actually comedones, the use of roentgen rays to lessen the activity of the sebaceous glands seems hardly justifiable.

### INJECTIONS FOR SPRAINS

**To the Editor**—I wish to comment on the discussion of Local Anesthesia Injections for Sprains in *Queries and Minor Notes* in *The Journal*, July 15, 1944. The purpose of injecting painful areas in sprains with a local anesthetic is not only to give immediate relief from pain but what is more important to relieve spasm of the surrounding tissues which always occurs following injury. The mere injection of the ligaments around a joint cannot repair the damaged tissues. Following the injection the area should be massaged in order to avoid accumulation in any one area and pressure necrosis from procaine. Recovery is expedited by good support of the joint with proper strapping which will support the joint and enable the patient to walk freely. This in turn will encourage lymph flow and return. For example, in the ankle joint flexion and extension or the forward and backward movements of the foot are permissible; however, the rocking of the foot or ankle from side to side will stretch the affected lateral ligaments which aggravates the injury. The method should not be condemned unless it is properly executed. The injection treatment is an adjunct and not a substitute for the practice of good surgery in the management of sprains. T. A. Ranieri, Lieut. (ig) (MC) U.S.N.R.

# The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL 126, No 4

CHICAGO, ILLINOIS  
COPYRIGHT 1944, BY AMERICAN MEDICAL ASSOCIATION

SEPTEMBER 23, 1944

## RELOCATION OF PHYSICIANS

A PREREQUISITE TO BETTER MEDICAL CARE

CHAIRMAN'S ADDRESS

JOSEPH W. MOUNTIN, MD

Medical Director, U S Public Health Service

WASHINGTON, D C

Most of the current controversy in respect to medical care centers on methods of paying for service rather than on how the service is to be provided. These are separate but intimately related questions. The former is likely to be determined finally as a political issue, while the latter should be solved by the medical profession itself. Since the physician is the central figure in any scheme of medical service, primary consideration must be given to placing physicians in areas where they are most needed. Although persons residing in certain localities and belonging to underprivileged classes of the population have illness rates somewhat higher than those of people living under better circumstances, a straight population enumeration gives a fairly accurate measure of the relative needs for medical service in one area as contrasted with another. Unfortunately, wealth more than population normally determines the number of physicians to be found in the average community.

As compared with recent years, the distribution of physicians appears to have been more equable at the beginning of this century. According to tradition and such data as are readily available, it would seem that physicians then were to be found in every hamlet and even at some of the crossroads. Since that time there has been a progressive decline in the numbers of rural physicians and an increasing tendency for more of the recent graduates to locate in the larger urban communities. Moreover, a simple numerical count does not tell the whole story. Rural physicians are much older, and hence their expectancy in years of professional service is less than for those in centers of population.

For purposes of this discussion, the year 1940 is taken to represent normal peacetime conditions. War abroad had stimulated the domestic economy to a point where recovery from the depression was nearly complete. Furthermore, the two basic documents on which this paper is based, the 1940 United States Census Reports<sup>1</sup> and the directory of physicians,<sup>2</sup> were current for that year. Data for these publications were gathered before the normal way of life had been materially disturbed by the national Selective Service and training program.

In 1940 there were 175,000 physicians listed in the directory or 1 for each 751 persons in the continental United States. Among the several states the number of physicians varied from 1 for every 492 persons in New York State to 1 for every 1459 in Mississippi. However, about 10,000 of the total group were designated as retired and 4,800 as in federal service. This reduced the physicians available for local service to approximately 160,000. Of this number nearly 15,000 occupied full time positions in institutions, 6,000 were teaching or combining hospital and teaching work, and approximately 2,600 were employed full time in state and local health departments. With few exceptions the others, numbering about 136,000, were engaged in private practice.

From the standpoint of capacity to serve the count of 160,000 physicians available for local service is somewhat misleading. This enumeration includes medical personnel of all age groups, however. Ciocco and Altman<sup>3</sup> have found that the service performed by a physician in private practice varies decidedly with age. The activity of an average private practitioner reaches a peak of approximately 170 patients per week in the age interval between 35 and 40 and continues almost on a plateau for a comparatively few years. After that the physician faces with advancing years a continuous decline in patient load which, without doubt, is closely correlated with capacity to serve. Moreover, the practice of a young physician just beginning his career undergoes a building up period of several years during which he sees fewer patients than he could handle simply because he has not yet won the confidence of the community.

Curve A in the chart illustrates the service cycle experienced by an average active physician and emphasizes the necessity for establishing criteria other than simple numerical counts of physicians for estimating the professional resources of a community. From this curve appropriate measures of a physician's capacity for service at each year of life may be estimated. Such index values represent approximate service equivalents<sup>4</sup> of physicians at different ages. On this basis an average physician of 26 renders service equal to approximately one fourth of that which he will render in his fortieth year. The fraction increases to three fourths when he is 31 and reaches 100 per cent before he is 40. The decline of activity with advancing age is somewhat more gradual. The fraction falls to three fourths when he is 53, one half at 64 and one fourth at 75 years. Naturally this does not imply that all physicians operate

From the States Relations Division, Bureau of States Services, U S Public Health Service.

Read before the Section on Preventive and Industrial Medicine and Public Health at the Ninety-Fourth Annual Session of the American Medical Association, Chicago, June 14, 1944.

<sup>1</sup> Sixteenth Census of the United States, 1940 Population, First Series, number of inhabitants, United States summary, United States Department of Commerce, Bureau of the Census, 1941.

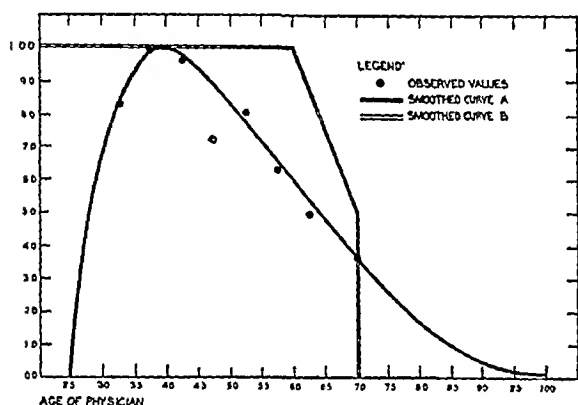
<sup>2</sup> American Medical Directory, ed 16, Chicago: American Medical Association Press, 1940.

<sup>3</sup> Ciocco A and Altman I. The Patient Load of Physicians in Private Practice. A Comparative Statistical Study of Three Areas. *Pub Health Rep* 58:1329-1351 (Sept 3) 1943. Also unpublished data from Ciocco's and Altman's study showing numbers of patients seen per week by physicians in five year age intervals.

<sup>4</sup> Pennell E H. Location and Movement of Physicians—Methods for Estimating Physician Resources. *Pub Health Rep* 59:281-305 (March 3) 1944. Pennell defines service equivalent as the decimal fraction obtained by dividing the average weekly number of patients seen by a physician of designated age by the corresponding number seen by a physician at the peak of his career.

at the service capacity indicated. These constants are presented as approximations for the average active practitioner. When for a given community the total number of physicians at each age is multiplied by the fraction that expresses their combined service capacity and the results are added, there is provided a comparative estimate of existing local physician resources which is more revealing than a numerical count.

For certain portions of the country and among particular population groups the deficit between physicians in practice—whether considered in terms of a simple enumeration or a calculated capacity to serve—and the number needed for adequate coverage is even more pronounced than when figures are completed on the basis of broad areas. For example, when physician totals are analyzed from the standpoint of community characteristics, one is impressed by the tendency of physicians to locate in areas that present attractions in the form of wealth, physical facilities essential to good medical practice and the presence of other physicians, particularly those representing the specialties. Since wealth seems to be the dominant factor, it will be analyzed first. To simplify the presentation, actual



Smoothed curves portraying A relative number of patients seen in a week in 1942 by active physicians of different ages engaged in private practice (number seen at age 40 equals 1.00) B full utilization of physicians to age 60 declining activity from 60 to 70 and retirement at 70

physician totals tabulated from the 1940 directory are used henceforth in this paper rather than full service equivalents.

Counties with average annual per capita incomes of less than \$100 attract only 45 physicians per hundred thousand of population. In those with per capita incomes of \$600 or more, the number of physicians for a corresponding unit is nearly four times as great. Among the younger practitioners these differences are sharply accentuated. Of those in practice under 45 there are only 12 per hundred thousand in the counties with the least per capita income, whereas the proportion increases to 92 in the counties of greatest wealth.

Likewise there is a high degree of association between urban character of a county and the number of physicians located therein. Rural, small city and large city counties, for each hundred thousand of population, average 67, 101 and 179 physicians respectively. That strictly rural counties are at a great disadvantage from the standpoint of availability of medical personnel is strikingly portrayed by these data.

Another factor—itsself an indirect reflection of wealth—which influences the tendency of physicians to settle

in a particular area is the presence of general hospitals. Comparative data for physicians and hospitals reveal that large numbers of hospital beds reflect increased physician-population ratios. In those six states providing less than 2 beds per thousand of population<sup>6</sup> there were 1,141 persons for each physician, whereas in the ten states affording 4.5 beds or more there were only 522 persons for each practitioner. While the same basic factor—wealth—influences the location of both physicians and hospitals, data assembled by the United States Public Health Service, but not presented on this occasion, show that the presence of a hospital alone serves to attract and retain physicians.

Factors affecting the physician distribution not only weight the total but to an even greater extent influence the location and migration pattern of the younger men. In 1938, for example, of a group of young practitioners graduated in 1935, 57 per cent remained in large cities and 18 per cent were found in rural areas. In contrast, study of a group of 92,000 physicians long in practice shows that 49 per cent of these established physicians were in large cities and 23 per cent in rural areas at this date. Even when the latter distribution is used as a base—itsself depicting a smaller proportion of physicians than of the general population in rural areas—it is evident that new recruits are particularly inclined to begin initial practice in large cities. Moreover, rural communities not only fail to attract a proportionate supply of recent registrants but also they hold relatively fewer physicians who have developed practices than do urban localities. Analysis of the migration pattern for established practitioners whose period of professional activity extended over a subsequent fifteen year interval reveals that rural areas suffered a net loss of 10 per cent through transfers to more urban communities. On the other hand, physician migration brought about an actual gain of 10 per cent in small cities, whereas in large cities the effect of such changes on physician totals was practically negligible.

The low rate of recruitment combined with the loss through migration has resulted in an age distribution for physicians in rural areas which is heavily weighted in the advanced age categories. As a matter of fact physicians in rural counties have a median age of 57 in contrast to a median age of 44 for those in large city counties—a difference of 13 years. Since physicians of the rural group are older, the fact that proportionately more physicians are lost from the profession by death in this than in any other location category is not surprising.

This was the picture in 1940. What are the prospects for the future? To begin with, about one third of the active physicians have been withdrawn from civilian practice. Furthermore, despite all efforts to retain physicians where most needed, the number per unit of population is diminishing at an increased rate in states normally deficient in professional resources. Moreover, as a result of the small number of new recruits who have entered practice in the poorer states during recent years, these states have a distribution weighted with older physicians who, because of their age, are subject to a high death rate. For example, in New York State 9 per cent of the physicians were 65 years of age or over in 1940, while in Arkansas and Maine 25 per cent of all practitioners were in that category. Since

5 Rural, small city and large city counties are defined as counties that do not contain any incorporated place of 2,500 or more inhabitants; counties containing cities of between 2,500 and 49,999 inhabitants; and counties containing cities of 50,000 or more persons respectively.

6 The 1942 Census of Hospitals report of the Council on Medical Education and Hospitals J A M A 121:1009-1094 (March 27) 1943. Exclusive of all mental and tuberculosis hospitals, infirmary units of institutions and all other hospitals of federal control except hospitals operated by the Bureau of Indian Affairs.

the general scarcity of physicians renders city locations more attractive, the small number of current graduates who will be channeled into civilian practice will be even less inclined than formerly to engage in rural practice. Thus, states with lowest ratios of physicians and the greatest percentage of loss through death and retirement can expect few accretions to the profession.

The figure suggested as the minimum for wartime safety has already been reached or passed in many areas. Perrott and Davis<sup>7</sup> have shown that in 1942 there was approximately 1 active private practitioner per thousand persons for the country as a whole. They estimate that early this year this rate will reach 1,500. During this year twenty-eight states are expected to have more than 1,500 persons per active private physician. This presents a striking contrast to the six states in a similar position before recruitment for military duty began.

Statistics based on 1940 data show that there was need at that time for relocation of at least 25,000 physicians to bring about a fair measure of equalization in the distribution. Since 1940 the situation obviously has grown worse, owing to the disproportionate loss of physicians from areas formerly deficient. Up to this time there have been practically no replacements.

Because of the present overall dearth of physicians and the widespread augmentation in purchasing power of the American people, urban physicians in civilian practice tend to remain where they are. The relatively few who are now being mustered out of service are for the most part older physicians with one form of disability or another. Those with city ties probably will tend to return to their places of residence, while many formerly in rural areas will take advantage of the facility with which city practices can be developed. At present, however, the returning veteran physicians are not sufficiently numerous to make any real impression on the problem.

The great opportunity for mass relocation of physicians will occur after hostilities cease. Already the armed forces contain a large number of physicians who have entered military service directly from hospitals in which they received their intern or residence training. As the war continues, the medical corps will consist more and more of physicians who have never undertaken civilian practice. Moreover, those physicians who engaged in private practice prior to the war soon will have been away for such a period of time that resuming practice will be essentially the same as starting anew.

If, after the war, full advantage is to be taken of the unusual opportunities for equalizing the distribution of physicians, many of the basic difficulties associated with medical practice in underprivileged areas must be overcome. In brief, these difficulties are (1) low income, (2) lack of hospitals and (3) professional isolation. The remedial measures are obvious, though they may not be simple to apply. Matters are further complicated by questions involving both social policy and political expediency.

Combining money assets through a broad program of taxation or insurance would assist materially in solving the economic problem in areas of low per capita income. Another approach would be some degree of subvention for physicians willing to practice in communities where otherwise they could not be assured of a satisfactory financial return. A further requisite for the attraction and stabilization of physicians in rural areas is an

arrangement whereby they will have access to appropriate diagnostic and treatment facilities. The growing interest in rural hospitals must not be taken to imply that every rural physician can or should have a fully equipped hospital immediately at his command. Outposts with diagnostic and first aid equipment must suffice for the more remote areas.

Professional isolation suffered by the physicians in rural communities acts as a deterrent to the establishment of medical practice. Recent medical graduates, especially, are reluctant to locate in places where because of restricted professional association their opportunities for further technical development are limited. With the expansion of hospitals and related facilities, however, it will be easier than heretofore to arrange continuing programs of education for physicians serving in rural areas. An additional measure for promoting professional growth is the provision of periodic refresher courses. To this end pilot projects undertaken by certain of the universities and medical societies should be extended, systematized and given a stable basis of financial support.

Another way in which a substantial impression might be made on rural medical practice is that of bringing about more effective utilization of physicians who do elect to practice in those areas. Solution of this question, while applicable to all physicians, is more urgent for those in the less populous regions. Excessive wastage of time and strain imposed by travel together with responsibility for both day and night calls taxes to the utmost the physical capacity of the practitioner serving rural communities. In the chart indicating the proportion of patients seen at each age level, curve B is constructed to show the extent to which the effectiveness of physicians at both ends of the age scale might be augmented. Studies<sup>8</sup> show that if maximum use could be made of the professional capacity of physicians at all ages up to 70 years the total volume of physician service available to the general population might be increased by about one fourth. Such a purpose is not likely to be attained unless physicians work as groups, preferably in connection with hospitals or health centers. In this manner both the potential capacity of the younger man can be utilized and the energy of the more experienced physician conserved. Experienced practitioners could then devote much of their time to consultation. By this procedure the younger physician receives seasoned judgment, the older man is relieved of much time and energy consuming detail and what is more essential the patient benefits by the team work.

#### SUMMARY

Low income, lack of essential facilities and professional isolation contribute to the maldistribution of physicians. If, after the war, full advantage is to be taken of the unusual opportunities for equalizing the distribution, many basic difficulties associated with medical practice in underprivileged areas must be overcome. Combining money assets through a broad program of taxation or insurance would assist materially in solving the economic problem in areas of low per capita income. Arrangements should also be worked out whereby physicians in rural locations will have access to appropriate facilities—either hospitals or health centers. In addition, provision for periodic refresher courses should be an integral part of any scheme for improving and extending medical practice.

<sup>7</sup> Perrott, G. St. J. and Davis, B. I. *The War and the Distribution of Physicians*. Pub. Health, 53: 15-24 (Oct. 15) 1941.

<sup>8</sup> States Relations Division, Bureau of States Service, United States Public Health Service, unpublished data.

## PRIMARY CARCINOMA OF THE TRACHEA

TREATMENT WITH INTRATRACHEAL RADIUM, RADIOACTIVE IODINE FAILS TO SHOW THYROID ORIGIN

PHILIP H. PIERSON, M.D.  
SAN FRANCISCO

Carcinoma of the trachea was apparently first recognized by Turck<sup>1</sup> in 1866, at which time he described 2 cases in which the disease was secondary to carcinoma in the esophagus and 1 case in which it was secondary to carcinoma of the thyroid. The first case of primary carcinoma of the trachea was reported by Langhans<sup>2</sup> in 1871. His patient, a man of 40, had suffered from dyspnea for a year and finally died of suffocation. It was found that "his primary disease had originated in the submucous glands and eventually involved not only the trachea but some spread had occurred into the right stem bronchus."

A review of the literature will be made later.

The patient who is the subject of this report is well after two years and presents several problems that are interesting and instructive.

### REPORT OF CASE

R. H., a man aged 61, married, a lecturer, whose past history was irrelevant, had a great deal of cough and was very tired during the last six months of 1938. There was no shortness of breath, wheezing or loss of weight. He was quite comfortable during the first six months of 1939, but during the summer his cough returned and he expectorated some blood on several occasions during August and September. By November he was again feeling very tired (possibly because of a very heavy schedule). Every two or three months after November 1939 he had bouts of cough and sputum, which was frequently bloody, but there was no fever. During the later part of 1940, while at an altitude of 4,500 feet for two months, he noticed more shortness of breath than for a long time. Because of the protracted "colds," cough and hemoptyses, he came to Palo Alto, Calif., in December 1940. The cough was somewhat better, but periodically there were bouts of hard coughing, expectoration of some yellow material and somewhat larger quantities of blood. It was not until March of 1941 that he developed wheezing, which not only interfered with his lecturing but reduced his voice to a whisper. This was associated with periods of intense suffocation. He had never seen a doctor about it before 1941. In May, after nearly three years of symptoms, he consulted Dr. Russell Lee who referred him to me. His weight had fallen to 147 pounds (67 Kg.) from a customary 160 to 165 (73 to 75 Kg.). His father and brother had died of cancer of the lung, and several of the family had had tuberculosis.

Physical examination was negative except for enlarged tonsils and a slightly prolonged expiration at the base of both lungs. X-ray examination of his lungs showed some increased linear markings at both bases but a normal mediastinum. On May 24 bronchoscopy revealed a tumor (fig 1) just above the carina, occupying at least one half of the lumen of the trachea. It extended over the whole cartilaginous portion of the lower trachea for a distance of 2.5 cm but apparently spared the posterior portion. Its base was broad and firmer than the pale, lobulated and softer superficial tissue. Biopsies were taken then and at subsequent operations and have been summarized

by Dr. David Wood as follows: "The tumor is a low grade, well differentiated primary carcinoma of the trachea. This tumor could well have had its origin from submucosal tracheal glands. Its acinar structure and intra-acinar homogeneous secretion, however, cause the tumor to bear a striking resemblance to neoplastic thyroid tissue. Histogenically its possible origin from aberrant thyroid tissue cannot be definitely excluded. Inability of the tumor to store radioactive iodine does not exclude its possible origin from aberrant thyroid tissue. The possibility of the tumor being metastatic from thyroid tissue elsewhere is extremely remote. Therefore the case at the present time is considered to be one of primary adenocarcinoma of the trachea."

After the second bronchoscopy the patient felt a great relief in his breathing and after five sessions of removing as much tumor as possible its appearance on October 23 was that of a very superficial layer of tumor tissue.

The question arose as to whether this tumor developed from a misplaced anlage of thyroid tissue, although roentgenograms showed no substernal mass suggesting a thyroid gland and

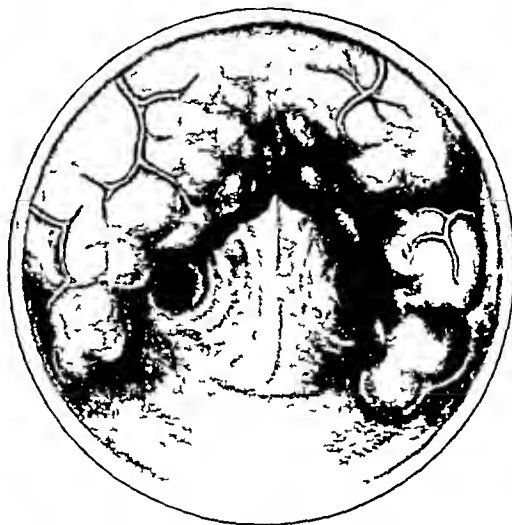


Fig 1—Bronchoscopic appearance of tumor

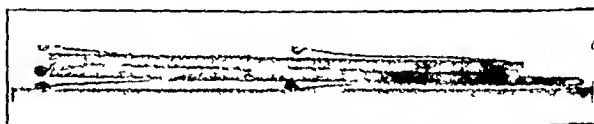


Fig 2—Radium applicator completely folded in the bronchoscope

laminograms also quite accurately delineated its size and position. We hoped to determine this by use of radioactive iodine, which Dr. Joseph Hamilton of the Radiation Laboratory at the University of California provided. The patient drank a small portion of the material on September 22 and when tested with the Geiger counter September 24 showed intense activity (several hundred counts per minute) in the lower part of the neck. Development of a "cold" prevented bronchoscopy, however.

On October 21 the counter, set close before the neck, gave only 50 counts per minute ( $4\frac{1}{2}$  times the background). He then drank another dose (200 microcuries) of radioactive iodine, with immediate increase in the general body radioactivity (counts close to the hand, 30 per minute). On this occasion the concentration in the neck was not followed. Two days later, October 23, I removed several pieces of tumor by means of the bronchoscope. Dr. Hamilton examined these but could find no radioactivity in them. This ruled out the presence of normal thyroid tissue but did not necessarily exclude carcinoma of the thyroid, for malignant thyroid carcinoma is known not to collect radioactive iodine as normal or hyperplastic thyroid does.

At this bronchoscopy I had planned to treat him with radium in a special applicator which Dr. Robert Newell had prepared, but this was broken during the attempt to place it. Dr. Newell

From the Department of Medicine, Stanford University School of Medicine.

Dr. Robert E. Newell of the Department of Roentgenology devised the radium carrier and supervised its application. He also gave help and encouragement throughout. Dr. David A. Wood of the Department of Pathology gave untiring cooperation. My son, Dr. Robert E. Pierson made the drawing.

<sup>1</sup> Turck, L., *Klinik der Krankheiten des Kehlkopfes und der Luftrohre*, Vienna, W. Braumüller, 1866.

<sup>2</sup> Langhans, *Primärer Krebs der Trachea und Bronchien*, *Vierteljahrsschrift für path. Anat.* 53: 470, 1871.



rebuilt the radium carrier, and on November 6 I placed it in the trachea in the region of the residual tumor. X-ray films were made with the tip of the forceps held at the distal margin of the tumor and the bronchoscope held at the proximal border, then the placement of the radium was checked with films according to these. The patient coughed the radium out after three and one half hours.

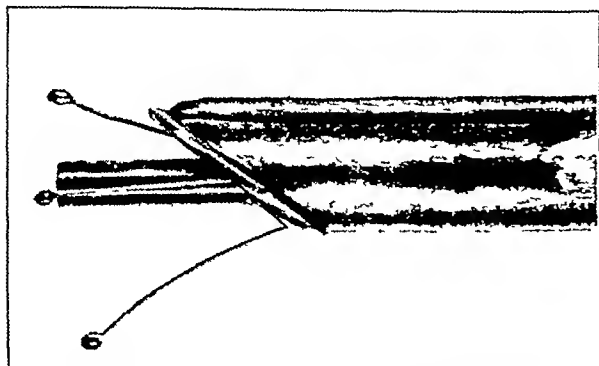


Fig 3—Radium applicator partly protruding from the bronchoscope

On November 27 radium was placed similarly, but the applicator was broken against the bronchoscope in trying to readjust its placement; it was retained for about one-half hour. On December 19, by means of a new applicator radium was placed again everything going smoothly because the patient was well sedated, and was successfully retained for five hours, as planned.

The radium was in four tubes, each containing 25 mg, set with 12, 16 and 12 mm spacings down the axis of the trachea. Allowing for crossfire, the calculated total dosage November 6 to December 19 amounted to about 5,000 roentgens at a radial distance of 8 mm and about one-half that at a radial distance of 12 mm.

Since treatment the patient's tracheal condition has been studied in April 1942 and in January and November 1943, and at all of these times there has been no evidence of any abnormality except possibly a little thinning of the mucous membrane in the area occupied by the tumor. On physical and x-ray examination there was no evidence of any increase in the mediastinal glands. The patient's general health is excellent, he walks considerable distances and lectures without any shortness of breath or cough. He shortly regained his normal weight and has maintained it.

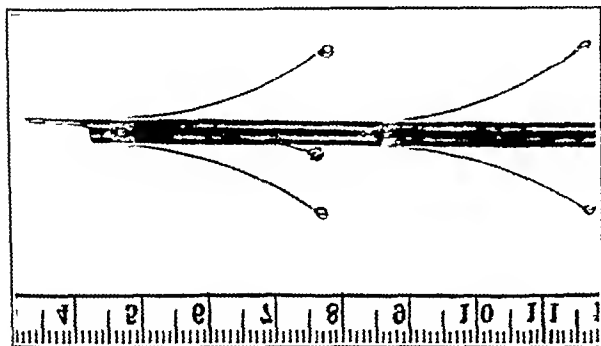


Fig 4—To show size of applicator

#### SUMMARY

A man of 61 who had intermittent bouts of severe cough, dyspnea, suffocation and moderate hemoptyses for three years was found to have a primary adenocarcinoma of the trachea. An attempt to prove the histogenic origin from aberrant thyroid by the use of radioactive iodine was unsuccessful. After removal of as much as possible of the tumor through the bronchoscope, the remnant was treated by radium applied within the trachea. Two years after treatment there are no subjective or objective evidences of tumor.

#### COMMENT

In 1890 reported in 1898 von Bruns<sup>2</sup> operated on a patient aged 31 in whom dyspnea had been present for ten years. The tumor he found apparently had arisen from thyroid tissue. It was his feeling "that thyroid tissue might be present in the trachea (1) from aberrant thyroid tissue in the germ or (2) that it could penetrate from outside into the trachea between the tracheal rings during extrauterine life. This can happen only if there is a growing together of the thyroid gland and trachea established by an embryological disorder of development of the thyroid capsule which is missing there allowing the glandular tissue to proceed directly into the perichondrium." His operation removed the trachea over a distance of ten rings and also the anterior surface of the esophagus. A tracheal tube was put in place and the patient was comfortable until stenosis again occurred and he died, six years after the first operation. This is apparently the first operation for the complete removal of a primary carcinoma



Fig 5—Radium applicator in trachea bronchoscope being withdrawn

of the trachea. He also felt that in two thirds of the reported cases the tumor was in the upper and middle thirds of the trachea and that very rarely did a carcinoma there metastasize or invade the surrounding tissues.

In 1908 Nager<sup>4</sup> reported that in observations made at the Pathological Institute at Basel, Switzerland between 1871 and 1905 in 1,078 cases of carcinoma the thirteenth in frequency were 19 cases of carcinoma of the lungs and bronchi and twenty-second were 9 cases of carcinoma of the larynx, and no cases involving the trachea were found. He reported a case in which a squamous cell carcinoma measuring 3 by 3.5 by 2 cm was present just above the right main bronchus, and he states that this location near the bifurcation is favored for tumors and diverticula because this is the region where the separation of the "anlage" of the lungs and the foregut starts.

3 von Bruns P. Resection der Trachea bei primarem Trachealkrebs. *Beitr z klin Chir* 21:284 1898.  
4 Nager F R. Ueber das primäre Tracheal Carcinom. *Arch f Laryng* 20:275 1908.



In 1909 Schmigelow,<sup>5</sup> reviewing the literature, found that von Bruns had collected 28 cases of primary carcinoma of the trachea, and he added 12 more from the literature and a case of his own, in which he had done a tracheal resection, the patient being well six years after the operation.

In 1911 Simmel<sup>6</sup> reported the occurrence of difficulty in swallowing, cough, fetid expectoration, hoarseness (paresis of both vocal cords), hemoptysis and cachexia in a man aged 77. Esophageal "probing" located a resistance 25 cm from the teeth, and this was thought to be due to a carcinoma of the esophagus perforating into the trachea. At postmortem a primary carcinoma of the trachea was found, with the esophageal lining intact, the tumor extending from just below the cricoid cartilage to a few centimeters above the bifurcation, producing a diverticulum of the trachea.

By 1913 von Bruns<sup>7</sup> brought the number of reported cases of primary carcinoma of the trachea up to 81 and an additional 174 cases of benign tumors of the trachea, making the ratio of malignant to benign tumors of the trachea about 1:2. To this figure of 81 Heymann<sup>8</sup> added 33 cases from the literature and 1 of his own. After two attempts to remove the tumor completely by tracheoscopy had failed, transverse resection of the trachea was performed by Gluck and the patient was well two years later.

In 1915 Soerensen<sup>9</sup> reported another case of "aberrant retrotracheal goiter showing cancerous degeneration and growth into the trachea from behind." The patient was well two years after transverse resection of the trachea. He strongly recommended resection of the trachea because (1) other methods of operation were insufficient, (2) it was relatively not dangerous, even in total removals, and (3) the functional effects were good if the recurrent nerve could be preserved. He felt that it was contraindicated if the bifurcation itself was involved by the tumor or if the vessels in the neck were grown together. Growing together of the esophagus and trachea would not exclude, *ipso facto*, the possibility of operation.

According to Chiari,<sup>10</sup> primary carcinomas are the most frequent tumors of the trachea and occur more often in men between the ages of 50 and 60. They generally form broadly sessile tumors with globular or knobby surfaces, sometimes extending over several rings, but seldom are they pedunculated, and rarely do they infiltrate deeply below the surface, at least not until a considerable time has elapsed. They may eventually extend into the mediastinum, esophagus or thyroid gland. Secondary carcinoma may develop from cancer in the larynx, or it may be from the esophagus, bronchus or thyroid. Very rarely is it metastatic in the trachea from any distant focus. He too feels that radical intratracheal extirpation is rarely successful and that the operation of choice is radical transverse resection of the trachea.

Feichtinger<sup>11</sup> proceeded with his operation in two stages: first a tracheotomy for full exploration of the extent of the tumor and later transverse resection.

Otto Maer<sup>12</sup> removed a papillary cystadenoma in his case by a deep tracheotomy and then extirpation of the tumor by "bisecting the trachea downward," suturing its walls together after the removal of the tumor.

The largest group observed by one person up to 1921 was by Fraenkel,<sup>13</sup> who carefully studied 8 cases. His conclusions were, briefly, that it is a rare condition, found more often in men than in women and between the ages of 50 and 70. Its location is generally at or near the bifurcation, having a preference for the anterior and not for the posterior wall, as previously stated, and its shape is that of a flat infiltration rather than of a globular tumor. The general symptoms, although not pathognomonic, are hoarseness or a debility of the voice, cough with uncharacteristic spitting, dyspnea of varying degrees, stridor and often trouble with swallowing. He places some importance on the early beginning of cachexia, the swelling of the glands in the neck and bouts of suffocation. The diagnosis is made by roentgenograms and tracheoscopy with biopsy. The course of the disease varies from three months to two years. In his experience death results from the extension of the disease into the surrounding tissues. He feels that the origin of the tumors is chiefly from the epithelium of the mucous glands and only rarely from the pavement epithelium.

Stenstrom<sup>14</sup> apparently agrees with Fraenkel in regard to the extension of the tumor to the mediastinum, for in 13 of 19 cases it had infiltrated the mediastinum, and only 6 were completely confined to the trachea.

Between 1925 and 1933 a few cases were reported by Borries,<sup>15</sup> Soerensen,<sup>16</sup> Hart and Mayer,<sup>17</sup> Holmgren,<sup>18</sup> Minnigerode,<sup>19</sup> Wolfgang Tiling<sup>20</sup> and Teubner.<sup>21</sup> The extreme rarity of the disease is statistically presented by Holmgren and Wolfgang Tiling.

In 1926 Adam<sup>22</sup> reported 4 cases of tracheal tumor, 2 epitheliomas, 1 soft fibroma and 1 endothelioma. He treated the first 2 with radium, but death occurred within six months.

The patient observed by Bowing and Vinson<sup>23</sup> had been ill three and one-half years with frequent colds, hemoptyses, slight fever, cough, considerable dyspnea on slight exertion and frequent asthmatic seizures. He had been sent to New Mexico for tuberculosis. They found a tracheal carcinoma, removed it by surgical diathermy and gave radium over the sternum.

A few other cases have been reported in the American literature, but their repetition adds little more to what has been already described.

5 Schmigelow E. Primärer Cancer tracheae nebst Mitteilung eines durch Resectio tracheal geheilten Falles. Arch f Laryng 22 18 1909.

6 Simmel E. Zur Kasuistik der primären Carcinom der Trachea. Arch f Laryng 24 449 1911.

7 von Bruns P. Handbuch der praktischen Chirurgie. Stuttgart 1913 vol 2 p 274.

8 Heymann P. Beitrag zur Kenntnis des primären Carcinom der Luftröhre. Ztschr f Laryng G 735 1913 1914.

9 Soerensen I. Zwei Fälle von Totalexstirpation der Trachea wegen Carcinom. Arch f Laryng u Rhin 29 188 1915.

10 Chiari. Chirurgie des Kehlkopfes und der Luftröhre. Stuttgart F Enke 1916.

11 Feichtinger I R. Fall von querer Trachealresektion by Ca tracheae. Monatsschr f Ohrenh 61 182 1917.

12 Maer O. Die Lehre von den intratrachealen Tumoren in Anschluss an einen Fall von Cystadenom. Beitr z Klin Chir 120 450 1920.

13 Fraenkel E. Ueber Luftröhrenkrebs. Deutsches Arch f Klin Med 135 184 1921.

14 Stenstrom B. Carcinome parti de la trachea et s accompagnant de paresie du nerf recurrent droit. Scandinav 71 82 1929.

15 Borries G V T. Primärer Trachealkrebs. Zentralbl f Hals Nasen u Ohrenh 8 688 1925 1926.

16 Soerensen I. Die Chirurgie des Kehlkopfes und der Luftröhre. Chirurgie 4 158 1927.

17 Hart and Mayer. Kehlkopf Luftröhre und Bronchien in Henke F und Lubarsch O. Handbuch der speziellen pathologische Anatomie und Histologie. Berlin Julius Springer 1928 vol 3 pt 1.

18 Holmgren G. Zur Kasuistik der primären Trachealkarzinome. Arch f Ohren Nasen u Kehlkopf 122 145 1929.

19 Minnigerode W. Die Geschwulste der Luftröhre und der Bronchien in Denker A and Kabler O. Handbuch der Hals Nasen Ohren heilkunde. Berlin Julius Springer 1929 vol 5.

20 Tiling W. Ueber Trachealkarzinome im Anschluss an einen Fall von Basalzellencarcinom. Monatsschr f Ohrenh 67 322 1933.

21 Teubner K. Das primäre Carcinom der Trachea. Ztschr f Hals Nasen u Ohrenh 33 444 1933.

22 Adam J. Tracheal Tumor. J Laryng & Otol 41 174 1926.

23 Bowing H H and Vinson P P. Surgical Diathermy for Tumors of Trachea. Laryngo cope 36 217 1926.

## SUMMARY

The American and foreign literature disclose the fact that primary carcinoma of the trachea is a very uncommon disease. With increasing use of endoscopy its presence may be recognized more frequently. Operative procedures, such as removal of a portion of the trachea, have been carried out with varying success. Endoscopic removal of the tumor with x-rays and radium have also been used, but the results have been disappointing.

In the case reported as much as possible of the primary adenocarcinoma of the trachea was removed endoscopically and then intratracheal radium was applied.

Radioactive iodine was used to determine whether any normal or hyperplastic thyroid tissue was present in the tumor.

The patient is well, subjectively and objectively, two years after treatment.

490 Post Street

THE DERMATOLOGIC ASPECTS OF THE  
VESICANT WAR GASES

MAJOR MARION I. JEFF DAVIS

MEDICAL CORPS, ARMY OF THE UNITED STATES

Of 27,111 hospital admissions due to use of poisonous mustard gas during World War I, 30 per cent showed involvement of the skin. This figure is significant and indicates to us, as dermatologists, the necessity of a greater familiarity with this relatively unknown field of war medicine.

Lewisite, one of the arsenical group of gases, is another type of vesicant agent that has been developed since the close of the last war. This discussion will consider experimentation and clinical observations that I have made on the mode of action of these two gases, mustard and lewisite, on human subjects.

## MUSTARD GAS

Mustard gas is an aliphatic sulfur compound which in the pure state is a colorless, odorless, moderately volatile liquid whose density is 5.5 times that of air, having a boiling point of 217° C and a freezing point of 14° C. The plant product, whose formula is bis-beta dichlorodiethyl sulfide ( $\text{ClCH}_2\text{CH}_2$ )<sub>2</sub>S, is used on the field. This is a thick dark brown to black oil characterized by a pungent garlic odor. Owing to its low vapor pressure it may form a persistent heavy mist that remains in the atmosphere for a considerable period after discharge. It is sparingly soluble in water but soluble in organic solvents and organic fats. Oilskin, rubber and cellophane offer some resistance to this synthetic product, ordinary dry clothing and leather afford slight protection, and wet apparel practically none.

Mustard gas acts on the respiratory system and the eyes unless a man is masked, then its chief action is on the skin. There is no pain or irritation on immediate contact with the skin. In a vapor exposure, absorption takes place coincident with the exposure of the skin to the vapors. No mustard gas remains on the skin surface after the exposure is over. In a liquid contamination only a small portion of the mustard gas is

absorbed by the skin, as the vast majority of the gas evaporates into the air unless it is removed by other means.

This agent enters the cuticle presumably by absorption through the epidermis and by penetration of the glandular orifices and hair follicles of the skin surface. The rate and degree of penetration are influenced by such factors as local keratinization, epidermal thickness, supply of gland appendages and variations in the amounts of sweat and sebum present on the glabrous skin. Complete and irreparable damage of cellular tissue takes place within ten to fifteen minutes after liquid contamination of the skin. Most of the mustard gas becomes fixed in the epidermis, while the remainder which is free is transmitted via the circulation to various organs of the body.

The exact mechanism involved in the production of vesication and burn by mustard gas is not definitely established. It is the general consensus that the effects of mustard gas are due to a combination of the entire mustard gas molecule with cellular tissue. Precisely what substance or substances of skin the mustard gas combines with is as yet undetermined. However it is believed to be some protoplasmic protein vital to cell life, perhaps a portion of one of the enzymatic systems.

Mustard gas is insidious in its action. Both the liquid and the vapor are nonirritating to the skin and give no warning. Disabling concentrations of mustard gas vapor may have so little odor that one is not aware of the danger. Likewise liquid contaminations of the skin or clothing may go unnoticed.

There is a latent period between the time of exposure and the onset of signs and symptoms. This period varies from several hours to several days. Generally the greater the degree of contamination, the shorter will be the latent period and the greater will be the injury produced. Early skin changes are often preceded or accompanied by nausea or vomiting coupled with a feeling of general exhaustion. In severe exposures these symptoms appear within two or three hours after the initial exposure.

In mild vapor exposures and small liquid splashes only the exposed skin surfaces are affected. In extensive liquid splashes or more severe vapor exposures there is permeation and penetration of the clothing with the general involvement of the covered portions of the skin. Warm, moist areas of the body are the sites of predilection for mustard vapors: face, neck, axillae, antecubital fossae, groin, genitalia and perineum.

The earliest change in the skin is an erythematous blush often appearing first on the neck, shoulders, arms and legs. Within a few hours there is a generalized bright erythema. The patient presents the appearance of severe sunburn. Bands of normal white skin, which have been protected by thick shoulder straps of an undershirt or the cross belt of a gas mask, streak through these areas of bright erythema.

The appearance of the erythema may be the patient's first indication that he has been burned. There is mild pruritus and prickling of the skin at this time which increases in severity as the erythema reaches its height. Discomfort becomes more pronounced in the flexural surfaces over the antecubital fossae, neck and popliteal spaces. The skin feels hot and the body temperature may rise to 100 to 102° F.

A generalized brawny edema develops early in this erythematous stage, which is accentuated in severe cases. It may be a superficial edema involving the epidermis or a deep pitting subcutaneous edema. On the extremi-

Major Davis is chief of the Dermatology and Syphilology Section, Cushing General Hospital, Framingham, Mass.  
Read before the Section on Dermatology and Syphilology at the Ninety-Fourth Annual Session of the American Medical Association, Chicago, June 16, 1944.

ties evidence of edema may remain long after the skin itself has returned to normal. The penial and scrotal lesions are often the most severe part of the skin involvement. The scrotum may become the size of a large grapefruit.

Within six to twelve hours, groups of multiple pinpoint vesicles appear. These vesicles soon coalesce to form blebs and bullae of varying size. At times the vesication resembles "crape rubber" or it may assume a ring shape like that of a doughnut.

There is progressive involvement of the skin during the first six to eight days. Pain and discomfort likewise increase in intensity. Sleep is difficult to obtain for the patient despite massive doses of sedatives. By the end of the first week the erythema, vesication and general discomfort reach their peak and begin to subside. Many portions of the skin become raw and denuded. There is weeping, oozing and maceration of some areas followed by fissuring, cracking and superficial ulceration with subsequent crusting. This is particularly true of the flexural surfaces and the genitalia. Eventually the skin becomes dry and parched and assumes a brownish to purplish hue. This deepening of pigmentation continues for a number of days. Desquamation then ensues and continues over a prolonged period. Many portions of the dry epithelium come off in strips and casts much as it does in scarlet fever.

Where liquid mustard gas comes in direct contact with the skin a typical blister develops. The bulla is superficial, round to oval with a thin, translucent, tense roof and has a glistening golden yellow appearance. Vesication takes place in the center of an erythematous base, so that there is a halo of erythema surrounding the fully developed bulla. There is a wide area of surrounding edema, its extent depending on the degree of burn. The involved area is many times the site of original contamination. In large liquid contaminations the doughnut type of bulla develops. Here one sees a central dull dirty white area of superficial necrosis surrounded by a ring of vesicle formation of varying width. Here the reaction between mustard gas and the cellular tissue has been so rapid and immediately necrotizing as to prevent the intervening stage of vesicle formation. The vesicle fluid is golden yellow and freely flowing when the early bulla is incised. Later the fluid becomes gelatinous and cannot be aspirated with a large gage needle. The base of the exposed bulla is moist and hemorrhagic. The fluid of an intact bulla or vesicle is reabsorbed within a week.

Lesions, uncomplicated by infection, heal without scar formation. There is characteristically a residual pigmentation due to a melanoblastic stimulation of the basal cells, which requires a number of weeks for resolution. The average case requires a month's hospitalization, the more severe cases several months'.

#### LEWISITE

Lewisite, a nonmetallic alkyl derivative, was synthesized by the late Dr. Lee Lewis at the American University near the close of the last war.

This gas is as yet untried on the battlefield. The Germans employed ethyldichlorarsine, a similar but less effective arsenical vesicant, during World War I.

Lewisite (beta-chlorovinyl-dichlorarsine) is representative of a group of trivalent arsenical compounds whose vesicant action and highly toxic nature are of prime importance. In its pure state it is a colorless, highly refractive, volatile liquid with no odor. However, it is extremely irritating to the nasal mucosa,

giving rise to coryza, accompanied by sneezing and lacrimation. The impure form used in the field is brownish black with the odor of geraniums. Lewisite boils at 190 C and freezes at -18 C. It is soluble in organic solvents and sparingly soluble in water. Hydrolysis by water or alkalis yields the corresponding hydroxide or oxide. The latter is one tenth as vesicant as lewisite and nontoxic when applied to the skin.

Liquid lewisite absorbed from the bare skin is capable of producing acute arsenical poisoning and death. From animal experiments it appears that 1 cc of liquid lewisite absorbed from the skin would be fatal to man. Lewisite combines with certain chemical constituents within the cell. This reaction is reversible during the first few minutes but later becomes an irreversible reaction.

High concentrations of lewisite vapor produce mild vesication. Although lewisite vapor is less effective than that of mustard gas, liquid lewisite causes a more rapid, severe and deeper burn than liquid mustard gas. In contrast to the absence of any symptoms on contact of mustard gas with the skin, lewisite (liquid) produces an almost immediate stinging and burning sensation (ten to twelve seconds).

During the first fifteen to twenty minutes a dull dead white or grayish area appears at the site of contamination. Within several hours the involved site increases in size and there appears an urticaria-like wheal, with central lemon colored area surrounded by a peripheral erythema. This center later becomes blanched in color, with the skin orifices puckering to give the appearance of tanned pigskin. Within six to eight hours pinpoint areas of vesication appear. These gradually coalesce to form a bulla, which covers the entire area of erythema so that early in its formation the underlying erythema sometimes reflects through the bullous roof to give the effect of an iris-like bullous lesion. The peripheral erythema and edema that are characteristic of the mustard gas blister is lacking in the early lewisite burn but appears later. The base of the exposed lesion is exudative, hemorrhagic and raised above the level of the surrounding skin. There is a sharp demarcation between skin involved by the burn and the normal skin, in contrast to the mustard gas burn, in which there is a variable amount of involvement of the adjacent skin.

The lewisite bulla tends to be more opaque and more cloudy than that of mustard gas and may be more flaccid. The vesicle fluid was until recently considered vesicant and to contain sufficient amounts of arsenic to be toxic. I have been able to show both by quantitative chemical analyses and by clinical experiments that the fluid is nonirritant, nonvesicant and nontoxic. In these same experiments it was shown that the vesicle fluid contained only infinitesimal amounts of arsenic (0.001 to 0.002 mg per cubic centimeter of fluid).

Resolution and healing of a lewisite blister take place in much the same fashion as that of the mustard gas blister. It has been thought by some observers to heal more rapidly than mustard gas burns, but I cannot assent to this opinion. Residual pigmentation in small lewisite burns is not as characteristic as in mustard gas but is often seen to occur in large burns. The lewisite lesion leaves a residual atrophic scar in healing more often than does mustard gas.

#### PATHOLOGY

A number of factors influence the physiologic action of the vesicants, such as the physical properties of the agent, as well as the concentration and duration of

exposure The influence of climatic factors on the physiologic action and general cellular activity of the skin are clearly demonstrated in the instance of the vesicant agents The entire reaction between cellular tissue and the agent is much accelerated by elevations of temperature and humidity Doses of the vesicants which in the winter produce only a mild erythema result in the hot summer in a burn requiring several weeks to heal

In the biopsies of mustard gas burns that I have studied the pathologic changes are practically confined to the epidermis There is a vacuolar or hydropic disintegration of the cells with eventual rupture of the cell membrane Spaces formed by the progressive liquefaction and disintegration of these cells becomes filled with fluid exudate to produce an intradermal vesicle The base of this vesicle, which rests on the surface of the corium, presents an occasional remaining basal cell The roof of the vesicle consists of an upper layer of epidermal cells that remain viable for a time and a lower layer of necrotic or disintegrating cells

The vesicle contains a homogeneous or fibrillar eosinophilic staining fluid in which there are a few polymorphonuclear leukocytes Some of the hair follicles appear necrotic for a short distance from the surface but there are no significant changes of the sebaceous glands, sweat ducts or sweat glands There is some edema of the superficial corium with capillary dilatation and perivascular edema and mild perivascular infiltration of lymphocytes and polymorphonuclear cells

In lewisite there is an early complete necrosis of the entire epidermis This necrotic process extends into the corium, where there is manifest vascular damage and polymorphonuclear infiltration Vesicle formation is intradermal as in mustard gas lesions, but beneath the vesicle roof there is attached the entire thickness of the necrotic epidermal layer The pathologic changes in the lewisite lesion are in contrast to the slowly progressive hydropic disintegration confined to the epidermal layer that is seen in mustard gas lesions

Vesicant burns, while in many respects analogous to those produced by heat and chemicals, offer certain contrasting features The vesicants do not produce the immediate coagulation necrosis that occurs with thermal, electric and other chemical burns Again only minute amounts of the agent are necessary to produce severe cellular destruction Latency, recrudescence and a delayed period of development are peculiar to vesicant burns With mild contamination, especially of mustard gas vapor, the skin may show no evidence of burn for as long as two to six days after the original contamination when erythema appears This is an extreme example of the latent period A vesicant lesion which appears to be properly healing under treatment may show a flare of reactivity ten to fourteen days after the original burn has been inflicted Such a recrudescence of the burn is usually a papuloerythematous type of eczematous dermatitis occurring about the periphery of the healing burn, which may or may not be associated with vesiculation Vesicant burns, especially when large portions of the skin are involved, often do not show their maximum involvement for a period of one to several days or more after the patient has presented himself for treatment Areas of skin which twenty-four hours after the original contamination still appear normal may at a later date become involved, and lesions already present may increase in severity This clinical observation of the delayed development of vesicant burns is substantiated by pathologic find-

ings Microscopically there is a prolonged period involved in the development of complete cellular necrosis

Vesicles have been observed to occur in the old healed scar of vesicant lesions weeks to months after the burn has entirely healed This phenomenon at least in my experience does not occur in thermal burns

Sensitivity tests performed with very high mustard gas dilutions show the light complexioned to react to a greater degree than the dark skinned or colored individual However with sufficiently large exposures these differences disappear Repeated exposure or burn with mustard gas is capable of producing sensitization to the agent In a person who has developed this sensitization, an amount of mustard gas sufficient to produce a small burn on the normal skin will result in a very large burn on the sensitive skin This phenomenon of sensitization from repeated exposures to mustard gas has also been demonstrated by experiments on the pig's skin

True allergic states have been observed in persons working with mustard gas In these individuals a fresh mustard gas burn on a previously unburned site of the skin will produce a vesicular reaction at a distant healed site of a mustard gas burn received years previously These people will also respond to a generalized vapor exposure in a similar fashion Allergic reactions due to lewisite have been known to occur but are rare

There is danger of arsenical poisoning from the absorption of lewisite following severe burns while small mustard gas burns are free from accompanying toxic manifestations With large areas of skin involved in mustard gas burns, however, there develops a generalized toxemia, hemoconcentration and the other associated signs of shock

#### TREATMENT

The emergency prophylactic treatment of vesicant contaminations is the responsibility of the individual soldier The physician is chiefly concerned with treatment of the burn

In severe cases the treatment of shock and toxemia is of primary importance In the mild erythematous vesicular cases treatment is the same as that for any acute generalized erythema i. e. bland lotions and ointments, baths, sedation and so on

The definitive treatment of vesicant burns differs but little from that usually employed for thermal burns One may choose almost any of the generally accepted techniques of burn treatment which one may prefer

It has been my experience as well as the experience of others working in this field that the healing time of vesicant lesions is not greatly influenced by the type of therapeutic agent employed except for a few notable exceptions I have employed ten day occlusive dressings on a large number of burns with a resulting increase of ten days in the healing time as compared with open dressings regardless of the therapeutic agent used in either instance

The healing time of blisters which were incised and drained was compared with the healing time in blisters which were left intact There was no difference found in the healing time However, drainage of the vesicle fluid does give relief to the patient Amyl salicylate which in common with other salicylates possesses analgesic properties, has been recommended during the first five or six days of treatment This is a saturated solution used in the form of a wet dressing I have employed it in experimental burns of 3 inches diameter

I have found it to have some analgesic effect in the acute stage, but it does not shorten healing time. Sulfanilamide crystalline powder and sulfonamide ointments appear to have no advantage over a boric acid ointment dressing in the small localized lesions. Workers are in general agreement that escharotics give poor results in vesicant lesions.

There is one major difference between vesicant and thermal burns which must be kept in mind, and that is the delayed period required for the full development of the vesicant lesion. Therapeutic measures and clinical prognosis must in some instances be guided by this fact.

#### ABSTRACT OF DISCUSSION

COMMANDER ROBERT L. GILMAN (MC), USNR. If war gases are never utilized in the present war it will be due in no inconsiderable measure to the Chemical Warfare and allied services, which, in association with civilians and service physicians, have worked so thoroughly on antigas defense, as well as shared in the development of these modern implements of offense. There are certain features in the action of vesicant gases, as pointed out by Major Davis such as the short but definite period between exposure and the beginning of skin irritation and the latency or refractory period (in mustard gas) before symptoms appear that dictate to a large extent the measures used in prophylaxis, decontamination and treatment. The clinical and histologic observations of the author and others have been instrumental in outlining rational therapeutic procedures. An additional consideration is concerned with lewisite, and that is that its severity of reaction is due largely more to the contact with the skin of minute liquid droplets than actual gaseous vaporization. This difference in contact and the arsenical content make this gas capable of more severe skin burns as well as toxic systemic effects. We have certain protective devices and prophylactic measures and they are all designed to put an impenetrable curtain between the gas and the man or material. These include protective clothing, ointments and covering material. The latter are protective only in a relative manner. Once material or equipment has been contaminated, considerable effort must ensue if complete salvage is to be obtained. Prophylaxis merges directly into decontamination which in turn is the first step in treatment. Solvents and soap and water have been mentioned. Action must take place promptly and oftentimes with only the means at hand, such as a thorough dousing or flushing with sea water. The treatment and management in this war will follow proportionally our advantages gained since the last war in the treatment of shock, fluid loss, severe dermatitis and burns. These constitute the major effects of the vesicants and in the last war these burn cases (as they were termed) were treated similarly to any other type of burn casualty. Men were cradled under heat lamps their beds screened with mosquito netting, while a variety of applications were used locally, ranging from bland ointments to antiseptics and the use of a variety of 'burn specifics'. The moderately burned did well, while the severely burned often died of concurrent pneumonia, sepsis or shock. I believe that any future vesicant gas casualties will be treated exactly as we do those of shock or thermal burns at present.

DR CHARLES C. DENNIE, Kansas City, Mo. I was a mustard gas officer in the last war. We saw hundreds of cases of mustard gas burns of all degrees of severity. The thing that impressed me most was the fact that these men did not die from mustard gas—only a small percentage of them. Of course, it took them from twenty-four to seventy-two hours to arrive at our hospital, and the ones who were going to die probably died before that time. They manifested all degrees of burns, and about 10 per cent of the total number of casualties were severe burns. The thing that struck me most forcibly was the gelatinous material that was secreted beneath the giant vesicles. Some of these were blebs, some were as much as a foot long and 8 inches wide and would cover both thighs and the buttocks. Most of the casualties occurred during July and August when the weather was hot and when there was dense

humidity in the air. A great many of these men wore defective gas masks and they got an interstitial keratitis, which took much longer to cure than an original gas burn. They had all the manifestations of interstitial keratitis of syphilitic origin including photophobia. They also, when they had defective gas masks, developed a severe burn of the upper respiratory tract in such a manner that they coughed up membranes a great deal like diphtheritic membranes, and in a few cases diphtheria was a complication. In treatment, we used only transfusions in those days, such a thing as using serum or plasma was unknown. Yet these men whom I saw, 12 of them in that first group of cases lost much plasma but did not die from plasma loss. With the large vesicles we could take the gloved hand and throw the plasma off on the ground. In those cases the plasma had to be removed. We didn't know what to do with them, so we washed them with salt water and then we found after a little experimentation that the thing that gave the most ease was 2 per cent sodium bicarbonate in petrolatum.

DR LEON GOLDMAN, Cincinnati. The remarks of some one who has had practical experience in this field are a lot more important than those of us who work in the experimental laboratory or had just a lot of library experience. One of the points that Major Davis brought up in his paper was the fact that a molecular intact mustard agent can be isolated from the lower layers of the skin and also found in the blood vessels away from the skin lesion. This is rather important for us who work in civilian dermatology because the principles of the study of these penetrating, persistent, equally strong irritant and sensitizing agents can be carried over into experimental work in civilian dermatology. With what he has told us about mustard gas and with the remarks of Dr Cowdry a few days ago on the dynamic morphologic anatomy of the skin we can really find out the fate of many of our contact agents in the skin. I should like to ask Major Davis if he has had any experience with cross sensitization between mustard gas and the less irritant but much more dangerous systemic agents, the so called nitrogen mustards. From my work I can substantiate the findings of Major Davis and also of Sulzberger and Katz that the lewisite blister fluid is not irritant to the skin and also the roof over the lewisite blister is certainly not dangerous to the skin and contains little, if any, arsenic. I am curious to know what happens to 30 plus arsenic which has been deposited in the skin from lewisite agent. I have tried to find it by sulfide staining techniques and am certainly not satisfied. Another point is the observation of Major Davis about the late appearance of vesicles in old scars, which I do not believe has been noted before in contact dermatitis. I have seen this phenomenon in old burns, especially in old stasis scars and in postoperative breast amputation scars, but there I have assumed that these fluid collections were due to mechanical trauma. I wonder if Major Davis can say anything about the value of protective ointments in the immediate emergency. All of us are concerned about whether there are such things as true protective ointments, as for instance in industrial dermatology. I should like to ask Major Davis too if he can say something of his important work in the field of antiarsenical agents as related to lewisite poisoning since many dermatologists are concerned with arsenical reactions.

DR C. GUY LANE, Boston. I have seen a few research workers with mustard gas and a few who are developing gas proof fabrics. One of these workers showed an interesting feature. She was working in front of a hood, where the fan was not turned on. The manager of the plant was beside her and another worker on the other side of her. She was handling some mustard gas just in front of her. She came to me about a week later with a mustard gas burn on the lower part of the abdomen, involving the pubic region and inner thighs, which was quite disturbing for several weeks. Curiously enough, on the lower part of the abdomen it was easy to see the markings of her girdle, where the gas had apparently penetrated. She was perfectly unconscious of anything going on at the time. It is important for workers to follow absolutely directions about protection. It is also important for them not to use too strong a solution to neutralize the mustard gas. There were several cases in a group that thought that because the routine strength of the neutralizing agent was good a stronger solution would



be much better. Their manifestations did not suggest mustard gas and disappeared when the solutions were used in normal strength.

MAJOR MARION I. JEFF DAVIS, M. C., A. U. S. The soldier is supplied with two types of prophylaxis against vesicant agents. One is used as a prophylactic against the mustard gas agent and there is also one used as a prophylactic against lewisite burns. These are ointments. They have to be applied rapidly after contamination. If they are applied within a few minutes after contamination they work well particularly in the case of lewisite. This prophylactic agent for lewisite has a specific action and is capable of reversing the lewisite reaction with the cellular tissue up to a given time after contamination. The principle involved in this ointment and its formula are not divulged, however, it has now been distributed to several clinics throughout the country, the active principle is being used in the treatment of toxic arsenical reactions. Severe arsenical dermatitides have been treated with this agent successfully. It is put up in the form of an intramuscular injection and used as an injection four times a day during the first day and once daily thereafter for the next five days. The reports have been received that this agent has actually saved patients' lives who have developed severe arsenical dermatitis which otherwise would probably have resulted in death. The investigative work included in this paper brings out perhaps one important feature: the need for a great deal of further work in burns. The pathology of burns, the mechanism of vesiculation and the therapy of burns are fields in which the dermatologist has an opportunity to contribute his share.

## METABOLIC CRANIOPATHY

### A CLINICAL AND ROENTGENOLOGIC STUDY OF SO-CALLED HYPEROSTOSIS FRONTALIS INTERNA

ARTHUR GROLLMAN, M.D., PH.D.

DALLAS, TEXAS

AND

J. P. ROUSSEAU, M.D.

WINSTON-SALEM, N. C.

Metabolic craniopathy has been defined as "a syndrome characterized clinically by variable and protean manifestations of a metabolic, endocrine and neuropsychiatric nature and roentgenologically by characteristic thickening of the internal tables of the skull."<sup>1</sup> The condition has been commonly referred to as hyperostosis frontalis interna, but this is a less suitable designation since the changes observed in the skull do not appear to contribute to the clinical picture nor are they probably an essential part of the syndrome. The changes in the skull are moreover not always limited to the frontal bones, and hence the designation metabolic craniopathy would appear preferable. Other designations which have been used for certain forms of this disorder are the eponyms Morgagni's and Stewart-Morel's syndrome and the terms "cranial hyperostosis of the insane" and "calvarial hyperostosis." These too fit the condition less satisfactorily, however, than does the designation metabolic craniopathy.

Although metabolic craniopathy is a relatively common condition, found in about 1 to 2 per cent of all patients admitted to hospitals, it is only since 1928 that the condition has been recognized as a clinical entity. In that year Stewart<sup>2</sup> described 5 patients with unusual

clinical features who at autopsy were found to have hyperostosis of the skull. He drew attention to the association of mental symptoms and obesity with the observed localized cranial hyperostosis. Moore's<sup>3</sup> survey of 6,650 x-ray films of the skull clarified the roentgenologic aspects of the disorder, established criteria for its diagnosis and clarified the confusing roentgenographic findings in the several types of cranial exostoses: puerperal osteophytes and senile hyperostosis and established our present concept of the pathognomonic bone changes in metabolic craniopathy as seen on x-ray examinations. Since Stewart's publication<sup>2</sup> over 100 cases have been reported in the world literature.

### CLINICAL MATERIAL AND METHODS

The present paper is based on a survey of the patients seen at the North Carolina Baptist Hospital. During the two and one-half year period between July 1941 and January 1944, approximately 1,620 examinations of the skull were carried out in the Department of Roentgenology for one cause or another. Of these 78, or 4.1 per cent, revealed the presence of calvarial hyperostosis pathognomonic of metabolic craniopathy. Many of these patients were outpatients referred by physicians for x-ray study only and hence were not available for clinical study. In the vast majority of the cases an x-ray examination of the skull was requested because of unexplained headache. Disease of the sinuses and intracranial tumor were the disorders most often suspected by the referring physician. In less than 5 per cent of the cases was the true nature of the disorder suspected.

The clinical data presented in the present paper are based on an analysis of 40 patients in whom the diagnosis as suggested by the history, physical examination and laboratory studies, was confirmed by the x-ray findings.<sup>4</sup> In addition 2 patients were encountered with clinical findings typical of the disorder but without the pathognomonic x-ray evidence of the characteristic hyperostosis. It is now generally conceded that the changes in the skull are merely one characteristic of the disease and need not be present. Nevertheless the objective x-ray findings remain to date the most constant and reliable and the characteristic feature of the disorder.

### INCIDENCE

As has already been noted, the incidence of calvarial hyperostoses in our series of x-ray films of the skull was 4.1 per cent. This is considerably higher than that reported by Moore<sup>3</sup> (1.2 per cent) but lower than that noted by Eldridge and Holm<sup>5</sup> (25 per cent) in patients admitted to an insane asylum.

The 42 patients whom we have studied clinically were encountered among a total of 4,200 individuals seen in the medical services of the North Carolina Baptist Hospital. The incidence of the disorder is thus approximately 1.0 per cent in a general hospital population. Metabolic craniopathy is thus far from being a rare condition.

### AGE

The age distribution of our patients has been as follows: ages 20 to 29, 5; 30 to 39, 10; 40 to 49, 16; 50 to 59, 5; 60 to 69, 4. More than a third of the

<sup>1</sup> From the Departments of Roentgenology and Internal Medicine of the Bowman Gray School of Medicine of Wake Forest College and the North Carolina Baptist Hospital.

<sup>2</sup> Grollman, A. "Disorders of the Bones," in Christian, H. A. and Mackenzie, J. Oxford Medicine, New York, Oxford University Press, 1943, vol. 4, chapter 2, pp. 405-502.

<sup>3</sup> Stewart, R. M. "Localized Cranial Hyperostosis in the Insane," J. Neurol. & Psychopath. 8: 321, 1928.

<sup>4</sup> Moore, S. "Hyperostosis Frontalis Interna," Surg., Gynec. & Obst. 61: 345, 1935. "Metabolic Craniopathy," Am. J. Roentgenol. 25: 30, 1936. "Calvarial Hyperostosis and the Accompanying Symptom Complex," Arch. Neurol. & Psychiat. 35: 975 (May), 1936.

<sup>5</sup> Drs. Wingate M. Johnson, Elbert MacMillan and R. L. McMillan gave us permission to study and include 4 of their patients in this series.

<sup>6</sup> Eldridge, W. W. and Holm, G. A. "The Incidence of Hyperostosis Frontalis Interna in Female Patients Admitted to a Mental Hospital," Am. J. Roentgenol. 42: 356, 1940.



patients were thus in the fifth decade of life when they first presented themselves for diagnosis, although in most cases the symptoms had been present for many years. The youngest of our patients was aged 21. The disease apparently, judging from the history, has a slow and insidious onset and probably begins in early life. The youngest patient on record in whom hyperostosis was evidenced in the x-ray film was aged 7, and in 5 of our own cases the changes in the skull were pronounced before the age of 30. In most cases, however, the condition is a disorder of middle life.

#### SEX

The condition, as has been pointed out by all previous observers, is predominantly one affecting the female sex. Only 1 of our patients was a man. This compares with the results of previous observers,<sup>6</sup> who also



Fig 1.—A 49 year old patient showing the typical obesity of metabolic craniopathy. The principal symptom of complaint was intractable headache. Note the megalomastia and rhizomelic type of obesity often erroneously referred to as "pituitary obesity."

found that 97 to 98 per cent of the patients were women. The 1 male patient in our series was a 33 year old salesman who complained of trembling, nervousness, insomnia, periodic attacks of blindness and generalized weakness. Physical examination was entirely negative except for bilateral megalomastia, which, according to the patient, was a familial characteristic shared by several other male members of his family.

#### HEREDITY

Metabolic craniopathy frequently affects several members of the same family, being inherited as a dominant character. The family history of a number of our patients suggested the existence of the disorder in their

relatives. In one instance the x-ray examination of the skull of a paternal uncle (an inmate of a mental asylum) of one of our patients revealed the existence of the disease.

#### SYMPTOMATOLOGY

The symptoms of metabolic craniopathy are protean and variable. They consist of metabolic, endocrine, hyper-tensive and neuropsychiatric manifestations. Although only one of these general groups of symptoms may be predominant in any individual case, there are usually manifestations of at least two or more of them. In our series of 42 patients, 14 showed manifestations of neuropsychiatric metabolic and endocrine dysfunction. In 13 the neuropsychiatric manifestations alone were outstanding. In 8 a combination of neuropsychiatric and metabolic abnormalities were predominant. In 5 cases neuropsychiatric and endocrine disturbances were outstanding. In the remaining 2 cases the changes in the skull were merely an incidental finding, and it was only on questioning that evidence of neuropsychiatric manifestations was elicited. One of these patients was brought to the hospital by hypertensive cardiovascular disease and chronic nephritis, where she died of uremia. The hyperostosis of the other patient was discovered incidentally during the study of a control series of 50 female patients in the fifth decade of life to determine the incidence of calvarial hyperostosis in the general hospital population. Her principal complaint was due to chronic cholecystitis.

**Metabolic Disturbances.**—The principal metabolic disturbance noted in this condition is obesity. This was observed in 23 of the 42 cases covered in this report. The obesity is usually of the rhizomelic type with megalomastia, which has so frequently but without any rational basis been designated as the "pituitary" type of obesity (fig 1).

Basal metabolic determinations varied in most cases within plus or minus 10 per cent of the normal. In only 2 cases did the basal metabolic rate deviate beyond these figures, being minus 15 per cent in 1 case and minus 18 per cent in another. There was no evidence of hypothyroidism in these cases.

The blood cholesterol, which was determined in 18 of the cases, was within normal limits (180 to 220 mg per hundred cubic centimeters).

There was no evidence of any disturbance in the calcium and phosphorus metabolism. The blood levels of the serum calcium and inorganic phosphate were normal in the 26 instances in which these determinations were made.

Hyperglycemia is considered by Bartelheimer<sup>8</sup> as a symptom of hypophysial diabetes in hyperostosis frontalis interna, but in our series of patients this was encountered in only 3 instances. In 2 of these the glycosuria was mild and was controlled by dietary restriction. In the other 3 there was relative refractoriness to insulin, and large doses did not effectively control the hyperglycemia. In 12 other patients in whom obesity was a prominent symptom the dextrose tolerance did not differ from that observed in otherwise normal obese individuals.<sup>9</sup>

**Endocrine Disturbances.**—Approximately one half of all the patients in our series have manifested some disturbance usually attributed to the endocrine organs.

6 Grollman<sup>1</sup>, Eldridge and Holm.  
7 Knie, P. T. and LeFever, H. E. Metabolic Craniopathy. Hyperostosis Frontalis Interna. *Ann Int Med* 14: 1858. Samson, M. Caron, S., and Martin, C. A. Syndrome d'hyperostose frontale interne a caractere familial. *Laval med* 7: 140. 1942.

8 Bartelheimer, H. Die Hyperostosis frontalis interna als Symptom des hypophysären Diabetes. *Deutsche med Wchnschr* 65: 1129. 1939.

9 Grollman, A. *Essentials of Endocrinology*. Philadelphia: J. B. Lippincott Company, 1941.

The principal endocrine disturbances were related to the reproductive system, with abnormalities of menstruation not associated with any demonstrable pelvic disease. In 9 of the patients, amenorrhea was outspoken. The menarche usually occurred normally, but gradual cessation of the menses began at the age of 18 or 20 and in some instances the amenorrhea had continued over a period of many years.

Hirsutism (fig 2) is the other prominent manifestation which we have encountered in 12 of the 42 cases. Since these symptoms are usually associated with obesity and hypertension, one can readily see how this condition might mistakenly be diagnosed as the Cushing syndrome. As a matter of fact this diagnosis had been made elsewhere in 2 of the cases in this series and in 1 case an exploration of the adrenals had been carried out.

**Hypertension**—Hypertension identical to that seen in benign hypertensive cardiovascular disease has been observed in 16 of our 42 patients. This is a much higher frequency than one would expect if the hypertension was merely a coincidental occurrence, and we therefore believe that this represents another of the protean manifestations of the disease.

**Neuropsychiatric Disturbances**—Neuropsychiatric manifestations constitute the most prevalent symptoms observed, being present in over three fourths of all patients. In 30 of our 42 patients a diagnosis of psychoneurosis had been made at some time during the patient's life.

The neuropsychiatric manifestations did not conform to any specific syndrome. This fact has also been noted by Eldridge and Holm,<sup>8</sup> who observed in their patients thirteen of the twenty-two types of psychosis recognized by the American Psychiatric Association. Schiff and Trelles<sup>10</sup> describe the neuropsychiatric disturbances observed in hyperostosis frontalis as consisting of (1) intellectual slowness with depression and anxiety, (2) disturbances of temperament and character and (3) protective neuroses. Personality changes, egocentricity, hypochondriasis, general nervousness and the other usual psychoneurotic manifestations are commonly observed. Easy fatigability, muscle weakness, dimness of vision, diplopia, dizziness (without any evidence of ocular disease) and subjective disturbances in gait and equilibrium are frequent complaints. Cranial nerve defects, narcolepsy, convulsive seizures, mental deterioration and dementia are less common manifestations.

Headache was a very common complaint, being present in 19 of the 42 patients of our series. It is commonly frontal but may be occipital or may be referred to the top of the head or to the nuchal area. In several cases the headache was disabling and was the principal complaint. The refractoriness of this headache to the usual methods of therapy is striking. In the more severe cases ergotamine tartrate, amipyrine and the other usual preparations were found to be ineffective.

Major psychoses are common in patients suffering from metabolic craniopathy. Four of our patients had

at some time required institutional confinement. These patients were suffering from depression.

Hysteria, with diverse manifestations, is frequently observed in metabolic craniopathy and was noted in 8 of our patients. In 1 the conversion hysteria was of the paralytic type, with hysterical paralysis and anesthesia of the left lower extremity. In 2 patients there were attacks of periodic blindness and in 2 periodic deafness, apparently hysterical in origin. One patient suffered from chronic attacks of jacksonian epilepsy. Another patient gave a history of a single acute attack of convulsions and coma lasting for several days. Somnolence was a symptom in 2 patients, dizziness and fainting spells in 3.

#### ROENTGENOLOGIC CONSIDERATIONS

We have found positive bone changes in the skull in 98 per cent of the patients in whom typical clinical symptoms were present. In practically every patient with the usual endocrine, metabolic and neuropsychiatric



Fig 2—A 39 year old patient with metabolic craniopathy. Note the facial hirsutism often seen in this disorder. In addition the patient manifested the typical obesity, hysterical paralysis of the left leg and amenorrhea of ten years duration.

manifestations of the disease, pathognomonic bone changes in the vault can be demonstrated on the roentgenogram. The failure to see typical bone changes, however, does not exclude the possibility of the syndrome, as clinicians interested in this disease can with careful study arrive at a diagnosis in a small percentage of cases on the basis of clinical findings alone. There are also a certain number in whom typical x-ray changes are demonstrated and in whom subsequent clinical investigations fail to elicit the expected symptoms. We feel that in all probability these patients will in time develop clinical manifestations, but we have no proof of this nor do we know how soon after x-ray bone changes occur such manifestations will develop, since our observations have been over too short a period of time.

The characteristic x-ray changes consist essentially in the deposition of cancellous bone of great density on the inner table of the frontal bone (fig 3). This formation consists of benign noninflammatory osseous tissue, affecting primarily the compact bone of the inner table. In a small percentage of cases it will later involve the diploe between the tables (fig 4). In

<sup>10</sup> Schiff P and Trelles J O. Syndrome de Stewart-Morel (hyperostose frontale interne avec adipose et trouble mentaux) d'origine traumatique. *Encephale* 24: 768 1931.

the majority of the cases the lesion is entirely limited to the squama frontalis, the condition which we recognize as typical hyperostosis frontalis interna. Occasionally there is involvement of the orbital plate of the frontal bone, the inner table of the parietal bone or, less commonly, the structures in the middle fossa at the base of the skull, especially the temporal or sphenoid bone and the bony structures of the hypophysial fossa (fig 5). Diffuse calvarial hyperostosis involving the entire vault has been reported by Moore,<sup>3</sup> and Schiller<sup>11</sup> has reported extracalvarial bone changes in the mandibles. In none of our cases were changes demonstrated outside the calvarium. Knies and Lefever<sup>7</sup> feel that distinction between the various subgroups as outlined by Moore is somewhat arbitrary and that care must be exercised lest thought become more confused rather than simplified.

In none of our cases were remote hyperostotic bone changes unassociated with the characteristic changes of the frontal bone found in the vault. We feel that in



Fig 3—Posteroanterior and lateral appearance of the skull in a case of metabolic craniopathy showing the typical deposition of cancellous bone on the inner table of the frontal bone.

all cases showing the classic x-ray appearance the inner table of the frontal bone is primarily involved and that in approximately 2 per cent of these lesions will be seen elsewhere in the vault. In all cases there is thickening and sclerosis of the inner table of the frontal bone, which, in some cases, may be as great as 3 to 5 cm in thickness (fig 6). The outer table is always spared and the external diameter of the calvarium is not altered. Usually the changes are bilateral and symmetrical. From these observations we may perhaps be justified in concluding that the x-ray evidence of metabolic craniopathy is hyperostosis frontalis interna and that changes remote from the frontal bone represent secondary variations of this primary change.

If this criterion is adhered to, the differential diagnosis of this syndrome from the hyperostoses associated with acromegaly, osteitis deformans, tuberculous and syphilitic osteomyelitis, leontiasis ossea, cranial osteoma, sarcoma, metastatic cancer, underlying hemispherical meningioma and senile hyperostosis will become less difficult and this condition may be diagnosed with a high degree of accuracy on roentgenologic evidence alone.

11 Schiller, A. Roentgen Diagnosis of Diseases of the Head translated by F. P. Stocking. St. Louis: C. V. Mosby Company, 1918.

#### DIFFERENTIAL DIAGNOSIS

Because of the neuropsychiatric manifestations of metabolic craniopathy the condition is frequently diagnosed as "psychoneurosis."

The obesity, hypertension, hirsutism and amenorrhea often lead to the diagnosis of Cushing's syndrome. There should, however, be no cause for confusion between the two conditions, since patients with metabolic craniopathy lack many of the outstanding features of true Cushing's disease. One does not observe in metabolic craniopathy the osteopetrosis, acrocyanosis and purplish striae which are characteristic of Cushing's syndrome.<sup>12</sup> Moreover, the course of the disease in the two conditions is entirely different, being rapidly progressive in Cushing's syndrome and relatively chronic without rapid progression in metabolic craniopathy. Except for the hirsutism there is no evidence of true masculinization in metabolic craniopathy. One does not find an enlargement of the clitoris or the masculine voice observed in most patients with androgenic tumors of the adrenal gland or with arrhenoblastoma.

The 17-ketosteroid content of the urine has been shown to be of considerable significance in the diagnosis of Cushing's syndrome and disorders of the adrenal cortex. It was thought, therefore, of interest to investigate the excretion of this steroid in the urine of patients suffering from metabolic craniopathy in whom amenorrhea and hirsutism were prominent features and in whom one might therefore suspect some abnormal androgenic activity of the adrenal cortex. In 10 patients on whom such studies were made the daily 17-ketosteroid excretion was 3 to 7 mg. This is entirely within the normal limit. Such determinations might be useful as an added laboratory aid in the differential diagnosis.

#### TREATMENT

Metabolic craniopathy is a progressive chronic disorder, the more severe cases terminating at times in actual dementia. The majority of the cases, however, show little progression, with long continued morbidity. In most of our patients, symptoms had been present over a period of from two to fifteen years.

Among the various forms of therapy which have been suggested are the administration of chondroitin, aminoacetic acid or anterior pituitary and irradiation of the pituitary-hypothalamic area. In our own experience no form of therapy has proved of any demonstrable permanent value, and any apparent beneficial effect has probably been the result of suggestion. In several of our patients in whom the pituitary-hypothalamic area was irradiated striking improvement has occurred, but in other cases this form of therapy has been of no apparent value. In most cases the obesity has been controlled by dietary restriction, but in many cases even on a low caloric diet, loss in weight has been minimal.

#### COMMENT

It has been questioned whether hyperostosis frontalis interna represents a real clinical entity.<sup>1</sup> Because of the chronic nature of the disease few of the patients have come to autopsy and hence there is lacking any

pathologic basis to which one might attribute the disorder. From a clinical standpoint we believe however, that the disease does represent a definite entity which when taken in conjunction with the specific roentgeno-

demonstrated<sup>13</sup>. Although several authors have pointed to the endocrine features of the disease as evidence of an endocrinopathy being the basis for the disorder, there is no proof to support this view. In the 2 patients of our series who have come to autopsy no abnormalities of the pituitary, thyroid or adrenals could be demonstrated.

#### SUMMARY

1 A study was made of 42 patients suffering from metabolic craniopathy.

2 X-ray findings in 78 patients manifesting the disorder and in a control series of 50 patients were investigated in order to establish the roentgenologic basis for the diagnosis.

3 The 17-ketosteroid excretion in patients with metabolic craniopathy displaying metabolic and endocrine disturbances has been shown to be normal. In patients



Fig 4—Appearance of the skull in a case of metabolic craniopathy, showing the involvement of the diploe between the tables in addition to changes on the inner table of the frontal bone and wings of the sphenoid.

logic findings may be differentiated as a distinct disease process.

As regards the pathogenesis of the disorder, the nature of its symptoms would lead one to assume that the basic disorder is in the hypothalamic area of the brain. This portion of the diencephalon could give rise to the diverse symptomatology and protean manifestations which one observes in metabolic craniopathy.



Fig 6—Hyperostosis of the frontal bone and diploe, the new bone deposit being 4 cm in thickness.

with similar symptoms which are due to adrenal cortical dysfunction, the 17-ketosteroid content of the urine is elevated.

4 Metabolic craniopathy is considered to be a definite clinical entity of relatively frequent occurrence.

13 Moore M T. The Morgagni Stewart Morel Syndrome. Report of a Case with Pneumoencephalographic Findings. Arch Int Med 73:7 (Jan) 1944.



Fig 5—A case of metabolic craniopathy with involvement of the inner table of the frontal bone, the structures of the middle fossa at the base of the skull and the squamous portion of the temporal bone.

Further pathologic studies however are necessary before this hypothesis can be established.

In a few cases reported in the literature cerebral degeneration in the form of cortical atrophy has been

**Fluid Structures of the Body**—The fluid structures of the body consist of three parts: the blood, the intracellular fluid and the interstitial fluid, the sum total of which constitutes 70 per cent of the body mass. Of this, 5 per cent of the body weight (35 liters in a person of 70 Kg) is circulating plasma, 50 per cent (35 liters) intracellular fluid and 15 per cent (10.5 liters) interstitial fluid. This last, which includes the lymph, is the most labile of the three for in order to preserve intact the other two it must undergo a constant shift in amount and, to a less extent, in electrolyte content.—McLester, James S. Nutrition and Diet in Health and Disease, Philadelphia, W B Saunders Company, 1943.

## HYPERTENSION

THE EFFECT OF ACTIVITY, REST, NATURAL SLEEP  
SODIUM AMYTAL, PENTOTHAL SODIUM, CHLORALOSE  
AND ETHER ON EXPERIMENTAL NEUROGENIC HYPERTENSION AND OF REST AND SODIUM AMYTAL AND ANESTHESIA ON HYPERTENSIVE PATIENTS

KEITH S GRIMSON, MD

CHARLES E KERNODLE JR, MD

AND

HENRY C HILL, MS

DURHAM, N C

Restriction of activity, extension of periods of rest and natural sleep, and generous use of sedatives are commonly employed in the medical treatment of hypertension. Splanchnicectomy (Peet,<sup>1</sup> Craig and Adson,<sup>2</sup> Smithwick<sup>3</sup> and others) or subtotal to total paravertebral sympathectomy, splanchnicectomy and celiac ganglionectomy (Grimson<sup>4</sup>) have been of value as occasional supplements to medical management. Selection of patients for surgery has proved difficult. The effect of rest and sodium amytal on hypertension determined by hourly blood pressure readings during twenty-four hours or more has been emphasized by many physicians as one of several important factors indicating the advisability of surgery.

Vasomotor instability evidenced by abnormal elevations of blood pressure during reflex or emotional stimulation has long been recognized in many patients and associated with the term "neurogenic hypertension." The function of the sympathetic nervous system in mediating such elevations of blood pressure and the important role of the carotid sinuses and cardioaortic depressor nerves in regulating blood pressure have been reviewed.<sup>5</sup> Heymans and Bouckaert<sup>6</sup> in 1931 presented the first of a series of studies demonstrating that elimination of the modulating function of the depressor nerves produces vasomotor instability and a persistent neurogenic hypertension in dogs. Similar studies by Koch and Mies,<sup>7</sup> Dautrebande,<sup>8</sup> Nowak and Walker,<sup>9</sup> Thomas and Warthin,<sup>10</sup> Grimson<sup>11</sup> and Schafer<sup>12</sup> have been reviewed.<sup>5</sup> Total sympathectomy effec-

tively reduces experimental neurogenic hypertension. Splanchnicectomy alone does not. The fundamental observations of Goldblatt and his colleagues<sup>13</sup> in 1934 initiated an extensive investigation of renal factors in hypertension. These studies have afforded little encouragement for sympathectomy and have not yet produced a satisfactory therapeutic agent.

The nature of the hypertensive disease process present in many patients is obscure. We feel that elements of abnormal blood pressure regulation, abnormal renal function and vascular pathologic conditions, together with other factors as yet unknown, may all be present in many hypertensive patients in varying degrees. We also feel that in some patients faulty blood pressure regulation or a neurogenic element may be an initiating and a major perpetuating factor. The disturbed pressor depressor equilibrium of such patients would effect through the sympathetic nervous system an increase of peripheral resistance throughout the body. Subsequent vascular disease and renal humoral or metabolic change would also affect the entire vascular bed. Should medical management fail in hypertension of this variety, surgical intervention would be indicated. The effectiveness of sympathectomy should increase as it is extended from the original limited splanchnicectomies to include more or all of the body. A test that could determine the presence of a neurogenic element would be valuable.

Because of these several considerations we feel that this experimental study of the effect of activity, rest, sedation and anesthesia on experimental neurogenic hypertension in dogs is warranted.

## ACTIVITY, REST AND NATURAL SLEEP

The technics conventionally employed for blood pressure determination in dogs require positioning and training and preclude determinations during normal emotional and physical activity, rest and natural sleep. We<sup>14</sup> have devised a technic that employs small sterile buried iliac and femoral cuffs and pressure sacs connected through fine plastic tubing to a pressure mercury and a recording water manometer. This technic permits pulse rate and mean systolic blood pressure determination at any desired moment without disturbing the animal. The average and the range of the blood pressures of 4 normal dogs were determined during varying stages of activity and during natural sleep. Two typical responses are represented in figure 1. The blood pressure and pulse average and range were elevated during activity and low during rest and natural sleep. Neurogenic hypertension was developed in 4 dogs by excision of the carotid sinuses and division of the vago-depressor-sympathetic trunk of one side and the depressor nerve of the opposite side. The blood pressure range and average of two of these dogs is represented in figure 2. It is evident that fluctuations of blood pressures during various stages of activity exceeded those observed in the normal dog. The blood pressures during rest and natural sleep of 3 of the 4 neurogenic hypertension dogs were lower than the active blood pressures but higher than similar pressures in the normal dogs (fig 1). One of the 4 dogs (dog 2, fig 2) had no reduction of the hypertension during

From the Department of Surgery, Duke University School of Medicine. Read before the Section on Surgery, General and Abdominal at the Ninety-Fourth Annual Session of the American Medical Association, Chicago, July 14, 1944.

<sup>1</sup> Peet, M. M. Splanchnic Section for Hypertension. Preliminary Report, Univ Hosp Bull, Ann Arbor 1, 17 18, 1935.

<sup>2</sup> Craig W. M. and Adson A. W. Hypertension and Subdiaphragmatic Sympathetic Denervation. Surg Clin North America 19, 969-980, 1939.

<sup>3</sup> Smithwick R. H. Technic for Splanchnic Resection for Hypertension. Preliminary Report, Surgery 7, 18, 1940.

<sup>4</sup> Grimson K. S. Total Thoracic and Partial to Total Lumbar Sympathectomy and Celiac Ganglionectomy in Treatment of Hypertension. Ann Surg 114, 753-775, 1941.

<sup>5</sup> Grimson K. S. Sympathetic Nervous System in Neurogenic and Renal Hypertension. Experimental Correlation and Clinical Consideration. Arch Surg 43, 284-305 (Aug.) 1941.

<sup>6</sup> Heymans C. and Bouckaert J. J. Observation chez le chien en hypertension artérielle chronique et expérimentale. Compt rend Soc de biol 106, 471-473, 1931.

<sup>7</sup> Koch E. and Mies H. Cronischer arterieller Hochdruck durch experimentelle Dauerausschaltung des Blutdruckregulierenden Krankheitsfor-schung 7, 241-256, 1929.

<sup>8</sup> Dautrebande L. Reactions vasomotrices a l'oxygene et a l'acide carbonique chez le chien en hypertension arterielle par enervation des zones vasosensibles. Arch internat de pharmacodyn et de therapie 40, 107-114, 1931.

<sup>9</sup> Nowak S. J. G. and Walker I. J. Experimental Studies Concerning Nature of Hypertension. Their Bearing on Surgical Treatment. New England J Med 220, 269-274, 1939.

<sup>10</sup> Thomas C. B. and Warthin T. A. Response of Normal Dogs and Dogs with Experimental Hypertension to Standard Cold Stimulus. Ann Heart J 19, 316-329, 1940.

<sup>11</sup> Grimson K. S. Role of Sympathetic Nervous System in Experimental Neurogenic Hypertension. Proc Soc Exper Biol & Med 44, 219-221, 1940.

<sup>12</sup> Schafer P. W. Body Fluid Changes in Neurogenic Hypertension and Total Paravertebral Sympathectomy. Proc Soc Exper Biol & Med 49, 327-329, 1942.

<sup>13</sup> Goldblatt H., Lynch J., Hanzal R. F. and Summerville W. W. Studies on Experimental Hypertension. Production of Persistent Elevation of Systolic Blood Pressure by Means of Renal Ischemia. J Exper Med 59, 347-379, 1934.

<sup>14</sup> Kernodle C. E. Jr., Hill H. C. and Grimson K. S. Experimental Technic for Measuring Mean Systolic Blood Pressures During Activity, Rest and Natural Sleep. Proc Soc Exper Biol & Med 55, 64-66, 1944.



sleep The pulse rates of the neurogenic hypertension dogs exceeded those of the controls and fluctuated more widely with variations of activity

#### SODIUM AMYTAL AND PENTOTHAL SODIUM

The effect of sodium amytal on blood pressure was observed in 5 normal and 6 neurogenic hypertension dogs The sodium amytal was given in divided doses during three or four hours in amounts averaging in all 0.2 Gm per dog This produced light sleep The blood pressures were taken before and after the sodium amytal by direct arterial puncture The positioning of the dog for arterial puncture after sodium amytal produced some restlessness The neurogenic hypertension dogs employed had been prepared by elimination of the modulator or depressor nerves as described some three months before the experiment The effect of the sedative on the blood pressure is illustrated in figure 3 An elevation occurred in 2 of the control animals, a lowering in 2 and no appreciable change in 2 An elevation occurred in 2 of the neurogenic hypertension dogs a lowering in 3 and no change in 1

The effect of pentothal sodium anesthesia was determined on 5 normal, 6 neurogenic hypertension and

in 3 It rose in 1 of the neurogenic hypertension group and dropped in 5 The final blood pressures of these 5 remained at definite hypertension levels It rose in 3 dropped in 3 and remained unchanged in 1 of the renal hypertension animals

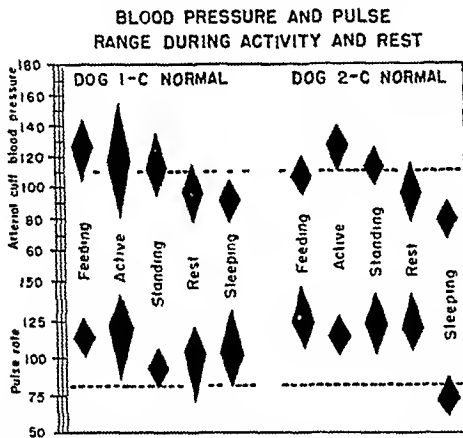


Fig 1—Blood pressure and pulse range of 2 normal dogs The pressures were obtained by an arterial cuff technique without disturbing the animal Some lowering of pressure occurred during rest and natural sleep

7 renal hypertension dogs The neurogenic hypertension had been developed three to eleven months before the experiment The renal hypertension was produced by placing tight silk or linen capsules about both kidneys from one to eleven months before the experiment Blood pressures were taken by arterial puncture during this period to familiarize each animal with the procedure The last blood pressure was taken in a dark quiet room just before the experiment Pentothal sodium in a 2.5 per cent solution was then introduced through the saphenous vein until the anesthesia was sufficient to prevent pain reflexes A second arterial puncture was performed four to ten minutes after the induction to determine the blood pressure under anesthesia Respiratory arrest and pronounced cyanosis occurred in certain dogs of the neurogenic hypertension group These experiments were repeated until satisfactory respiration was maintained The neurogenic hypertension animals required slightly more pentothal sodium for anesthesia than did the control or the renal hypertension groups The effect of pentothal sodium anesthesia is illustrated in figure 3 The blood pressure rose in 2 of the control dogs and dropped

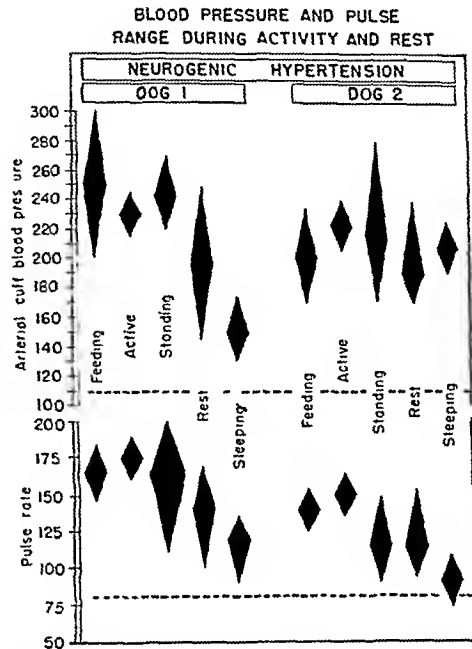


Fig 2—Blood pressure and pulse range of 2 of 4 neurogenic hypertension dogs Dog 1 demonstrates the greatest lowering observed during natural sleep and dog 2 the least The blood pressures of the neurogenic hypertension dogs during sleep did not reach the low values observed in the normal dogs (fig 1)

#### CHLORALOSE AND ETHER ANESTHESIA

The effect of chloralose anesthesia on blood pressure was observed in 4 normal and 5 neurogenic hypertension dogs (fig 4) The blood pressures were determined by arterial puncture before and after the intravenous administration of 0.08 to 0.1 Gm of chloralose per kilogram of body weight Some lowering of blood pressure occurred in 2 of the normal dogs and a

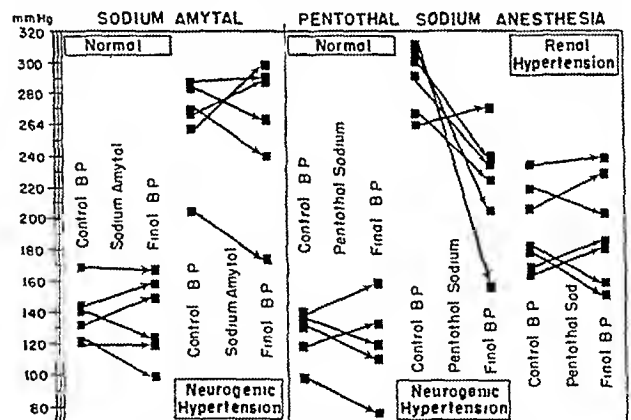


Fig 3—The effect of sodium amytal sedation on the blood pressure of 6 normal and 6 neurogenic hypertension dogs is demonstrated on the left The effect of pentothal sodium anesthesia on 5 normal 6 neurogenic and 7 renal hypertension dogs is represented on the right

moderate elevation in 2 A lowering of blood pressure occurred in 1 of the neurogenic hypertension dogs, elevation in 2 and no change in 2

The effect of ether anesthesia on blood pressure was determined in 4 normal and 4 neurogenic hypertension dogs Arterial puncture blood pressures were taken



before and after the induction of a deep third plane ether anesthesia. Some lowering of blood pressure occurred in 1 and little change in 3 of the control dogs. The 4 neurogenic hypertension dogs demonstrated a definite lowering. The final blood pressures remained in the hypertensive range.

COMMENT AND CLINICAL STUDY ON REST AND SODIUM AMYTAL AND ANESTHESIA

Repeated blood pressure determinations by an arterial cuff method have demonstrated a range of blood pressures in normal dogs that is higher during activity and lower during rest and natural sleep. The range is greater in neurogenic hypertension dogs. Active blood pressure readings were high. Readings during natural sleep were lower but at no time approached the low level observed during sleep in normal dogs. Sodium amytal did not significantly alter the blood pressures of neurogenic hypertension dogs. Chloralose anesthesia effected little change. Deep anesthesia under pentothal sodium and ether lowered the blood pressures to approximately the same hypertension values as were observed in the neurogenic hypertension dogs during natural sleep. Pentothal sodium did not significantly alter the blood pressure of 7 renal hypertension dogs. These studies would indicate that a neurogenic hypertension produced by a disturbance of blood pressure regulation will persist although at times somewhat reduced through sedation, anesthesia or natural sleep.

Interpretation of these findings into terms of clinical hypertension must be done with reservation. It seems well established that clinical hypertension is effected by an increase of the peripheral resistance. Components of disturbed blood pressure regulation or neurogenic hypertension, pathologic change, particularly arteriolar sclerosis, or renal circulatory change altering metabolism or producing a renal pressor substance may play varying roles in affecting the increase of peripheral resistance. The experiments would suggest that rest, natural sleep, sedation or anesthesia may moderately lower the blood pressure of a neurogenic hypertension. They also suggest that a neurogenic hypertension may

be illustrated by a review of the test as employed on the first 20 patients treated by paravertebral sympathectomy. This procedure, although limited somewhat by anatomic variations and by nerve regeneration, accomplishes sympathetic denervation of most of the peripheral vascular bed throughout the body. Rest and

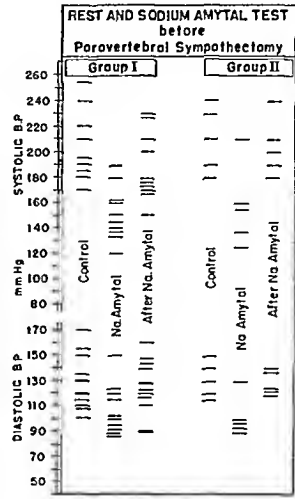


Fig 5—The rest and sodium amytal tests of 10 patients who were treated by paravertebral sympathectomy and had a definite lowering of blood pressure are represented in group I. This is contrasted with similar tests of 5 patients who had no lowering of blood pressure in the supine position after sympathectomy, group II.

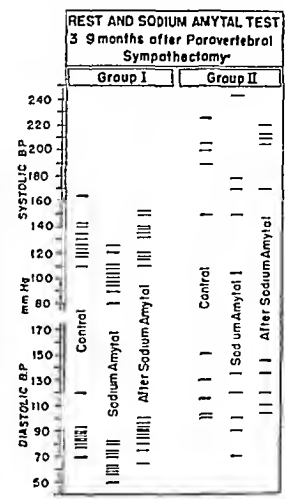


Fig 6—The rest and sodium amytal tests of the patients illustrated in figure 5 three to nine months after paravertebral sympathectomy. The 10 patients group I with definite reduction of blood pressure could not be differentiated from the 5 patients with no reduction in the supine position group II by the preoperative rest and sodium amytal tests (fig 5).

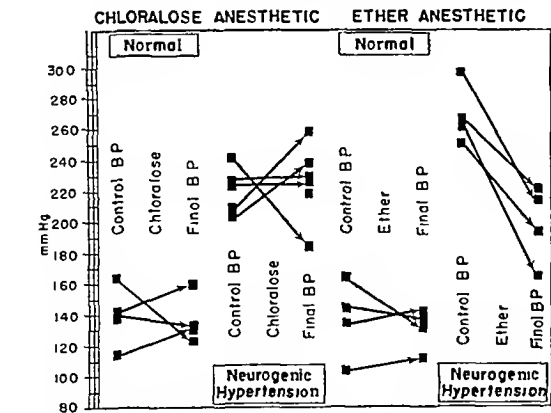


Fig 4—Effect of chloralose and of ether anesthesia on the blood pressure of normal and of neurogenic hypertension dogs.

persist under these conditions and that a negative rest and sodium amytal test may not eliminate the possibility that an element of a neurogenic nature may be present.

Rest and sodium amytal tests aid medical evaluation of the hypertensive patient. The importance of the sodium amytal test in the clinical evaluation of a patient should not, however, be overemphasized. This

sodium amytal tests were employed before the sympathectomy and at intervals of three to nine months after the sympathectomy. These were frequently preceded or followed by control twenty-four hour periods of hourly blood pressure determinations that presented a similar curve to that obtained with the sodium amytal.

Rest and sodium amytal tests before operation were separately plotted and then shuffled. Four observers attempted a prediction of which patient would be benefited by sympathectomy and failed. The rest and sodium amytal tests three to nine months after sympathectomy were then examined. Ten patients were selected as showing by the postoperative rest and sodium amytal test an appreciable lowering of the supine blood pressure. Five patients were selected as showing by this test alone no change in the supine blood pressure. Three patients with intermediate results, 1 with a polycythemia vera and another with a Cushing's syndrome were discarded. The preoperative tests of the 10 patients that later showed appreciable lowering of blood pressure are illustrated as group I in figure 5 and compared with the preoperative tests of the 5 patients that later had no lowering of blood pressure, group II. It was impossible to determine by the tests which patients would receive benefit from surgery. Figure 6 represents the rest and sodium amytal tests of the same groups of patients three to nine months after sympathectomy.

The effect of anesthesia was determined from the anesthetist's record of the first operation of these 15 patients. Ethylene or ethylene-ether anesthesia was employed. The blood pressure rose after anesthesia and before operation in 12 patients, remained the same in 2 and decreased slightly in 1. No difference existed between groups.

## CONCLUSION

Experimentally and clinically the blood pressure altering effect of rest, sedation or anesthesia has been found variable. Etiologic assumption or surgical prognosis based principally on rest and sodium amytal or anesthesia tests may be misleading. The blood pressure lowering effect of these tests clinically should be but one of many factors considered in the evaluation of the hypertensive patient.

## ABSTRACT OF DISCUSSION

DR GEZA DE TAKATS, Chicago. The significant experimental findings of Grimson and his associates indicate that the neurogenic hypertension in the dog does not respond remarkably to the customary use of barbiturates or sleep, which are so frequently employed in selecting patients for sympathectomy. The neurogenic hypertension of the dog produced by section of the buffer nerves, may not be identical with the essential hypertension in man. There is good evidence that the buffer nerves are intact in essential hypertension. In my own series the best results with splanchnic nerve section have been obtained in young or middle aged women who have had toxemia of pregnancy or eclampsia, thus an organic vascular disease affecting among others the renal parenchyma. In this group, which consists of an internist, an ophthalmologist and a surgeon, a three day schedule is being used for a preoperative study of the hypertensive patient. As Dr Grimson stated, the sodium amytal test is not always conclusive. We have had certain cases that indicated through the carbon dioxide pressor test whether the central mechanism is active or not. A patient with a late grade 3 hypertension who showed on biopsy a late benign renal sclerosis gave a slight response to the carbon dioxide pressor test. On the other hand, a younger patient with other tests showing early grade 1 hypertension with considerable vasomotor activity gave an exaggerated response to carbon dioxide. The block of the paravertebral sympathetics as a preoperative test, just like high spinal anesthesia, cannot be a good test for operability, since it is especially apt to cause a definite drop in blood pressure in the older, sclerotic group by causing a sudden failure in venous return. In face of these difficulties the lack of pronounced organic changes and fall in blood pressure to a minimum requirement of 150 systolic, 100 diastolic after rest or sedation still remain the safest criteria for operability.

DR EMMET B. BAY, Chicago. Dr Grimson's work in both animals and man has great validity. Any single test is obviously a precarious thing on which to base one's judgment with respect to indications for operation. The sodium amytal test may be largely left out of our armamentarium because some of Dr Grimson's patients had negative sodium amytal tests and yet had very good response to the operation. It leaves us, however, in great difficulty. The surgical procedure is a major one. We would like to employ it for younger people in whom there was no serious organic change in the precapillary arterioles or in the kidneys. We, as internists, don't like to suggest an operation to patients when we know that so many of these cases have a relatively benign course for so many years. We should like to pick out those in whom the course is going to be a malignant one, pick them out early and attempt to correct this situation before serious irreversible damage has been done. This procedure was, wisely, first used only on elderly patients for the most part who were doomed to die unless something was done about it in a very short time. The fact that as many of them received some improvement as did indicates that it should be included in our thinking about the treatment of hypertension still, but we all hope that those who are working on the physiology of this common disease will find some method of management that will lead to improved care for this large number of patients.

DR KEITH S. GRIMSON, Durham, N. C. One impression that Dr de Takats' report has unintentionally given might be corrected. He demonstrated an outline for a three day preoperative evaluation of the hypertensive patient. Actually many patients should be evaluated in the hospital for three weeks or more before surgical treatment should be considered.

PSYCHIATRIC SELECTION OF MEN  
FOR THE ARMED FORCES

RAYMOND W. WAGGONER, M.D.  
Psychiatric Consultant Selective Service System

ANN ARBOR, MICH.

COLONEL WILLIAM C. MENNINGER  
MEDICAL CORPS, ARMY OF THE UNITED STATES

AND

COMMANDER FRANCIS J. BRACELAND  
MEDICAL CORPS, UNITED STATES NAVAL RESERVE

The importance of the psychiatric aspects in the selection of men for the armed services was recognized by psychiatrists long before the onset of the present war. In 1918 it became so apparent to General Pershing that better methods should be used in screening out those individuals who would be unable to make a satisfactory military adjustment that he cabled to the Chief of Staff in Washington as follows: "Prevalence of mental disorders suggests urgent importance of intensive efforts in eliminating mentally unfit from organization of new draft prior to departure from United States." During the last war attempts were made to screen all recruits at mobilization centers. In some centers most of the recruits were seen by psychiatrists with adequate screening in the light of psychiatric knowledge at that time. In other centers no psychiatric examination was made or it was most unsatisfactory. In a considerable number of instances rejection was recommended by the neuropsychiatric examiner but the recommendation was overruled by the line officer or command surgeon. At the same time the number of neuropsychiatric casualties in the last war was great (41,646) and the postwar problem of care has been stupendous, the total cost of \$30,000 to \$35,000 per man being greater than for any other single group of casualties.

In the summer of 1940 when it was apparent that we were likely to be involved in the present conflict Dr Winfred Overholser wrote a detailed and excellent summary of the problem to President Roosevelt, calling attention to the need for the establishment of an adequate psychiatric screening program which could be used when the time came for rapid mobilization of a large army. Considerable thought was given to the subject by psychiatrists and Selective Service planning groups. During the latter part of 1940 and the first of 1941 the Selective Service System established plans and began holding seminars in various parts of the country. This psychiatric program was under the direction of Dr Harry Stack Sullivan and an advisory committee. The purpose of these seminars was to indoctrinate the local board physicians with the need of and a method of recognition of psychiatric problems and to help them to weed out at the local board level those registrants who would be unable to adjust satisfactorily to the military service. At that time the American Psychiatric Association, through its special committee appointed to deal with wartime problems, was aiding in the development of plans for psychiatric examinations of prospective members of the armed forces.

In several states plans were developed to secure information which would aid in the proper psychiatric selection of recruits. Through cooperation of the

Selective Service System the Army and the Navy, and with the advice from representatives from the American Psychiatric Association, military psychiatric standards were established. These standards if followed were presumed to cause the rejection of those who would likely fail in military service. The tendency was to reject all persons who showed any evidence of psychiatric disorder. That this attitude has changed is evidenced by War Department Technical Bulletin TB MED 33 which says in part "There is accumulating evidence that many individuals with minor personality deviations and mild neurotic trends can be of service in the armed forces. It is believed that, on the basis of previous directives, many such men are now being rejected at induction stations on neuropsychiatric grounds. The acute need for manpower makes it necessary to admit all individuals to serve in the armed forces who have a reasonable chance of adjusting to such service. The neuropsychiatric study should be made on a longitudinal basis and not on a cross section. The Medical Survey Program was developed by Selective Service to make just such a longitudinal survey possible."

In the present conflict the size of the armed forces is far larger than that of the last war. The forces have been built up to this size in approximately three years. Psychiatric selection, which requires more time than physical selection, has been seriously hampered by this extraordinarily rapid mobilization.

The problem of selection from a psychiatric standpoint is of course to recognize those men who by the nature of their personality makeup will not be able to adjust satisfactorily in the armed forces. It was necessary, with no historical data, to prognosticate the future mental health of these individuals rather than to make the diagnosis of a disease process. Psychiatrists, no matter how well trained, were not prepared for this type of function.

Most of the psychiatrists at induction stations are civilian psychiatrists, and most of those who are in the armed forces have been commissioned out of civil life. These men have an inadequate understanding of the needs of the armed forces, even though they may have a fair idea of the stress to which servicemen may be subjected. As in other fields of endeavor there are both exceptionally well qualified psychiatrists and those who are poorly qualified. By virtue of the amount of work to be done and the shortage of men to do it, all available psychiatrists have been employed. It is perfectly obvious to many of us that some psychiatrists are doing an inadequate and unsatisfactory examination, especially at the induction stations. To quote further from TB MED 33 "Thus, a neuropsychiatric examination consisting of a few leading and suggestive questions such as 'Do you worry?' 'Are you nervous?' or 'Do you have headaches or stomach trouble?' is inadequate, and positive answers to such questions are not in themselves justifiable cause for rejection. Isolated signs, such as nail biting, slight tremor or vasomotor symptoms, are not disqualifying. Normal concern over the prospect of induction, as manifested by moderately moist palms or tenseness, should not be regarded as evidence of an incapacitating disorder. Rejection for neuropsychiatric reasons should be made only in those cases in which the history and examination clearly indicate the existence in the past and/or present of a personality disorder of partially or completely incapacitating degree." These poorly done examinations have in some cases resulted in the rejection

of men who should have been accepted, as well as the acceptance of many who should have been rejected. Much criticism of psychiatric rejections has been expressed by Selective Service board officials, by the Army officials and by the public. Some of this criticism is valid but most of it is unjustified and has been the result of misunderstanding of the meaning of psychiatric rejection and of the seriousness of psychiatric casualties. In many instances this criticism can be considered a psychologic defense and projection mechanism on the part of the person offering it.

At the present time research is being carried on to develop what might be called a military personality profile. Psychiatric screening has been done on the basis of presumption of psychiatric disorders or indications of the possibility of its development not on the basis of established criteria or exact measurements as is true in the physical study. Therefore the more experienced and capable the psychiatrist making the examination and, within certain limits, the greater the amount of time allotted him, the more accurate will be his prediction as to the inductee's success or failure in the armed forces. It is hoped that, with the greater knowledge of the personality characteristics which lead to failure in the armed forces and of those which spell success psychiatric selection will become progressively more accurate.

At the present time our job is not only to recognize the manifest cases of psychiatric disorder and those who are apt to develop a psychiatric disorder as a result of the stress of military life but also to select those individuals who will be unable to adapt themselves satisfactorily to military life. This includes the mentally deficient, the inept and the psychotic, as well as those with neurotic characteristics. It should be emphasized that persons with certain types of mild neurosis may do well in the armed forces. Service may resolve the basic conflict. Recognition of the psychopathic personality group is important because, although these individuals may not actually develop a serious psychiatric illness in the armed services, yet by virtue of their inability to adjust they may serve as a focus of infection of bad morale, which in turn may result in breaks in discipline and lead to disaster. This is typified in the description of a situation told by an Army officer who at one time had been placed in charge of a unit with a reputation for bad discipline, which under two or three previous commanding officers had become progressively worse. This man, instead of initiating his command by establishing rigid discipline, carefully observed the unit for a week and then picked out three men who, although they did not have any psychiatric deviations obvious to a lay person, did have psychopathic personalities. These men were discharged, and the unit almost over night changed from one with a very bad reputation to one with high morale.

Those individuals who present psychiatric problems in the service might be considered in four categories or groups. The first group would include those who are manifestly unfit for service and whose disability is obvious or becomes so during the course of a brief psychiatric examination. Such individuals are easily detected and account for a fairly large percentage of the neuropsychiatric rejections at induction stations. The second group are those who are questionably fit but with whom a more complete historical background, the need of observation or both is necessary in order to evaluate their fitness accurately. The historical

information obtained through the Medical Survey Program is particularly important in the selection of this group. In the naval service until the present, these cases have been detected at the naval training station or boot camps where, after a period of observation and trial duty, the lack of fitness is demonstrated. The third group includes those who are potentially unfit but who may be able to adjust reasonably well for an indefinite but relatively short period of time. These men adjust well until the degree of stress becomes sufficiently severe to produce symptoms. They are separated from the service only after hospitalization study and medical survey. In the future large numbers of these should be detected by the historical information made available by the Medical Survey Program. The adjustment of these individuals usually becomes strained after the first six months. The peak period of discharge of these individuals occurs within the first twelve months of service. Finally the fourth group would include those who according to the best possible tests and the highest standards of psychiatric fitness including an adequate historical background appear to be normal, well integrated individuals. Not until such persons are confronted with the greater than normal stress of actual combat or prolonged operational duties do they manifest evidence of functional disability. It does not seem likely that any procedure can be set up which will accurately determine which individuals going through induction stations would break down provided they are in this fourth group.

At the present time the procedure for the selection is divided into two parts, the first phase being before the prospective service man reaches the induction station. Following registration, and if the registrant reports any difficulty which makes it apparent to the board that he might not be able to pass the induction station examination, he may be referred to a physician for examination either at the board's request or at his own request, or he may be referred to an advisory board for special examination. At the time of registration or, if registered, when he is considered for the reclassification which will lead to his induction, a survey is made of his previous social, medical and school history. This material is prepared by various regularly constituted individuals at the local board level on special forms for transmittal to the induction station. This survey, which is called the Medical Survey Program, was developed by the Selective Service System in conjunction with the Surgeon General's Office of the Army and Navy. Important procedures in the program are carried out by the use of certain forms.

Form 210 is designed to establish the identity of the individual in reference to treatment for mental illness. If this treatment has been in a state hospital, the registrant is disqualified at the local board level.

Form 212 carries medical and social history so arranged that the examiner at the induction station can determine at a glance the presence of positive or negative information of value. In case important information is available and is so noted by the checking of one of the questions, it is inscribed on the reverse of the form. This form is completed by a special field worker known as the medical field agent.

Form 213 is a composite report from five teachers so arranged that any consistent deviation from the normal will be called to the attention of the examiner by merely glancing at the composite form. This form is to be used for boys from 15 to 18 years of age at the time they

leave school for any reason other than transfer to another school.

Form 214 is to be used to obtain information about school adjustment when it is necessary to get this information from school records.

Only form 210 is to be used as the basis for rejection and this should be carried out at the local board level. The other forms have information for the induction station psychiatrist and should give him important leads as to possible reasons for rejection or induction. Such procedures have been in use in several parts of the country over a period of many months. The program was established as a national program in October 1943. It is so designed as to give the examining physicians at the induction station the maximum amount of information about each registrant with the minimum amount of time necessary to utilize this information. As first constituted the Medical Survey Program was very comprehensive in its coverage of various factors relating to the adjustment of the individual. As is so frequently true in the development of any plan of this scope some changes were necessary to suit particular problems in various parts of the country in order to yield a maximum of utilization with a minimum of difficulty. As the machinery of the plan has been developed, various changes have been made and will continue to be made in order to reach the highest degree of efficiency possible. Universal coverage of men forwarded has not yet been achieved but is constantly on the increase. It should be the responsibility of every psychiatrist, military or civil, to assist in this program in order that the aim of best possible selection may be achieved as soon as possible.

The second phase might be considered that which occurs at the induction station and during the early period of the registrant's military career. The induction station psychiatric examination is difficult. A number of factors tend to militate against a completely successful psychiatric study. First and foremost among these factors is the time element. While a reasonably good judgment can be based on a study of ten to fifteen minutes, in many instances so many have had to be examined that the time allotted to each may be reduced to one or two minutes per individual. Without other information, such an examination can be only of very superficial value. Second, not all examiners are of equal competence. Asking such questions of the selectee as "Do you worry?" or "Do you have stomach trouble?" and observing certain minor signs as mild vasomotor instability, mild tenseness results in an almost worse than useless psychiatric examination, and yet frequently this kind of an examination is the basis on which a man is rejected or accepted. It should be apparent that a justifiable rejection can be based only on a longitudinal study of the individual. It most certainly should not be based on an all too brief cross section examination of the individual at the moment of his induction station examination. To quote further from TB MED 33, "Information and time are oftentimes inadequate to establish accurate diagnoses. In many instances the symptomatology and/or behavior may make disqualification of the registrant necessary, although not sufficiently well crystallized to warrant the diagnosis of a clinical disease entity. To label a registrant with a diagnostic term in so brief an examination without adequate data available, is unscientific, and unfair to the individual. Each clinical diagnosis as given in MR 1-9 will be based on adequate historical and examination evidence. In those instances where insufficient

data are available to arrive at a diagnosis and where it is the neuropsychiatrist's opinion that the registrant is not acceptable, he will indicate that the individual is disqualified as "not suited for military service."

In some sections of the country the induction stations are using an autobiographic social survey. This consists of a questionnaire which is given each registrant at the induction station and which he is to complete by the time he reaches the psychiatrist. Since the psychiatrist is usually last or next to last in the examining line, the registrant has ample opportunity for filling out the form during the course of his other examinations. This form has proved of considerable value in selection, but difficulties arise in connection with its use. In certain instances the individual refuses to put down all the information required or records inaccurate information, which at times may be misleading. This form cannot be used by illiterates. Some of the registrants tend to consider the psychiatric examination as a joke or to be very much frightened by it. Those reactions are in themselves a valuable index of the registrant's personality makeup. This plan, where used, supplements the information obtained by the Medical Survey Program.

There are important social implications involved in the examination of men for the armed forces. To many men who failed to be selected for service, this failure represents a threat to their self esteem and self confidence. This is particularly true with regard to certain types of psychoneurosis. A significant factor in the readjustment of the individual in his community is the fact that he frequently carried back with him a label which connotes maladjustment, the label being the result of a diagnosis made on the basis of a very brief examination. This diagnosis may make it more difficult for him to adjust to his home situation, for him to meet his associates if they know of his diagnosis, and for him to obtain reemployment or to return to his previous occupation.

There has been an unfortunately wide misinterpretation of the meaning of psychiatric rejection. Too many individuals have assumed that a neuropsychiatric rejection or a neuropsychiatric discharge from the armed forces signifies that the individual involved is "crazy." Even the rejectee involved may assume this to be the case. One person rejected for psychoneurosis looked the term up in the dictionary and found also the term psychosis, confused the terms, and both the patient and his family became extremely anxious for fear that within the near future it would become necessary for him to be committed to a state hospital. Whether this misinterpretation is wilful or the result of lack of understanding of the problem is not nearly so important as is the great harm which is done to those in the rejected group. It should be a part of our responsibility as psychiatrists and neurologists to clarify the issue whenever opportunity arises. Such clarification requires the development of better community understanding of psychiatric situations in general and of the psychiatric problem of the service man in particular. Education of the community concerning the role of psychiatry in war and in peace is urgently needed. In some respects psychiatry has been oversold, our need is to face the problems of community understanding squarely.

In a report of the first year's experience of the Information and Counseling Service at the Milwaukee Induction Station made by Miss Dorothy Paull, it is stated that "after a year of experimentation and observation we are more convinced than ever that the public has

no realization of the extent of emotional and mental illness in its midst or of the lack of resources to cope with it. Many young men are carrying on a tragic and lonely struggle attempting to make good against terrific odds of environment and unhealthy mental habits and family pattern." This is a clear and succinct statement of an important problem. With the information being developed under the Medical Survey Program the background for reeducation of the public and for a better understanding of the problem of psychiatric disabilities can be developed. This ought to be particularly useful when demobilization day comes. With the mass of information which will be available and which will remain confidential, those who are qualified to utilize it should be able to make a very real contribution to the better adjustment of our people.

Certain factors have been highlighted by our experiences in the psychiatric selection of men for the armed forces. The most important is perhaps the demonstration of such an alarming amount of mental ill health in our communities. The need for a more comprehensive mental hygiene program is obvious. It is our responsibility to provide and facilitate this program. The material available through the Medical Survey Program and through our experience at induction stations and in the armed forces, if properly analyzed, will serve as sign posts on the road leading to a better understanding of public needs and be put to excellent use by business, industry and the professions.

#### ABSTRACT OF DISCUSSION

DR HANS DEUTSCH, Chicago. In these last three and one-half years I have gone through the difficulties which confront the psychiatrist in selecting men for military service. The first apparent difficulty was the lack of indoctrination before induction, and therefore the men manifested a lack of receptivity toward military discipline. Another important factor which might interfere with the obedience of a man joining the armed forces was negativism. From the start I favored the term "unsuitability" and instructing the man as well as the public that it is no reflection on the personality when a man is disqualified. Of prime importance is it to look at the man and his conduct during examination, and then if necessary look at the history. What we need are facilities for disposal of the man, not a rejection or acceptance but to decide where to put the man either in civilian or in military life. In that way we would not have so many men hesitant to join the armed forces or appeal for induction reexamination.

COLONEL LEONARD G. ROWNTREE, M. C., A. U. S. In the thirteen million records to date we have had more than four million rejections. In addition to this we have many hundred thousand discharges. We apparently have a problem facing us in the nation of lack of physical and mental fitness that has never been suspected. Selective Service has attempted to deal with this problem in many different ways. We have been very fortunate in securing as adviser in this program Dr. Raymond W. Waggoner. We have provided for changes in this program when the need becomes apparent. We have requested the National Research Council to set up a committee consisting of Dr. Overholser, Colonel Menninger, in charge of the Psychiatric Service of the United States Army, and Commander Braceland of the United States Navy. They have studied this program to date. They are permitted to recommend changes, if changes become desirable. We have developed what we consider to be the best possible system for the gathering of information of medical, social and educational histories on each registrant and have presented it in its present form for the aid of the psychiatrist at the induction stations. The Medical Survey Program has been set up in response to a request from the Secretary of War to General Hershey, saying that a system of assistance must be developed in this field. I would request that all who have to do with examinations utilize the material col-



lected to the utmost. The problem has been in effect only six months. Most of our difficulties have been surmounted. The program has advanced far beyond what I believed was possible for any program of this magnitude in the short time it has been in existence. If you have suggestions for change, make them to the committee referred to or to Dr Waggoner. All suggestions will be given serious consideration. In the meantime I believe that if you will use this plan you will find that it fills a real need. The system should become more valuable as time passes.

DR RAYMOND W WAGGONER, Ann Arbor, Mich. There have been many difficulties with those who were charged with the execution of the program and quite as many difficulties among those charged with its use. Perhaps this is the most serious problem. Many of us may feel that it is evidence of our inability to do a good job to have to rely on assistance such as that furnished by the Medical Survey Program. No one can deny that a good medical-social history is of great importance in making a prognostication concerning the future mental health of the individual. A question has just been handed in asking whether there are any data as to how we compare as a nation with respect to the occurrence of neuropsychiatric casualties with other nations, particularly Germany and Italy. I am not in possession of information necessary to answer the question.

## PSYCHOSOMATIC RELATIONSHIP TO GASTROINTESTINAL DISEASES

MARTIN G VORHAUS, M.D.  
AND  
S ZACHARY ORGEL, M.D.  
NEW YORK

The early twentieth century witnessed the ascendancy of the therapeutic nihilism of Osler. It had been preceded and influenced by a structural concept of disease derived from the precise pathologic investigations of Virchow. These autopsy studies had stressed abnormal cellular findings and centered the activity of medical students in the morgue.

The rebellion from the concept that disease is a fixed pathologic state was led by the modern psychologists. Their investigations of the psyche emphasized the role of the personality in the expression of disease. It is largely the result of these studies that has terminated the independent development of internal medicine and clinical psychiatry. No longer should a patient be treated only in terms of his specific complaints. A careful survey is made of the sick man from the standpoint of his personality as well as his organic disturbances. This new approach, which has as its basis the recognition and acceptance of the interdependence of the psyche and the soma, is known as psychosomatics.

The gastrointestinal tract is the primary battleground for the conflicts between the psyche and the soma. Here is the site for many primitive gratifications and abuses, adjustments and accommodations. These concepts have long been recognized but are only now being translated into a dynamic plan of treatment. Until now the results in the treatment of the functional disorders of the gastrointestinal tract have been largely unsatisfactory. Since these so-called functional cases represent more than a majority of all those seen in a gastrointestinal clinic or in private practice, the large percentage of failures in this group is a challenge. To meet this challenge the gastroenterologist must approach the psychotherapeutic problem with the same precise skill that he employs in establishing a physical diagnosis.

Our purpose in this paper is to correlate and emphasize clinical experience dealing with

- 1 The recognition of the origins and mechanisms of some gastrointestinal symptoms.
- 2 The exposition of basic principles of psychosomatic therapy.

In our studies we have arbitrarily divided our patients into two categories. The first group consists of those in whom no organic gastrointestinal disease can be demonstrated. Various clinics<sup>1</sup> have estimated that this so-called functional group represents from 50 to 75 per cent of all patients. The second group consists of those patients with true organic disease in whom concomitant psychologic disturbances complicate, mask or interfere with the treatment of their organic disease. No accurate estimate has been made of the percentage this group represents.

Irrespective of the type of case it becomes essential to investigate not only the physical components but the psychosomatic factors as well. The first step in this direction, which is best taken after the diagnosis of physical disease has been established or proved absent is the taking of the psychosomatic history.

### PSYCHOSOMATIC HISTORY AND DIAGNOSIS

The fundamental cause of psychosomatic illness is the emotional immaturity of the adult. It is this lack of emotional stability that occasions the conflict between the intellect and the emotions, which in turn creates the disharmony conducive to ill health. By treating the individual and not his gastrointestinal tract the physician will attempt the reeducation of the emotions which is the psychotherapeutic goal.

Felix Deutsch<sup>2</sup> and others have stressed the skilful guiding of the patient's discussion of himself as a medical case and as a human being. The physician must give the patient sufficient time to tell his story in his own way. Two important objectives are thus gained: first, the cathartic value to the patient by the recitation of his difficulties and, second, the establishment of the patient's confidence through the demonstration of sincere interest by the physician. The ideal method seems to be one of casual conversation utilizing free association and careful questioning. Only as the physician gains the patient's confidence can he learn of the past struggles and the conscious present anxieties of the patient's life situation in regard to family, friends and business.

Dunbar<sup>3</sup> suggests that the following important diagnostic points be obtained from the history: 1 A picture of the patient's life in which his major environmental stresses are outlined, together with his psychological and physiological reaction to them. 2 A picture of the patient's characteristic reaction pattern in terms of the environment and emotional situation to which he has adjusted with ease or difficulty, again in relation to illness history. 3 The topics he tends to avoid and misrepresent, and the topics that are accompanied by an increase or decrease in his skeletal or vegetative response and by temporary increase or relief of his symptoms. Type of defense used by the patient—whether he will try to keep his anxieties to himself or seek relief in action, as for example fidgeting or walking.

1 Eusterman G B. Diagnostic Aspects of Roentgenologically Negative Gastric Disorders. *J A M A* 107:1432 (Oct 31) 1936. McLester J S. Psychic and Emotional Factors in Their Relation to Disorders of the Digestive Tract. *ibid* 89:1019 (Sept 24) 1927. Menninger W C. *Am J Digest Dis & Nutrition* 4:447 1937. Robinson G C and Paulson M. *Rev Gastroenterol* 6:454 1939. Sullivan A J. *Am J Digest Dis & Nutrition* 5:484 1938. Weiss E and English O S. *Psychosomatic Medicine Philadelphia W B Saunders Company* 1943.  
2 Deutsch F. *Psychoanal Quart* 8:354 1939.  
3 Dunbar H F. *Psychosomatic Diagnosis*. New York: Paul B Hoeber Inc 1943.



up and down the room, or seek relief in smoking or talking about his symptoms. Attention should be paid to hesitancy, crying, laughing, evasion, tenseness and an increase or decrease of symptoms. 4 Dreams and other indications of the unconscious, especially divergences between dream material and the patient's statements may be of value. This presumes adequate special training on the part of the physician in the interpretation of this material.

The review of the psychosomatic history should enable the physician to make a diagnosis of the personality disorder. The psychopathologic basis of the specific personality disorder then becomes clear and permits an exact diagnostic term. This will be one of the accepted classifications of psychoneuroses or psychoses or some combination of them.

#### PSYCHOSOMATIC THERAPY

In the first group of cases in which the diagnosis "no organic disease" has already been made, psychosomatic therapy should be instituted early. It should be reemphasized that all steps should have been completed to eliminate the possibility of physical disease before psychotherapy is begun. Group 1 has been subdivided into (a) mild, (b) moderate and (c) severe. In group 1a (mild), if the symptoms are of short duration, simple reassurance may suffice to effect a cure. Often, if the intelligence of the patient permits, superficial insight is extremely helpful.

CASE 1—A married woman aged 35 with abdominal discomfort and low abdominal pain of three months' duration was asked to face the fact that there was no organic disease present. Investigation into the personal history disclosed a sense of guilt due to an extramarital relationship. The resulting tensions created a psychogenic stimulus for her gastrointestinal symptoms. Her recognition of her anxiety as a causative factor of her complaints was followed by disappearance of her symptoms. The essential fact to be recognized in these cases of mild anxiety is the value of mental catharsis. Often simple encouragement to the patient to talk out his present day problems is followed by relief of his tensions.

In cases of moderate severity and longer duration, group 1b (moderate), reassurance alone is often insufficient. In this group it is necessary to plan and carry out a program of education for the patient. The first step is to awaken a recognition that the gastrointestinal symptoms are simply a geographic transfer of emotional tensions. The object of this educational program is to assist the patient in "calling things by their right names." The sooner the patient is able to recognize that the origin of his discomfort is psychologic the quicker will his insight develop. In this process of education the clinician should keep in mind the experience of the psychiatrist who has demonstrated that often the patient will not readily accept from the physician any explanation of psychologic mechanisms. On the other hand, those conclusions laboriously and circuitously arrived at by the patient himself have greater validity and are productive of more insight. In effect, the psychotherapeutic approach stimulates the patient to discover his own transference of tensions. The physician then repeats the patient's words, approving and agreeing with his discovery. The statement by the patient is no assurance that the thought expressed has reached the conscious level. The repetition of the same words by the physician now becomes a conscious thought, since it reaches through the auditory mechanism into the conscious awareness of the patient, coming to him from a parent ideal or substitute. This approval

is accepted with gratitude, or, as the psychiatrist says, "The patient feels that he is getting love." The usual result of this situation is a further stimulation of the patient to reveal more of his hidden tensions and thus gain further insight. This learning process is often slow and halting, especially when resistance of the patient is pronounced. In such instances the use of repetition of essential points is of considerable value. The capacity to learn varies with patients. Some learn quickly, others slowly, and many tend to suppress all or part of what they have recently learned.

CASE 2—The case of a man aged 25 with a history of low abdominal pain and bouts of diarrhea of eight years' duration serves to illustrate these points. A diagnosis of colitis had been corroborated by several physicians and accepted by his draft board as sufficiently valid to classify him as 4-F. After a physical examination, sigmoidoscopic studies and gastrointestinal x-ray examinations had failed to reveal any organic disease, investigation of his personality disclosed a clearcut feeling of inferiority. For many years a constant fear of failure arose from any type of competition in school or in his job and from his social contacts with his contemporaries, both male and female. The diagnosis was revised to one of irritable colon with psychosomatic factors. In succeeding sessions he was encouraged by free association to describe those events associated with the onset of individual attacks. After reliving several of these experiences, the importance of his fear in the production of an attack became apparent to him. It was not long thereafter that he asked the question "Does fear bring on these attacks?" This stimulated further discussions concerning the origin of his fears and the psychologic meaning of diarrhea. Clinical improvement became apparent with the comprehension of his fears and their effects. This patient has been under observation for two years. In the two mild recurrences of diarrhea that have brought him back for observation he was able to state without prodding the entire sequence of events from dread of failure to diarrhea.

In the 1c (severe) group we have placed those patients whose symptoms are sufficiently serious to produce considerable interference with the normal routine of life. Many of these patients are unable to carry on adequately in their jobs. Frequently the complaints have existed for more than half the life span of the patients. Because of the long duration of symptoms considerable difficulty is encountered in obtaining an accurate psychosomatic history. Greater skill is required in eliciting the personality problems, many of which extend thirty or more years back into childhood. This longer period of time has created greater facility for complicated displacements of emotional tensions, the trail from these to the geographic transfer in the gastrointestinal tract is often vague. The patient's resistance to the psychosomatic approach should be anticipated by the clinician. Few if any ideas are willingly accepted and are rarely self learned. The inability to accept the significance of symbolism predominates. The experienced practitioner of psychosomatic therapy soon learns the expected limitations of treatment with this group of patients. To him they are the equivalent of the chronic cardiac, chronic bronchiectatic and the chronic nephritic so often encountered in internal medicine. Since resistance to therapy is strong and the pattern of tension complicated, the gastroenterologist must screen this group with a view to separating those patients sufficiently young and malleable for psychoanalytic therapy. For the remainder, into which group most of the older age patients fall, the only plan is "to carry on." In this technic of "carrying on," constant reassurance is the main "crutch" offered to the patient. It should never be

the only means of support. Even here the physician should encourage the patient at each session to discuss concerns other than the gastrointestinal complaints. Repeated efforts should be made to direct these energies and tensions into some creative or otherwise productive field of endeavor. In this connection the stimulation of avocations and the development of hobbies as a form of occupational therapy is of inestimable benefit. Their value is to direct the patient's thoughts of his own and his family's concerns into other channels. By this projection the patient derives not only relief from his own tensions but satisfaction in his new hobbies.

**CASE 3**—A woman aged 61, with over forty years of belching, will serve to demonstrate some of these mechanisms. Since adolescence, repeated and often audible eructations of gas had driven her from doctor to doctor. In the last twenty years the additional story of a substernal lump soon after swallowing and the existence of transient cardiospasm required repeated medical investigation. The usual studies, a survey which required much less time and effort than the attempts at taking a psychosomatic history, excluded any organic disease. She was first of all persuaded to give up all medications previously prescribed. After repeated attempts her interest in her symptoms was diverted and directed into her personal problems. Believing that some clue to the beginnings of her illness might become apparent, she was encouraged to talk of her childhood. In one of these sessions she mentioned a long cherished hope of learning to paint. The assurance that she was neither too old nor too ill to take up this hobby was grasped as the first constructive concept in many years. For the past ten years all of her free time has been spent in this pursuit. It is now six years since the last attack of cardiospasm and her aerophagia reappeared only at the eve of her "one man show" given this season at the age of 70.

Typical case histories as the three quoted tend to oversimplify the problems of psychosomatic therapy. This faulty perspective has been created by the deliberate selection of cases, as each one of them was chosen to illustrate different phases of this group. Whenever the physician is dealing with patients whose symptoms arise solely from psychosomatic factors, the absence of organic disease is a potent ally. At moments of despair, at the end of a blind alley, the encouragement to be derived from the constant reiteration that "You have no organic disease" often enables the patients to take their first step forward on the path to health.

In the treatment of group 2, those with organic disease plus psychosomatic factors a totally different situation exists. The patient must face and the physician must freely admit the existence of physical disease. To this burden is added the need for recognition and acceptance of a complicating psychologic disturbance. Since it is only rarely that the two states can be concurrently treated, and since priority must be granted to the therapy of the organic disease, this state of affairs is a deterrent to the onset of psychosomatic therapy. Much time and effort is spent with this group of patients, outlining the steps to be taken for improvement and possible cure. In many instances detailed explanations are required as to which symptoms arise from organic disease and which from emotional stresses. Often these have an intricate interrelationship and for most of these patients an early acceptance of the role of the psyche and the soma is impossible.

**CASE 4**—An illustrative case in the 2a (mild) group is that of a man aged 39 complaining of attacks of dull epigastric discomfort, belching and nausea for over ten years. The patient had observed these attacks carefully and knew that certain foods and emotional strain were competent producing causes of these attacks. The physical factor was a dilated poorly

functioning gallbladder without demonstrable stones. The emotional factors centered about a closely knit excitable family in which the patient and his youngish stepmother were the hub of neurotic stress. In the plan of treatment it required but little time for the patient to recognize his difficulties with his stepmother but he had very little insight into the incestuous nature of his drive. His economic level precluded psychoanalytic treatment. In the course of time he gradually permitted himself to seek companionship out of the home. This loosening of the familial ties was followed by increasing interest in female companionship, which culminated in a happy marriage and his attacks abated. Family reunions especially at holiday times are usually followed by a mild recurrence of symptoms but these are of short duration. In the last six years he has been free from anxiety in regard to his health and relates frankly and with some amusement of the family friction that precipitates each attack.

The cases of moderate severity (2b) present greater difficulties in treatment and yet even here the results need not be too discouraging.

**CASE 5**—A case in point is that of a 19 year old youth discharged from the Navy after eight months of service with a diagnosis of duodenal ulcer as his medical disability. For five years symptoms had been present and the diagnosis had been established and confirmed. The personal history disclosed the fact that the year before the onset of his symptoms his father had died, following an operation for duodenal ulcer. The patient, an only child, left school and assisted his mother in a small retail business which was the sole source of income for the family. The conflicts between mother and son occurred daily both at work and in the home. Since the educational and economic level of the patient placed psychoanalytic therapy beyond his reach, the more superficial psychotherapeutic approach was attempted. As the duodenal ulcer responded to treatment the patient discovered that his Sundays if spent outdoors were his most comfortable times, he was encouraged to take more physical activity. After his symptoms abated and the X-ray follow-up substantiated this improvement he was urged to translate his love of the outdoors, and separation from his mother, into a plan for future vocation. With the aid of a scholarship he is now learning agriculture at a farm school, and his freedom from symptoms and gain of 15 pounds (6.8 Kg) in weight provide a real promise for the future and permit a temporary classification of a successful therapeutic response.

In the last category, 2c (severe) fall the most difficult problems. Most of these patients are past 40, and their enjoyment of life has been impaired by their illnesses for many years. The physical disease is usually incurable, and the groove of psychogenic tension is often ineradicable.

**CASE 6**—The case of a woman aged 64 with rheumatic heart disease, mitral and aortic insufficiency and a complicating hiatus hernia will serve to demonstrate this group. When first seen she was in mild congestive failure, which responded to the usual treatment. Her heart disease had been known to her for many years, and she had made a good adjustment to it. X-ray studies revealed a hiatus hernia, which explained her more recent attacks of high epigastric pain and its associated symptoms. To accept this additional physical disease was more than she was willing to bear and her first reaction was to deny its existence. After corroboration of the diagnosis at other clinics, she reluctantly and even resentfully accepted the need for treatment. It was at this point that a satisfactory psychosomatic history was first obtained. Investigation of her emotional tensions revealed an involved interlinking of her gastric symptoms with her wish for self punishment and her death drive. As was to be anticipated little headway was made in the early weeks of treatment. Slowly she began to realize that these repeated aggressive attacks had not resulted in the death that she anticipated. Gradually it became apparent that these episodes occurred only in the presence of loved ones or in public places and produced painful embarrassment. In

effect the gastric symptoms symbolized her willingness to give and her unconscious desire to receive the love and help of her dear ones. It was possible at this time to institute sufficient psychosomatic therapy to disassociate her anxieties from her gastric symptoms. She gradually attained sufficient superficial insight to provide her with the courage to meet her emotional problems without creating the mechanism of geographic transfer. In the past four years her complaints have been less frequent and less intense. The symptoms of her hiatus hernia continue but they are no longer initiated or aggravated by her emotional tensions.

In the presentation of this clinical study it is a relatively simple task to divide arbitrarily all cases into the two groups mentioned—the functional and organic. In actual practice there is in addition a small number of patients who appear to fit into an intermediary group. These patients at first manifest symptoms which arise only from functional disturbances, but after a lapse of time there develops real organic disease. This type of case is not only seen in a gastrointestinal clinic. Many internists believe that toxic diffuse goiter and essential hypertension may well fit into this group, which many of us classify as the "dynamic diseases." Schematically it can be represented as psychologic disturbance, alteration in secretory and/or motor activity, diminished cellular vitality, organic disease. In this group may be included cases with mucosal ulcerations in the esophagus, stomach, duodenum and colon. Also patients with disturbances of sphincter control (namely, cardiospasm, pylorospasm, sphincter of Oddi spasm, anal sphincter spasm or relaxation) may well fit into this transitional group. To what extent a functional disturbance in the mechanism of the sphincter of Oddi can eventuate in organic disease of the gallbladder and/or the pancreas may at the moment be left for future speculation.

#### UNITY OF THE PSYCHE AND THE SOMA

The ancient belief that sickness is a visitation from the Lord, a punishment for evil, still persists in the mind of man. Although scientific advances have stamped this as superstition, we know that every man creates and obeys his own god or gods and that every man decrees and executes judgments of punishment on himself. For some it is necessary to have a daily stint of punishment and pain, at times an external cross is replaced with an internal one, such as an organic disease. Observations such as these have encouraged modern medicine to investigate the influence of psychic factors on physiologic functions. The physician of the prescientific period was concerned with the entire life situation of his patient. The exact laboratory methods of the latter part of the nineteenth century reduced the psychic theory of disease to superstition, but recently the importance of the psychic status of the patient is again receiving attention. This interest has been stimulated by the work of Freud and Breuer and their students, who clarified many personality disorders and elaborated the libido theme and ego and character analysis. This resulted in an understanding of the role of the emotional factors in illness complicated by or eventuating in actual organic damage. Interest then gradually veered to a study of symptoms produced by disturbances in the autonomic nervous system and led to what Freud termed the "future of medicine." This was the investigation of the psychogenesis of those organic disorders theretofore segregated from psychiatric interest because of their supposed organic causation.

Alkan<sup>4</sup> stated in 1930 that organic disease may be profitably studied by psychologic methods. He indicated that psychogenic disturbances within the field of the autonomic nervous system may result finally in organic changes whose morphologic mechanisms form only the last link of an intricate causal chain. He postulated that intrapsychic conflicts may be expressed by spasms of smooth muscle which secondarily lead to anemia of an organ, vascular stasis, dyskinesia, atrophy or infection. The result may be organic changes in visceral tissues or somatic structures, which of themselves, as terminal events, are irreversible and constitute the so-called organic disease.

Alexander and his group through their psychoanalytic researches have become convinced of the psychogenesis of gastrointestinal disorders. They believe that organic changes are the last link in a complicated functional chain of events of which the basic etiologic factors are psychologic conflicts. Alexander states that no disturbance of innervation of an organ could symbolically express a specific fantasy or a repressed idea. An organ's specific function, he believes, could be used to express a tendency of psychic direction which by a process of conflict could not normally be expressed through the voluntary nervous system and its organs of expression. To quote Alexander:

Physiologically the process of life can well be described in terms of the three major functions of *in-taking* of substances and energy from the environment, partially *retaining* it during the process of growth and *elimination*—elimination of the end products of metabolism, elimination of substance for the purpose of propagation and the constant production of thermic and mechanical energy. It would not be surprising at all if it should turn out that the elementary psychologic tendencies of the individual correspond to these three biologic phases of life and that psychologic dynamics correspond to the biologic dynamics of life.

Alexander<sup>5</sup> and his group at the Chicago Institute of Psychoanalysis are impressed with the constancy and similarity between the nature of the psychologic conflict and the type of gastrointestinal disorder. They find it possible to describe the patient's emotional trends in terms of the three elemental tendencies applicable to both the psychologic conflict and the gastrointestinal symptoms. First, the wish to receive or take as related to gastric disorders, second, the wish to give or eliminate as applied to the diarrhea cases, and, third, the wish to retain as applied to the constipation cases.

Psychoanalytic theory explains why the functions of nutrition are especially adapted to express the repressed or externally thwarted receptive tendencies which we find predominantly in gastrointestinal disorders. In the psychologic development of the infant, his first interest and aim in life is concerned with the intake of nourishment. "The infantile wish to receive, to be taken care of, to be loved, to depend upon some one else, is most ideally gratified in the parasitic situation of the suckling infant. Thus these emotional qualities of receptivity become closely associated in an early period of life with the physiologic functions of nutrition."<sup>6</sup> Being fed becomes the equivalent of being loved. The character attributes of the adult individuals with gastric disorders were often found to be ambition and aggressiveness. They consistently strove to be independent, active and efficient, and frequently had

<sup>4</sup> Alkan, L. *Anatomische Organkrankheiten aus seelischer Ursache*. Stuttgart: Hippokrates Verlag, 1930.

<sup>5</sup> Alexander, F. *Psychoanalyt. Quart.* 3: 501, 1934.

achieved considerable success. The unconscious desires of these individuals, however, showed that this desire for independence, ambition and self assertiveness was an overcompensation. They were leaning over backward to repress or deny completely their unconscious wish to be dependent, to be loved, to be fed. It was thus apparent that in these gastric neuroses the unconscious desire in the primitive mind was directly associated with the child's first manifestation of love, namely food and nourishment. It is presumed that the gastric symptoms are caused through these unconscious tendencies which serve as chronic psychic stimuli to the stomach, independent of the process of nutrition. The stomach behaves as if it were taking or about to take food. The greater the rejection of every receptive gratification in life, the greater will be his unconscious wish for receiving love and help. Food is craved not because of organic hunger but as a symbol of love and help. The stomach under this permanent chronic stimulation constantly behaves as if it were about to receive food or as during digestion. The epigastric distress, heartburn, belching and other symptoms of the nervous stomach are probably due to this chronic stimulation and provide one theory for the development of ulcer.

Many patients with irritable colons were found to solve the same conflict in a different yet typical manner. The dynamic formula for these cases is as follows: 'I have the right to take and demand, for I always give sufficiently. I do not need to feel inferior or guilty for my desire to receive and take, because I am giving something in exchange for it.' The assumption is that the diarrhea apart from expressing aggression serves as a substitute for giving of real value. In this conscious attitude there is again apparent the parallelism between the nature of the disorder, namely diarrhea, and the person's attitude toward life, particularly as it is reflected in his relations with other people.

It is easy to understand why the lower end of the intestinal tract is especially suited to express activity, aggression and the wish to give. Here, as in the gastric cases it is assumed that the peristaltic function of the intestine under the permanent psychic stimulus of the wish to eject and to give becomes independent of the normal physiologic regulations. This explanation stems from psychoanalytic findings which link the early coprophilic attitude of the child with the unconscious symbolic significance of the intestinal contents as a valuable possession. The use of defecation as a sadistic or an aggressive tendency develops after the child learns to assume a deprecatory negative attitude toward his excremental function.

In the analytic study of some patients suffering from constipation, the individual's emotional attitude toward his environment can be expressed in terms that apply equally well to his psychologic problem—namely, to retain or to hold on. The conscious attitude in these individuals demonstrates an unwillingness to receive help from others or to depend on them. At the same time there exists an extreme sense of obligation to give, of which the patient tries to rid himself by renouncing all conscious tendencies to receive. The conscious attitude is summarized as "I do not take or receive, therefore I do not need to give." Added to the positive evaluation of the intestinal content as a valuable possession is found an anal-sadistic attitude, the inhibition of which contributes to constipation.

The findings of the psychiatrists in these three groups are significant but the dynamic tensions of all patients cannot be reduced to these three types of gastrointestinal disorders. In many individuals there exists a specificity of unconscious demands and the gastrointestinal tract is often affected by these chronic psychogenic stimuli. Psychoanalytic treatment offers the possibility of adequate knowledge of these factors—not only to the psychiatrist but to the patient. When psychoanalysis cannot be instituted, a study of the life situation of the patient and insight into his repressed tendencies and unconscious desires will reward the internist trained in psychosomatics with a clear understanding of the therapeutic problem.

#### SUMMARY

The psychosomatic approach has a special value in the treatment of the functional gastrointestinal patient. The high percentage of therapeutic failures hitherto encountered in this group is largely due to a lack of recognition of the psychobiologic disturbances. To meet this problem satisfactorily the gastroenterologist must be as thoroughly trained in psychosomatics as he has been in internal medical diagnosis and treatment. The acceptance of the unity of the psyche and the soma is an essential of the psychosomatic concept. A primary requisite toward the establishment of an accurate psychosomatic diagnosis is the method of taking the psychosomatic history.

Careful screening of all patients and the selection of those suitable for psychoanalytic therapy is an obligatory function of the internist. For the remainder the gastroenterologist must render as much psychotherapy as the flexibility and intelligence of the patient permit.

In those cases in which psychologic disturbances are coexistent with organic disease, the utilization of psychotherapy in conjunction with medical therapy is of value.

The modern concept of psychosomatics reemphasizes the need for the treatment of the entire patient, his emotional difficulties as well as his physical disease.

In the future therapy of gastrointestinal diseases the psychosomatic approach will play a distinguished role.

1130 Park Avenue—667 Madison Avenue

#### ABSTRACT OF DISCUSSION

DR FRANZ G. ALEXANDER, Chicago. From the practical point of view a differentiation between cases with and without organic disease is perhaps permissible. Theoretically the validity of such a sharp distinction is questionable. A more adequate distinction would be to differentiate between disturbances with and without irreversible structural changes. Also the subdivision into mild, moderate and severe cases is from the practical point of view permissible. Under the influence of traumatic experiences, mild cases may turn into moderate or severe cases. In the field of psychogenic disorders we must be aware of the extreme fluidity of such conditions. It is a well known observation that severe peptic ulcer symptoms may rapidly disappear when the patient is placed in a sanatorium and then released from his daily emotional strains. Such an observation alone suffices to demonstrate the futility of any attempt to try to attach a diagnostic tag such as mild, moderate or severe to any case as a permanent description. The more experience one has with psychosomatic disturbances of the gastrointestinal tract, the more one becomes impressed with the

capriciousness both of symptomatology and of therapeutic results. The patient's intrinsic capacity to deal with his emotional problems, on the one hand, and the flexibility of the life situation, on the other, determine the therapeutic chances. A patient whose life situation does not allow changes which would relieve emotional tensions will react more slowly to therapeutic efforts. The capacity of such patients to deal with emotional tensions must be changed, which is always a much more difficult and time consuming therapeutic task than the adaptation of the life situation to the emotional needs. The evaluation of all the etiologically important factors requires expert knowledge both in the principles of psychodynamics and pathology and in the principles of clinical medicine. I agree with the authors' emphasis in requiring that the modern gastroenterologist should be equally equipped in all these fields. The novel feature in this emphasis is the requirement of acquaintance with the principles of psychodynamics. Knowledge of clinical medicine and pathology has been for a long time a standard requirement. The fact that at present we are able to evaluate the specific role of emotional factors in the diseases of the gastrointestinal tract makes it imperative that our psychotherapeutic approach should be specific and etiologically oriented. Many patients suffering from gastrointestinal disorders can be helped by a simple ventilation of their emotional conflicts or by reassurance and rest; however, the physician should know why in certain cases such simple methods suffice and others require prolonged psychotherapeutic treatment. Without a specific knowledge of psychodynamics the psychotherapy will remain the old hit-or-miss variety of treatment.

DR SIDNEY A. PORTIS, Chicago. Drs. Vorhaus and Orgel have presented an approach to a problem that confronts all of us who are doing serious thinking. I am always concerned, when looking at a patient from a psychosomatic point of view, that I am overlooking some organic disease, and I tell myself that first last and always I am a physician, and the responsibility for any oversight lies in my hands. However, after a serious intensive investigation, when one confirms an original suspicion that the problems of a patient are entirely psychogenic in origin, it is up to the physician to outline adequate care. Many patients cannot afford prolonged psychotherapy; on the other hand, a fairly large number will have to have some psychotherapy. In order that the patient should have the medical treatment that is adequate to meet this problem, I have developed a regimen which in my own hands has yielded me the best results I have seen in over twenty-five years in gastroenterology. One of the most perplexing factors in the clinical pictures of these patients is the question of fatigue. Twenty-one months ago I began studying fatigue and came to the conclusion that it was probably associated with a disturbance of the carbohydrate metabolism which has its origin in a presumed hypersecretion of insulin. This was evidenced by the so-called flat curve which resulted when intravenous glucose tolerance tests were made. I found that these patients became hypoglycemic at the end of the two hour test. Therefore the therapeutic approach to this problem was to maintain the high level of blood sugars at all times. In order that the hyperirritable glands of the pancreas should not be stimulated too rapidly, free sugar in any form was noticeably omitted from the diet. The complex carbohydrates, proteins and moderate fat satisfy the demand for this relatively high sugar at all times. During the course of these observations the question arose: Could it be possible that the early morning pain of a duodenal ulcer is associated with this relative hypoglycemia? Patients were given a small feeding before retiring. These patients got atropine three times a day and an additional dose at bedtime. They have been completely free from symptoms during the early morning hours, with no neutralization. In addition, the fatigue which was such an important part of the clinical picture had definitely disappeared. In observations and studies of over 450 patients with psychosomatic disease, which now covers a period of over twenty-one months, I was struck by the fact that the incidence of coronary occlusion was relatively nil. Also I was

impressed by the improvement in the electrocardiographic findings of the middle aged group when these patients were subjected to this fatigue management. And, while I have no clinical proof for the conclusions, it might be well for all of us to begin to think seriously that there may be some relation between myocardial damage and coronary occlusion and levels of blood sugar.

DR BENJAMIN M. BERNSTEIN, Brooklyn. I don't think we need fear that we shall have to turn all our cases over to the neuropsychiatrists, as a matter of fact, we don't even have to learn psychiatric management, because you and I have been treating our patients psychologically. Have you ever tried to analyze what faith is? Why does a patient say "I went to an awfully good doctor the other day. He spent one full hour with me." She has faith. You have hypnotized her in the belief that you are going to cure her. Another patient says "I went to a wonderful doctor the other day. Why, in five seconds he knew what was wrong with me!" Faith again. That is psychotherapy. Knowing the type of individual as he comes into your office seeing how he walks, how he stands, how he sits and how he sweats, if you will, give a clue as to the kind of individual you are dealing with. Of course, we all go wrong, at times. We see persons who have gallstones, who are operated on for gallstones, and they don't get well! We explain by saying biliary dyssynergia, biliary stasis, chronic pancreatitis—I don't believe it matters. I believe we are dealing with individuals who have a particular kind of constitution, who have abdominal symptoms, if you will, not necessarily gastroduodenal, based on causes that we know little or nothing about. You may give the same patient the same medication the other fellow gave. With a bit of 'salve' and some common sense, and a pat on the back, you are doing psychotherapy. We all have to be psychotherapists. I am afraid sometimes we may have to throw most of our abdominal conditions into the field of trophopathic disorders even gallstones perhaps, particularly cholesterol stones, certainly colitis, even though secondary infection plays an important role, and most importantly, of course, gastroduodenal dys-synergia.

DR GEORGE B. EUSTERMANN, Rochester, Minn. As so large a percentage of patients with gastrointestinal disorders harbor no demonstrable organic lesions, every gastroenterologist also should have neuropsychiatric training. A preponderance of psychoneurotic patients have as their presenting complaint disturbances of a gastrointestinal nature. Unlike Dr. Palmer, I am strongly of the opinion that gastroduodenal ulceration, in the large majority of cases, has its origin in physical, nervous or emotional stress, or a combination of these factors. We can no longer dismiss the neurotic patient with the cheerless statement that there is nothing wrong with him and prescribe a sedative as a routine measure. Of course the psychotherapeutic value of a thorough, even though negative, examination by a physician in whom the patient has every confidence is generally recognized. We have postponed too long doing for these unfortunate individuals what for years we have done systematically for arthritic and diabetic patients for example, namely group instruction and treatment by lecture, demonstration and personal interviews. This is being successfully done at our state university, as it has been done in various Eastern institutions for some years. Following the exclusion of any significant organic disorder by the internist, which includes the application of all modern approved methods of examination, the neuropsychiatrist then takes charge. Among other things the emotional factor underlying the complaint is determined and the patient given an adequate insight into the mechanism which gives rise to his physical disturbances as the result of a personality disorder. Usually after six to eight weeks recovery follows unless the patient is actually psychotic, uncooperative or the victim of a deep seated systematized neurosis. Finally, one is always faced with the problem of the psychoneurotic patient who also harbors an organic lesion, duodenal ulcer in particular. Not infrequently it is essential to determine which condition is paramount, the neurosis or the ulcer. We have all had the somewhat embarrassing experience of successfully healing by treatment or



removing by gastric resection lesions of the digestive or biliary systems only to realize that cure was not effected and that the patient sooner or later continued to complain as volubly as before

DR S ZACHARY ORGEL, New York. In psychosomatic disorders we are not interested in obtaining as many facts as possible but in getting information that has not been prepared for the occasion. Thus one learns how the symptoms develop and what the symptoms meant to the patient from early childhood. He is stimulated to give the information by having him describe his organic complaints without making him aware of a psychologic background in his illness. He will give the material necessary for a proof of a psychosomatic unit in his illness only if he is not aware of what he reveals to us about his emotional life. The patient, if allowed to talk without being asked leading questions, will usually give a detailed account of his complaints and ideas about his illness. When he has exhausted his ideas and recollections about his organic disturbance, he will stop and wait to be questioned. After being certain he will not continue spontaneously, the examiner repeats one of the points of the patient's last sentence, in an interrogative form, care being taken to use the patient's words. New information centering around his symptoms is usually now stimulated. He drifts into giving a communication in which he inattentively mixes emotional and somatic material. References to persons in his environment, both from the present and from the past, then begin to appear. This usually is the beginning of a critical phase of the examination. Material will now appear which leads to the three essential points in establishing the psychosomatic unit: the old conflict, the recent conflict and the time factors. Persons first appearing are usually relevant from the psychosomatic point of view. Correlation of organic illness with the patient's emotional life now becomes evident. Thus we learn a great deal about the neurotic conflicts of these patients.

## Clinical Notes, Suggestions and New Instruments

### RETRO ORBITAL ADRENAL REST TUMOR

LEE W. HUGHES, M.D. AND ANTHONY AMBROSE, M.D.  
NEWARK, N. J.

This case is being reported because of the apparent rarity of its occurrence. A search of the textbooks in ophthalmology at our disposal has failed to disclose a report of any such case. No doubt there have been others seen which probably were not reported.

The patient was a woman aged 21, whom we first saw March 21, 1944. Her past and present health had been good.

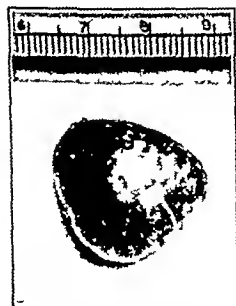


Fig 1—Tumor mass

She had measles, pneumonia and mumps during childhood. Her chief complaint was that the left eye had been gradually protruding forward, downward and inward since February 1939. At that time she was struck over the left eye with a hard packed snowball. There was a sharp stinging pain in the eye. Cold compresses were applied and by the next morning the eye felt better. She stated that it never became discolored. She did not have any further trouble until early in 1941, when she noticed a slight swelling over the left eye, which appeared at

certain intervals. By the following year the swelling was more definite and she began to notice that the eyeball was protruding.

Examinations revealed that the vision in the right eye was 20/100, with correction 20/30; vision in the left eye was 20/70, with correction 20/30.

There was a moderate swelling of the left upper lid, especially in its outer two thirds. The eye was protruding downward,

slightly inward, and noticeably forward. The ocular motility was good; there was no diplopia. The condition was thought to be a hemangioma which resulted from the accident in 1939.

She was operated on under general anesthesia April 13, 1944 at the Newark Eye and Ear Infirmary. The external canthus was split directly outward to the edge of the orbit. The con-



Fig 2—Appearance before operation

junctiva was open and dissected backward. The external rectus muscle was fixed with catgut and then severed near its insertion. Digital exploration of the retrobulbar space revealed the presence of a more or less olive shaped swelling behind and slightly above the globe. It seemed to be firmly fixed. A



Fig 3—After operation

curved blunt pointed scissors was placed along the outer side of the bony orbit until the lateral border of the tumor was reached, and then with careful spreading of the blades the tumor was partially dislocated. The remainder of the dislocation was done with the small finger tip. There was surprisingly little bleeding. The conjunctiva was closed with interrupted silk



stitches. The external rectus was reattached. The skin was closed with interrupted black silk sutures. A pressure bandage was applied.

A section of the tumor was sent to Dr. Harrison S. Martland, who had the following to say after the examination:

"After examining a microscopic slide of the tumor removed from the orbit I am expressing the following opinions:

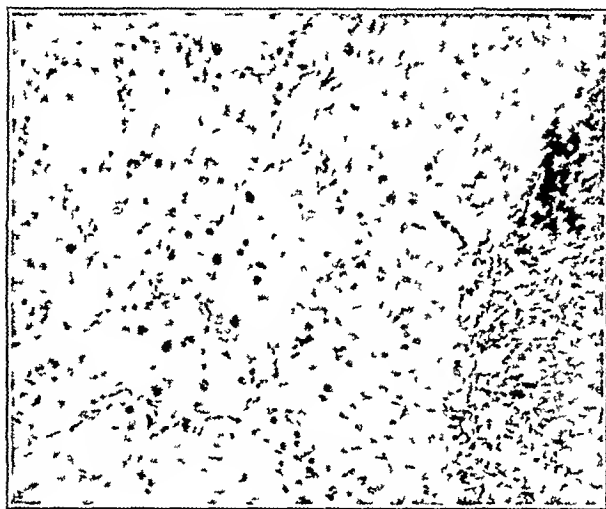


Fig. 4—Section under low power

"The tumor is well encapsulated and appears to be a benign tumor, in that there is absence of mitosis, hyperchromatism and other malignant features.

"The tumor is composed chiefly of cells which appear like liver cells or cells from the adrenal cortex and these are arranged in a manner similar to zona fasciculata of the adrenal cortex, occasionally showing lumen formation.

"There are many areas of small round cells.

"I am inclined to interpret the tumor as a congenital fault somewhat in the nature of an adrenal rest (which has been

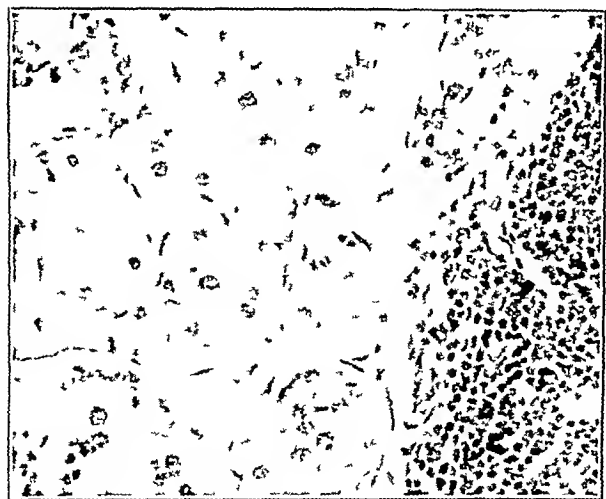


Fig. 5—Section under high power

described in the region of the head) and am apt to regard the collections of small round cells as probably of neurogenic origin."

Postoperatively the patient made an uneventful recovery. There was only a slight diplopia when looking to the extreme right, which disappeared within a few weeks.

965 Broad Street—31 Lincoln Park.

## CONTINUOUS INTRAMUSCULAR INFUSION OF PENICILLIN

FRANKLIN I. HARRIS, M.D., SAN FRANCISCO

The methods of administering penicillin described in the current literature are (1) continuous intravenous infusion, (2) repeated intramuscular injections and (3) topical application. In none of this voluminous literature have I been able to find any description or recommendation for giving this valuable drug by continuous intramuscular infusion.

Continuous intravenous infusion is objectionable because of the special and constant nursing care required, the occasional formation of thrombophlebitis at the site of injection and finally the constrained position of the patient's arm for twenty-four hours a day limits his activity and comfort.

Repeated intramuscular injections of penicillin are disturbing and painful and often prevent a patient from receiving a sufficient amount of rest in a twenty-four hour period. The nursing care is likewise increased.

As penicillin became available to civilian hospitals in greater amounts, our two surgical residents, Drs. Walter Leff and Lewis Karp, suggested that we give penicillin to the patients in the surgical service by continuous intramuscular clysis. This suggestion was immediately accepted and since May 15, 1944 has been the method of choice for the administration of penicillin at the Mount Zion Hospital, San Francisco.

### TECHNIC

The contemplated total dose of penicillin for twenty-four hours is dissolved in 1,000 cc of sterile solution, exactly as in the preparation for continuous intravenous infusion. This solution is then allowed to run in by a drip method as an intramuscular clysis. One or both thighs may be utilized. The regular intramuscular clysis needles are used, and the outer or inner side of the thighs is the favorite site of administration as in any other type of intramuscular clysis. The usual rate of flow when 100,000 units has been dissolved in 1,000 cc of saline solution is between twelve and fifteen drops per minute, which gives approximately 50 cc per hour or about 5,000 units per hour. This rate of flow can be easily increased to give 10,000 units per hour or any desired dose. Many variations can be easily arranged. If more fluid intake is desired, the 100,000 units can be dissolved in two flasks of 1,000 cc each.

This method requires no special nursing care, once the needle is inserted intramuscularly and the rate of flow established. The patient does not need close observation from this standpoint. Lately we have found it more advantageous to place the needle only in one leg. This permits the patient greater activity and movement in bed.

In the majority of cases we have averaged about 5,000 units per hour by intramuscular infusion throughout the twenty-four hour period. Our laboratories have not at the present time found it possible to determine the blood level and concentration of penicillin, but those of us who have used this method of administration believe that the penicillin effect is probably more evenly distributed and kept at a better level than by the repeated intramuscular injection. Further studies will have to be made in the future of the blood levels that are obtained by this method.

The clinical results with the continuous intramuscular method of administering penicillin have been eminently satisfactory in approximately 25 cases in which this method has been used from May 15 to August 1. There have been no complications, no abscess formation and no nursing difficulty that could be attributed to this method of administration.

This short note is submitted because it is believed that sufficient publicity has not been given to this safe and valuable method of administering penicillin.

450 Sutter Street

From the Division of Surgery, Mount Zion Hospital

SUBACUTE BACTERIAL ENDOCARDITIS TREATED  
WITH PENICILLIN

B C COLLINS MD MEMPHIS TENN

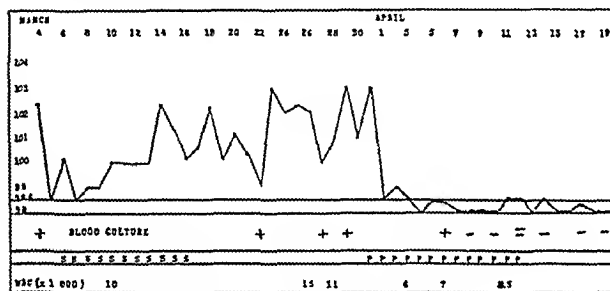
B W H, a white boy aged 10 years was admitted to the Methodist Hospital Oct 2, 1943 with a history of fever for the preceding four days and complaining of pain in the left lower chest, anorexia and general malaise

X ray examination at this time revealed a lobar pneumonia of the left lower lobe, infiltration of both hilar regions and slight enlargement of the heart, but no abnormality in contour

Physical examination revealed an acute inflammation of the tonsils and tonsillar pillars. There was bronchial breathing and moderate dullness over the left lower lobe. Examination of the heart revealed a palpable thrill, a very loud blowing systolic and a subdued diastolic murmur about 2 centimeters to the right of the mitral area. These murmurs were not transmitted to the axilla or posteriorly. A tentative diagnosis of lobar pneumonia and congenital heart disease was made.

Laboratory studies showed 54 per cent hemoglobin, 2,950,000 red blood cells and 12,250 white blood cells, with a differential count of 76 per cent neutrophils, 23 per cent lymphocytes and 1 per cent large mononuclears. Urinalysis was negative. The corrected sedimentation rate by the Wintrobe method was 30 mm in one hour.

Treatment consisted of one 300 cc blood transfusion sulfadiazine 1 Gm immediately and 0.5 Gm every six hours for two days, then 0.5 Gm every twelve hours. The blood con-



Clinical course S sulfamerazine P penicillin

centration was 129 mg per hundred cubic centimeters on the second day of therapy. The clinical course was very satisfactory, the temperature returning to normal in seventy-two hours. The patient was discharged home on the ninth day, apparently cured.

The patient returned to the hospital on Feb 9, 1944 with a fever of 104.2 F. A blood culture positive for *Streptococcus viridans* was obtained. X-ray examination at this time revealed an atypical lobar pneumonia of the right base. There was prompt and satisfactory response to sulfamerazine, 15 Gm immediately and 0.5 Gm every six hours for six days. The temperature dropped to normal on the second day of treatment but became elevated again four days after the drug was discontinued.

Blood cultures positive for *Streptococcus viridans* were obtained on February 11 and 29, March 22, 27 and 29 and April 6.

The patient received another course of sulfamerazine from March 6 to March 16 with little improvement, as shown in the accompanying chart.

Treatment with penicillin was started on March 31. The dosage was 100,000 Oxford units daily divided into eight equal parts and given every three hours intramuscularly. The total given was 1,400,000 units over a period of fourteen days. The response was rapid and very dramatic, the temperature dropping to 99 F on the second day of treatment and becoming normal the following day. Negative blood cultures were obtained on April 8, 10, 12, 14, 16, 17, 19 and 24. The clinical improvement was excellent and on September 16 the patient was still afebrile and symptom free.

## Council on Foods and Nutrition

## ACCEPTED FOODS

The following additional foods have been accepted as conforming to the Rules of the Council on Foods and Nutrition of the American Medical Association for admission to Accepted Foods.

GEORGE K. ANDERSON MD Secretary

PREPARATIONS USED IN THE FEEDING OF  
INFANTS (See Accepted Foods, 1939 p 156)

Harold H Clapp Inc Rochester N Y

## CLAPP'S (BABY FOODS) CUSTARD PUDDING

Analysis (submitted by manufacturer)—Total solids 21.86% fat (by acid hydrolysis) 2.73% protein (N X 6.25) 0.06% ash 0.62% crude fiber 0.006% carbohydrates (by difference) 15.44% calcium (Ca) 137.09 mg per hundred grams phosphorus (P) 92.72 mg per hundred grams iron (Fe) 0.5 mg per hundred grams

Calories—0.99 per gram 28.1 per ounce

Vitamins—Vitamin A (carotene) 156 U S P units per hundred grams  
Vitamin B<sub>1</sub> (thiamine) 0.03 mg per hundred grams  
Vitamin C (ascorbic acid) 0.34 mg per hundred grams  
Vitamin G (riboflavin) 0.38 mg per hundred grams

Harold H Clapp Inc Rochester N Y

## CLAPP'S STRAINED PEACHES

Analysis (submitted by manufacturer)—Total solids 14.5% protein (N X 6.25) 0.4% ash 0.37% crude fiber 0.09% fat (ether extract) 0.06% carbohydrates (by difference) 13.58% phosphorus (P) 16.6 mg per hundred grams calcium (Ca) 4.8 mg per hundred grams iron (Fe) 0.37 mg per hundred grams copper (Cu) 0.10 mg per hundred grams

Calories—0.57 per gram 16.2 per ounce

Vitamins—Vitamin A (carotene) 169 U S P units per hundred gram  
Vitamin B<sub>1</sub> (thiamine) 0.02 mg per hundred grams  
Vitamin C (ascorbic acid) 2.0 mg per hundred grams  
Vitamin G (riboflavin) 0.3 mg per hundred grams

Harold H Clapp Inc Rochester N Y

## CLAPP'S STRAINED PEARS

Analysis (submitted by manufacturer)—Total solids 15.61% crude fiber 1.02% protein (N X 6.25) 0.56% ash 0.21% fat (ether extract) 0.08% carbohydrates (by difference) 13.74% phosphorus (P) 14.2 mg per hundred grams calcium (Ca) 8.5 mg per hundred grams iron (Fe) 0.69 mg per hundred grams copper (Cu) 0.09 mg per hundred grams

Calories—0.58 per gram 16.5 per ounce

Vitamins—Vitamin C (ascorbic acid) 0.74 mg per hundred grams  
Vitamin G (riboflavin) 0.03 mg per hundred grams

Gerber Products Company Fremont Mich

GERBER'S CHOPPED VEGETABLE AND LAMB WITH BARLEY consisting of potatoes water carrots lamb green beans pearl barley barley flour onion powder and salt

Analysis (submitted by manufacturer)—Moisture 86.8% ash 1.2% fat 2.2% protein 2.4% crude fiber 0.4% carbohydrates (by difference) 7.0% Ca 0.010% P 0.040% Fe 0.0009% Cu (?)

Calories—0.6 per gram 16 per ounce

Vitamins—Protocols of assay (1941) show that this product contains 900 international units of vitamin A 0.032 mg of thiamine and 2.3 mg of ascorbic acid for each hundred grams

Gerber Products Company Fremont Mich

GERBER'S CHOPPED VEGETABLE AND LIVER WITH RICE consisting of potatoes water celery tomato pulp beef liver carrots rice salt and onion powder

Analysis (submitted by manufacturer)—Moisture 88.7% ash 1.3% fat 0.3% protein (N X 6.25) 2.6% crude fiber 0.3% carbohydrates (by difference) 6.9% Ca 0.015% P 0.044% Fe 0.0013% Cu 0.00031%

Calories—0.4 per gram 12 per ounce

Vitamins—Protocols of assay (1941) show that this product contains 8100 international units of vitamin A 0.074 mg of thiamine and 1.5 mg of ascorbic acid for each hundred grams

Gerber Products Company Fremont Mich

## GERBER'S PINEAPPLE RICE PUDDING (JUNIOR FOODS)

Analysis (submitted by manufacturer)—Moisture 74.36% ash 0.85% fat 0.62% protein (N X 6.25) 1.67% crude fiber 0.20% carbohydrates (by difference) 22.30% calcium 0.0416% phosphorus 0.0378% iron 0.00085% copper 0.00004%

Calories—1.02 per gram 29 per ounce

Vitamins—Carotene 0.0135 mg per hundred grams  
Thiamine 0.034 mg per hundred grams  
Ascorbic acid 0.78 mg per hundred grams

# THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

535 NORTH DEARBORN STREET - CHICAGO 10, ILL.

Cable Address

'Medic, Chicago

Subscription price

Eight dollars per annum in advance

*Please send in promptly notice of change of address giving both old and new always state whether the change is temporary or permanent Such notice should mention all journals received from this office Important information regarding contributions will be found on second advertising page following reading matter*

SATURDAY, SEPTEMBER 23, 1944

## POSTWAR TRAINING FOR RETURNING OFFICERS

Elsewhere in this issue is a preliminary estimate prepared by the Council on Medical Education and Hospitals, of the probable demand for advanced graduate training by returning medical officers. The report suggests ways in which efforts may be applied to meet the need. Returns on the questionnaires sent to all medical officers are now being received in numbers which clearly reflect the widespread interest in continuation training. Analysis of an early random sample has already been published.<sup>1</sup> Such data are indispensable for effective planning.

Probably 10,000 medical officers will want house officer training of six months or more. Since demobilization will probably extend over some time, the number of additional places required will probably approximate 5,000 during the first year. Apparently most expansion will be required in otolaryngology, surgery, obstetrics and gynecology and ophthalmology, which may need to double their facilities. Expansions of 50 to 70 per cent seem to be indicated in urology, internal medicine, orthopedic surgery and pediatrics.

Somewhat fewer officers are likely to seek shorter courses, about 9,000 officers will seek full time training of one to six months' duration. In 1943-1944 there were nearly 27,000 physicians enrolled in such courses. However, over 90 per cent of these were in short courses of about a month. Apparently more than 90 per cent of those desiring review or refresher courses will seek training in somewhat longer courses of two to six months' duration. Many more courses of that duration will be required.

In the light of the figures given, all institutions which can contribute to meeting the need are obligated to review their resources and prepare estimates of the additional facilities they can provide, to facilitate the achievement of the program outlined (page 257).

The communication from Col Perrin H Long, published on page 239 of this issue further underscores

the deep concern of medical officers with regard to their further training after the war and indicates that the work being carried out by the Committee on Postwar Medical Service meets a real demand. The suggestions of Colonel Long are similar to the program already being developed. With continuing cooperation of the Committee on Postwar Medical Service, the Council on Medical Education and Hospitals, the Surgeons General of the armed forces, medical schools, American boards in the medical specialties and others primarily concerned, there is every reason to expect that the needs will be met. Information now being collected from all educational institutions will be made available in the near future. In the meantime, medical officers can be assured that every effort is being made, and with success, "to cut through to the goal, because then, with the facts before them [medical officers]

will be able to plan their existence in the postwar world."

## CHANGING FOOD HABITS FOR BETTER NUTRITION

Somebody is always trying to change the eating habits of the American people. Sometimes the stimulus comes from a food faddist who has made up his or her mind that health lies in abstinence from meat or acid fruits or eggs or some other food that has been for years eaten by great numbers of people. Sometimes the urge comes from an agency like the American Meat Institute, the National Confectioners' Association or the manufacturers of cereals or of dairy products or the bakers of bread, telling us that we ought to eat more of their particular products. Associated with these campaigns are the promulgations of groups of scientists or nutritional authorities who want everybody to be quite familiar with the vitamin, mineral, protein, carbohydrate and fat content of everything they eat and to eat strictly according to formula.

Recently a reaction has been voiced in Great Britain against present trends in eating, led largely by Lord Thomas Horder, who is president of the Food Education Society. Lord Horder<sup>1</sup> said that the overweighting of food education by the appeal to science has induced in many people a spirit of antipathy. They feel that eating and drinking were never intended to be subject to chemical equations. Lord Horder has emphasized the factor of safety in the human body in relation to nutrition. He said, as quoted by the *Lancet* -

Health is not a tight-rope and our bodies are neither anxious nor solicitous, they are not puritanical, they will dine with publicans and sinners and often, though not always, come away none the worse, but even better. Our bodies are wonderfully adaptable, they will tolerate a large range of strains and stresses. This is not to say that we can continue to abuse our bodies over a long period. But this 'balancing' of our diet is sometimes taken too far. The principle is sound and it

<sup>1</sup> Joy Through Food editorial *Lancet* 2 47 (July 8) 1944

<sup>1</sup> Lueth H C Future Educational Objectives of Medical Officers J A M A 125 1099 (Aug 19) 1944

<sup>2</sup> Cautious Food Reform extract from Lord Horder's presidential address to the Food Education Society *Lancet* 2 53 (July 8) 1944

needed stating, even stressing. Balance the diet by all means, to balance the day's food is not a bad idea, but to balance the individual meal is not necessary at all.

This statement by Lord Horder should give pause particularly to the pronouncements that now assail us constantly over the radio, telling us that this or the other product takes care of all of our deficiencies of vitamins or of minerals or of both. People are likely to get from these announcements the notion that every one is deficient in something or other and that the only hope of health is a superabundance of all the known vitamins and minerals. For them Lord Horder has a special caution.

We should teach a little less than we think we know, rather than strain the few facts of which we seem certain to explain conditions which are complex and probably result from more factors than the few that have been revealed to us.

Supplementing the statement by Lord Horder is one by F. Le Gros Clark,<sup>3</sup> who at some length analyzed food habits and how to change them. The eating habits of people are for the most part traditional. Children learn to enjoy certain foods in their homes and carry their prejudices over to adult life. Many of the food habits are a reflection of factors that have nothing whatever to do with the science of nutrition.

Most of those who lecture or write on nutrition are members of the professional classes (research workers, doctors and teachers), whereas most of those who receive the message are the families of miners, dockers, railway men, farm workers and the like. For food habits the latter have acquired in the process of generations there is always a set of comprehensible causes, among which are not only mistaken or outworn ideas about correct diets but also such factors as storage space, cooking facilities, income levels and mealtimes.

Our eating habits are affected by the ability of housewives in general and of cooks to cook. Many a mother has pretty definite ideas about what is good for the family in the way of food, but the preferences of the father and the children are more likely to dictate the dietary than the mother's knowledge of scientific nutrition. If the father and the children refuse to eat turnips or squash or beet tops, the mother gains little by serving these items.

Since established habits of eating are hard to change, more emphasis should be placed on desirable traits in the early impressionable years. The stress on proper feeding of infants and children over the past several years should soon be paying dividends in better eating habits in the younger generation. The gains made should be maintained. Without change in established eating habits, improvement will come from the continuation and expansion of the food enrichment program. Such generally eaten foods as bread, flour, cereals and milk become effective carriers of nutrients which are known to be commonly deficient in diets of the general population. Without change in character of the food, its nutritional value to the consumer is enhanced.

The impositions and restrictions of wartime are without permanence. When restrictions are released, people will go back again to eating what they like. Even the law cannot make people enjoy eating something they do not like. But some benefits on our national nutrition will undoubtedly result from the war aside from the increased scale of food production. There will be new types of food available as a result of research and innovations in transportation. Old familiar foods will be made more attractive to the eye and the palate. The sum total of our wartime food experience can hardly be other than good. Nutritionists and others concerned with the correction of our nutritional deficiencies may extend the gains thus far made. No doubt a planned state would provide community kitchens and dining rooms in which the workers and their families would eat exactly what the nutritionists put out for them, but as long as our civilization continues to be based on the family, food habits are going to control eating.

#### THE PREVENTION AND TREATMENT OF FETAL ERYTHROBLASTOSIS

Fetal erythroblastosis in by far most cases appears to be the result of Rh incompatibility on part of the father and the mother. Does the demonstration of such incompatibility bring with it practical means for the prevention and cure of erythroblastosis?

At present the main if not the only means of successful prevention would be the avoidance of impregnation of an Rh negative woman by an Rh positive man. The immediate cause of Rh erythroblastosis is the destruction of red corpuscles of the fetus by specific antibodies from the blood of the mother, the question has been raised whether it is possible to remove the antibodies in the mother's blood by injecting the antigen, that is, blood containing the Rh factor. Broman,<sup>1</sup> who has made extensive studies on the Rh factor, introduced blood from the Rh positive father into the isoimmunized Rh negative mother, with an apparently wholly negative result. Further and comprehensive experiments along this line seem indicated. Possibly effective methods of removing antibodies from the mother's blood may be found if the Rh substance becomes available in adequate quantities. In experiments it has been shown that removal of different antibodies from the blood of immunized rabbits readily results from the intravenous injection of the corresponding antigen.

Henceforth special care must be taken in blood transfusion of prospective mothers. Rh negative women in the childbearing age should not be transfused with Rh positive blood because, if done, Rh antibodies may be produced which can cause erythroblastosis in a subsequent Rh positive fetus. The sensitization of an

3 Clark, F. Le Gros. Food Habits and How to Change Them. *Lancet* 2: 53 (July 8) 1944.

1 Broman, Birger. The Blood Factor Rh in Man. A Clinico-serological Investigation with Special Regard to Morbus Hemolyticus Neonatorum (Erythroblastosis Fetalis). *Acta pædiat.* 31, Supp. II, 1944.

Rh negative woman to the Rh factor may be harmful to the future offspring

In the case of Rh incompatible couples with previous erythroblastic episodes, the mother may be tested at intervals for Rh antibodies if pregnancy occurs again with a view to producing premature viable birth, should the results be increasingly positive. As yet the suggestion has not been approved by obstetricians. The experience so far indicates "that nothing is to be gained by premature delivery."<sup>2</sup> Whenever there is reason to fear erythroblastosis, arrangements should be made so that if necessary transfusion of the child with suitable Rh negative blood can be done as soon after birth as possible. There are as yet no methods available for intrauterine control of erythroblastosis. Treatment can be given after birth only. Since some 50 per cent of children with erythroblastosis die before they are 7 days old,<sup>1</sup> the earlier proper treatment is given the better. The treatment of choice<sup>3</sup> is the introduction of Rh negative blood—a substitution treatment. Rh negative blood of the same group as that of the infant is used because there may be anti-Rh bodies in the blood and tissues of the child. Fortunately suspensions of the mother's red cells can be used after thorough washing in salt solution to remove all traces of the plasma. It has been recommended that infants with erythroblastosis be not nursed by their mothers because the milk may contain anti-Rh bodies.<sup>4</sup> It was noted long ago that infants with erythroblastosis did not thrive on the mother's milk. The results of prompt transfusion in erythroblastosis are favorable.<sup>5</sup> In Javert's series the case death rate was reduced from 73 to 14 per cent.

#### EXIT TALCUM FROM THE SURGICAL SCENE

From the earliest days of the emergence of surgery in the fertile valley of the river Nile down to Ignatz Semmelweis's epochal discovery, surgeons with few exceptions shared with the rest of humanity the title of the "great unwashed." Then, in 1861, hand washing emerged from the realm of Mosaic ritual into the sphere of inviolable surgical technic. About forty years later came the discovery, after Pasteur's and Lister's investigations, that mere hand washing was not adequate protection either for patient or for surgeon, therefore sterile cotton or lisle gloves were added to the surgical armamentarium. Only a few years later Halsted supplanted fabric with rubber gloves sterilized by boiling

and put on under sterile water or a suitable antiseptic solution. This technic in turn, and in short order was replaced by steam autoclaving of the rubber gloves and donning them when dry, with the aid of the generous use of talcum powder. This powder was dusted inside the gloves before and also after sterilization, and on the hands of the surgeon before slipping them into the gloves.

That talcum and similar powders are not innocuous has been known for well over half a century. In 1881 Hippolyte Martin<sup>1</sup> described the potentially grave hazards incident to the use of these powders. Only well within the past ten years, however, have surgeons and pathologists recognized the dangerous properties of talcum powder. More than a score of studies have been published detailing the serious consequences that follow the entrance of talcum powder into animal tissues: by way of operative wounds, the peritoneal cavity, the brain, the rectum, the vagina or the cervix and through numerous other routes.

The resultant lesions follow a definite structural pattern, which initially is that of the usual foreign body reaction represented by tubercle-like formation, with talc crystals demonstrable in most of the tubercles. This demonstration is greatly facilitated by the use of polarized light. Later a fibrosis occurs. Naturally when these processes occur in the peritoneal cavity they lead to peritoneal adhesions frequently causing intestinal obstruction. These lesions are permanent because the body does not have adequate reparative power against talcum, which is essentially a silicate and which therefore induces a silicosis.

The evils of talcum manifest themselves most tragically in the field of abdominal surgery in the form of postoperative intestinal obstruction. German<sup>2</sup> studied a series of surgical patients by removing biopsy specimens from the omentum in 50 cases in which laparotomy had been done. Using polarized light technic he demonstrated the presence of talc crystals in 80 per cent of the specimens. These results of German's study furnish startling and disturbing evidence of the frequency with which talcum escapes into the peritoneal cavity during operative procedures. It does not always follow, of course, that the presence of intraperitoneal talcum invariably causes symptoms of grave abdominal disease, but it requires no stretch of imagination to grasp the possible hazards attendant on the presence of a siliceous powder in the peritoneal cavity.

Despite these hazards, however, and despite an appreciable wealth of scientific literature on the subject, investigators<sup>3</sup> at the Barnard Free Skin and Cancer Hospital of St. Louis were the first to

<sup>2</sup> Potter, Edith L. The Present Status of the Rh Factor. *Am J Child* 68:32 (July) 1944.

<sup>3</sup> Davidson, I. The Rh Factor. *M Clin North America* January 1944, p. 232.

<sup>4</sup> Gimson, I. D. Hemolytic Disease of the Newborn (Erythroblastosis Fetalis). Its Treatment with Rhesus Negative Blood. *Brit M J* 2:293, 1943. Javert, C. T. Erythroblastosis Neonatorum. An Obstetrical Pathological Study of 47 Cases. *Surg Gynec & Obst* 74:1 (Jan.) 1942. Further Studies on Erythroblastosis Neonatorum of Obstetrical Significance. *Am J Obst & Gynec* 3:921 (June) 1942. Witebsky, Ernest. Anderson, G. W. and Heide, Anne. Demonstration of Rh Antibody in Breast Milk. *Proc Soc Exper Biol & Med* 49:179 (Feb.) 1942. Potter.

Gimson & Javert.

<sup>1</sup> Martin, Hippolyte. Nouvelles recherches sur la tuberculose spontanée et expérimentelle des séreuses. *Arch de phys norm et path* 8:49, 1881.

<sup>2</sup> German, W. M. Dusting Powder Granulomas Following Surgery. *Surg Gynec & Obst* 76:501 (April) 1943.

<sup>3</sup> Seelig, M. G., Verda, D. J. and Kidd, F. H. The Talcum Powder Problem in Surgery and Its Solution. *J A M A* 123:930 (Dec. 11) 1943.

substitute an innocuous powder for the troublesome talcum. These workers present evidence favoring the use of potassium bitartrate (cream of tartar) as a desirable and safe substitute for talcum. This salt is readily disposed of by the body fluids and tissues within a few hours and has the added advantage of being bacteriostatic in its action. It does not deteriorate rubber but it is a bit more costly than talcum powder. In a later contribution the Barnard Hospital workers<sup>4</sup> announced the discovery by which corn starch can be robbed of its gelling property and thus rendered even more suitable as a dusting powder than is potassium bitartrate, because it is smoother in texture and is more readily disposed of by the diastase mechanism of the body. This new, nongelling starch cannot be manufactured until after the cessation of war, owing to problems of priorities. In the meantime the somewhat more costly potassium bitartrate will serve. In any event the surgical scene seems to be set for the exit of talcum.

#### HEAT PRODUCTION ON MIXED DIETS

During the last decade Forbes and his associates<sup>1</sup> of the Institute of Animal Nutrition, Pennsylvania State College, have collected experimental evidence that with animals on equicaloric mixed diets progressive decrease in total heat production is associated with increases in protein percentage. This is contrary to general clinical belief, which assigns a dominant thermogenic role to protein. Forbes and Swift<sup>2</sup> have emphasized the possible bearing of these results on current problems of military dietetics and animal husbandry.

Total heat production was measured in selected groups of white rats during seven hour experimental periods on two consecutive days, the animals sleeping during most of the period. The first determinations were made with the animals on a minimum basal diet. The experiment was repeated seven days later with the same rats on the same diet plus measured amounts of beef protein, dextrose or lard tested alone or, in combination. The increased heat production on the supplemented diets was taken as a measure of the energy expense of utilization of the supplement. Accepting this interpretation, the net energy value of the supplement was calculated by subtracting this caloric expense of utilization from the gross caloric value of the supplement.

When fed alone it was found that 32 per cent of the total caloric value of beef protein was expended as necessary expense of utilization. With dextrose 20 per cent of the total caloric value was thus expended and with lard 16 per cent. The calculated net energy values of these three foods were protein 68 per cent of the gross caloric value, carbohydrate 80 and fat 84.

When these three foods were mixed however the heat production (energy of utilization) was much less than that computed from the individual food components. Thus with a mixture of approximately equal parts of beef protein and lard but 11 calories of energy was necessary for utilization, as compared with 24 calories calculated for the individual components a reduction of 54 per cent in the energy expense of utilization. Dextrose plus lard led to an "economy of utilization" of 35 per cent dextrose plus protein 12.5 per cent and dextrose plus protein plus lard 22 per cent. It is evident from these data that in mixed diets carbohydrate is the major thermogenic factor while lard is the major factor conferring economy of utilization.

The results of this study suggest that there is no special reason for decreasing the protein content in tropical military diets. Any desired decrease in heat production should be accomplished first by diminishing the carbohydrate, second the protein and last of all the fat in the routine mixed diet. The study also emphasizes present economic losses in animal husbandry. Manufacturing processes which skim off the fat content of by-product feed not only lower the net energy value of the feed through diminishing its gross caloric value but also decrease its net nutritional value by increasing the caloric expense of its utilization.

No adequate theory has thus far been suggested to account for the observed antithermogenic effects of fat in a mixed diet.

#### CONGENITAL CATARACT AND OTHER ANOMALIES FOLLOWING GERMAN MEASLES IN THE MOTHER

Gregg reported in 1941 at the annual meeting of the Ophthalmological Society of Australia a series of 78 cases of congenital cataract occurring in babies between December 1939 and January 1941. With few exceptions their mothers had suffered during the early stages of pregnancy from an exanthematous disease diagnosed as rubella. Many of the babies were of small size, ill nourished and often difficult to feed. In 44 of them a congenital lesion of the heart also was detected; in 10 the heart was apparently normal and in the remainder the cardiac condition was not recorded. The cataracts were of dense nuclear type, in 62 cases they were bilateral and in the remainder unilateral. In 11 of the 16 monocular cases the affected eye was microphthalmic. There was no similarity in the appearance of the cataracts to any of the morphologic types of congenital and developmental opacity reported previously.

Swan and his collaborators<sup>1</sup> investigated under the grant from the National Health and Medical Research Council children born in South Australia of mothers

<sup>1</sup> Swan Charles, Tostevin A. L., Moore Brian, Mayo Helen, and Black G. H. Barham. Congenital Defects in Infants Following Infectious Diseases During Pregnancy with Special Reference to the Relationship Between German Measles and Cataract, Deaf Mutism, Heart Disease and Microcephaly and to the Period of Pregnancy in Which the Occurrence of Rubella is Followed by Congenital Abnormalities. *M. J. Australia* 2: 201 (Sept. 11) 1943.

<sup>4</sup> Seelig M. G. Dusting Powder for Surgical Gloves. *J. V. M. A.* 125: 1208 (Aug. 25) 1944.

<sup>1</sup> Forbes E. B. and others. *J. Nutrition* 10: 461 1935. 15: 285 1938. 18: 47 57, 1939. 20: 47 1940.

<sup>2</sup> Forbes E. B. and Swift R. S. *Science* 99: 476 (June 9) 1944.



who had suffered from exanthematous disease during pregnancy. Of 61 infants examined, 36 were found to have congenital defects. The mothers of 49 infants had suffered during pregnancy from rubella. 4 had no knowledge of any exanthem during this time. 9 contracted measles during pregnancy and 2 suffered from mumps. In the cases of rubella during pregnancy 31 of the infants born subsequently exhibited congenital defects. The abnormalities included cataract, deaf-mutism, heart disease, microcephaly and mental retardation. With 2 exceptions all of the 31 mothers with congenitally defective children had contracted rubella within the first three months of pregnancy. No congenitally defective babies were born subsequent to the occurrence of measles in pregnancy. One case is recorded of congenital corneal opacity following mumps.

Gregg noted that the epidemic of German measles in 1940 which gave rise to most of these cases was of greater severity and was more often accompanied by complications than previous epidemics of his experience. In some of the cases of the series investigated by Swan and his associates the general constitutional symptoms and the occurrence of complications were more pronounced than usual. The Swan committee gained the impression that the disease was sometimes more intense in mothers who later gave birth to congenitally defective infants than in those whose children were born healthy. The severity of the epidemic of German measles of 1940 was probably caused by the war conditions, large numbers of susceptible recruits being herded together in military camps. The disease spread rapidly, and the causative agent may have reached a higher stage of virulence. Several investigators have shown that avian and mammalian embryos exhibit a much higher susceptibility to infectious agents than adult tissues. Possibly the human embryo possesses the same susceptibility to infection, and the etiologic factor of German measles, after penetrating the chorionic barrier, is capable of producing severe lesions in the embryo, whereas the same infection in the adult tissues of the mother leads to only minor effects. Data gathered by Swan and his collaborators suggest that the chances of giving birth to a congenitally defective child when a woman contracts rubella within the first two months of pregnancy are almost 100 per cent, and if she contracts rubella in the third month they are about 50 per cent.

Now Reese<sup>2</sup> reports from New York City congenital heart lesions in 3 infants. The mothers of these 3 infants contracted German measles within the first month of pregnancy, which was during a rather severe epidemic of German measles in the East about one and a half years ago. This author raises the question whether the exanthem in the mother was German measles and, if it was German measles, why congenital anomalies in the

children so infected have not been observed before. A probable answer is that the congenital anomalies in his cases are the result of a more virulent or probably altered type of virus, which may have gained access to this country through an increased traffic with Australia.

## Current Comment

### HOSPITAL FACILITIES FOR TREATMENT OF ALCOHOLISM

An exhaustive report<sup>1</sup> on the institutional facilities available in this country for the treatment of alcoholism has recently been prepared by a committee of the American Hospital Association, its conclusions can be accepted as the basis for further study and active implementation. Hospital facilities for the care and treatment of alcoholic addicts in the United States are scanty and inadequate, and those which exist are not always utilized to the best advantage. The placement of patients in institutions has depended to a greater extent on the admission policies of hospitals, economic status of the patient, and how much of a nuisance he has been to his family or to the public than it has on the type of medical management best suited to his case of inebriety. Furthermore, there has been a lack of understanding of the necessity of research directed toward the evaluation of various technics of treatment, of the need to explore new methods of therapy and the necessity of greater education of physicians and those in allied professions in the sound handling of the problem drinker. The main point of attack, it is stated, should be through the general hospital. The completeness of the facilities of the general hospital and its accessibility make it the most logical place to which an alcoholic addict or his family would turn. The alcoholic addict, like other patients suffering from acute manifestations of an underlying chronic disorder, should not be denied the advantage of a thorough study of the cause, or causes, of his condition, or advice as to the means by which it can be best treated. Although some general hospitals may object to including facilities for patients with alcoholism, the report emphasizes the overwhelming arguments for the extension of their use in this manner. The report recommends that the trustees of the American Hospital Association appoint a committee to translate the suggested program into action, its scope should include the dissemination of facts, the stimulation of discussions of the problem, the setting up of selected hospitals as experimental units for testing the possibility of incorporating the treatment of alcoholic addicts into a well integrated plan and the promotion of clinics in outpatient departments and representative hospitals. In view of the profound effect which alcoholism has on a large and often otherwise useful segment of the population, the recommendations of the committee should receive active support by individuals, philanthropic foundations, general hospitals and all others who can exert any influence on this probably growing medical and social problem.

<sup>2</sup> Reese, Algernon B. Congenital Cataract and Other Anomalies Following German Measles in the Mother. *Am J Ophth* 27: 483 (May) 1944.

<sup>1</sup> Corwin, E. H. L. and Cunningham, Elizabeth V. Institutional Facilities for the Treatment of Alcoholism. *Quart J Stud on Alcohol* 5: 9 (June) 1944.

# MEDICINE AND THE WAR

## GRADUATE MEDICAL TRAINING IN THE POSTWAR PERIOD

*To the Editor*—While looking over the Program of the One Hundred and Sixty-Third Anniversary of the Massachusetts Medical Society I noted that Dr. Allen O. Whipple was to present a paper on the subject of "How Shall We Provide Postgraduate Training in Surgery for Men at Present Serving in the Armed Forces?" While I have not had the privilege as yet of reading Dr. Whipple's address I would like to discuss from the point of view of a medical officer in an overseas theater of operations the problem of postgraduate medical education for doctors who at some future period will be demobilized from the armed forces.

During the past year I have had repeated opportunities to discuss this problem with those who are most concerned with it, namely the doctors who staff the medical services of squadrons, battalions, regiments, divisions, corps, armies, and those whose duties are of a nonprofessional nature in administrative sections and depots. In addition, this question has been reviewed with doctors in field, evacuation, station, and general hospitals. It is believed from these discussions that an attempt can be made to gauge the cross section of opinion of these doctors on the problems of postwar professional rehabilitation, their reactions toward what has been accomplished so far in this direction, and to formulate the tentative desires of at least a section of the doctors in the armed forces in respect to what they would like in the way of postwar postgraduate medical education.

It seems quite clear that most of the doctors whose tour of duty has been a professional one in station or general hospitals for the greater part or all of their service in the armed forces will require much less professional rehabilitation than those who have been in field service or administrative positions. Hence for doctors who have been in hospitals, short intensive postgraduate courses dealing with cardiology, degenerative diseases, metabolic and endocrinologic disturbances would seem desirable. These men have not lost that type of analytic reasoning which is based on the correct evaluation of all factors involved and which is necessary for arriving at the diagnosis and forms the basis for the treatment and prognosis of disease.

The problems of doctors who have been in field or administrative services are entirely different. These are the men whose closest contact to professional practices for periods which in some instances amount to four years has been to hold sick call if they are field service doctors or none at all as is the case with many of the doctors who hold administrative positions. Experience has shown when these men are rotated to positions as ward doctors in station or general hospitals that from three to six months is required to reeducate them in analytic reasoning and to restore their confidence in their professional ability. This observation gives a definite clue to the length of the periods of instruction which will be required and programs for rehabilitation should be formulated so that these doctors will receive carefully supervised ward and outpatient work with patients together with formal ward rounds, clinics and lectures on special topics, x-ray and clinical pathologic conferences and journal clubs during their period of postgraduate instruction. These men have had little opportunity to acquaint themselves with the advances in medicine which have been made since 1940. Because of their long separation from professional practices these field and administrative medicine officers should be given a first priority on all courses in postgraduate instruction and this priority should be continued until demobilization is complete.

Then there is a third group of doctors with whom we should concern ourselves and whose problems are not so well understood by those of us who have long been without the continental limits of the United States. These are the young men who have undergone a forced acceleration of their medical education and hospital experience in medical schools and hospitals whose staffs have been woefully depleted during the past three years. One can judge these young doctors only by their performance

and to date our experience with them has not been broad enough to warrant any conclusions being drawn. However, it seems logical to assume that their foundation in medicine is less adequate than the foundation of those who graduated prior to June 1942. For these young men definite plans for further instruction must be made, otherwise they will be on the market at a dime a dozen in the competition for internships and residencies which will arise in the postwar period, and unless suitable preparations for their reception back into hospital training are made a chaotic situation characterized by disappointment, bitterness, and resentment on the part of these young men to their chosen profession will arise.

That the future of our profession in a large measure is dependent on the maintenance of high standards of professional practice is well recognized by the doctors in the armed forces and is the reason why they are hoping and one might even say praying that means will be afforded for the professional rehabilitation which will be necessary if our standards are to be maintained in the postwar period. It is at this point that emphasis must be laid on the point that these doctors are beginning to develop an attitude of hopelessness toward their chances of postwar postgraduate education because of the lack of a specific program for rehabilitation which would permit them to begin to lay plans for the future. One looks in vain in the Report of the Committee on Postwar Medical Service (*THE JOURNAL*, June 24 p. 567) for a real ray of hope. All that one finds and I quote: "Authorization has now been obtained to send a somewhat revised questionnaire to all medical officers in the Army, Navy, and Public Health Service. I think it is safe to say that these questionnaires will receive a very favorable response. It will make the medical officers feel that they are not forgotten men. The committee submits this report as a record of a year's humble but earnest endeavor. A questionnaire to make medical officers realize they are not forgotten men." Furthermore, in the President's address (*THE JOURNAL*, June 17 p. 461) the statement is made that the Association is doing everything in its power to safeguard the quality and standard of medical practice during your absence and will do everything in its power to aid you when you return. The Council on Medical Education and Hospitals has made an extensive study of existing facilities for graduate medical education and is giving thought to the establishment of further facilities so that medical officers who have had an abbreviated internship or whose residency was interrupted may on return complete their education. These are hopeful phrases to be sure, but if the study has been made why not immediately publish its results so that doctors in the armed forces may begin to plan for the future and instead of giving thought to the establishment of further facilities for medical officers who have had abbreviated training, why not say that they will be made available and by utilizing the prestige and power of the Association create promptly a reality from the thought?

It is not that doctors in the armed forces are critical or resentful of the effort being made by the Association in their behalf; they are merely skeptical of its realization. While it would be foolish to presume to answer for all the doctors in the armed forces a cross section of the opinions of a rather large group of doctors in the armed forces would lead one to believe that the following specific information should be made available in the very near future to these men:

What facilities will exist for further hospital or postgraduate training in the demobilization period?

(a) What medical schools and hospitals will provide such training?

(b) What will be the length of the periods of training and postgraduate courses?

(c) What will be the content of the training and postgraduate courses?

(d) Where will one be able in the near future to obtain information in respect to postwar training?

(e) When and where will one make application for this training?

(f) What will be the cost of this training and will it be subsidized by private or governmental agencies?

The complexity of these problems is well understood by the doctors in the armed forces but they feel that every effort should be made to cut directly through to the goal because then with the facts before them they will be able to plan their existence in the postwar period

FERRIS H LONG Colonel, M C, A U S

## ARMY

### HOSPITAL SHIP PATIENTS WRITE IN PRAISE OF EXCELLENT CARE

The War Department announced that letters written by patients who have returned to the United States from the fighting fronts aboard army hospital ships show the sincere gratitude these sick and wounded men feel for their treatment during the ocean voyage. Some of these letters were addressed to the senior medical officer aboard ship or to the master.

The Transportation Corps, responsible for the operation of these floating hospitals, has twenty of them in operation, most of which are busy in the Atlantic and the Mediterranean, bringing back the wounded from France, Italy and Africa. The great majority of their passengers have been disembarked at the Charleston, S C, Port of Embarkation.

In a letter signed by 4 patients the men stated 'Our quarters have been to us the essence of luxury embracing all those essentials to complete comfort we had been looking forward to renewing our acquaintance with. All the members of the Medical Corps, doctors, nurses and wardmen have unstintingly and cheerfully done their utmost to make us happy, comfortable, and to speed our recovery. Never shall we forget for a moment our great indebtedness to them all.'

These 'floating hospitals' can anchor off an invasion coast and take care of any need of a wounded man. Completely equipped with the latest medical and surgical devices and staffed with picked medical personnel, the wards aboard these vessels compare favorably with any. Drill in abandoning ship has been given until each member of the staff knows how to evacuate patients quickly and efficiently. In accordance with international agreements, hospital ships are painted white with a wide green band around the middle and marked with huge red crosses.

### APPOINTED ASSISTANT SURGEON FOR THE NATIONWIDE ARMY AIR FORCES TRAINING COMMAND

Col W H Powell Jr formerly of Fayetteville, N C has been appointed assistant surgeon for the nationwide Army Air Forces Training Command. He previously served as chief of the Professional Service section of the Training Command Surgeon's office. Dr Powell will assist in the direction of medical surgical and related functions at AAF flying and technical schools in every corner of the nation. He entered the army as a 1st lieutenant at Fort Bragg, North Carolina in December 1929 where he was accepted for appointment to the regular army. He graduated from the Medical College of Virginia Richmond in 1927. He is also a graduate of the Army Medical School, Washington, D C, of the Medical Field Service School Carlisle Barracks Pa, of the radiology course at the Army and Navy General Hospital, Hot Springs Ark and of the School of Aviation Medicine Randolph Field, Texas.

### GEN DWIGHT D EISENHOWER PAYS TRIBUTE TO ARMY NURSES

A tribute to the work Army nurses are doing in the European theater was recently expressed by Gen Dwight D Eisenhower in a letter to Mr Edwin B Wilson editor of the Brooklyn *Fagle*. General Eisenhower had been informed by Mr Wilson of the campaign being undertaken by the Brooklyn *Fagle* and by the Brooklyn chapter of the Red Cross to recruit nurses for the armed forces. Expressing his appreciation of the nurses' work General Eisenhower wrote 'Nothing stops them in their determination to see that our troops receive

the best attention humanly possible. We need nurses, more nurses. The work that you and your group—and other similar groups throughout the United States—are doing must be successful.'

### HOSPITAL STAFFED BY GERMAN DOCTORS OPENED IN OKLAHOMA

The Army Medical Department has established a separate prisoner of war hospital staffed with doctors and medical corps men of the prisoners' nationality. The first hospital, Glennan General Hospital, with a bed capacity of 1,700 has been established at Okmulgee, Okla for German war prisoners. American Army doctors are the chiefs of the medical services. Eight German physicians have been assigned to medical work. It is anticipated that the number will be increased to 30 or 40.

The Medical Department's new policy is in accord with the Geneva Convention Treaty, which stipulated that 'it shall be lawful for belligerents reciprocally to authorize, by means of private arrangements, the retention in camps of physicians and attendants to care for prisoners of their own country.'

### PHYSICAL THERAPY CLINIC IN THE JUNGLE

A physical therapy clinic was created recently out of make shift materials by members of a hospital unit on the Ledo Road the highway which Allied troops are building from Assam India through Burma to China against the vigorous opposition of the Japanese. Lieut Col Willis M Weeden of Woodbury, Conn, chief of surgery in the unit assigned Capt Hyman D Stein of Elkins Park Pa, and 2d Lieut Pauline Moudy, Army Nurse Corps, of Alhambra, Calif, to the task. They made a dry heat apparatus out of a crate and electric bulbs. Stirrups with ropes and weights made weight lifting devices, a Chinese officer provided a bicycle for leg exercises, and old gasoline tanks were turned into whirlpool leg and arm baths. A water heater was created from a gasoline drum, and the hard rubber core of an old soft ball was used for hand and finger exercises.

### ELECTRICALLY HEATED FLYING SUITS DELIVERED TO ARMY AIR FORCES

The General Electric Company recently delivered to the Army Air Forces the 200,000th electrically heated flying suit. The suit consists of jacket, trousers, gloves, boots and other electrically heated accessories. Each product has been subjected to a great variety of tests. Proof of the suits' ability to withstand the low temperatures encountered by airmen at high altitude has come in actual combat. Without the protection these suits afford, airmen fall easy prey to their invisible enemy frostbite. Major H G Thole of the AAF materiel command accepted the suit on behalf of the Air Forces from D C Spooner, manager of the pioneer products section of the General Electric Company which developed the outfit.

### SCOPE OF WORK AT MOORE GENERAL HOSPITAL

The Office of the Surgeon General of the Army, clarifying a recent announcement of the designation of the Moore General Hospital Swannanoa North Carolina as a medical center for the study and treatment of tropical diseases points out that the

commanding officer of the hospital is Col Frank W Wilson and that the chief of the medical service is Lieut Col Joseph M Hayman, under whose professional direction the tropical disease center will operate. The center will not confine its attention to malaria.

### CHARLES A STAFFORD (EX SIBONEY) DESIGNATED AS U S ARMY HOSPITAL SHIP

The War Department announced on August 1 that on May 20 the *Charles A Stafford* (ex *Siboney*) was designated as a United States Army hospital ship in accordance with international practice as set forth in the provisions of the Hague Convention X of 1907. In the future the United States Army hospital ship *Charles A Stafford* will be operated in accordance with the provisions of applicable treaties. Notification of this designation was delivered through channels, to the German, Japanese and Thai governments on June 3, to the Rumanian and Bulgarian governments on June 6 and to the Hungarian government on June 9. The ship's master of this and all other United States military hospital ships will at all times maintain sufficient copies of this general order for presentation to any authorized agent of an enemy belligerent who may require it for inspection.

### MAJOR MANTZ APPOINTED CHIEF OF MALARIA CONTROL SECTION

Major Francis A Mantz of Bala-Cynwyd, Pa. has been appointed chief of the Malaria Control Section in the Preventive Medicine Service, Office of the Surgeon General. Dr Mantz has been stationed overseas as malariologist for the past three years, lastly in the China-Burma-India theater to which he was assigned early in January 1943. Dr Mantz graduated from the University of Pennsylvania School of Medicine, Philadelphia, in 1938 and entered the service July 1, 1941.

### LIEUT ARTHUR L BENISON A PRISONER OF WAR

Word has recently been received by the parents of Lieut Arthur L Benison, formerly of Flint Mich., that he has been held prisoner by the Japanese at Philippine Military Prison Camp No 1 for more than two years. He was believed to be taken prisoner at Bataan. Dr Benison graduated from the University of Michigan Medical School Ann Arbor in 1937 and entered the service May 15 1941.

### ARMY AWARDS AND COMMENDATIONS

#### Captain Harry J Stone

The Distinguished Service Cross was recently awarded to Capt Harry J Stone for 'extraordinary heroism in action near Anzio, Italy.' The citation accompanying the award read:

"On Jan 27, 1944 Captain Stone advanced with a company attacking in daylight across an exposed field. During the advance the enemy laid down heavy concentrations of artillery and machine gun fire on the unit. Carrying full equipment, Captain Stone kept pace with the foremost elements and, following the assault, maintained an aid station under direct enemy observation.

'Captain Stone's prompt treatment under fire was a vital necessity, since evacuation was impossible because of direct enemy observation and nearness of enemy positions.

'Four days later his battalion occupied a defensive position and was subjected to heavy and sustained enemy attack. Because of enemy observation and fire the position could be approached only at night. Despite heavy enemy fire Captain Stone made nightly trips to the position to evacuate the wounded. On the night of March 15-16, 1944 Captain Stone participated in an advance on two enemy strong points. Following the assault platoon under intense artillery and machine gun fire, he treated 2 casualties directly in the rear of the objectives. Leaving

his place of cover he then proceeded under continued heavy fire to treat 2 more men in an open field swept by machine gun fire. Despite the intensity of artillery and small arms fire he carried to safety 1 of the men who was unable to walk. Still under fire he went to the aid of 5 other casualties. During the following hours of continuous combat Captain Stone was ever available to render aid where needed. With no regard for his own safety he promptly treated and evacuated all casualties.

'His calm demeanor and sustained courage and skill under fire were an inspiration to all officers and men and his performance reflects the finest traditions of the Medical Corps.

Dr Stone graduated from Wayne University College of Medicine Detroit in 1938 and entered the service Aug 1 1942.

#### Major Ernest Lloyd Boylen

The Bronze Star has been awarded to Major Ernest Lloyd Boylen formerly of Portland Ore. for meritorious service in direct support of combat operations in Italy last December and January. He commanded within a few miles of actual combat a field hospital unit which according to the citation admitted numerous patients too seriously wounded to permit evacuation to the rear. Major Boylen so organized the hospital as to provide the highest type of surgical and medical treatment to these patients. He displayed outstanding executive ability and resolved numerous problems of administrative and supply work incident to this function. His efficiency and devotion to duty contributed greatly to the high rate of recovery of seriously wounded patients during this period. Besides the Bronze Star awarded Dr Boylen his unit received a Fifth Army Plaque and clasp for outstanding performance during January 1944. Dr Boylen graduated from Harvard Medical School Boston in 1926 and entered the service Aug 8 1942.

#### Captain Lucien M Strawn

The Silver Star Award for gallantry in action has recently been presented to Capt Lucien M Strawn a battalion surgeon serving with the infantry in France. The citation accompanying the award said: Capt Strawn's battalion was engaged in a bitter fight against a powerful enemy force. Observing many wounded and knowing their immediate need for medical attention, Capt Strawn went forward into the heavy fire to administer first aid with complete disregard for his own personal safety. His action saved many lives and in performing it he displayed outstanding courage and devotion to duty. Capt Strawn's decision to go forward through terrific enemy fire and help his fellow soldiers is in keeping with the highest soldierly and professional traditions. Dr Strawn graduated from Temple University School of Medicine Philadelphia in 1940 and entered the service Aug 18 1942.

#### Colonel Emory H Gist

Col Emory H Gist, camp surgeon and commanding officer Regional Army Service Forces Hospital was awarded the Camp Lee Certificate of Commendation for "exceptionally meritorious service by Brig Gen George A Horkan camp commander. The citation states that Colonel Gist supervised the growth and the extensive expansion of the station hospital and to a large extent, its present status as an Army Services Forces Regional Hospital is a tribute to his outstanding administration. The Certificate of Commendation adds that "through his guidance an enviable high standard of health has been maintained on this post, rigid sanitation and the control of diseases and injuries have been factors in this success." Dr Gist graduated from Barnes Medical College, St Louis in 1911 and has been a regular army officer since 1922.

#### Captain Charles A Speer

Capt Charles A Speer, formerly of Somerville N J., has been awarded the Silver Star for gallantry in action in France on D Day June 6. He has also been awarded the Purple Heart. Dr Speer has been serving overseas with the Army Medical Corps since October 1942. He has received battle stars for three major engagements besides the invasion of Normandy, having seen action previously in Tunisia, Bizerte and Sicily. Dr Speer graduated from New York University College of Medicine, New York in 1940 and entered the service June 2, 1942.

## MISCELLANEOUS

DOCTOR'S MISSING BOOK FOUND  
WITH DEAD JAP

When Dr Edwin Lee of Downey Calif., was a student at Loma Linda Medical College an instructor told the students to buy Kellogg's Surgical Approaches to Anatomy. Dr Lee bought his volume and put his name on the fly leaf. One day it vanished from his book shelf. He sought it in vain and finally bought another. The other day he received the book from a former classmate Major L. Lawrence Whitaker, medical officer with the American forces that took Attu. The major and another Loma Linda classmate had discovered it in a Japanese hospital on the island, following the occupation by the Americans. A letter from Major Whitaker told Dr Lee of the weird incident of finding the book. After the Americans had completed the bitter job of wiping the tenacious Japs out of Attu, Major Whitaker and a group of officers examined the garrisons where the Jap command had its headquarters. When they entered the underground hospital they found that 18 of the Japs wounded had been killed by morphine. They lay on their backs, their hands folded across their chests, stiff in cold death. The doctor who had killed his patients lay sprawled on the floor—he had put a bullet through his head. Major Whitaker and his classmate recognized the doctor as their former classmate Paul Tatsuguchi, who had been in college with them for four years. He had received his medical degree with them and had taken the California state medical examination with them, when they did.

The two officers found his personal effects and, in going through them, discovered a diary which he kept in English during the last sixteen days, when the Japs realized that resistance would prove useless. He related what was happening as the battle of Attu began depleting the Jap garrison and wounded soldiers were being brought to the hospital. He methodically set down the number of patients he was treating and what he was doing for each one. He told how he had contracted diarrhea and how ill he was. On the last day, when the Japs knew that the end had come, he described how he had killed each of his patients. He wrote a farewell note to his wife and two children who lived in Japan. In final rite he wrote a rededication of himself to his emperor, setting down a renewal of his oath and then, according to the grim evidence, took his life.

In addition to the diary, one of the Loma Linda classmates picked up a volume that had a familiar appearance, it was "Surgical Approaches to Anatomy," a book that recalled many memories. The two officers examined it and there on the fly leaf they found the name of Ed Lee. It had been crossed out and beneath it was written that of Paul Tatsuguchi.

U S HOSPITALS ASSURED ENOUGH  
SUPPLIES AND EQUIPMENT FOR  
TREATMENT OF POLIOMYELITIS

The War Production Board's Office of Civilian Requirements recently announced that hospitals of the United States have been assured enough supplies and equipment to treat every one of the approximately 9,500 cases of poliomyelitis reported in the current epidemic and two and one half times that number if they should develop. Warned in June by the rapid development of the epidemic in North Carolina and Kentucky and the occurrence of 480 cases nationally, the OCR Chemicals, Drugs and Health Supplies Division officials contacted the National Institute of Health and the National Foundation for Infantile Paralysis to determine what equipment would be needed and what was available. It was revealed that 150,000 yards of wool, 500,000 yards of muslin binder, 150,000 yards of oil silk, 100,000 blankets and 25,000 dozen safety pins would be needed, together with hot pack units. Three days later the first hot pack unit thus made available was shipped by the maker to a hospital in Washington, D. C. Three more were sent to North Carolina, 15 went to Buffalo, and other orders were being filled.

Throughout the summer OCR acted as a clearing house, putting hospitals in touch with sources of equipment and sup-

plies and manufacturers in touch with materials. Contacts were made for inquiring parties and emergency ratings issued when necessary. OCR officials believed there would be little difficulty in meeting future emergency demands. Cooler weather is expected to help stop the spread of the disease.

HOSPITALS NEEDING INTERNS AND  
RESIDENTS

The following hospitals have indicated to the Council on Medical Education and Hospitals that they have not completed their house staff quota allotted by the Procurement and Assignment Service.

(Continuation of list in THE JOURNAL, September 16 page 177)

## ILLINOIS

Illinois Central Hospital Chicago Capacity 290 admissions 53/8  
Dr W. W. Leake Chief Surgeon (interns resident)

## NEW YORK

Ellis Hospital Schenectady Capacity 470 admissions 14/385 Miss  
Mary G. McPherson R.N. Administrator (intern October 1)

## PENNSYLVANIA

Babies Hospital Philadelphia Capacity 14 admissions 235 Dr  
Laura E. McClure Medical Director (resident—pediatrics October 1)

## WISCONSIN

State of Wisconsin General Hospital Madison Capacity 772 admis-  
sions 13/393 Dr H. M. Coon Superintendent (resident—surgery)

U S DOCTORS SAVE TWO HUNDRED  
JAVANESE

The lives of more than 200 Javanese workers were recently saved after being treated by American doctors when General MacArthur's men invaded Numfor Island, a Japanese held air base at the entrance of Geelink Bay, off the northwest coast of Netherlands New Guinea on July 2. Hundreds of Indonesians had been transported there from other Netherlands East Indies Islands to work on defense projects. Some were on the verge of death as a result of starvation, overwork and disease. Medical personnel of American hospital ships were immediately assigned to treat these workers, a number of whom were in such critical condition that they needed blood transfusions. Most of the victims of Japanese cruelty pulled through but some were beyond help and died en route to Australia.

## WOMEN GIVEN BRAVERY AWARDS

The Office of War Information recently announced that awards from the Army and Navy for bravery and efficiency in war have been presented to 105 American women. Army nurses lead with 97 and a Distinguished Flying Cross, the highest award ever given an American woman in uniform. This was presented to Lieut. Kathleen R. Dial of Florence, Ala., in recognition of her work in taking care of 18 patients after a flying ambulance crashed off Port Moresby, New Guinea.

Flying nurses have received 29 air medals, 11 with four oak leaf clusters, for flights in combat areas. Twenty-four Purple Hearts have been received by Army nurses and four by Wacs. The Soldier's Medal for personal bravery has been presented to four Army nurses and two Wacs.

## HEALTH NEWS FROM EUROPE

The Netherlands Information Bureau recently stated that diphtheria has increased thirtyfold in occupied Holland, with a weekly average of 1,800 new cases reported for the country. According to information gathered by medical personnel of the Nazi government, deaths resulting from diphtheria totaled 2,388 in 1943, as compared with the 75 reported in 1939 prior to the Nazi occupation. The tuberculosis toll has doubled within this period, the reports also revealed. In 1939 the number of deaths due to this disease was 3,595, while in 1943 it rose to 6,382.

# ORGANIZATION SECTION

## POSTWAR MEDICAL SERVICE

A meeting of the Committee on Postwar Medical Service was held on September 9 at the Waldorf Astoria Hotel in New York City. The following members and guests were present: Dr. Roger I. Lee, chairman; Dr. Irvin Abell; Dr. Francis G. Blake; Dr. F. F. Borzell; Dr. Frederick A. Collier; Mr. Graham E. Davis; Dr. Morris Fishbein; Dr. Alan Gregg; Dr. Charles M. Griffith; Mr. B. A. Horning; Dr. E. E. Irons; Dr. Victor Johnson; Mr. E. R. Loveland; Lieut. Col. Harold C. Lueth; Dr. W. W. Palmer; Col. George M. Powell; Dr. W. C. Rappleye; Father Alfonse Schwitalla; Miss Mary Switzer; Dr. Olin West; and Dr. Ralph C. Williams.

The chairman reported the loss of a valued member of the committee, Dr. William C. Breed of Boston, who died in August and stated that the vacancy thus caused would be filled by the appointment of Dr. Morris Piersol of Philadelphia.

### REPORT ON QUESTIONNAIRE

An interim report on the questionnaire returns was presented by Lieutenant Colonel Lueth. It is expected that during September and October an adequately representative number of returns will be received and a full report can be presented at the next meeting of the committee on October 28. The returns thus far received indicate that the first sampling of 1,000 presents a characteristic picture and thus has served well the purpose of a specimen or trial sampling.

### REPORT ON EDUCATIONAL FACILITIES

Dr. Victor Johnson presented the material of a report on educational facilities required for returning medical officers, which he has prepared with Dr. F. H. Arestad. After considerable discussion of the statistics and comment offered by Dr. Johnson, it was voted that the chairman be authorized to appoint a committee to confer with the Surgeons General regarding places for study in the hospitals of the Army, Navy, and civilian hospitals. The chairman designated Dr. Palmer, Dr. Johnson, Lieutenant Colonel Lueth, and Father Schwitalla, and as chairman, Dr. Frederick A. Collier.

### PROVISIONS FOR LICENSURE OF RETURNING OFFICERS

There appeared before the committee Dr. Barton of the Procurement and Assignment Service, Mr. Wheaton of the War Manpower Commission, Mr. Robinson of the Council of State Agencies, and Mrs. Gallaher of the Department of Justice to solicit opinion on a proposal relating to the amendment of the medical practices acts of the states by adding the following:

'If an applicant presents evidence satisfactory to the board that he (1) has been graduated by a medical school reputable and in good standing as determined by the board, has been licensed by a state of the United States, (2) has served in the active military or naval service on or after Sept. 16, 1940 and prior to the termination of the present war as a commissioned medical officer of the Army or Navy and has been discharged or released therefrom under conditions other than dishonorable or has rendered medical service during the period 1940 to 1945 in industry or in a civilian community and (3) is of good moral character, the board in its discretion may issue him a temporary license for a period of time to be fixed in the license issued to practice medicine in this state without requiring that he pass an examination (including a basic science examination if that is a condition precedent to licensure) that otherwise he would be required to pass. An application for such a license shall be on a form approved by the board and shall be accompanied by such fee as is required for other licenses issued without examination.'

This amendment is to become effective at once and is to remain in effect until the governor, on the recommendation of the state board of medical licensure, proclaims that this amendment is no longer necessary.

After discussion the following resolutions were passed unanimously by the committee:

1 That the Committee on Postwar Planning announces its approval of the proposed legislation.

2 That the committee recommends that the Council of State Governments be requested to give active support to the proposed legislation in the various states.

3 That the committee recommends to state medical associations that they support such legislation and that such associations obtain the assistance of the Procurement and Assignment Service of the War Manpower Commission through its state representatives and

4 That the committee recommends to state medical associations that they appoint liaisons to officers to correlate the efforts of those supporting this legislation.

### ASSISTANCE TO MEN DISCHARGED FROM SERVICE

The chairman then asked Dr. Charles M. Griffith of the Veterans Administration to comment on public law 346, 78th Congress, relating to the provision of educational assistance to men after discharge from military service since the interpretations and application of this law will be for the Veterans Administration to make. It was voted that the chairman appoint a subcommittee to confer and cooperate with the Veterans Administration and for this purpose the chairman designated Dr. Collier, Dr. Palmer, and Father Schwitalla.

### RECOMMENDATIONS ON SURPLUS SUPPLIES

Dr. Palmer reported that a committee of the National Research Council appointed to advise the War Production Board on the subject of essential drugs and supplies had prepared a series of recommendations which cover the measures to be taken in control of the disposal of surplus drugs, materials, and supplies after the war. Dr. Palmer stated that the report is now in the committee stage of discussion by Congress but that it would be appropriate for some formulation of opinion to be expressed at this time.

It was voted that the recommendations in the report of this National Research Council committee be approved.

### ORGANIZATION OF INFORMATION BUREAU

Dr. West reported that arrangements are being made for the organization of the Information Bureau at American Medical Association Headquarters as authorized by the Trustees of the American Medical Association.

### WARTIME GRADUATE MEETINGS

In the absence of Commander Bortz, Dr. Borzell gave an account of the work of the Committee on Wartime Graduate Medical Meetings and requested an expression regarding its continuance after the cessation of hostilities, especially in the European theater of war. It was voted that the committee express its appreciation of the valuable work done under the direction of Commander Bortz and that a further report be requested at the next meeting of the committee.

October 28 was agreed on as being the time for the next meeting of the committee and the place Chicago.

## ANNUAL CONFERENCE OF STATE SECRETARIES AND EDITORS

The Annual Conference of Secretaries of Constituent State Medical Associations and Editors of State Medical Journals will be held in Chicago at the offices of the American Medical Association on Friday and Saturday, November 17 and 18. Two sessions of the conference will be held on Friday, November 17, the first at 10 a. m. and the second on the afternoon of that day. On the evening of November 17 a program given over to the discussion of topics of particular interest to editors of the journals of constituent state medical associations will be presented at the Palmer House. The concluding session of the conference will be held at the offices of the Association on the morning of Saturday, November 18.

While these annual conferences have each year been attended by nearly all of the secretaries of constituent state medical associations and editors of medical journals of those associations, there has been a constantly increasing attendance of other officers of constituent state medical associations and officers of component county and district medical societies, and of late



years a very considerable number of members who do not occupy official positions have been present. The members of all those groups will be cordially welcome at the November conference.

All who expect to attend the conference this year are especially urged at the earliest possible time to make necessary arrangements for hotel accommodations and railroad transportation.

### WASHINGTON OFFICE BEGINS ACTIVITY

On September 1 the Washington office of the Council on Medical Service of the American Medical Association began its activities. The office is located at 1835 I Street NW. Dr. Joseph S. Lawrence, formerly representing the Medical Society of the State of New York in Albany, is in charge of this office. Any requests for assistance in relation to material available in Washington may be addressed directly to Dr. Lawrence. The activities of the office will be reported from time to time in THE JOURNAL.

### AIR CONDITIONING

The Association's Committee to Study Air Conditioning maintains a compilation of pertinent bibliographic material with brief abstracts related to air conditioning for human comfort and health but not for industrial materials and products.

While this committee cannot undertake to furnish complete bibliographic material, it will furnish, without cost to physicians and other professional personnel citations with minor abstracts on any one or any small number of the categories mentioned. This committee does not agree to pass on the merits of any air conditioning installation, nor can it furnish detailed plans for desired air conditioning in any operation. The material available is limited solely to citations to the world's literature on air conditioning in relation to human beings such as is available to the committee for review. Abstracting for the years 1942-1943 has just been completed.

The members of the Committee to Study Air Conditioning are Alvan L. Barach, Walter M. Simpson, C. P. Yaglou and Carey P. McCord, Chairman. Requests should be addressed to Carey P. McCord, M.D., 10 Peterboro Street, Detroit 1, Michigan.

This material is segregated in the following categories:

|  |  |
|--|--|
| Air Analysis   | Hospital Air Conditioning                                      |
| Air Cleaning   | Hotels   |
| Air Conditioning in Tropics                                | Humidity, Humidifying, and Dehumidification                    |
| Aircraft   | Industrial Air Conditioning and Ventilation                    |
| Air Flow, Air Circulation and Distribution, Air Movement   | Instruments and Apparatus, Laboratory                          |
| Air Pressure, High   | Insulation   |
| Air Raid Shelters and Military Air Conditioning            | Ionization   |
| Allergy and Allergens                                      | Laws, Standards and Codes                                      |
| Altitudes, High, Low, Air Pressure                         | Libraries and Museums  |
| Apparatus, Breathing                                       | Mines  |
| Bacteria   | Miscellaneous Buildings and Structures                         |
| Banks  | Natural Infiltration   |
| Charts and Tables  | Newspapers   |
| Climate, Season and Weather                                | Noise and Noise Control  |
| Clothing   | Odors and Odor Effects, Air Free, Air Freshness, Deodorization |
| Comfort and Comfort Zone                                   | Office Buildings   |
| Condensation   | Operating Rooms (Hospitals)                                    |
| Cooling Agents for Air Conditioning, Refrigerants, General | Oxygen and Oxygen Therapy                                      |
| Cooling and Refrigeration, Summer Cooling                  | Ozone  |
| Costs, Economics and Sales                                 | Personal Protective Equipment                                  |
| Dehydration  | Physical and Physiologic Principles, General                   |
| Department Stores, Stores                                  | Pollution, Atmospheric, General                                |
| Design   | Priorities and Rationing                                       |
| Ducts  | Progress and Future of Air Conditioning                        |
| Dust Control   | Public Buildings   |
| Dust Determinations  | Railroads and Automobiles                                      |
| Education and Training                                     | Respiratory Diseases   |
| Environment and Health                                     | Restaurants  |
| Equipment  | Schools  |
| Fans   | Ships  |
| Fire Hazards   | Sterilization of Air   |
| Heat   | Temperature and Humidity Control                               |
| Heat Regulation (Temperature Regulation)                   | Temperature Changes  |
| Heat Transfer  | Temperature Effective  |
| Heating and Ventilation and Air Conditioning, General      | Tunnels  |
| Heating, Radiant   | Windowless Structures and Blackouts                            |
| Homes and Apartment Houses                                 |  |

### WASHINGTON LETTER

(From a Special Correspondent)

Sept 18, 1944

#### Hearings of Pepper Subcommittee on Wartime Health and Education

'Medical care for the people of the United States is not enough.' Dr. Roger I. Lee, President-Elect of the American Medical Association and chairman of the Joint Committee on Postwar Medical Service, told the Pepper hearings on wartime health and education here. "It must be good medical care. Good medical care is based on good medical education, on medical research and on good medical communication." Dr. Lee declared that no doctor who graduated ten years ago can be a good practitioner solely on what he learned in medical school. Continuing medical education for the doctor is necessary, to be met only partly for most doctors by reading, perhaps by medical meetings, by long or short courses, or by long or short visits to medical centers and hospitals. "It is customary and accurate to state that the United States has the finest health record in the world. But that is not enough," he continued. "The practice of medicine in the United States is undergoing rapid change. We live in a changing world." Dr. Lee said. "Good roads, airplanes and other new devices will have a part in the changes in our lives and medical practice. Controlled scientific experimentation can, I think, be depended on to develop sound medical care for every one in the United States. This will require the cooperation of the government, the medical profession and the public."

On the subject of prepayment medical plans, Dr. Lee said some had been discarded as unsound, others had "folded up" as unsuccessful. While the insurance principle had a definite appeal, there were difficulties in its application. The insurance principle seemed to be working fairly but not altogether successfully in voluntary prepayment hospitalization plans. General prepayment sickness plans had similar success when the insured group was homogeneous as in some industries or universities. General plans, he said, found great difficulties in the heterogeneous population of the country. Great Britain's national health insurance plan, so often quoted, has met great difficulties and has not resulted in furnishing medical service approaching the quality of medical care in the United States. Maintenance of the quality of medical care is fundamental in any health program, he said, declaring it was hard to improve the phraseology of a British recommendation. "There should be initiated, by arrangement and agreement between the government and the profession, organized experiments in the methods of practice, such a group practice, including health centers of different kinds, which should extend to general practitioners, hospital units attached to general hospitals. Future developments in group practice should depend on the results of such clinical and administrative experimentation."

Dr. Lee elaborated on the report that 4,000,000 men had been rejected as physically disqualified for the armed forces. Standards of physical fitness had varied as the needs for manpower varied. The examinations were carried out by 33,000 physicians and 10,000 dentists who had served without remuneration. Some of the doctors boasted that they were "tough" and their personal interpretation of the standards had been tough, in the belief that all men should be fit for overseas combat service. Other examining doctors were lenient and some soldiers they had passed were found unfit for training and were discharged. Rejections had been made for mental disease, mental deficiency, illiteracy and neurologic disorders. Dr. Lee felt that many in other categories could be made to meet standards and needs of the armed forces.

Dr. Lee said that to ascertain postwar plans of medical officers a questionnaire had been circulated with enthusiastic consent of the Surgeons General of the Army, Navy and Public Health Service. The Joint Committee was amazed at the large response and uniformity of answers to the questionnaire. Younger officers largely wanted to finish or supplement their training, older men wanted to get back to their practices, although some wanted short refresher courses. The Joint Committee, Dr. Lee said, was greatly concerned in the problem of disposal of surplus war supplies as they concern medical and hospital supplies.

Many returning medical officers will find their medical equipment obsolete or dissipated. Hospitals having yielded to needs of the armed forces require x-ray machines, surgical instruments, rubber gloves and other supplies.

First witnesses at the resumed sessions of the Pepper Subcommittee on Wartime Health and Education were Dr. R. L. Sensenich of the Board of Trustees, American Medical Association; Dr. Harvey Stone, member of the Council on Medical Education and Hospitals; and Dr. Lee. Dr. Stone further elaborated on the reason for rejection of a large number of draftees by the various examining bodies functioning under the Selective Service law. The rejections had attracted wide attention and led to inferences and deductions that general public health was in a deplorable state. "I believe that a careful appraisal of the facts do not warrant the drawing of such conclusions," he said. Dr. Stone said that despite the withdrawal of about 55,000 doctors into the federal services through the war, a general breakdown of civilian medical care had not resulted. This remarkably good record shows that despite shortages in trained personnel, the public health services such as the protection of the food and water supply, the maintenance of sanitary conditions, control of infectious diseases and more particularly, the care of the sick, are still operating efficiently," he said. Dr. Stone recommended a change in the attitude of Selective Service to assure a continuous supply of medical school graduates. He also saw benefits accruing from a well thought out and soundly organized program for hospital and laboratory facilities in areas now inadequately supplied.

#### Hearing on the Physically Handicapped

American Medical Association statistics on the number of hard of hearing persons in the United States were submitted to the Kelley hearing on the Physically Handicapped here this week. Alan B. Crammatt of the American Federation of Physically Handicapped, Inc., quoted the figures showing an overall total of some 5,500,000 deaf persons, with about 3,000,000 children affected in some degree and between 60,000 and 100,000 totally deaf. Mr. Crammatt was one of several witnesses who charged that educational facilities for deaf and hard of hearing children in the country are wholly inadequate both in teaching personnel and in equipment.

The American Medical Association was to have been represented at the hearings by Dr. Walter Hughson, director of the Abington (Pa.) Memorial Hospital, but Dr. Hughson was taken seriously ill in Washington and was unable to attend.

The sessions. Two medical witnesses were Dr. Harry Best of the University of Kentucky, Lexington, author of books on the subject, and Dr. Robert West, professor of speech pathology, University of Wisconsin, Madison. While Dr. Best's testimony did not touch to a great extent on the medical aspects of the question, he expressed pleasure that the federal government was taking an interest in the welfare of the deaf. Employers generally were unaware of what the deaf can do. He advocated more publicity and proposed that each state have a person to advise the deaf and employers alike to their mutual advantage. Dr. Best expressed the opinion that there are 5 deaf per 10,000 in the country on the basis of census reports. He said that 60 per cent of the afflicted are congenitally deaf, 27 per cent are deaf before 3 years of age and 13 per cent later. Deafness, he indicated, was a problem both of childhood and of old age. He reported Wisconsin plans to set up centers in the state where the hearing loss of each individual will be estimated and help will be given in selecting a hearing aid.

Criticism of the federal government employment policies in regard to deaf and hard of hearing elicited an official statement from the Civil Service Commission that it had surveyed 550 types of jobs and found that 1,200 of them could be handled by totally deaf persons and 3,200 by hard of hearing. The commission reported that since October 1942 the government had hired 3,000 hard of hearing and 1,500 totally deaf persons.

Among witnesses at the hearings for the deaf were Miss Elizabeth Withers, American Occupational Therapy Association, Washington; Edmond Bortner, American School for the Deaf, West Hartford, Conn.; Ben M. Showe, National Association of the Deaf; Raymond H. Greenman, managing director, American Society for the Hard of Hearing; Miss Josephine Timberlake, executive secretary, Volta Bureau; Paul A. Strachan, president, American Federation of the Physically Handicapped; and Rev. Herbert C. Merrill, president, Gallaudet College Alumni Association.

Representative Augustus B. Kelley (Democrat, Pennsylvania) reported that further hearings of his committee on the physically handicapped will be held in New York on October 24, in Pittsburgh on October 17 and 18, and in Detroit on October 19 and 20. Mr. Kelley has expressed to Dr. Olin West, Secretary of the American Medical Association, his gratitude for cooperation rendered in the hearings by the American Medical Association and for publicity in *THE JOURNAL*, which he said had resulted in valuable material being sent directly to the committee.

## MEDICAL ECONOMIC ABSTRACTS

### ANOTHER COMPULSORY SICKNESS INSURANCE PLAN

The Subcommittee on Medical Care of the Committee on Administrative Practice of the American Public Health Association has submitted a preliminary report on the national program for medical care. This report appears in the September 1944 issue of the *American Journal of Public Health* (p. 984). The program suggested follows closely the recommendations of the International Labor Organization on Sickness Insurance already described in *THE JOURNAL*.<sup>1</sup>

The similarity is shown in the following selection from the preliminary report of the Subcommittee on Medical Care:

A national program for medical care should make available to the entire population regardless of the financial means of the individual curative services.

Services should be adequately and securely financed through social insurance supplemented by general taxation or by general taxation alone.

The public health agencies—federal, state and local—should carry major responsibilities in administering the health services of the future.

The agency authorized to administer such a program should have the advice and counsel of a body representing the professions, other sources of service and the recipients of service.

There is more of a similarity to the Wagner-Murray-Dingell bill than is found in the original recommendations of the International Labor Office in that the public health department is

proposed as the administrative agency and that the role of the medical profession is reduced to representation in an advisory commission.

The members of the subcommittee submitting the report are: Joseph W. Mountain, M.D., chairman; Earle G. Prown, M.D.; David D. Carr, M.D.; Edwin F. Daily, M.D.; Graham Davis, I. S. Falk, Ph.D.; J. Roy Hege, M.D.; Hugh R. Leavell, M.D.; Emory Morris, D.D.S.; George St. J. Perrott; Marion G. Randall, R.N.; Edward S. Rogers, M.D.; and Nathan Smil, D.P.H.

### PROGRESS OF MEDICAL SERVICE PLANS

*Medical-Surgical Plan of New Jersey*—The first contracts were issued in July 1942. It serves the state of New Jersey and offers both medical and surgical contracts. On Dec. 31, 1943, it had a total membership of 7,334 males and 8,681 females, including both subscribers and dependents. During 1943, it had an income from subscribers of \$74,498.47, expended \$67,348.46 and accumulated a surplus of \$12,201.35.

*California Physicians Service*—This was organized in 1939 and serves the state of California. On March 31, 1944, it had contracts covering 38,990 males and 53,010 females, making a total of 92,000. Its income to the date mentioned was \$1,280,054.03, disbursements amounted to \$1,206,401.39, leaving a net gain of \$73,652.64. It now has a stabilization fund of \$90,165.

## Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES NEW HOSPITALS EDUCATION AND PUBLIC HEALTH)

### ALABAMA

**Personal**—Dr Frank M Hall has resigned as director of the Limestone County Health Unit in Athens to organize a similar unit in Gainesville, Fla, it is reported

**Condemnation Proceedings Started for Medical School Site**—Condemnation proceedings have been started on four square blocks between Sixth and Eighth avenues, south, and Eighteenth and Twentieth streets, Birmingham, to provide a site for the new University of Alabama School of Medicine (THE JOURNAL, March 4 p 658, and April 22, p 1212) Plans are under consideration to merge Hillman and Jefferson hospitals under the Jefferson Hospital roof, which would leave Hillman Hospital vacant Tentative plans include using the vacant building as temporary administrative offices for the four year medical school

### CALIFORNIA

**Fund for Tropical Medicine**—The Columbia Foundation of San Francisco has given \$13,800 to assist in the establishment of a department of tropical medicine at the University of California Medical School San Francisco it is reported

**Tuberculosis Control in the State Hospitals**—The state department of public health is cooperating with the state department of institutions in a program of tuberculosis case finding in state hospitals A mobile x-ray unit will be used in the project X-ray examinations have already been completed of most of the patients in Patton State Hospital Patton A similar program will be undertaken in the Folsom State Prison which according to *California's Health* will be the first tuberculosis x-ray survey of a California state prison

**Medicine to Benefit in Appropriations for Postwar Planning**—More than \$27,000,000 will be expended by the University of California in a building program to be undertaken after the war The legislature has already appropriated several million dollars for the work which includes new buildings and expansion programs for medical and public health projects At Los Angeles the proposed projects will include the student health center \$450,000 student hospital \$600,000 life sciences \$1,000,000 In San Francisco more than \$6,000,000 will be spent \$4,000,000 to finance a teaching hospital \$1,000,000 for medical science \$500,000 for a nurses home, \$200,000 for interns quarters and \$100,000 for a dental clinic

### DISTRICT OF COLUMBIA

**Annual Scientific Assembly**—The Medical Society of the District of Columbia will hold its annual scientific assembly at the Mayflower Hotel, Washington October 5-7 under the presidency of Dr Fred R Sanderson The program is presented as a preview of postwar medicine and includes the following speakers

Dr Robert H Williams Boston Thioracil Treatment of Thyrotoxicosis  
Dr Lothar B Kalinowsky New York Electric Convulsive Therapy in Psychoneuroses  
Lieut Howard M Odel (MC) The Future of Our Coronaries  
Louis L Williams Jr medical director U S Public Health Service The Malaria Problem  
Dr Howard F Root Boston Diabetes Tomorrow  
Dr Frank H Lahey Boston Biliary Tract Surgery  
Lieuts C Hunter Shelden and Robert H Pudenz (MC) and Lieut Comdr Joseph S Restarski (DC) Direct Observation of the Brain Under Physiologic Conditions  
Dr George P Muller Philadelphia Regional Ileitis  
Dr James Ross Veal Management of Venous Thrombosis  
Comdr George W Christiansen (DC) Oral and Plastic Surgery  
Brig Gen Fred W Rankin M C Surgery in the Forward Echelon  
Drs John Tilden Howard and Arthur M Shipley Baltimore Inflammatory Lesions of the Lower Gastrointestinal Tract  
Dr Frank E Adair New York Cancer of the Breast  
Lieut Comdr Francis S Cheever (MC) The Dysenteries  
Norman T Kirk Surgeon General of the Army Present Concepts of Military Surgery as Developed in the European Theater  
Dr Frank W Konzelmann Philadelphia Recent Advances in Laboratory Diagnosis  
Dr Norman M Scott Trenton N J Experiments in Medical Care  
Major Charles R Brooke M C Rehabilitation of Veterans  
Col Leonard G Rowntree M C The National Program for Physical Fitness  
Major Henry B Gwynn M C Reconditioning in Civilian Hospitals  
Dr Geza de Takats Chicago The Causal State in Peace and War

Luncheon sessions during the meeting will be addressed by Commodore Arthur W Clarke of the Royal Navy, who will speak on 'Maintaining Morale in Fighting Men at Sea', Major Gen David N W Grant the Air Surgeon, "Aviation Preventive Medicine" and William Mather Lewis, LL D, president of Lafayette College, Easton, Pa One feature will include a panel discussion on chemotherapeutic drugs with the following speakers Dr Chester S Keefer, Boston, moderator, Lieut Col Michael E DeBailey, M C, Lieut Comdr Adolph M Hutter (MC) and Lieut Comdr Edwim E Barksdale (MC) There will be a panel discussion Saturday morning on the future of medicine with the following speakers Dr John P Peters, New Haven, Conn, Dr Walter H Judd, congressman from Minnesota Ross T McIntire, Surgeon General of the Navy, Claude D Pepper, Senator from Florida, Thomas Parran Surgeon General of the Public Health Service, and Dr John H Fitzgibbon, Portland, Ore

### INDIANA

**Fellowship in Cancer**—Establishment at the Robert W Long Hospital of the Indiana University Medical Center, Indianapolis of a fellowship for the training of a pathologist in specialized diagnoses and research in cancer has been announced by the Indiana Women's Field Army of the American Society for the Control of Cancer The Women's Field Army of Marion County, assisted by the state division will provide also during the coming year for the sponsorship of the services of Miss Millicent Duckworth, medical center research worker in the follow up of cancer patients in the medical center and Indianapolis City Hospital clinics

**State Medical Meeting**—The ninety-fifth annual meeting of the Indiana State Medical Association in conjunction with the army air force medical services will be held at the Murat Temple Indianapolis October 3-5 under the presidency of Dr Jacob T Oliphant, Farmersburg Among the speakers will be

Dr Paul H Holinger Chicago Bronchoscopic Diagnosis of Bronchial Tumors  
Dr Julian B Mueller The Teaching of Anesthesia  
Major Gen David N W Grant the Air Surgeon Medical Aspects of Pressurized Aircraft  
Dr Newell C Gilbert Chicago Functional Disturbances versus Organic Heart Disease  
Dr Chester S Keefer Boston Indications and Methods of Use of Penicillin  
Dr Vugil S Counsellor Rochester Minn Indications for Radical versus Conservative Treatment for Gynecologic Conditions  
Colonel Howard A Rusk M C New Horizons in Management of Convalescents  
Brig Gen Fred W Rankin M C Advances in Army Medicine  
Ross T McIntire Surgeon General of the Navy Medical Aspects of Naval Warfare  
Dr A Jerome Sparks Fort Wayne Upper Urinary Tract Symptoms of General Interest  
Major Randolph I Clark Jr M C The Evolution of the Treatment of Pilonidal Cysts in Sinuses  
Dr Eugene B Mumford Indianapolis Bone Grafts—Review of 103 Cases  
Dr Leo K Cooper, Gary Surgery of Trauma and Its Importance as an Emergency  
Major Dillon D Geiger M C, Penicillin in Otolaryngology  
Major John C Bellows M C Penicillin in Ophthalmology  
Dr Ralph M Water Madison Wis Artificial Respiration  
Major Donald S Thatcher M C The Correction of Protein Deficiency by Amino Acid Therapy in the Management of Surgical Patients  
Dr Charles N Combs Terre Haute The First Nitrous Oxide Anesthesia Administered by Dr Horace Wells Dec 11 1844—A Memorial

At the annual banquet, Dr Frank H Lahey, Boston will discuss "Present and Postwar Medical Economic Problems" The program also includes Michael "Mickey" MacDougall, New York on Card Sharks versus Soldiers and Sailors

### MICHIGAN

**Physicians Honored**—The Lapeer County Medical Society gave a dinner August 29 in honor of physicians who have completed fifty or more years in the practice of medicine Among the guests were Dr Frank A Tinker Lapeer, who has served sixty years, and Drs David H Burley, Almont and Henry G Merz Lapeer both of whom have completed fifty years in the practice of medicine

**Changes in Health Personnel**—Dr Louis K Peck has been appointed health officer of Crawford, Kalkaska, Missaukee and Roscommon counties with headquarters in Lake City —Dr Douglas S Fryer resigned August 11 as assistant director of the bureau of local health services, Michigan Department of Health, Lansing to join the Wyeth Laboratories Philadelphia —Dr William A Corcoran has been appointed health officer of Ishpeming, succeeding Dr Neal J McCann (THE JOURNAL, August 26, p 1199)

**Postgraduate Medical Conference**—On October 13 the University of Michigan Medical School, Ann Arbor will conduct its annual postgraduate medical conference. Among the speakers will be

Dr Sture A. M. Johnson New of the Skin Diagnosis and Treatment  
Dr Gordon H. Moe Circulatory Actions of the Veratrum  
Dr Carl D. Cump Postural Tension as a Cause of Pain  
Dr Albert C. Furstenberg Diseases of the Salivary Glands  
Dr Cyrus C. Sturgis Medical Treatment of Diseases of the Thyroid Gland  
Dr Frederick A. Collier Surgical Treatment of Diseases of the Thyroid Gland  
Dr John Alexander The Management of Benign and Malignant Inter-thoracic Neoplasms  
Dr Raymond W. Waggoner Psychiatric Aspects of Chest Pain  
Dr Norman F. Miller Toxemias of Late Pregnancy

## MISSOURI

**Annual Fall Clinical Conference**—The twenty-second annual fall clinical conference of the Kansas City Southwest Clinical Society will be held in Kansas City, October 2-4 at the Municipal Auditorium. Dr Max Goldman, Kansas City, president of the southwest clinical society, will give the address of welcome. Among the speakers will be

Dr Frederic E. B. Foley St. Paul Management of Vesical Neck Obstruction  
Dr Russell L. Haden Cleveland Treatment of Rheumatoid Arthritis  
Dr Robert L. Jackson Iowa City The Management of Acute Rheumatic Fever in Children  
Dr Frank H. Lahey Boston The Management of Surgical Lesions of the Terminal Ileum, Colon and Rectum  
Capt Bruce V. Leamer (MC) Aviation Medicine—A Brief Review and Its Part in the Present War  
Dr William F. Rienhoff Jr. Baltimore Surgical Treatment of Lesions of the Biliary Tract  
Dr Earl C. Sage Omaha Questions Arising in the Office Practice of Obstetrics and Gynecology  
Dr Cyrus C. Sturgis Ann Arbor Mich. The Leukemias  
Dr Owen H. Wangenstein Minneapolis Studies on the Origin and Treatment of Ulcer

The guest speakers are scheduled for more than one topic for discussion. "The Newer Things in Medicine" will be considered in a round table discussion conducted by Dr Ira H. Lockwood, Kansas City, Dr Foley, Dr Haden, Dr Rienhoff, Dr Sturgis and Dr Wangenstein. At a joint evening session with the local county medical societies on Tuesday Dr Lahey will discuss "Medicine Today, In and Out of the Service and After the War." The program also includes symposiums on gastroenterology, obstetrics, pediatrics, cardiovascular diseases, urogenital abnormalities and headache and backache.

## NEW YORK

**Commission Named to Study Care of Needy**—Dr Basil C. MacLean, medical director of the Strong Memorial Hospital, Rochester, has been appointed head of a ten member commission requested by Governor Dewey to draft a program providing medical care for needy persons in the state according to the Rochester *Democrat and Chronicle*, September 7. The commission, which has \$40,000 for its work, was authorized by the 1943 legislature and results of its study are intended for use in formulating legislation for submission in 1945. The commission will make necessary studies to devise programs for medical care for persons of all groups and classes in the state of New York. Governor Dewey is reported to have said in a press interview. The commission was created after Governor Dewey told the legislature in his annual message last January that medical care for persons who cannot provide it for themselves was one of the chief areas of unmet human need. Assemblyman Lee B. Mailler, sponsor of the bill, was designated by the governor as vice chairman of the group although he is also an ex officio member. Other members of the commission include Dr George M. Mackenzie, Cooperstown; Dr Herman G. Weiskotten, Syracuse; Dr Lucien M. Brown, Rev. John J. Bingham, Dr Robert L. Levy and Garrard B. Winston, lawyer, all of New York City; Miss Ruth Hall, R.N., Buffalo; Miss Agnes Gelinas, R.N., New York; and Miss Marion W. Sheahan, R.N., Albany.

## New York City

**Cancer Foundation Seeks Funds**—On September 4 the National Foundation for the Care of the Advanced Cancer Patients, Inc., opened a campaign to raise \$1,800,000 to provide beds and care in established institutions at low cost for incurable cancer patients. The campaign will be carried out under the direction of the foundation's executive committee consisting of Julius J. Perlmutter, president; Dr Frank E. Adair, president of the American Society for the Control of Cancer; Dr Roscoe R. Spencer, director of the National Cancer Institute, Bethesda, Md.; John W. Wingate of New York University; Morris M. Bernstein, treasurer; Morton Morrison, secretary of the foundation; and Mrs. Francis J. Rigney,

commander of the Metropolitan area of the Women's Field Army of the New York City Cancer Committee. Organization of the foundation was announced in THE JOURNAL, May 20, page 221.

**New Psychosomatic Clinic**—A psychoanalytic and psychosomatic clinic for training and research has been established in the department of psychiatry at Columbia University College of Physicians and Surgeons. The new clinic said to be the first of its kind in the United States is under the supervision of Dr. Nolan D. C. Lewis, executive officer of the department of psychiatry at Columbia University and director of the New York State Psychiatric Institute and Hospital. Dr. George E. Dannels, clinical professor of psychiatry, has been appointed chief of the psychosomatic service. The following additional appointments were announced: Dr. Sándor Rado, clinical professor of psychiatry, director of the clinic and chief of the psychoanalytic services for inpatients and outpatients; Dr. David M. Levy, assistant clinical professor of psychiatry and chief of the psychoanalytic service for children; Dr. Abraham Kardiner, assistant clinical professor of psychiatry and chairman of the seminar on comparative analysis of cultures. The new clinic is located at the Columbia-Presbyterian Medical Center and will be opened in October. Qualified physicians who are graduates of an approved medical school and have completed an approved hospital internship of not less than one year will be required to undergo a psychoanalysis in order to be admitted to the three year course of resident graduate training in psychoanalysis and psychosomatic medicine. The course of training includes a systematic program of lectures and seminars, clinical conferences and supervised clinical work on the psychoanalytic and psychosomatic services. It is combined with two years of resident graduate study in the other branches of psychiatry with emphasis on the related basic medical sciences. Those who meet the requirements may register for the degree of doctor of medical science. On completion of an acceptable original and previously unpublished dissertation on the laboratory or clinical aspects of the specialty and satisfactory completion of written oral and practical examinations in related clinical and laboratory fields the candidate may be recommended for the degree of doctor of medical science.

## OHIO

**Medical Society Observes Centennial**—The one hundredth anniversary of the Northwestern Ohio Medical Society will be held at the Elks Club, Findlay, October 3. A luncheon address will be delivered by Dr. Walter C. Alvarez, Rochester, Minn., on "Hints in the Recognition of Puzzling Abdominal Pain." Other speakers, members of the faculty of the University of Cincinnati College of Medicine, will be

Dr. Marion A. Blankenhorn, The Toxic Reactions of the Newer Sulfonamides  
Dr. A. Ashley Weech, The Child Who Won't Eat  
Dr. Joseph A. Freiberg, Some Common Foot Disabilities in Children and Adults  
Dr. Leon Schiff, Tests of Liver Functions in Health and in Disease  
Dr. William A. Altemeier, Penicillin: The Management of Surgical Infections

Dr. Wayland B. Recker, Leipsic, is president of the society and Dr. John M. Leahy, Tiffin, secretary.

**Industrial Disbursements**—The Industrial Commission of Ohio disbursed \$3,457,727.45 for medical services to injured Ohio workmen during 1943 according to the *Ohio State Medical Journal*. This figure includes a relatively small amount for dental services. Other expenditures during the year included \$1,801,325 hospital care and nursing; \$130,821.34 funeral expenses and \$97,001.18 court costs, a total of \$5,486,874.97. These amounts include payments covering treatment of injured private and public employees as well as similar costs on occupational diseases and are in addition to death awards and compensation to injured workmen. Comparative figures for 1942 were \$4,243,069.09 for medical services; \$1,760,598.69 for hospital care and nursing; \$133,104.41 for funeral expenses and \$86,661.34 for court costs, a total of \$6,223,733.53. The considerable decrease in 1943 of the amount disbursed for medical service is of no special significance as a change by the auditing department of the Industrial Commission in the method of compiling records in 1942 resulted in the inclusion in the 1942 figure of approximately \$800,000 of medical fees which had been allowed late in 1941 but were actually paid in 1942. The amount disbursed by the commission for medical service during 1941 was \$3,322,792.06. The number of claims filed during 1943 was 331,072, a record for the thirty-two year history of the Ohio Workmen's Compensation Fund. There were 320,793 claims filed in 1942, the previous peak year. The total for 1932, during the depression, was 130,099. Medical only claims involving payment for physicians' services but no compensation to the claimant for loss of time num-

bered 260,150 in 1943 or 78.6 per cent of all claims filed, compared with 80 per cent in 1942. The average fee of "medical only" claims increased from \$7.69 in 1942 to \$7.88 in 1943.

## PENNSYLVANIA

### Philadelphia

**Another Cancer Prevention Clinic**—On August 10 the International Cancer Research Foundation sponsored the opening of a cancer prevention clinic at the Jeanes Hospital Fox Chase under the direction of Dr. Elizabeth W. F. Love, medical director, and Dr. Hoke Wammock, medical chief of staff. This is the sixth of these clinics operating in Philadelphia at the present time (THE JOURNAL August 26, p. 1200).

**Changes at Woman's Medical College**—Recent changes on the faculty of the Woman's Medical College of Pennsylvania include the following appointments:

James O. Brown, Ph.D., to associate professor of anatomy and acting head of the department.

Dr. Ruth Hartley Weaver to acting associate professor of preventive medicine.

Dr. Francis H. Murray to clinical assistant professor of proctology.

Dr. Mary E. McKee Porter to assistant director of the clinical laboratory.

Promotions on the faculty include:

Gina Castelnovo, Ph.D., to assistant professor of anatomy.

Dr. Helen M. Angelucci to clinical associate professor of gynecology.

Dr. Laura E. McClure to clinical associate professor of pediatrics.

Dr. Harriet M. Felton to clinical assistant professor of pediatrics.

## UTAH

**State Medical Election**—Dr. Ray T. Woolsey, Salt Lake City, was chosen president-elect of the Utah State Medical Association at its recent meeting in Salt Lake City August 24 and Dr. Ezekiel R. Dunke-Ogden was installed as president. Drs. Roy W. Robinson, Kenilworth, Horace Asa Dewey, Richfield, and John P. Burgess, Hyrum, were chosen vice presidents. Dr. David G. Edmunds, Salt Lake City, constitutional secretary, and Dr. Hyrum R. Reichman, Salt Lake City, treasurer. Dr. David P. Whitmore, Roosevelt, was named honorary president. Mr. W. H. Tibbals, Salt Lake City, was reelected executive secretary of the association. The 1945 meeting will be held in Ogden.

## GENERAL

**American Pediatric Society**—The fifty-fifth annual meeting of the American Pediatric Society will be held at the Hotel Claridge, Atlantic City, N. J., September 26-27 under the presidency of Dr. James L. Gamble, Boston. Included among the speakers will be:

Dr. William L. Bradford, Rochester, N. Y., Effectiveness of Sulfadiazine and Antipertussis Serum in the Treatment of Pertussis.

Dr. Stewart H. Clifford, Brookline, Mass., Clinical Significance of Yellow Staining of the Vermicaseous Skin and Umbilical Cord in the Newborn.

Dr. Harriet G. Guild, Baltimore, Acute Idiopathic Porphyria with Repeated Attacks of Peripheral Neuritis: Treatment with Liver Extract.

Dr. Josef Warkany and Elizabeth Schraffenberger, Cincinnati, Congenital Malformations of Eyes Induced by Maternal Vitamin A Deficiency.

Dr. Daniel C. Darrow, Hamden, Conn., Intestinal Alkalosis.

Dr. Sidney Farber, Boston, Nature of Some Diseases Ascribed to Disorders of Lipid Metabolism.

Dr. Arild E. Hansen and Hilda F. Wiese, Ph.D., Minneapolis, Clinical and Lipid Studies on Child with Chylous Ascites.

Dr. L. Emmett Holt, Jr. and Victor A. Nazzari, Baltimore, Biosynthesis of Vitamins in Man.

Dr. Laslo Kaydi, Baltimore, Comparison of the Effect of Vitamin D and Citrates on Mineral Metabolism in Late Rickets.

Drs. Benjamin Kramer and Benjamin Phillips, Brooklyn, Chemotherapy of Staphylococcus Aureus Infections in Infants.

Dr. Charles A. Weymiller, Brooklyn, Use of Sulfathiazole Ointment for Impetigo in Infants.

Drs. Milton Kapoport and Mitchell I. Rubin, Philadelphia, Influence of Sulfonamide Therapy on the Course of Acute Glomerulonephritis.

Dr. Charles Hendee Smith, New York, Self-Feeding of Infants.

Dr. Julian D. Boyd, Iowa City, Clinical Significance of Head Size of Infants.

Dr. Ethel C. Dunham, Washington, D. C., Effect of Rickets in Infancy on the Pelvis in Adolescence.

Drs. Donovan J. McCune and Brunhilde Bruch, New York, Basal Metabolism of Children: Further Observations on Obese Children Which Suggest the Superiority of Standards Based on Weight.

Dr. Francis F. Schwenker, New York, Type Specific Vaccination Against Streptococcal Infections.

Drs. Joseph Stokes, Jr. and Tazee A. Harris, Philadelphia, Three Year Study of the Clinical Applications of Disinfection of Air by Glycol Vapors.

Dr. John A. Toomey, Cleveland, Attempts to Isolate Poliomyelitis Virus in Fish.

Dr. Irvine McQuarrie and Mildred R. Ziegler, Ph.D., Minneapolis, Metabolic Studies in a Case of Familial Periodic Paralysis.

Dr. Harry Bakwin, New York, Pseudodoxia Pediatrica.

On Wednesday there will be a symposium on Crying of Newly Born Babies. Community Aspects presented by Dr. C. Anderson Aldrich, Rochester, Minn., Chieh Sung, Catherine Knop, Geraldine Stevens, R.N., and Margaret Burchell on Wednesday. The meeting Tuesday evening will be a joint session with the Society for Pediatric Research.

**American Public Health Association**—The second war time public health conference and the seventy-third annual business meeting of the American Public Health Association will be held at the Hotel Pennsylvania, New York, October 2-5 under the presidency of Dr. Felix J. Underwood, Jackson, Miss. Laboratory technic, epidemiology, industrial hygiene, school health, food and nutrition, vital statistics, dental health, public health education and maternal and child health will be among the various sessions, and speakers will include:

Major Walter P. Havens, Jr., M.C., Dr. Robert Ward and Victor A. Drill, Ph.D., New Haven, Conn., Epidemiologic Studies on Infectious Hepatitis.

Howard J. Shughnessy, Ph.D., and Frances I. Frieser, Chicago, Excretion of Typhoid Bacilli by Carriers: Comparative Value of Fecal and Bile Specimens in Their Detection.

S. Edward Sulkin, Ph.D., Dallas, Texas, The Effect of Environmental Temperature on Experimental Influenza in Mice.

Dr. Charles M. Carpenter, Rochester, N. Y., The Development in Vitro of Fertilized Oocytes of the Gonococcus.

Nathan Sarna, Dr. P.H., Ann Arbor, Mich., Scope Administration and Financing of a National Health Service.

Irene C. Macy-Hoobler, Ph.D., Detroit, Implications of Nutrition in the School Health Program.

Dr. Milton J. F. Senn, New York, The Influence of Psychologic Factors on the Nutrition of Children.

Dr. Guillermo Arborea and Pablo Morales Otero, San Juan, P. R., Public Health in the Tropics.

Raymond B. Fosdick, LL.D., New York, will deliver the third annual Delta Omega Lecture Tuesday evening on "Public Health as an International Problem." A special session Wednesday will be devoted to "Today's Global Frontiers in Public Health for South America." Major Gen. George C. Dunham, M.C., for China; Dr. Sreemoy Sre for Great Britain; Dr. Melville D. Mackenzie, and for the United States, Thomas Parran, Surgeon General of the Public Health Service. On Thursday morning there will be a demonstration of cooperative effort for health education of workers on the job in New York by:

Dr. Jacob H. Imboden, The Hinn of the Fort Greene Industrial Health Committee.

Louis Hollander, Organized Labor's Cooperation in the Plan.

Dr. L. Holland Whitney, Management's Cooperation in the Plan.

Kenneth D. Widdener, Community Cooperation.

Dr. Charles I. McArthur, Organized Medicine's Cooperation.

Philip R. Mather, Role of the National Voluntary Agency.

Another session the same day will be devoted to "The Effect of War on Tuberculosis" with the following speakers: Goddard J. Drolet, New York, "World War I and Tuberculosis"; Dr. James A. Donli, Cleveland, "Tuberculosis in England and Other Countries at War"; Mary V. Dempsey, New York, "Current Tuberculosis Statistics in the United States"; Col. Esmond R. Long, M.C., "Tuberculosis in the Armed Forces"; and Herman E. Hilleboe, medical director, U. S. Public Health Service, "Small Film Radiography Among Industrial Groups."

Industry versus Venerable Disease will be the theme of a program sponsored by the American Social Hygiene Association Monday evening, October 2. The session will be presided over by Dr. Victor G. Heiser, Bantam, Conn., consultant committee on industrial health, National Association of Manufacturers and speakers will include:

Mr. Reginald E. Gulliver, president, Sperry Gyroscope Company, Long Island, N. Y.

Dr. William I. Weaver, medical director, Du Pont Rayon Plant, Richmond, Va.

Mr. Abraham Bluestein, executive director, Labor League for Human Rights, American Federation of Labor.

Mr. Percy Shostac, consultant on industrial cooperation, American Social Hygiene Association.

Other groups meeting during the public health session will include among others the American Association of Public Health Dentists, the American School Health Association and the American Society for Research in Psychosomatic Problems.

## FOREIGN

**Personal**—Dr. Pasteur Vallery-Radot, Paris, is the new French minister of health.

**Physicians for India**—A program intended to train about 300,000 physicians over a period of about thirty years has been adopted by the health survey and development committee set up by the government of British India under the reconstruction committee of the council, the New York Times reported August 28. The plan would provide at least one doctor for each thousand of the population, compared with the present ratio of about one doctor to 10,000. The scheme is to be developed and expanded every five years and the work completed in six stages it was stated. Existing medical institutions would have to be enlarged and new ones established and a public health directorate with a network of provincial auxiliaries would be needed, it was said.



## Foreign Letters

### LONDON

(From Our Regular Correspondent)

Aug 19 1944

#### Whole Stomach Extract in the Treatment of Infantile Pellagra

From the Non-European Hospital at Johannesburg, T Gillman and others report remarkable results in the treatment of infantile pellagra (*Nature*, August 12, p 210). During the last three years nearly 300 children suffering from acute malnutrition have been admitted. More than 60 per cent of these manifested signs of infantile pellagra. The dominating features were edema of the limbs and, in severe cases of the face, eyelids and genitals. The edema was associated with pellagrous skin lesions on the legs, buttocks, back, arms and face, gray hair or alopecia and patchy or diffuse dermal pigmentation. The stools as a rule were bulky, pale and foul smelling and contained much unsplit fat. The serum proteins were extremely low and there was a mild microcytic anemia. The liver was extremely fatty.

The unresponsiveness of this condition to vitamin therapy including nicotinic acid, and a death rate of 90 per cent have been recorded by Trowell. It was therefore necessary to seek some other treatment. By improved liver biopsy Gillman and his group established that the microscopic appearances of the liver is a valuable method of assessing the severity of the condition. They studied 20 children by this method and treated them in three ways. They treated 7 with thiamine hydrochloride, nicotinic acid or brewers' yeast. Only 1 survived. Another 7 were given liver extract intramuscularly. Five survived and recovery was slow. Six were treated with 10 Gm of desiccated hog's stomach and 10 cc of tenth normal hydrochloric acid daily for five days. The response was dramatic: all survived. The loss of edematous fluid was shown by a fall in weight of 1 to 1½ pounds (450 to 675 Gm) in twenty-four hours. The clinical condition remarkably improved, and the liver became almost free from fat in two weeks.

Whole extracts of hog's stomach have been occasionally used in the treatment of pellagra in adults with good results. In 7 severe cases in adults Gillman and his collaborators found the substance much more effective and rapid in its results than nicotinic acid and other vitamins. They draw the following conclusions: 1 Stomach extract is life saving in severe infantile pellagra. 2 It can be regarded as a lipotrope in view of its rapidity in depleting fat from the liver. 3 As both adults and infants respond to a single form of therapy there is no justification for regarding infantile and adult pellagra as different diseases.

#### Tuberculosis in Nurses

A survey of tuberculosis in nurses, organized by the Royal College of Physicians under the terms of a special bequest has been carried out by Dr Marc Daniels. It is the only survey of the sort in this country large enough to produce data of statistical value. The number of nursing entrants in the survey up to March 1943 was 3,764. Shortly after entry to the preliminary training school they were given Mantoux tests and x-ray examination. In the tests, 50.3 per cent were positive to old tuberculin 1 in 10,000 or 100,000, 30.5 per cent were positive only to 1 in 100 or 1,000 and 19.2 were negative. A change from negative to positive reaction (Mantoux conversion) in the first year took place in 58.4 and 78.3 per cent of two hospital groups respectively. Most of these nurses had no notable symptoms between the last negative and the first

positive test. A study was made of the tuberculosis morbidity in nurses with a clear x-ray film on entry, disclosing that 33 cases occurred in 452 nurses initially Mantoux negative and 43 cases in 2,120 initially Mantoux positive. The annual case rate was 7.4 per thousand in nurses who were Mantoux positive on entry and 1.88 in those who were Mantoux negative.

The important fact emerges that tuberculous morbidity was two and one-half times higher in nurses who were Mantoux negative on entry than in those who were Mantoux positive. The explanation is that those who are Mantoux positive on entry are a selected population in whom primary infection has produced no perceptible lesion or who have recovered from a lesion. Therefore the percentage succumbing to infection will be lower in this group than in the Mantoux negative nurses who are an unselected group. Special care must be taken of the young nurse who is Mantoux negative on entry. She should not be required to work in a ward set aside in a general hospital for tuberculous cases. X-ray examination and tuberculin tests should be repeated at frequent intervals and particular care given if the test is found to be changing from negative to positive.

#### Color Film Record of Tongue Movements in Speech

A color film record of the tongue movements in speech the first ever made, is described in *Endeavor* the quarterly review of scientific progress published by Imperial Chemical Industries. The authors are a physiologist Mr J Yuk Pogue and Mr Dennis Fry, who since 1939 has been occupied in research for the Royal Air Force into problems connected with the transmission and reception of speech signals. To make the film a man aged 72 whose tongue was exposed to view as the result of an operation involving removal of the right cheek, was used. A film record of the tongue movements was taken at the normal rate of twenty-four frames a second. A simultaneous record was made of the subject's speech. Thus it is possible to compare the pictures with the sounds corresponding to the tongue movements. The film sound track supplies a rough indication of the wave form of the sound that is being produced. In addition to these records made at normal speed photographs were taken at high speed for frame by frame analysis in conjunction with cathode ray oscillograms of the speech taken at the time. The film is not only of scientific interest but also of assistance in speech therapy. It has been welcomed by the Air Force as a contribution toward the rehabilitation of flying men with facial injuries who have to be taught to speak again.

#### Vital Statistics

The remarkable fact that our vital statistics have improved during the war has been reported in previous letters to *THE JOURNAL*. The latest official figures for the quarter ended March 31 have just been published. They show a birth rate of 17.9 per thousand of population, which is the highest rate for the first quarter of the year since 1926. Thus there is some reversal of the declining birth rate, which was not sufficient for the maintenance of our population. Births exceed deaths by 37,941. The provisional infant mortality rate was 58 per thousand live births. This was 14 below the average for the preceding ten first quarters and the lowest on record. Marriages for the quarter numbered 62,599, lower by 12,972 than the average for the five years prior to 1943 but 8,338 higher than the corresponding first quarter average for the five years immediately preceding the war. The greatly increased marriage rate produced by the outbreak of war—which not only removed unemployment but gave family allowances to members of the fighting forces—could not be expected to continue at the same level.



## PALESTINE

(From a Regular Correspondent)

JERUSALEM, Aug 1, 1944

## Statistics on Physicians in Palestine

Second in a series of publications issued by the Central Bureau of Medical Statistics is a report of investigations carried on by Prof R Bacchi in cooperation with Dr Serolovitz, of Palestinian economic conditions with reference to physicians both now and in the future, when the end of the war will create an entirely unprecedented situation. Intertwined with the problems of immigration and demobilization of physicians is the question of the necessity of establishing a faculty of medicine as part of the Hebrew University in Jerusalem.

The introductory chapter of the study deals with the peculiar structure of the medical profession in Palestine since 1921. At that time there were 129 Jewish physicians, or 23.6 per 10,000 Jewish inhabitants. At the same time non-Jewish physicians numbered 120, or 2.47 per 10,000 non-Jewish inhabitants. The further development may be seen in the accompanying table giving the percentages of Jewish and non-Jewish physicians in relation to the corresponding number of inhabitants. According to government statistics the total number of physicians practicing in Palestine in 1941 was 2,244.

Physicians per 10,000 Inhabitants

|          | 1922-24 | 1931-33 | 1934-36 | 1937-39 | 1940-42 |
|----------|---------|---------|---------|---------|---------|
| Jews     | 23.6    | 21.9    | 45.1    | 44.1    | 45.9    |
| Non Jews | 2.47    | 2.18    | 2.25    | 2.44    |         |

An analysis of the figures shows that in the non Jewish population of Palestine the percentage of physicians has remained the same during the past twenty years (and is moreover, one of the lowest in the world. United States [1942] 13.3, England [1932] 9.4, Switzerland [1938] 8.2, Finland [1936] 6.2).

For the Jewish population the number of physicians in relation to the number of inhabitants was, even in 1921, double that of the international average, while by 1941 it had grown to twice as much. There is no doubt that the Jewish population of Palestine has an excess of physicians.

But what will happen if for any reason no influx of new physicians from abroad takes place and training facilities for physicians are not provided for in this country? For the coming ten or twenty years the present number of physicians will suffice for a population of three quarters of a million. After about twenty years a crisis may develop and in 1972 practically all physicians will have disappeared. Such an event can naturally be forestalled by establishing a faculty of medicine at the Jerusalem University. An additional thirty-five physicians every year will suffice to meet the demand of the present Jewish inhabitants. The first group of fully trained physicians can be expected by the year 1953 if training is started in the near future.

Remittent Rural Fever (Febris Remittens  
Agricolarum)

According to data presented by Dr J Yatomi in 1940 245 inmates of the Mikhel Israel Agricultural School (218 students and 36 teachers) contracted an infectious disease of an outspokenly remittent character. The maximum temperature, 104 F, was recorded in the afternoon this rise being accompanied by rigor, which subsided as soon as sweating set in. Occasionally elevation of temperature occurred during the night too. During the day the temperature was normal but the patients complained of violent headache, particularly supra-orbitally and of pain in the muscles. Immediately after the temperature had reached its maximum the patients felt exceptionally well and ate with good appetite. Thus intermittent fever

lasted from four to twelve days. The pulse rate inclined toward bradycardia. Even during the first few days the spleen was palpable while the liver could be felt only occasionally. The blood was characterized by leukopenia, with relative increase in monocytes. Epidemiologically the following facts could be established. Contact or food infection could be ruled out. Sixty-two per cent of the students were recent immigrants to the country, while the majority of the remaining 38 per cent came from towns. Only a small number of children from rural areas contracted the infection, while agricultural workers from Turkey, Persia and Mesopotamia who were employed at the settlement were spared altogether. It seems probable, therefore, that immunity after earlier infection must be taken into consideration. There was no indication of transmission by insects. The probable carrier of the infection is a special type of microtus, since prior to and during the epidemic a great number of these field mice were found. It is assumed that the germ was present in the fields and in the harvest and reached susceptible persons through the skin.

Venereal Diseases Among the Jewish  
Population of Palestine

In an article by Dr A Dostrovsky and Dr F Sgher, the incidence of venereal diseases among the Jewish population of Palestine is discussed. The data published by the authors refer to inpatients as well as outpatients of the Hadassah University Hospital in Jerusalem and it is pointed out that caution should be exercised in applying them to the country as a whole. Among the 116,276 patients registered at the dermatologic outpatient department during the years 1920-1942, there were 986 venereal cases or an incidence of 0.85 per cent. Six hundred and twenty of the patients were suffering from syphilis, 355 from gonorrhea and 11 from ulcus molle. In Jews of Oriental origin venereal diseases were twice as frequent as in Ashkenazim. The highest figures recorded were those for the years immediately following the first world war (1920, 2.7 per cent; 1922, 1.7 per cent). In 1942 the figure dropped to 0.2 per cent. The war years 1939-1942 have so far shown no increase, although a similar postwar peak should be expected this time too.

Although the study has the shortcomings of all venereal disease statistics it has on the other hand the advantage of covering a period of twenty-two years so that there is some justification in applying the result to the Jewish sector as a whole. It may be concluded that the incidence of venereal diseases among the Jews of Palestine is actually very low.

## Marriages

ROBERT FREDERICK LAMAR, Kansas City, Mo., to Miss Hazel M Swanson of New Bedford, Mass., in Brisbane, Australia March 21.

WILLIAM CASPER KITE JR., Oklahoma City, to Miss Dorothy Ann Havener of Middletown, N. Y., September 2.

DALE BRIAN PARSHALL, South Bend, Ind., to Miss Margaret Grace McDaniel in Pickens, S. C., August 5.

MARGUERITE PATRICIA MCCARTHY, Syracuse, N. Y., to Mr Bertram James Brough of New York July 11.

LEOPOLD A SCHNEIDER, Ninety Six, S. C., to Miss Inez Jennings Holloway of Chappells, August 16.

LATHA MITCHELL DONALDSON, Fayetteville, Tenn., to Miss Claudie May Taylor in Franklin, August 1.

ELLY HALLFR DRAKE, Mobile, Ala., to Miss Frances Margaret Moyer at Spring Hill, August 15.

WILLIAM CHARLES GAUNT, Rochester, Texas, to Miss Eugenia Tate of Kountze in July.

ROY YOUNG, Port Arthur, Texas, to Miss Evelyn Cravens of Chattanooga, Tenn., May 1.

## Deaths

**Joelle Cornelius Hiebert** @ Lewiston Maine, Boston University School of Medicine, 1923 clinical instructor of obstetrics at his alma mater from 1924 to 1931 and instructor of preventive medicine and first aid Gordon Theological College from 1929 to 1931 director of the Androscoggin County Tuberculosis Association member of the American College of Hospital Administrators American Hospital Association American Protestant Hospital Association and the American Society for the Control of Cancer a trustee and president in 1941-1942 of the New England Hospital Assembly member and past president of the Maine Hospital Association a member of the Boston Hospital Superintendents Club and the Maine Civilian Defense Committee member of the advisory council of the Maine State Department of Health and Welfare trustee of Oak Grove School, Vassalboro on the editorial board of the *Journal of the Maine Medical Association* resident physician and superintendent of the Medical Mission Dispensary from 1924 to 1931 since 1931 medical superintendent of the Central Maine General Hospital where he died June 8 aged 51

**James Henry Taylor**, Indianapolis, Indiana Medical College, Indianapolis 1878 member of the Indiana State Medical Association professor emeritus of pediatrics at the Indiana University School of Medicine past president of the Indianapolis Medical Society president of the board of trade of Indianapolis 1915-1916 served as president of the Summer Mission for Sick Children and as a member of the Family Welfare Board formerly a member of the board of aldermen, for many years visiting physician at the Indianapolis Orphans Home one of the founders and for many years president of the Arsenal Building and Loan Association died July 23 aged 81

**David Powrie Maitland**, Jackson Minn University of Michigan Department of Medicine and Surgery, Ann Arbor, 1891, member of the Minnesota State Medical Association, past president of the Jackson County Medical Society for over twenty years chairman of the board of health of Jackson served as coroner of Jackson County, during World War I had been examining physician and a member of the Jackson County Draft Board for many years also served on the United States Pension Board examining physician for the local Selective Service Board during World War II died June 25 aged 77, of coronary heart disease

**Alexander Alexion**, New York National University of Athens School of Medicine, Greece 1897 died July 30, aged 71, of cerebral hemorrhage

**Oscar Henning Anderson** @ Plum City, Wis University of Minnesota College of Medicine and Surgery Minneapolis 1909 owner of the Plum City Hospital, died in St Luke's Hospital, St Paul, Minn June 20 aged 60 of congestive heart disease with edema, hypertensive heart disease and pulmonary embolism

**James Eddy Arnold**, Minneapolis Rush Medical College Chicago 1917 formerly village health officer and school physician for Mountain Iron Minn on the staff of the Minneapolis General Hospital, where he died July 17, aged 54 of coronary sclerosis and diabetes mellitus

**Frederick William Becker** Newark N J College of Physicians and Surgeons New York 1888 also a pharmacist member of the Medical Society of New Jersey formerly member of the city board of health served on the staff of the Newark City Almshouse Maplewood, died in the Presbyterian Hospital July 11, aged 83 of uremia and hypertrophy of the prostate

**Glenn A Brandt**, Palo Iowa Keokuk Medical College, College of Physicians and Surgeons Keokuk 1901 member of the Iowa State Medical Society died in Shellsburg June 8 aged 71 of injuries received when the automobile in which he was driving was struck by a train

**Michael Joseph Buck**, Wilkesburg Pa, Jefferson Medical College of Philadelphia 1872 Hahnemann Medical College of Philadelphia 1876 died in the Western Pennsylvania Hospital Pittsburgh June 14, aged 92

**Judson Charles Cole**, Emmett Kan (licensed in Kansas in 1901) at one time coroner of Atchison County formerly on the staff of the Atchison, Topeka and Santa Fe Railway Hospital Topeka died June 25, aged 84, of uremia

**Edna Bowden Dayton**, Remsenburg N Y Woman's Medical College of Pennsylvania Philadelphia 1915 died July 11 aged 66 of sinus heart block

**Charles A Dimond** Keokuk Iowa Keokuk Medical College College of Physicians and Surgeons 1905 member of the Iowa State Medical Society served as a member of the city council and for many years city physician died June 11 aged 73 of chronic endocarditis

**William H Douglass** Benton City Mo Barnes Medical College St Louis 1898 honorary member of the Missouri State Medical Association died in Mexico May 1 aged 69 of arthritis

**Bishop L Elam**, Centralia Okla (licensed in Oklahoma under the act of 1908) served as mayor of Centralia died May 8 aged 71

**Sidney A Faulkner** Whitney Texas Louisville (Ky) Medical College 1890 died June 8 aged 77 of heart disease

**James Murray Fettes**, Spencer Iowa Trinity Medical College Toronto Ont Canada 1904 died June 6 aged 64

**Arthur John Fletcher** @ Danville Ill Northwestern University Medical School Chicago 1909 member of the American Academy of Pediatrics president of the Vermilion County Medical Society veteran of the Spanish-American War and World War I on the staffs of the Lake View Hospital and St Elizabeth Hospital, where he died July 24 aged 65 of heart disease

**Archibald Whittington George** @ Detroit Baltimore Medical College 1911 a charter member and formerly a director of the American Association of Industrial Physicians and Surgeons chief surgeon of the Packard Motor Car Company for many years on the staff of the Harper Hospital where he died July 21 aged 60 of sarcoma of the left ureter

**Robert Marion Golson**, Prattville Ala University of Tennessee Medical Department Nashville, 1891 member of the Medical Association of the State of Alabama died July 15, aged 78 of arteriolar sclerosis

**Morton Guzy** @ Bridgeton N J Medical College of Virginia Richmond, 1939 served an internship at the Jewish Hospital in Philadelphia secretary of the Bridgeton Hospital staff died July 20 aged 29 of coronary thrombosis and diabetes mellitus

**Sherwood Ackler Haggerty**, Richfield Springs N Y Albany Medical College 1895 died June 15 aged 73 of lymphosarcoma

**John Arthur Lamb** Kalispell Mont McGill University Faculty of Medicine Montreal Que Canada 1898 member of the Montana State Medical Association served during World War I captain medical reserve corps U S Army not on active duty on the staff of the Flathead County Hospital, on the courtesy staff of the Kalispell General Hospital city health officer and local registrar died June 20 aged 70 of carcinoma of the liver and pancreas

**Morris Hallowell Layton Jr** @ Harrisburg Pa Medical College of Philadelphia 1910 died in the Harrisburg Hospital June 4 aged 56 of cerebral hemorrhage

**Daniel Guy Leach** Tucson Ariz Central College of Physicians and Surgeons Indianapolis, 1901 died June 24 aged 65

**Joseph Levy**, New Orleans Medical Department of Tulane University of Louisiana New Orleans 1902 member of the Louisiana State Medical Society for many years on the staff of the Charity Hospital died July 8 aged 64

**Charles Patterson Marsh** Petersburg Tenn University of Nashville Medical Department 1909 served in France during World War I died July 5, aged 61

**Jessie Laird Robb Marshall**, New York University of Birmingham Faculty of Medicine, England 1924 physician at Teachers College of Columbia University and the Horace Mann-Lincoln School lecturer on child health at Columbia University died in St Luke's Hospital July 19 aged 45 of peritonitis caused by a carcinomatous growth

**Flora Eva Frost Moody** @ Springfield Mass Tufts College Medical School, Boston 1898 died June 26 aged 73 of cerebral hemorrhage hypertension and osteoarthritis

**Julius Daniel Mueller**, Flandreau S D Creighton University School of Medicine Omaha 1931 served an internship at the Dr W H Groves Latter-Day Saints Hospital Salt Lake City Utah on the staff of the Flandreau Municipal Hospital coroner for Moody County died June 29 aged 39, of injuries received when crushed by a truck

**Emil Alfred Muller**, Glen Cove N Y Columbia University College of Physicians and Surgeons New York 1898 died June 13 aged 67 of arteriosclerosis hypertension and acute cardiac failure

**James Moffett Norris**, Northampton, Mass Western Reserve University School of Medicine Cleveland 1935 served an internship at the Charity Hospital in Cleveland and the LaFayette Home Hospital in LaFayette, Ind., captain in the medical reserve corps U S Army served on the staffs of Veterans Administration facilities in Lyons, N J, Sunnyside N Y and Northampton died July 15 aged 39

**Lovett E Park** Columbus Ohio Eclectic Medical Institute Cincinnati 1889 formerly on the staff of the Institution for Feeble-minded died July 12 aged 81

**Robert Alex T Patterson**, Philadelphia, Hahnemann Medical College and Hospital of Philadelphia, 1900, died in the Philadelphia General Hospital in July, aged 67, of carcinoma of the lung

**Marcellus Leroy Peterson**, Cincinnati Eclectic Medical Institute Cincinnati 1899 served during World War I, lieutenant colonel in the medical reserve corps of the U S Army from Feb 21 1941 to Nov 27 1943 when he was relieved from active duty because of age died in the Bethesda Hospital June 15 aged 66 of ruptured myocardial infarct with intrapericardial hemorrhage

**Alfred Noroton Phillips**, Glenbrook Conn College of Physicians and Surgeons New York, 1883 member of the Connecticut State Medical Society formerly an executive of the Phillips Chemical Company a director of the Stamford Hospital Stamford died August 1 aged 88

**Leo Francis Pierotti**, Memphis Tenn St Louis University School of Medicine 1931 member of the Tennessee State Medical Association served an internship and a residency in surgery at St Mary's Group of Hospitals in St Louis formerly an intern secretary and member of the staff at St Joseph's Hospital where he died July 15 aged 37 of coronary occlusion

**William Henry Pipes**, Jackson La., Medical Department of Tulane University of Louisiana New Orleans 1906, member of the Louisiana State Medical Society died July 8, aged 66

**John Rogers Pollock** ♂ Ardmore Okla Chicago College of Medicine and Surgery 1909 died June 28 aged 61

**Herbert Ellis Rodley**, Chico Calif College of Physicians and Surgeons of San Francisco 1910 died in the Enloe Hospital July 5 aged 60 of cardiac decompensation

**Clement E V Sams**, Haven Kan American Medical College St Louis 1894 died in June aged 75 of coronary occlusion

**Richard Savine**, Long Island City N Y Long Island College Hospital Brooklyn 1907 member of the Medical Society of the State of New York died July 19 aged 67 of cerebral hemorrhage

**Bert D Shedd**, Arcade N Y Cleveland Homeopathic Medical College 1898 member of the Medical Society of the State of New York formerly mayor, school physician county coroner and health officer died July 18 aged 72 of coronary embolism

**Joseph Leslie Sherrick** ♂ Monmouth, Ill., Johns Hopkins University School of Medicine Baltimore 1914 fellow of the American College of Physicians served an internship at the Massachusetts General Hospital Boston 1914-1915, on the staff of the Monmouth Hospital trustee Monmouth College director of the Second National Bank and associate medical director of the Illinois Bankers Life Assurance Company, died July 28 aged 56 of heart disease

**Arthur Montell Smith** ♂ Piedmont Calif Cooper Medical College San Francisco 1899 an Affiliate Fellow of the American Medical Association fellow of the American College of Physicians formerly a member of the state board of medical examiners during World War I served overseas as a captain in the medical corps of the U S Army served as chief of medical service Samuel Merritt Hospital Oakland where he died July 21 aged 72 of heart disease

**Rose Marie Vastola Smith**, Rome, N Y, University of Buffalo School of Medicine 1924 served an internship at Buffalo City Hospital Buffalo, formerly connected with the New York City health department died in the Station Hospital Rome Army Air Field, July 6, aged 48 of carcinoma

**William Adelbert Smith**, Petersburg, Mich Cleveland Homeopathic Medical College, 1903 for many years member and president of the school board served as village president and as village and township health officer, on the staffs of the Toledo Hospital, Toledo, Ohio and the Mercy Hospital Monroe president of the H C McLachlin & Company State Bank died July 9 aged 67

**Ulysses G Spohn**, Fairgrove Mich Detroit College of Medicine 1906 member of the Michigan State Medical Society served on the staff of the Samaritan Hospital Bay City died in East Tawas July 22, aged 73, of coronary thrombosis

**Andrew Wilton Springs**, Colp Ill., National Medical University Chicago 1905 formerly physician in charge of the Madison Coal Corporation Hospital in Dewmanne died July 22 aged 75, of heart disease

**Harry Erskine Tatum**, Brunswick, Mo., Jefferson Medical College of Philadelphia 1900 member of the Missouri State Medical Association served as president of the Chariton County Medical Society county coroner for many years a member of the school board died July 1, aged 67, of coronary embolism

**William J Thompson**, Washington D C Howard University College of Medicine, Washington 1905, formerly assistant health commissioner department of hygiene and communicable diseases Missouri State Board of Health served as curator of the Lincoln University Jefferson City formerly superintendent of the Kansas City General Hospital number 2 Kansas City, Mo recorder of deeds for the District of Columbia, died August 4 aged 66

**George Monroe Tolhurst**, Atlanta Ga International Medical Missionary College and Training School for Nurses Atlanta, 1908 died in the Grady Hospital June 27, aged 68, of hypertensive cardiovascular disease

**Frank F Tourner**, Bloomington Ind., Kentucky University Medical Department Louisville 1899 member of the Indiana State Medical Association, died July 6 aged 85, of hypostatic pneumonia

**James Walter Van Blaricum** ♂ Minneola Kan Kansas City (Mo) Medical College, 1901 for many years member of the school board died June 4 aged 70 of bronchial asthma

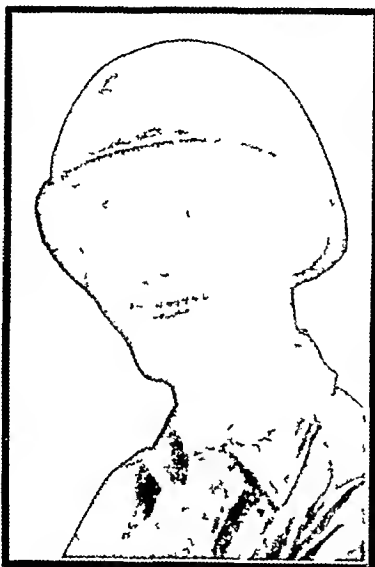
**Fred Ellridge Varney**, North Chelmsford Mass., Medical School of Maine Portland, 1886 member of the Massachusetts Medical Society past president of the Middlesex North District Medical Society school physician for many years on the staff of the Lowell General Hospital, Lowell died June 8 aged 83 of coronary heart disease

**Robert Lee Walker**, Crabtree, N C., Kentucky School of Medicine Louisville 1889 died in the Haywood County Hospital Waynesville, June 28 aged 80

**James D Woodley**, Indianapolis, Baltimore University School of Medicine 1891 died May 23, aged 76, of heart disease

## KILLED IN ACTION

**Peter Leo Demeter**, Webster, Mass., Middlesex University School of Medicine, Waltham, 1938 served an internship at the Buffalo Columbus Hospital Buffalo commissioned a first lieutenant in the medical corps Army of the United States on Nov 4, 1942, later promoted to captain, went overseas in 1943 took part in the North African campaign and the invasion of Sicily, killed in action in Italy July 26 aged 30



CAPT PETER L DEMETER  
M C A U S 1914 1944

# COUNCIL ON MEDICAL EDUCATION AND HOSPITALS

*This report is based on studies by the Council and returns on questionnaires sent to medical officers by the Committee on Postwar Medical Service and analyzed by Lieut Col Harold C Lueth, M C, Surgeon General's Liaison Officer*

## POSTWAR PLANNING

### EDUCATIONAL FACILITIES REQUIRED FOR RETURNING MEDICAL OFFICERS

VICTOR JOHNSON, M.D., PH.D.

AND

F. H. ARESTAD, M.D.

Secretary and Assistant Secretary Respectively Council on  
Medical Education and Hospitals  
CHICAGO

In November 1942 the Council on Medical Education and Hospitals took cognizance of the fact that medical educational facilities at the graduate and postgraduate levels would be severely taxed in the postwar period because many medical graduates were and would be entering military service with a minimum of training beyond the internship and would desire additional education after the war. At that time the Council embarked on a study of the required facilities to meet this future need. This project was reported to the House of Delegates in April 1943.<sup>1</sup>

In its first preliminary report on this study the Council estimated that "with a normal civilian complement of 5,500 residents the approved hospitals may be called on to furnish a total of 12,000 or 13,000 residencies in the immediate postwar period."<sup>2</sup> The Council further concluded from its preliminary survey that "it should be possible to develop the required twelve or thirteen thousand residencies."

In its report to the House of Delegates in April 1944 the Council stated<sup>3</sup> that "In the Council's planning for these postwar services it became clear early that we were working entirely on the probable available supply of educational opportunities. The question of demand for them was entirely unknown and will depend (in part) on what the men now in service will desire after the war."

#### THE SURVEY OF MEDICAL OFFICERS

This very problem was then being attacked by the Committee on Postwar Medical Service. This committee was established by the American Medical Association in collaboration with the American College of Physicians and the American College of Surgeons and also includes representatives of the Association of American Medical Colleges, the American Hospital Association, the Catholic Hospital Association, the Federation of State Medical Boards of the United States, the Procurement and Assignment Service, the Advisory Board for Medical Specialties and the Veterans Administration. A major project of this committee has been a study of the postwar educational desires of medical officers, being conducted with the cooperation of the Surgeons General of the Army, the Navy and the Public Health Service. A questionnaire on this (and other important) questions was devised and has now been mailed to every medical officer in the services. A pilot questionnaire was first sent to 3,000 officers selected at random, representing all age

groups, all services and all theaters of operation. Analyses of the early returns<sup>4</sup> and a more detailed presentation of the educational plans of the first thousand of the officers replying<sup>5</sup> have been made by Lieut Col Harold C Lueth.

The latter of these two reports which appeared in the Forty-Fourth Annual Educational Number of THE JOURNAL by courtesy of the Committee on Postwar Medical Service provides figures permitting preliminary estimates of the total postwar educational requirements of medical officers and civilian graduates. From these requirements must be subtracted the currently available facilities to indicate what further educational opportunities must be developed to meet the demand.

#### POSTWAR EDUCATIONAL DESIRES OF MEDICAL OFFICERS

The data in tables 1, 2, 3 and 6 are recapitulations of Lueth's figures.<sup>6</sup> Table 1 shows the distribution of officers replying according to year of graduation and the

TABLE 1—*Postwar Educational Desires of the First 1,000 Medical Officers Replying to a Questionnaire Sent to 3,000 Medical Officers Selected at Random and Representing All Theaters of Operation and the United States*

| Group Number | Date of Graduation | Desire No Educational Training | Desire 6 Months or Less or Unspecified Period | Desire More Than 6 Months Training | Total Replies by Group |
|--------------|--------------------|--------------------------------|---|------------------------------------|------------------------|
| 1            | 1911-1913          | 4                              | 41  | 119                                | 164                    |
| 2            | 1913-1915          | 21                             | 88  | 148                                | 156                    |
| 3            | 1915-1917          | 39                             | 82  | 69                                 | 190                    |
| 4            | 1917-1919          | 60                             | 79  | 80                                 | 219                    |
| 5            | 1919-1921          | 60                             | 62  | 36                                 | 158                    |
| 6            | Before 1920        | 17                             | 10  | 4                                  | 31                     |
| Totals       |                    | 204                            | 338   | 458                                | 1,000                  |

Note: Since there were 1,000 replies, any figure can be converted to per cent of the officers replying by pointing off one decimal place. 164 becomes 16.4 per cent.

postwar educational desires. No further formal education was planned by 20.4 per cent of all officers replying. Some full time training was requested by 79.6 per cent. Of these 33.8 per cent desired six months or less training, which was classified as review or refresher courses, and 45.8 per cent desired more than six months training in hospital house officerships. Excluding group 6 (the oldest officers) from whom the fewest replies were received, the replies indicate that with increasing age, on the one hand, there is an increasing tendency to anticipate either no future training or at most, review and refresher courses when further education is desired. On the other hand the younger graduates provide most of the requests for hospital training, nearly 60 per cent of such requests came from men who graduated in 1938 or later. These general trends might have been anticipated in advance but the large totals are surprising, as is also the fact that nearly two thirds of those who graduated before 1930 also desire some further training.

1 J. A. M. A. 121: 1397 (April 24) 1943.  
2 J. A. M. A. 124: 40 (Jan. 1) 1944. Compare with estimate in the present report, page 255.  
3 J. A. M. A. 121: 1302 (April 29) 1944.

4 J. A. M. A. 125: 558 (June 24) 1944.  
5 J. A. M. A. 125: 1099 (Aug. 19) 1944.

## DURATION OF TRAINING DESIRED

Table 2 shows the number of courses of varying durations requested by the thousand men who replied. Some officers requested more than one course since 796 men requested 970 courses. Such instances were more frequent in the shorter courses (average 1.34 courses per officer) than in the longer house officerships (average 1.13 requests per officer).

There was a relatively small number of specific requests for courses of two months or less. Over 60 per cent of the 452 requests for the shorter courses specified three to six months. Of the 518 requests for house officerships 47 per cent were for nine months or a year, 32 per cent for two years and 21 per cent for three years or more. Almost all of those desiring three years graduated in 1938 or later. The average duration of the 518 house officerships requested was 1.73 years.

of the internship and residency requests were for training in each of the remaining fields, and there were less than 1 per cent of the requests for work in each of the following subjects: neurosurgery, dermatology and syphilology, public health, hospital administration and plastic surgery.

## ESTIMATED REQUIRED EXPANSION OF HOUSE OFFICERSHIPS

An attempt is made in table 4 to arrive at a tentative estimate of the additional hospital educational facilities which will be required in all fields after the war by all officers seeking more than six months' training. Any such estimates are necessarily hazardous in the extreme because of several unknown variables which might greatly modify the resulting figures. However, it is essential that an approximation be made at once to facilitate definitive planning.

TABLE 2—Number of Courses of Different Durations Requested by 796 of the 1,000 Officers in Groups 1 to 6 Replying to the Questionnaire

| Groups                | Short Courses<br>Review or Refresher<br>6 Months or Less |      |      |      |                       | Long Courses<br>Internships, Residencies or<br>Fellowships More Than 6 Months |      |      |       |                    | Grand<br>Total<br>Short<br>and<br>Long<br>Courses |       |
|-----------------------|--|------|------|------|-----------------------|---|------|------|-------|--------------------|---|-------|
|                       | 1 Mo   | 2 Mo | 3 Mo | 6 Mo | Duration<br>Not Given | Total   | 9 Mo | 1 Yr | 2 Yrs | 3 or More<br>Years |   | Total |
|                       |  |      |      |      |                       |   |      |      |       |                    |   |       |
| Group 1 (1941-1943)   | 0  | 0    | 0    | 23   | 26                    | 55  | 0    | 29   | 53    | 57                 | 141   | 196   |
| Group 2 (1938-1940)   | 0  | 4    | 18   | 21   | 16                    | 59  | 0    | 0    | 0     | 59                 | 164   | 244   |
| Group 3 (1935-1937)   | 12   | 7    | 26   | 52   | 19                    | 116   | 4    | 0    | 24    | 8                  | 72  | 183   |
| Group 4 (1930-1934)   | 11   | 8    | 23   | 46   | 17                    | 115   | 17   | 48   | 20    | 5                  | 90  | 200   |
| Group 5 (1920-1929)   | 9  | 5    | 27   | 31   | 21                    | 93  | 0    | 25   | 6     | 1                  | 41  | 114   |
| Group 6 (Before 1920) | 1  | 0    | 3    | 0    | 10                    | 14  | 0    | 4    | 0     | 0                  | 4   | 23    |
| Total                 | 33   | 24   | 108  | 178  | 109                   | 459   | 17   | 209  | 161   | 110                | 517   | 960   |

Note: Since nearly 1,000 courses were requested, any figure can be converted into percentage of the courses requested by pointing off one decimal place. It becomes approximately 19.6 per cent. Note that one man may want 2 or more courses. Since 796 men requested 970 courses.

## INTERNSHIPS AND RESIDENCIES

Table 3 deals with requests for hospital house officerships of nine or more months' duration classified according to the subject or field of medicine desired.

TABLE 3—Requests for Postwar House Officer Training of More Than Six Months Duration from 458 Medical Officers of the 1,000 Who Replied

| Field in Which Training<br>is Desired | Group 1 | Group 2 | Group 3 | Group 4 | Group 5 | Group 6 | Total<br>Groups<br>1 to 6<br>by<br>Sub-<br>jects |
|---------------------------------------|---------|---------|---------|---------|---------|---------|--|
| Anesthesiology                        | 1       | 3       | 2       |         |         |         | 6  |
| Dermatology and Syphilology           | 1       | 1       |         | 1       | 1       |         | 4  |
| Hospital Administration               |         |         |         | 1       | 1       |         | 2  |
| Internal Medicine                     | 25      | 31      | 11      | 9       | 8       |         | 84   |
| General Training                      | 11      | 12      | 9       | 11      | 7       | 1       | 51   |
| Neurological Surgery                  | 0       | 1       | 1       |         |         |         | 2  |
| Obstetrics and Gynecology             | 20      | 27      | 5       | 7       | 3       |         | 62   |
| Ophthalmology                         | 1       | 0       | 6       | 14      | 1       |         | 22   |
| Ophthalmology                         | 5       | 6       | 3       | 2       | 1       |         | 17   |
| Orthopedic Surgery                    | 3       | 4       | 4       | 13      | 3       |         | 27   |
| Otolaryngology                        | 2       | 5       | 2       |         | 1       | 1       | 11   |
| Pathology                             | 5       | 9       | 1       |         | 2       |         | 18   |
| Pediatrics                            | 0       | 0       | 1       | 1       |         |         | 2  |
| Plastic Surgery                       |         |         |         | 1       |         |         | 1  |
| Psychiatry and Neurology              | 4       | 0       | 3       | 4       | 3       |         | 20   |
| Public Health                         | 1       | 1       | 1       |         | 1       |         | 4  |
| Radiology                             | 1       | 4       | 4       | 3       | 1       |         | 13   |
| Surgery                               | 52      | 53      | 17      | 21      | 7       | 2       | 152  |
| Urology                               | 4       | 2       | 3       | 3       | 1       |         | 13   |
| Total courses by age groups           | 141     | 167     | 12      | 93      | 41      | 4       | 518  |

Note: Since nearly 1,000 (actually 970) courses were requested in this category and that of table 6, any figure can be converted into percentage of all courses desired by pointing off one decimal place. It becomes approximately 51.8 per cent.

Nearly 70 per cent of the 518 requests for internships and residencies were in the following four fields: surgery (30 per cent), internal medicine (17 per cent), obstetrics and gynecology (12 per cent) and general training such as a mixed residency or "second year internship" (10 per cent). Less than 52 per cent

in table 4, column A is shown the total number of physicians certified by the American boards in the specialties to 1944. Column B is taken from the figures provided by Lueth's study.<sup>5</sup> Column C gives provisional estimates of the probable total number of all medical officers in the armed forces who will want more than six months' training. The figures in this column are twenty times the numbers of requests from the first thousand replies (column B) received from the 3,000 officers to whom the pilot questionnaires were sent. This estimate assumes (a) that there are 54,000 medical officers in the services, (b) that there was a fair sampling of the officers receiving the pilot questionnaire, (c) that about one fourth of those requesting training of this kind may be unable to carry out their plans, and (d) that nearly 10 per cent of the 2,000 medical officers to whom pilot questionnaires were mailed, but from whom replies had not been received at the time of tabulation, will take further training similar to that of the officers who replied. The last of these assumptions is probably the most seriously open to question and may later require considerable modification in the light of further returns on the questionnaires of the Committee on Postwar Medical Service. These are now being received at a rapid rate. All information received is being transferred at once to International Business Machine punch cards to facilitate further analysis.

It is of interest to compare the figures of column C with those of column A. An estimated 10,260 officers will seek more than six months of specialty training (but not necessarily certification) after the war. This is nearly one-half the total number of specialists (23,465) now certified by the American boards.

In column D are given the numbers of assistant residents, residents and fellows in the normal prewar year 1941. To obtain the total number of house officerships required, these prewar figures must be added to the estimated numbers of returning medical officers desiring training. This total is given in column E.

The house officer facilities available in 1943 are shown in column F. These currently existing places must be deducted from the total places required (column E) to arrive at a provisional estimate of additional facilities which must be developed, given in column G. Provided the basic assumptions made are reasonably accurate, it appears that nearly 10,000 additional residencies will be required for returning officers, should demobilization be rather rapid.

ures of column G should be adjusted to the assumption currently in vogue that demobilization will extend over some time.

If we assume that about one half of the medical officers will be discharged and will embark on their postwar educational plans during the first year after the war, a total of approximately 4,590 additional residencies (column H) will be required in addition to the 5,796 now available. Should medical officers in all categories be discharged in equal numbers every three months throughout a two year demobilization period the numbers seeking hospital positions will be relatively small at first but will mount steadily for two years. Under these conditions the maximum figure will be reached toward the end of the second

TABLE 4—Additional Postwar House Officerships Required Tentative Estimates

| Field in Which Training Is Desired   | Column A<br>Total<br>Certified<br>by American<br>Board<br>to 1944 | B<br>Numbers of<br>Requests<br>for<br>Training | C<br>Estimated<br>Total<br>Numbers<br>from All<br>Medical<br>Officers | D<br>Normal<br>Prewar<br>Numbers<br>Assistant<br>Residents,<br>Residents<br>and Fellows<br>in 1941 | E<br>Estimated<br>Total<br>Postwar<br>Numbers<br>(C Plus D) | F<br>Approved<br>Residencies<br>Assistant<br>Residencies<br>and<br>Fellowships<br>in 1943 <sup>1</sup> | G<br>Estimated<br>Additional<br>Postwar<br>Facilities<br>Required<br>(E Minus F) | H<br>Estimated<br>Additional<br>Facilities<br>Required if<br>Demobiliza-<br>tion Extends<br>Over 2 Years |
|--------------------------------------|---|--|---|--|---|--|--|--|
| Anesthesiology                       | 231   | 6  | 120   | 121  | 241   | 128  | 113  | 53   |
| Dermatology and syphilology          | 680   | 4  | 80  | 78   | 158   | 82   | 76   | 36   |
| General training <sup>2</sup>        |   | 51   | 1,020   | 183  | 1,203   | 154  | 1,049  | 539  |
| Internal medicine and subspecialties | 3,263   | 84   | 1,680   | 1,126  | 2,806   | 1,297  | 1,509  | 669  |
| Neurologic surgery                   | 149   | 4  | 80  | 36   | 116   | 60   | 56   | 16   |
| Obstetrics and gynecology            | 1,764   | 62   | 1,240   | 442  | 1,682   | 504  | 1,178  | 558  |
| Ophthalmology                        | 2,336   | 25   | 500   | 208  | 708   | 242  | 466  | 216  |
| Orthopedic surgery                   | 860   | 17   | 340   | 200  | 540   | 243  | 297  | 127  |
| Otolaryngology                       | 3,737   | 27   | 540   | 233  | 773   | 229  | 544  | 274  |
| Pathology                            | 1,012   | 11   | 220   | 332  | 552   | 311  | 241  | 111  |
| Pediatrics                           | 2,220   | 18   | 360   | 393  | 753   | 389  | 364  | 184  |
| Physical medicine <sup>3</sup>       |   | 3  | 60  | 5  | 65  | 5  | 60   | 30   |
| Plastic surgery                      | 160   | 1  | 20  | 8  | 28  | 6  | 22   | 12   |
| Psychiatry and neurology             | 1,716   | 20   | 400   | 497  | 897   | 548  | 349  | 149  |
| Radiology                            | 2,012   | 13   | 260   | 250  | 510   | 281  | 229  | 99   |
| Surgery <sup>4</sup>                 | 2,342   | 154  | 3,080   | 1,007  | 4,087   | 1,161  | 2,926  | 1,386  |
| Urology                              | 983   | 13   | 260   | 137  | 397   | 156  | 241  | 111  |
| Totals                               | 23,465  | 513  | 10,260  | 5,256  | 15,516  | 5,796  | 9,720  | 4,590  |

Note—Column B includes the courses requested by officers in all age groups (see table 3 last column). The total (513) is 5 less than total in tables 2 and 3 because Hospital Administration (2 requests) and Public Health (3 requests) were omitted. There are no specialty boards or approved residencies in these fields. Column C contains a tentative estimate for the desires of 54,000 medical officers. See discussion on page 254 for method of computation and variables which would modify the estimates. Column H is the estimated number in the first postwar year if one half of the medical officers are discharged in that year ( $C/2 + D - F$ ).

<sup>1</sup> J. A. M. A. 122:1119 (Aug. 14) 1943.

<sup>2</sup> This pertains to general hospital training independent of specialties in second year internships or mixed residencies in columns D and F the figures 183 and 154 are for mixed residencies.

<sup>3</sup> Included under Internal Medicine in table 3.

<sup>4</sup> Includes Malignant Diseases, Thoracic Surgery, Traumatic Surgery and the subspecialty Proctology.

#### RATE OF DEMOBILIZATION

The Council on Medical Education and Hospitals has recognized<sup>3</sup> that "the rate of demobilization of medical officers will bear significantly on our planning for their postwar training." The estimates contained in table 4 must take this into account, since the additional 9,720 residencies (total of column G) and the total of 15,516 residencies for civilians plus discharged officers (column E) would apply provided all officers desiring such training were discharged within a few months on conclusion of the war, which is not likely to happen. While the rate of demobilization cannot now be estimated with assurance, the fig-

year of demobilization. At that time a full 75 per cent of all discharged physicians seeking house officerships will be in such positions which may require about 7,500 residencies in addition to the 5,796 now available."

#### RESIDENCIES REQUIRED IN SPECIFIC FIELDS OF MEDICINE

Preliminary approximations to the number of hospital positions required in the various specialties are also given in table 4 column H. If our basic assumptions have been reasonably sound, it appears that an increase

<sup>6</sup> The total estimated in this way about 13,300 may be compared with the Council's estimate of January 1944<sup>1</sup> when a figure of 12,000 or 13,000 was arrived at on the basis of the scanty information then available.



of about 80 per cent will be required during the first year in the total number of residencies and that the percentages of expansion of available places required in the various special fields may be about as shown in table 5. Not included in this table are the following subjects, in which relatively small numbers of officers

TABLE 5—Percentage Increase in Numbers of Postwar Residencies Which May Be Required Tentative Estimates

|                           |      |                          |     |
|---------------------------|------|--------------------------|-----|
| Otolaryngology            | 140% | Orthopedic surgery       | 50% |
| Surgery                   | 120% | Pediatrics               | 50% |
| Obstetrics and gynecology | 110% | Pathology                | 40% |
| Ophthalmology             | 9%   | Radiology                | 30% |
| Urology                   | 70%  | Psychiatry and neurology | 30% |
| Internal medicine         | 50%  |                          |     |

evinced interest anesthesiology, dermatology and syphilology, neurologic surgery, physical medicine and plastic surgery. While some expansion of educational opportunities will be required in these fields replies from more officers in the services are required to justify hazarding an estimate of the required additional facilities needed.

The field of "general training" requires special mention. In table 4 it is estimated that over 1,000 officers may seek such mixed residencies or second year internships. Although approved mixed residencies in non-internship hospitals numbered only 154 in 1943, it must be remembered that all internship hospitals are also approved for mixed residencies. There are now over 700 such hospitals providing nearly 8,000 internships in peacetime. There seems to be no doubt that these institutions will be capable of providing for the additional requirements for general hospital training.

#### FULL TIME REVIEW AND REFRESHER COURSES

Review and refresher courses were requested by 338 officers (table 1). The total number requested was 452 courses (table 2), varying in duration from one

TABLE 6—Requests for Postwar Review or Refresher Courses of Six Months Duration or Less from 338 Medical Officers of the 1,000 Who Replied

| Field in Which Training Is Desired | Group 1 | Group 2 | Group 3 | Group 4 | Group 5 | Group 6 | Total Groups 1 to 6 by Sub-jects |
|------------------------------------|---------|---------|---------|---------|---------|---------|----------------------------------|
| Anesthesiology                     | 1       | 1       | 3       |         | 1       |         | 6                                |
| Dermatology and Syphilology        |         |         | 1       | 1       | 5       |         | 7                                |
| Hospital Administration            |         |         |         |         |         | 1       | 1                                |
| Internal Medicine                  | 11      | 11      | 29      | 17      | 26      | 5       | 99                               |
| General Training                   | 21      | 20      | 18      | 30      | 8       | 6       | 103                              |
| Neurological Surgery               |         | 10      | 23      | 15      | 6       |         | 54                               |
| Obstetrics and Gynecology          | 2       | 1       | 23      | 15      | 6       |         | 56                               |
| Ophthalmology                      |         |         | 6       | 6       | 6       |         | 17                               |
| Orthopedic Surgery                 | 1       | 1       | 3       | 2       |         |         | 7                                |
| Otolaryngology                     | 2       | 1       | 3       | 4       | 4       |         | 14                               |
| Pathology                          | 1       |         | 2       | 1       | 1       |         | 5                                |
| Pediatrics                         | 2       | 1       | 5       | 2       | 6       | 1       | 16                               |
| Plastic Surgery                    |         |         |         |         |         |         | 0                                |
| Psychiatry and Neurology           | 2       | 3       | 4       | 3       | 4       | 1       | 17                               |
| Public Health                      |         |         |         | 1       | 1       |         | 2                                |
| Radiology                          | 1       | 1       |         | 4       | 2       |         | 8                                |
| Surgery                            | 10      | 10      | 18      | 20      | 24      | 4       | 86                               |
| Urology                            |         |         | 1       | 2       |         |         | 3                                |
| Total requests by age groups       | 50      | 53      | 116     | 110     | 93      | 19      | 462                              |

Note: Since nearly 1,000 (actually 940) courses were requested in this category and that of table 3, any figure can be converted into percentage of all courses desired by pointing off one decimal place. 452 becomes approximately 45.2 per cent.

to six months. The fields in which such training is desired are shown in table 6. The largest number of requests were for work in the same four fields which were most popular in the case of house officerships. Over 75 per cent of the requests were for the following

subjects: general training (23 per cent), internal medicine (22 per cent), surgery (19 per cent) and obstetrics and gynecology (12 per cent). Less than 4 per cent of the requests were for work in each of the remaining fields of medicine.

Again, it is incumbent on us to try to translate the expressed desires of the first thousand officers who replied to the questionnaire sent to 3,000 physicians in the services into the probable demand from all medical officers after the war. This must be done now, even at the risk of seriously miscalculating, and an attempt at this is made in table 7. Recalculations will be made on the basis of the continuing studies of the Committee on Postwar Medical Services.

In this table are given the attendance and the number of courses at various full time postgraduate courses during the year 1943-1944, classified according to duration of training and the specialty or field of interest of the physician.

In the last column of table 7 is given the estimated total number of courses desired by medical officers in the fields indicated. Expansion of presently available facilities is needed in all of the fields indicated. The most illuminating figures are those of the last two pairs of lines across the bottom of table 7, relating to the duration of the courses available and desired. In 1943-1944 over 90 per cent of the participating physicians were in postgraduate full time courses of one month or less duration. Yet over 90 per cent of the probable demands for short term training will be for courses of about two or more months. It appears that one of the most acute needs for expansion of postwar educational opportunities will be in full time review and refresher courses of two to six months' duration.

#### TRAINING IN THE BASIC MEDICAL SCIENCES

In the first 1,000 questionnaires returned there was an insignificant number of specific requests for further work entirely limited to the basic medical sciences. However, it must be recognized that sound advanced training in any of the medical fields requested by medical officers must include basic science instruction and review. In planning internships and residencies for returning physicians it is essential to incorporate appropriate work in biochemistry, bacteriology, physiology, anatomy and pathology. Too often, in the typical residency of peacetime, the clinical responsibilities of the physicians allowed insufficient time for such a well rounded educational program.

#### HOW CAN POSTWAR EDUCATIONAL NEEDS BE MET?

Meeting the requirements of returning medical officers for additional training is a serious responsibility which will require the continued joint efforts of the Committee on Postwar Medical Service, the Council on Medical Education and Hospitals, the Surgeons General of the Army, Navy and Public Health Service hospitals approved for internships and residencies, the American boards in the medical specialties, medical schools, state licensing boards, the Veterans Administration, foundations, county and state medical societies, and every institution capable of providing advanced training to physicians.

On these physicians rests a large share of the responsibility for the quality of medical care to be provided the nation in the decades following the war. Many entered the services after an abbreviated internship

7 These figures are twenty times those in the last column of table 6. See page 254 for discussion of the basis for this calculation. Note that table 7 omits estimates in hospital administration, neurosurgery, and public health.

Others recognize the need for further education to equip themselves to return to their former practices or to new locations in which they desire to work.

The Council on Medical Education and Hospitals of the American Medical Association recommends the following, to meet the educational challenge of the postwar period:

1 Every hospital approved by the Council for internships should review its present and potential facilities and be prepared on request to submit to the Council estimates of the additional physicians it can accommodate as house officers in general medical training without jeopardizing high educational standards.

2 Every residency and fellowship hospital approved by the Council and acceptable to the various American

feasibility of allowing credit for such graduate externships in the training requirements for certification.

6 Schools engaged in undergraduate, postgraduate and graduate education, medical societies and foundations should plan especially to meet the probable demands for full time review and refresher courses of two to six months duration.

7 All participating hospitals and schools should incorporate into all postwar house officer training appropriate work in the basic medical sciences which will require close cooperation between hospitals, medical societies and medical schools.

8 Consistent with the demands of national security and the postwar military needs, plans for the demobilization of medical officers should provide for teachers

TABLE 7—Officers Who Will Desire Full Time Review or Refresher Courses: Tentative Estimates

| Field of Training                             | Places Now Available in Short Full Time Courses |               |                   |               |                   |               |                   |               |                   |               | Total Available Places in Short Courses |               | Estimated Additional Courses Required by Returning Officers |
|---|---|---------------|-------------------|---------------|-------------------|---------------|-------------------|---------------|-------------------|---------------|---|---------------|---|
|   | About 1 Mo                                      |               | About 2 Mo        |               | About 3 Mo        |               | 3 to 6 Mo         |               | Variable Length   |               | No of Phys icians                       | No of Courses |   |
|   | No of Phys icians                               | No of Courses | No of Phys icians | No of Courses | No of Phys icians | No of Courses | No of Phys icians | No of Courses | No of Phys icians | No of Courses |   |               |   |
| Anesthesiology                                | 534   | 3             |                   |               |                   |               | 6                 | 1             | 5                 | 1             | 545                                     | 5             | 120   |
| Dermatology and syphilology                   | 55  | 2             |                   |               |                   | 1             |                   |               | 41                | 10            | 96                                      | 1             | 160   |
| Internal medicine                             | 19 501  | 86            | 141               | 9             | 9                 | 2             | 44                | 7             | 79                | 7             | 19 774                                  | 111           | 1 980   |
| General training                              | 2 334   | 21            | 43                | 4             | 8                 | 1             |                   |               | 73                | 5             | 2 458                                   | 31            | 2 060   |
| Obstetrics and gynecology                     | 115   | 7             | 26                | 7             | 10                | 2             | 8                 | 1             |                   |               | 159                                     | 17            | 1 120   |
| Ophthalmology                                 | 235   | 11            | 85                | 10            |                   |               | 33                | 2             |                   |               | 353                                     | 23            | 340   |
| Orthopedics                                   | 14  | 3             |                   |               |                   |               |                   |               |                   |               | 14                                      | 3             | 140   |
| Otolaryngology                                | 94  | 6             | 24                | 5             | 13                | 2             | 10                | 3             | 7                 | 2             | 148                                     | 18            | 280   |
| Pathology                                     |   |               |                   |               |                   |               | 7                 | 1             | 25                | 2             | 32                                      | 3             | 100   |
| Pediatrics                                    | 270   | 9             | 21                | 3             |                   |               |                   |               |                   |               | 291                                     | 12            | 320   |
| Psychiatry and neurology                      | 1,073   | 7             |                   |               |                   |               |                   |               | 182               | 8             | 1 255                                   | 15            | 340   |
| Radiology                                     | 17  | 1             | 13                | 2             | 8                 | 1             |                   |               | 16                | 2             | 54                                      | 6             | 160   |
| Surgery                                       | 219   | 11            | 74                | 9             | 1,415             | 5             | 10                | 1             | 1                 | 1             | 1,719                                   | 27            | 1 720   |
| Urology                                       | 8   | 3             |                   |               |                   |               |                   |               |                   |               | 8                                       | 3             | 60  |
| Total places now available                    |   |               |                   |               |                   |               |                   |               |                   |               |   |               |   |
| Numbers                                       | 24,469  | 170           | 427               | 49            | 1,463             | 14            | 118               | 16            | 429               | 38            | 26 906                                  | 287           |   |
| Per cent                                      | 90.9  |               | 16                |               | 55                |               | 0.4               |               | 1.6               |               |   |               |   |
| Estimated places required by medical officers |   |               |                   |               |                   |               |                   |               |                   |               |   |               |   |
| Numbers                                       | 660   |               | 480               |               | 2,160             |               | 3,560             |               | 2 180             |               |   |               |   |
| Per cent                                      | 7   |               | 5                 |               | 24                |               | 40                |               | 24                |               |   |               |   |

Note.—Part time courses (236 in number) which were given to 2,873 physicians in the year 1943-1944 are not included.

The figures given are for numbers of physicians accommodated in short courses in the year 1943-1944 and for the numbers of courses involved.

These preliminary estimates (bottom line and last column) of total postwar short courses required for medical officers were obtained by expanding the requests from 1,000 officers twenty times as was done in column C, table 5. See discussion of this calculation in text, page 254. The horizontal totals in the last line exceed those of the vertical totals in the last column because the latter does not include estimates of required courses in hospital administration, neurosurgery and public health.

boards should be prepared to submit to the Council and the respective boards estimates of the additional physicians it can accommodate as house officers in already approved residencies, having in mind initially the required expansion estimated in table 5, as well as the necessity for preserving a high quality of training.

3 Every internship hospital not now approved by the Council for residencies should be prepared to report on such facilities it may possess as may warrant consideration for approval of residencies, particularly in those specialties requiring most expansion.

4 Every approved residency hospital which has not yet developed its educational programs to full capacity should consider the organization of additional residencies in specialties not yet approved by the Council.

5 Hospitals approved for house officer training should consider developing graduate externships to provide training of short duration to discharged officers not housed at the hospital but engaged in full time hospital work. Specialty boards should consider the

required for the training of discharged officers to be demobilized before the prospective students.

9 Although it may be necessary to modify the estimates here published when further questionnaires have been returned from medical officers to the Committee on Postwar Medical Service, plans by all medical educational institutions for expanded postwar facilities should commence at once.

10 Full use for educational purposes should be made of the period between the surrender of Germany and that of Japan to provide training for as many officers as possible while still retained on active service.

The Committee on Postwar Medical Service and the Council on Medical Education and Hospitals are moving forward with this program to the end that a complete list of available facilities may be published as soon as possible.

8 The American Board of Psychiatry and Neurology has already considered the plan which was first suggested to the Council by that board.

**Medical Examinations and Licensure****COMING EXAMINATIONS AND MEETINGS****NATIONAL BOARD OF MEDICAL EXAMINERS  
EXAMINING BOARDS IN SPECIALTIES**

Examinations of the Examining Boards in Specialties were published in THE JOURNAL Sept 16 page 190

**BOARDS OF MEDICAL EXAMINERS**

- ALABAMA Montgomery Oct 24 26 Sec Dr B F Austin 519 Dexter Ave Mont,omery
- ARIZONA \* Phoenix Oct 34 Sec Dr J H Patterson 826 Security Bldg Phoenix
- ARKANSAS \* Little Rock Nov 9 10 Sec Dr D L Owens Harrison
- COLORADO \* Denver Oct 36 Sec Dr J B Davis 831 Republic Bldg Denver
- CONNECTICUT \* Medical Written Hartford Nov 14 15 Endorsement Hartford Nov 28 Sec to the Board Dr Creighton Barker
- 258 Church St New Haven Homeopathic Derby Nov 14 15 Sec Dr J H Evans Hartford 6
- DELAWARE Dover Oct 10 12 Sec Medical Council of Delaware Dr J S McDaniel 229 S State St Dover
- DISTRICT OF COLUMBIA \* Washington November Sec Commission on Licensure Dr G C Ruhland 6150 E Municipal Bldg Washington
- IDAHO Boise Jan 8 11 Dir Bureau of Occupational Licenses Mrs Lela D Painter 355 State Capitol Bldg Boise
- ILLINOIS Chicago Oct 10 12 Supt of Registration Department of Registration and Education Mr Philip Harman Springfield
- INDIANA Indianapolis Jan 35 Exec Sec Board of Medical Registration and Examination Miss Ruth V Kirk 301 State House Indianapolis 4
- IOWA \* Iowa City Sept 25 27 Dir Division of Licensure and Registration Mr H W Grefe Capitol Bldg Des Moines
- KANSAS Nov 23 Sec Board of Medical Registration and Examination Dr J I Hassig 905 N Seventh St Kansas City
- MAINE Portland Nov 14 15 Sec Board of Registration of Medicine Dr A P Leighton 192 State St Portland
- MARYLAND Homoeopathic Baltimore Dec 13 Sec Dr John A Evans 612 W 40th St Baltimore
- MASSACHUSETTS Boston Nov 14 17 Sec Board of Registration in Medicine Dr H Q Gallupe 413 F State House Boston
- MICHIGAN \* Detroit, Sept 25 27 Sec Board of Registration in Medicine Dr J E McIntyre 100 W Allegan St Lansing 8
- MISSISSIPPI Jackson Oct 16 17 Asst Sec Dr R A Whitfield Jackson
- MONTANA Helena Oct 24 Sec Dr O G Klein First Natl Bank Bldg Helena
- NEBRASKA Omaha Sept 26 28 Dir Bureau of Examining Boards Mr Oscar F Humble 1009 State Capitol Bldg Lincoln
- NEW JERSEY Trenton Oct 17 18 Sec Dr E S Hallinger 28 W State St Trenton
- NEW MEXICO \* Santa Fe Oct 9 10 Sec Dr LeGrand Ward 141 Palace Ave Santa Fe
- NEW YORK Albany Buffalo New York and Syracuse Oct 16 19 Sec Dr R R Hannon Education Bldg Albany
- NORTH DAKOTA Grand Forks Jan 25 Sec Dr G M Williamson 432 S 3rd St Grand Forks
- OHIO Examination Columbus Sept 26 29 Endorsement Columbus Oct 3 Sec Dr H M Platter 21 W Broad St Columbus
- PENNSYLVANIA Philadelphia and Pittsburgh Oct 6 Acting Sec Bureau of Professional Licensing Department of Public Instruction Mrs Marguerite G Steiner 358 Education Bldg Harrisburg
- RHODE ISLAND \* Providence Oct 5 6 Chief Division of Examiners Mr Thomas B Casey 366 State Office Bldg Providence
- SOUTH DAKOTA \* Pierre Jan 16 17 Sec Medical Licensure State Board of Health Dr G Cottam Pierre
- TEXAS Dallas Nov 15 17 and Dec 19 21 Sec Dr T J Crowe 918 20 Texas Bank Bldg Dallas 2
- WEST VIRGINIA Charleston Oct 24 Commissioner Public Health Council Dr John E Offner State Capitol Charleston 5
- WYOMING Cheyenne Oct 2 Sec Dr M C Keith Capitol Bldg Cheyenne

\* Basic Science Certificate required

**BOARDS OF EXAMINERS IN THE BASIC SCIENCES**

- CONNECTICUT New Haven Oct 14 Address State Board of Healing Arts 250 Church Street New Haven 10
- DISTRICT OF COLUMBIA Washington Oct 20 24 Sec Commission on Licensure Dr G C Ruhland 6150 E Municipal Bldg Washington
- FLORIDA Gainesville Nov 4 Final date for filing application is Oct 20 Sec Dr J F Conn John B Stetson University DeLand
- IOWA Des Moines Oct 10 Dir Division of Licensure and Registration Mr H W Grefe Capitol Bldg Des Moines
- MICHIGAN Ann Arbor and Detroit Oct 13 14 Sec Miss Eloise LeBeau 101 N Walnut St Lansing
- MINNESOTA Minneapolis Oct 34 Sec Dr J C McKinley 126 Millard Hall University of Minnesota Minneapolis 14
- NEBRASKA Omaha Oct 34 Dir Bureau of Examining Boards Mr Oscar F Humble 1009 State Capitol Bldg Lincoln
- NEW MEXICO Santa Fe Feb 12 Sec Miss Marion M Rhea State Capitol Santa Fe
- OREGON Portland Nov 4 Sec Mr C D Byrne University of Oregon Eugene
- SOUTH DAKOTA Aberdeen Dec 12 Sec Dr G M Evans Yankton
- TENNESSEE Memphis and Nashville Sept 25 26 Sec Dr O W Hyman 874 University Ave Memphis

**Bureau of Legal Medicine and Legislation****MEDICOLEGAL ABSTRACTS**

**Malpractice Statute of Limitations Does Not Begin to Run Until Discovery of Negligence**—In 1930 the plaintiff submitted to an abdominal operation in a hospital owned and operated by the Colorado Fuel and Iron Company. The operation was performed by two physician employees of the hospital but whether the patient paid the hospital for their services or paid the physicians themselves directly the reported decision does not make clear. The patient suffered constant pain thereafter and was attended by various physicians. In October 1940 roentgenograms and fluoroscopes failed to indicate the presence of any foreign body in her abdomen but a laparotomy performed later in the month revealed the presence in the abdomen of a large gauze pad, which the patient alleged was left there when the abdominal operation was performed. This, so the patient alleged, was the first notice that she had had that the physicians had been negligent in performing the abdominal operation in 1930. She sued the hospital the two physicians who performed the operation in 1930 and a nurse who was in charge of the operating room at the time and assisted the two physicians in the operation. The nurse and the hospital moved to dismiss the action allegedly because the complaint failed to state a cause of action and because an applicable six year statute of limitations in Colorado barred suit. The defendant physicians moved to dismiss because of the bar of an applicable two year statute of limitations. The trial court dismissed the action with respect to all the defendants and the patient appealed to the Supreme Court of Colorado.

The motion of the nurse said the Supreme Court, was overruled by the trial court as to the contention that the complaint failed to state a cause of action against her but was sustained as to the contention that the applicable statute of limitations had run. We think the motion should have been sustained as to the first contention—namely, that the complaint stated no cause of action against her. It is not alleged in the complaint that the nurse was derelict as to any special duty with which she was charged or that she was charged with any. According to the allegations of the complaint she was simply assisting said surgeons (referring to the physician defendants), and the presumption is that she was directed by them. Her negligence, if any was that of the physicians or of the hospital.

The motion to dismiss filed by the hospital was sustained on the grounds that the complaint stated no cause of action against it and that the applicable statute of limitations had run. A hospital a corporation as here said the court cannot be licensed to and cannot practice medicine. The relation between physician and patient is personal. That a hospital employs physicians on its staff does not make it liable for the discharge of their professional duty since it is powerless under the law to command or forbid any act by them in the practice of their profession. Unless it employs those whose want of skill is known, or should be known to it, or by some special conduct or neglect makes itself responsible for their malpractice (and no such allegation appears in the complaint in this case), it cannot be held liable therefor. Hence the motion of the hospital to dismiss because the complaint did not state a cause of action against it was properly sustained. Its motion to dismiss on the second ground, namely, that the applicable statute of limitations had run, becomes immaterial.

The motion of the two physicians to dismiss the complaint as to them was sustained by the trial court on the ground that the applicable two year statute of limitations had run. This, in the opinion of the court was error. The statute on which the defendant physicians relied, so far as here applicable, reads

No person shall be permitted to maintain an action to recover damages from any person licensed to practice medicine on account of the alleged negligence of such person in the practice of the profession unless such action be instituted within two years after such cause of action accrued.

Much argument has been made, continued the court, on the question of whether it is the negligent act of the physicians or the resulting damage which fixed the date from which the statute of limitations begins to run. We ignore these arguments because that is not the point. The question here is: Does delay due to a patient's ignorance of the cause of a known injury stop the running of the statute when the patient has used every reasonable effort to ascertain the cause and has been frustrated solely by the concealment of the physicians concerned? In other words, under such circumstances, when did the cause of action accrue? There are certain recognized exceptions to the strict and literal construction of such statutes as that here in question, necessarily construed into them by the demands of simple justice and the necessity for evading constitutional conflicts. For instance, it would seem outrageous to deprive one of his right to sue when a superior law forbade suit, or require him to sue when good faith to his debtor forbade action. *Brooks v. Bates et al.*, 7 Colo 576, 4 P 1069, *Board of Comrs of El Paso County v. Flanagan* 21 Colo App 467, 122 P 801. Do the facts before us constitute such an exception?

Cases involving the applicability of statutes similar to that here in question are numerous, the Supreme Court said and not a few of them were actions against physicians for leaving a foreign substance in closed incisions. In most of these cases the exceptions are repudiated and the statute strictly construed. A shocking result of this doctrine is well illustrated by a New York case *Conklin v. Draper*, 229 App Div 227, 241 N Y S 529. Id 254 N Y 620, 173 N E 892, in which a physician performed an appendectomy and left arterial forceps in the wound when it was closed. Despite allegations that he knew of his negligence but failed to disclose it and that plaintiff did everything within reason to discover the trouble and succeeded only when a roentgenogram revealed it and a hasty operation was performed to save life a two year statute had run and its bar was sustained. A notable 'gauze pad case' comes from Alabama, where it was contended that the statute was tolled since the cause of action was concealed by the negligence hence the malfeasance should be treated as a fraudulent concealment. The strict construction rule was applied but the opinion does recognize the rule that one may not take advantage of his own wrong. A careful reading of the case discloses that the real basis of the decision was the absence of allegations of diligence on the part of the plaintiff to ascertain the cause of his ailment after the performance of the operation in question. *Hudson v. Moore*, 239 Ala 130, 194 Co 147.

It is generally held, continued the court, that fraudulent concealment stops the running of the statute. 74 A L R 1320. It is said this is necessary that one be not permitted to take advantage of his own wrong. *Reynolds v. Hennessy* 17 R I 169, 20 A 307, 23 A 639. But in such case the defendant has committed two wrongs, the original negligence and the fraudulent concealment. Why permit him to take advantage of the first and apply the rule only to the second? We are not impressed with the reasoning which supports the materiality of fraud. The statute of limitations is enacted to promote justice, discourage unnecessary delay and forestall the prosecution of stale claims, not for the benefit of the negligent. It should not be construed to defeat justice. The negligence is equally damaging and the victim equally helpless regardless of the motive for concealment. This statute has exactly the same effect, in the opinion of the court, as would a contract of employment which provided that no action could be maintained against the physicians unless brought within two years from the date of the performance of the operation, that is on a par with a contract of insurance providing no recovery can be had unless notice be given within a specified time. Any excuse which would defeat such express contracts is equally effective to toll the statute and it is well settled in this jurisdiction that impossibility to give notice is such. *London Guarantee & Accident Co v. Officer* 78 Colo 441 242 P 989. *United States Casualty Co v. Hanson* 20 Colo App 393 79 P 176.

The court then discussed the decision of the Court of Appeals of Maryland in *Hahn v. Claybrook*, 130 Md 179 100 A 83,

86 L R A 1917C 1169 which, after reviewing with apparent acquiescence various authorities which deny the exception or limit it to other grounds, appeared finally unable to escape the logic and justice of the rule that a patient's lack of knowledge due to no lack of diligence on his part but solely to a physician defendant's concealment tolls the statute and holds flatly that the statute begins to run from the time of the discovery of the alleged injury.

It has been held continued the court that while generally a plaintiff's ignorance of the wrong committed cannot be considered in determining when the statute begins to run an exception to this rule is made in cases of the concealment of the cause of action. There the bar of the statute does not operate until discovery, and it is said. This proposition is so fundamental that no authorities need be cited. *Johnson v. Chicago M & St P R Co* D C 224 F 196 201. With this statement we agree. Certainly one should not be permitted to take advantage of his own wrong. Under the facts pleaded it was impossible for plaintiff to sue within the limitation and it is a recognized maxim that the law does not require impossibilities. A legal right to damage for an injury is property and one cannot be deprived of his property without due process. There can be no due process unless the party deprived has his day in court and it without his fault a tortfeasor conceals from him his right until a statute deprives him of his remedy he is deprived of due process. It is also an ancient maxim of the common law that Where there is a right there is a remedy. What a mockery to say to one, grievously wronged, Certainly you had a remedy but while your debtor concealed from you the fact that you had a right the law stripped you of your remedy. Regarding the number of authorities supporting the rule of strict construction stated the Supreme Court we disagree with them on reason and hold that this alleged cause of action against the physicians was not barred by the statute relied on.

For the reasons stated the judgment of dismissal as to the physicians was reversed.—*Rosane v. Singer* 149 P (2d) 372 (Colo 1944)

## Society Proceedings

### COMING MEETINGS

- American Academy of Ophthalmology and Otolaryngology Chicago Oct 8 12 Dr W L Benedict 102 Second Ave S W Rochester Minn Secretary
- American Academy of Pediatrics St Louis Nov 9 11 Dr Clifford G Grulice 636 Church St Evanston Ill Secretary
- American Hospital Association Cleveland Oct 26 Mr George P Bugbee 18 East Division St Chicago Executive Secretary
- American Pediatric Society Atlantic City N J Sept 25 27 Dr Hugh McCulloch 325 N Euclid Ave St Louis 8 Secretary
- American Public Health Association New York Oct 3 5 Dr Reginald M Atwater 1790 Broadway New York 19 Executive Secretary
- American Roentgen Ray Society Chicago Sept 24 29 Dr H Dabney Kerr University Hospitals Iowa City Secretary
- Association of American Medical Colleges Detroit Oct 23 25 Dr Fred C Zippke 5 S Wabash Ave Chicago Secretary
- Association of Military Surgeons of the United States New York Nov 2 4 Col James M Phalen Army Medical Museum Washington 25 D C Secretary
- Colorado State Medical Society, Denver Sept 27 29 Dr John S Bouslog 537 Republic Bldg Denver 2 Secretary
- District of Columbia Medical Society of the Washington Oct 5 7 Mr Theodore Wiprud 1718 M St N W Washington Secretary
- Indiana State Medical Association Indianapolis Oct 3 5 Mr T A Hendricks 23 East Ohio St Indianapolis 4 Executive Secretary
- Inter State Postgraduate Medical Association of North America Chicago Oct 17 20 Dr Arthur G Sullivan 16 N Carroll St Madison Wis Managing Director
- International College of Surgeons U S Chapter Philadelphia Oct 3 5 Dr Desiderio Roman 250 South 17th St Philadelphia Secretary
- Kan as Cty Southwest Clinical Society Kansas City Mo Oct 2 4 Dr William M North 1115 Grand Ave Kansas City 6 Mo Secretary
- Michigan State Medical Society Grand Rapids Sept 27 29 Dr L Fernald Foster 2020 Olds Tower Lansing 8 Secretary
- Midwestern Section of American Federation for Clinical Research Chicago Nov 2 Dr Richard H Lyons University Hospital Ann Arbor Mich Secretary
- Mississippi Valley Medical Society Peoria Ill Sept 27 28 Dr Harold Swanberg 510 Mine St Quincy Ill Secretary
- Oklahoma Cty Clinical Society Oklahoma Cty Oct 23 26 Dr I C McHenry 512 Medical Arts Bldg Oklahoma City Secretary
- Omaha Mid West Clinical Society Omaha Nebraska Oct 23 26 Dr J D McCarthy 1036 Medical Arts Bldg Omaha 2 Secretary
- Radiological Society of North America Chicago Sept 24 29 Dr Donald S Child 607 Medical Arts Bldg Syracuse N Y Secretary
- Southern Medical Association St Louis Mo Nov 13 16 Mr C P Loran Empire Building Birmingham 3 Ala Secretary
- Virginia Medical Society of Richmond Oct 23 25 Miss Agnes V Edwards 1200 E Clay St Richmond 19 Secretary

## Current Medical Literature

### AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1934 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (\*) are abstracted below.

#### American Heart Journal, St. Louis

27 755 904 (June) 1944

Distribution of Potential of Ventricular Origin Below the Diaphragm and in Esophagus J. D. Helm Jr., Grace H. Helm and C. C. Woffert —p. 755

Study of Methods of Making So Called Unipolar Electrocardiograms C. C. Woffert and Mary M. Livezey —p. 764

Effects of Anterior Infarction Complicated by Bundle Branch Block on Form QRS Complex of Canine Electrocardiogram I. F. Rosenbaum, H. Erlanger, N. Cotrim, T. D. Johnston and E. N. Wilson —p. 783

Coronary Occlusion, Coronary Insufficiency and Angina Pectoris: Clinical and Postmortem Study A. M. Master, H. L. Jaffe, S. Dick and A. Crisman —p. 803

Electrocardiographic Changes in Uremia Associated with High Concentration of Serum Potassium: Report of 3 Cases N. M. Keith, H. B. Burchell and A. H. Baggenstoss —p. 817

Continuous Intravenous Administration of Histamine: Effect on Electrocardiogram and Serum Potassium G. A. Peters and B. T. Horton —p. 845

#### American J. Digestive Diseases, Fort Wayne, Ind.

11 205 240 (July) 1944

\*Quantitative Study of Inhibitory Effect of Acid in Intestine on Gastric Secretion I. J. Pincus, M. H. T. Friedman, J. E. Thomas and M. E. Rehfuess —p. 205

\*Therapeutic Use of Amino Acid Histidine in Allergy and Shock—Histidine as Factor in Histamine-Epinephrine Balance S. L. Ruskin —p. 209

Role of Fat Soluble Vitamins A and D in Nutrition: Requirements of Vitamin A J. Buckstein —p. 224

New Test for Gastric Function J. Nasio —p. 227

Effectiveness of Different Culture Media in Isolation of Enteric Micro-Organisms E. R. Neter and Phyllis Clark —p. 229

**Inhibitory Effect of Acid in Intestine on Gastric Secretion**—Pincus and his collaborators performed experiments on 3 dogs equipped with a Pavlov pouch of the stomach and on 1 dog with a Heidenhain pouch. They found that acid introduced into the small intestine of Pavlov pouch dogs inhibits gastric secretion in response to a meal, provided an adequate degree of intestinal acidity is attained. Great inhibition of secretion occurs if the  $pH$  of the intestinal contents is about 2.5 and almost complete depression when the  $pH$  is 2.0 or lower. The experiments point to the existence of a mechanism for the autoregulation of the gastric secretion which is brought into play when the acidity of the intestinal contents reaches levels which may be harmful to the intestinal mucosa. During the digestion of a meat meal by the dog the acidity of the duodenum near the pylorus is generally near  $pH$  4, while the content of the antrum of the stomach has a reaction between  $pH$  2.0 and  $pH$  3.0. The existence of a threshold level of intestinal  $pH$  for inhibition of gastric secretion which these studies show to be within the  $pH$  range of the antral contents is suggestive. One of the authors has suggested that the "receptive relaxation" of the duodenum which occurs when the stomach empties itself results in the accumulation of duodenal contents in the vicinity of the pylorus. Occurring at the moment of exit of the acid gastric contents, this would facilitate quick dilution and partial neutralization of the chyme (to about  $pH$  4.0). It may now be supposed that, should this neutralizing ability of the duodenal contents be ineffective a second mechanism may be set into action, one which arrests the secretion of the acid at its source. The intestinal phase of digestion is believed to give rise to a corresponding intestinal phase of gastric secretion. The suggestion has been advanced that the intestinal phase of gastric secretion is normally regulated to some extent by the acidity

of the intestinal contents. The results obtained by the authors cast doubt on this assumption. In the dog, at least, little inhibition of acid secretion occurs if the intestinal  $pH$  is above 2.5. Acidities as great as this are rarely found in the dog's intestine. The authors regard this mechanism as one which is set into action only during emergencies when other means of reducing the acidity of the intestinal contents have failed. The possibility remains that in man the threshold is higher than  $pH$  2.5, which would explain the results of Griffiths and Shay et al., who used less concentrated solutions of acid. The inhibition observed in these experiments may be due to enterogastrostomy, the intestinal instillation of acid failed to inhibit the gastric secretion provoked by histamine.

**Histidine in Allergy and Shock**—Ruskin experimented with a viable section of a bronchiole from rabbit lung obtained according to a slightly modified technique of Sollmann and Gilbert. The purpose of the experiment was to produce contraction of the bronchiole by adding histamine hydrochloride to the Ringer-Locke-dextrose solution to obtain a 1:50,000 concentration. After the contraction due to the histamine was established, and at a fixed interval, the substance to be tested for histamine antagonism was added. It was demonstrated that vitamin C has slight histamine antagonism in itself, but when serving as the acid radical for calcium, epinephrine, amphetamine or epinephrine it enhances their histamine antagonism and bronchiole dilating capacity. This is important in increasing respiratory ability. Calcium gluconate not only did not antagonize histamine hydrochloride but actually increased contraction of the bronchiole to the drug. Calcium ascorbate, on the other hand, antagonized histamine, and the response was quicker than that to either vitamin C alone or sodium ascorbate. This is significant in view of the conflicting claims made for calcium in the treatment of asthma. The synergistic effect of vitamin C on calcium may be the all deciding factor in the therapeutic value of calcium in allergy. Calcium gluconate may produce unfavorable results in the treatment of asthma, while calcium ascorbate may be useful. While amphetamine ascorbate produced a quick recovery from histamine contraction, with strong histamine block, the amphetamine sulfate showed no histamine antagonism and in fact prolonged histamine contraction. The implications of this experiment may be important in relation to histamine shock. While amphetamine sulfate can keep a soldier alert, it may predispose him to greater histamine shock, whereas the vitamin C salt may protect against histamine shock. The epinephrine ascorbate showed about twice the bronchiole dilating capacity exerted to epinephrine hydrochloride and a much quicker and more active histamine antagonism. The amino acids histidine and tyrosine supplemented by methionine and choline, serve as fundamental factors in the balance between histamine and epinephrine. The author arrives at the following conclusions: (1) Therapeutic usefulness of the amino acid histidine is indicated in allergic and related conditions; (2) histidine is antagonistic to histamine and plays an important part in histamine-epinephrine balance in shock; (3) histidine produces a feeling of well being and energy that could be useful in the care of postoperative patients and the treatment of shock. Further study of histidine enrichment of parenterally administered protein hydrolysates as blood substitutes is being conducted.

#### Endocrinology, Springfield, Ill.

34 353-432 (June) 1944

Effect of Thyroid Treatment on Respiration of Various Rat Tissues F. S. Gordon and A. E. Heming —p. 353

Diabetogenic Effect of Diethylstilbestrol in Adrenalectomized Hypophysectomized Partially Depauperatized Rats D. J. Ingle —p. 361

Removal of Exogenous Estrogens from Circulation A. E. Rakoff, A. Cantarow, K. E. Paschke, L. P. Hansen and A. A. Walking —p. 370

Response of Intraocular Endometrial Implants to Estrogens in Female Rabbit E. M. Jacobsen —p. 376

Deposition of Pigment in Sparrow's Bill in Response to Direct Applications as Specific and Quantitative Test for Androgen C. A. Pfeiffer, C. W. Hooker and A. Kirschbaum —p. 389

Water Diuresis and Water Intoxication in Relation to Adrenal Cortex R. Gaunt —p. 400

Influence of 11 Dehydro 17 Hydroxy corticosterone (Compound E) on Growth of Malignant Tumor in Mouse F. R. Heilmann and E. C. Kendall —p. 416



**Florida Medical Association Journal, Jacksonville**  
**31 1-40 (July) 1944**

- Relationship of Obstructions to Urinary Affections E G Ballenger —p 13  
\*Rupture of Coronary Artery Report of Case with Necropsy M Dobrin —p 15  
Collapse Therapy in Pulmonary Tuberculosis R D Thompson —p 16

**Rupture of Coronary Artery**—A man aged 74 was hospitalized with the complaint of tightness in the abdomen and shortness of breath. These symptoms came on gradually and grew worse. Six days previously he had been seized with a pain across the back which radiated up the neck to both jaws and down both arms lasting ten minutes four days before admission he had been kept awake most of the night with similar pains. The pulse could not be felt. The systolic blood pressure appeared to be about 50. Oxygen was administered and morphine was given twice during the night. The patient continued to have severe dyspnea and died the next morning. At necropsy the pericardial sac contained about 650 cc of liquid and clotted blood. On the anterior surface of the left ventricle, adjacent to the anterior descending branch of the left coronary artery there was an irregular tear in the epicardium, with a small blood clot extruding. The coronary artery was sclerotic and calcareous, and there was a rupture of the artery with clotted blood in the opening. Dobrin states that the literature contains reports of only 33 cases of death due to rupture of a coronary artery.

**Ohio State Medical Journal, Columbus**  
**40 501-612 (June) 1944**

- Radiology and Law S W Donaldson —p 517  
Incidence of Hypothyroidism R M Watkins —p 521  
Dark Adaptation in Skin Conditions J D Walters —p 524  
Ruptured Dissecting Aneurysm Associated with Syphilitic Vortitis J C Sherrick —p 527  
Recognition of Nonpollen Allergy of Respiratory Tract by General Practitioner R S Rosedale —p 529  
Etiology of Regional Enteritis Role of Inflammatory Bands and Ileocecal Valve Incompetence J L DeCourcy —p 535  
\*Case of Acute Leukemia Complicating Pregnancy With Necropsy Findings in Fetus H S Applebaum —p 536  
Care of Crippled E H Wilson —p 539

**Leukemia Complicating Pregnancy**—Applebaum reports a case in which myeloid leukemia developed during the first half of pregnancy. Three blood transfusions produced prompt but short lived improvement. A month later the woman, aged 29, was hospitalized again and was given x-ray treatments and blood transfusions, in spite of some improvement the course was steadily downhill. Since the patient would take no food and nausea and vomiting became persistent, dextrose and saline solution together with amino acids were started intravenously. Vitamins were given parenterally all to no avail. A cesarean operation was performed in the hope of saving the child and giving some relief to the patient. The fetus was found dead and the mother expired several hours later. Microscopic examination of the organs of the fetus revealed no leukemic infiltrations of the lymph nodes or spleen or of any of the 23 sections taken from the various organs. The absence of leukemia from the fetus is another link in the chain of evidence that 'a leukemic mother has never given birth to an infant with leukemia'. This suggests that leukemia in man is probably not transmitted by the mother to the child.

**Pennsylvania Medical Journal, Harrisburg**  
**47 961-1056 (July) 1944**

- Evaluation of Kenny Method in Treatment of Chronic Infantile Paralysis H Chance Jr —p 975  
Principles of Preparation for and Management of Elective Surgery in Children J A Cowan Jr —p 979  
Continuous Fractional Spinal Anesthesia in Obstetrics and Gynecology Report of 308 Cases with Observations at Philadelphia Living In Hospital J C Ullery —p 982  
Treatment of Impaired Hearing by Radiation of Excessive Lymphoid Tissue in Nasopharynx H D Rentschler and J W Settle Jr —p 985  
Absence of Pain in Serious Urologic Disease D M Dati —p 989  
Effect of Synchronized Medicine on Workmen's Compensation and the Doctor in War I F Barzell —p 995

**Public Health Reports, Washington, D C**  
**59 765-796 (June 16) 1944**

- Therapeutic Efficacy of Phenyl Arsenoxides in Mice and Rabbit Trypano omias (Tryp Equiperdum) H Eagle R B Hogan et al Doak and H C Steinman —p 765

**59 797-828 (June 23) 1944**

- Births Infant Mortality and Maternal Mortality in United States - 194 J Yerushalmi —p 797

**59 829-856 (June 30) 1944**

- Steve Device for Sampling Air Borne Micro Organism H C Duffay and L R Crisp —p 829  
Production of Vitamin B Deficiency in Rats by Various Sulfonamide A Kornberg and W H Sebrall —p 835

**Radiology, Syracuse, N Y**  
**42 531-638 (June) 1944**

- Cancer of Rectum N A McCormick —p 531  
Clinical Features Diagnosis and Treatment of Carcinoma of Colon and Rectum D S Beilin —p 539  
Results of Treatment of 173 Cases of Carcinoma of Rectum M Malhan and K W Stenstrom —p 545  
\*Aseptic Necrosis in Adults Caisson Worker and Others H K Taylor —p 550  
Right Aortic Arch with Report of 8 Cases D Eisen —p 550  
\*Accidental Trauma and Tumor Metastasis B I Toth —p 557  
Wilson Volt Isodose Curves for Angulated Beam M C Reinhard and H L Coltz —p 591

**Aseptic Necrosis in Caisson Workers and Others**—Taylor observed 54 persons showing aseptic necrosis and bone infarcts. Of the 13 patients who had worked under compressed air for varying periods of time some were subjected to sudden changes of atmospheric pressure and had experienced symptoms of acroembolism decompression illness or bends. Others were not subjected to sudden changes in atmospheric pressure. Of the latter group some had mild or subacute symptoms of decompression illness and others did not. Shaft and joint lesions do not develop immediately after decompression illness. Considerable time must elapse. The shaft lesions are usually asymptomatic and are discovered accidentally. In the joints secondary arthritic changes occur resembling a chronic hypertrophic osteoarthritis. The lesions observed in the 41 patients who had never worked under compressed air and had never been subjected to sudden or violent changes in atmospheric pressure were similar to those in the occupational group. In the caisson worker the etiologic factor is the presence of an inert gas nitrogen in bubble formation either forming an embolus or producing pressure or both thus interfering with the circulation to the part. In the noncaisson worker there is no apparent etiologic factor. The bone lesions may be single though usually they are multiple and often bilateral. Caisson workers presented extensive and multiple lesions more often than others. In the noncaisson worker, in whom the lesion is single and not extensive the reparative changes are usually greater. Deep sea divers and aviators may develop acroembolism. There are, however, no recorded evidences of bone changes in either naval or air personnel who have had attacks of acroembolism.

**Accidental Trauma and Tumor Metastasis**—Toth presents 2 cases of generalized carcinomatosis which were studied with a view of determining the influence of mechanical injuries on the formation of metastases. He lists the requirements that according to Segond Thiem Lubarsch and Langer should be fulfilled to establish a relationship between injury and tumor. He evaluates his 2 cases with these requirements in mind. Lacerations of the skin repeated subcutaneous and intravenous injections surgical amputation of the forearm and limb as well as compression fractures failed to result in the localization of secondary tumors. One post-traumatic and several supposedly post-traumatic metastases seemingly fulfilled all the requirements of Segond for the establishment of a definite relationship between accidental injury and metastatic cancer. On further observation, however, it became evident that this patient had an unusual type of metastatic spread from a primary lung carcinoma with preferential involvement of the subcutaneous tissues and muscles. The practically identical appearance of several intramuscular and subcutaneous metastases was evidence against a traumatic influence. A subsequent experimental blunt traumatization affecting mainly the subcutaneous structures in an apparently favorable location failed to result in the formation of a metas-



tasis. It thus appears that the unknown laws of metastasis have had an overwhelming—probably an exclusive—influence in the localization of the secondary deposits, possibly being entirely indifferent to the incidental presence of multiple traumas. The author suggests that in cases which are doubtful from the medicolegal point of view a further requirement should be added to the usual postulates of Segond and others.

### Southern Medical Journal, Birmingham, Ala

37 365-414 (July) 1944

- \*Deaths from Sulfonamides. Clinical and Pathological Study with Report of 3 Cases. C. V. Gessler—p. 365
- \*Clinical Analysis of 1,000 Consecutive Cases of Low Back Pain with Particular Reference to Sciatic Pain Caused by Extrusion of Intervertebral Disk. F. Jelsma—p. 372
- Practical Application of Physical Therapy in Medicine. W. J. Zeiter—p. 378
- Problem of Benign Prostate. E. O. Swartz—p. 382
- Menstrual Irregularity. W. Bickers—p. 391
- Radium Treatment of Nasopharyngeal Lymphoid Hypertrophy. R. E. Fricke and H. A. Brown—p. 399
- Some of Detoxifying Properties of Heparin. D. I. Macht—p. 402
- Study of Incidence and Treatment of Intestinal Parasites in South eastern Kentucky. W. C. Bailey—p. 407

**Deaths from Sulfonamides**—Gessler studied tissues from 3 patients in whom death is believed to have been caused by sulfonamide administration. The major cause of death in all 3 cases was uremia, but in 1 case a previously undescribed type of pulmonary pathology was believed to be an important factor. In 2 cases sulfathiazole was the drug used; in the third case sulfadiazine was used. The author presents clinical histories, postmortem observations and the results of microscopic studies. In 1 case in addition to tubular nephritis, myocarditis and visceral focal necrosis, a previously undescribed interstitial pneumonitis with hyaline membrane formation was found. The author reviews 30 cases from the literature. In these sulfathiazole was the administered medication 16 times; sulfadiazine 5 times; sulfapyridine 6 times; and sulfanilamide 3 times. Anuria was the complicating factor in 18 cases; the majority of which were treated with sulfathiazole. Agranulocytosis was the complicating factor 5 times; agranulocytosis was not found in sulfadiazine treated cases. Hemolytic anemia was the complicating factor once; sulfanilamide was used then. In the other 6 cases death was not due to drug intoxication but signs of drug intoxication were incidental findings of the necropsy. The urinary tract was blocked by concretions of the drug in 3 cases; a different drug was used in each of these cases. In 11 cases there were evidences which suggested that there might be a blocked urinary tract; most of these were in sulfathiazole treated cases. Uremia and agranulocytosis are the most frequent lethal complications. The mechanism by which the sulfonamides cause toxic symptoms has not been completely explained. There are many uncorrelated facts which require further study. It seems likely that many of the minor reactions—nausea, dizziness, disorientation, headaches—may be due to the allergic or pharmacologic reactions, kidney damage and hematuria are apparently due more often to mechanical factors. Focal necrosis, agranulocytosis and periarteritis nodosa may be due to a combination of these factors. Although most physicians view with alarm the appearance of one or more of the minor reactions while patients are receiving sulfonamides, there is little evidence to suggest that the minor reactions are precursors of the more serious reactions.

**Clinical Analysis of 1,000 Cases of Low Back Pain**—The scope of this paper by Jelsma is limited to the consideration of those cases in which pain is complained of in the lower lumbar region especially with distribution of pain along the sciatic nerve. A total of 531 of the patients had sufficient clinical signs and symptoms to warrant the assumption that a focal neurologic lesion was present. It was found that 484 of these 531 patients had clinical signs to warrant the diagnosis of probable herniated disk. Of the remaining 47 patients with symptoms of neurologic focal lesions 10 had crushing of one or more of the lumbar vertebrae, 10 had a metastasis to the lumbar spine, 9 had primary intradural tumors, 9 had spina bifida occulta, 4 had spondylolisthesis, 4 had sacralization of the fifth lumbar vertebra, and in 1 patient the symptoms were due to an arachnoid cyst. In many of the 469 cases in which focal neuro-

logic signs could not be found the pain was apparently due to hypertrophic arthritic changes. In view of the abundance of nerve endings found in the posterior longitudinal ligaments it has been suggested that the cause for many low back pains, without other evident causes, is due to involvement of the disks without protrusion and without compression of the spinal nerves. McKenzie feels that destructive processes of the disks (traumatic or otherwise) can produce such pains. This group of patients was treated with palliative measures. Palliative measures were used for all patients with herniated disk as long as it gave improvement. The surgical mortality rate was zero.

### Surgery, St. Louis

15 869-1036 (June) 1944

- Observations on Battle Fractures of Extracranial. O. P. Hampton Jr. and J. M. Parker—p. 869
- Fractures of Femur. Results of Treatment Over Period of Six Years at Mayo Clinic. R. K. Ghormley, G. S. Phalen, R. E. Vandemark and C. A. Luckey—p. 887
- Traumatic Synostosis of Distal Third of Radius and Ulna. F. Hurt and S. C. Ho—p. 894
- \*Studies on Burns. I. Effect of Plaster Confinement Applied at Varying Intervals After Burning. E. M. Alrich and E. P. Lehman—p. 899
- \*Id. II. Observations on Vasoconstrictor Substance in Lymph from Burned Area. E. M. Alrich—p. 906
- Cotton as Suture Material. E. O. Latimer—p. 913
- Surgical Treatment of Carcinoma of Common Bile Duct. K. L. Pickrell and A. Blalock—p. 923
- \*Gynecostoma with Report of 7 Cases. E. F. Goel—p. 938
- Carcinoma of Breast. Comparative Clinical and Pathologic Study of Tumors Metastasizing to Bone and to Viscera. I. N. Palella and E. P. Lehman—p. 944
- Experimental Esophagectomy. O. Swenson and T. V. Magruder Jr.—p. 954
- Congenital Macroglossia (Hibromatosis Gingivae) and Hypertrichosis. L. T. Byars and B. G. Sarnat—p. 964
- Urinary Infection After Colostomy. H. Milwidsky and F. Mandl—p. 971
- Rectal and Colonic Complications of Pelvic Irradiation. H. I. Kallet and M. J. Thorstad—p. 980
- Report of Case of Retroperitoneal Hemangioendothelioma. T. J. Snodgrass—p. 988
- Foreign Body in Thyroid Gland. Case Report. H. T. Wible and T. Spelman—p. 994

**Effect of Plaster Confinement Applied at Varying Intervals After Burning**—Alrich and Lehman made studies on dogs to determine the effects of plaster confinement applied at varying intervals following a standard burn on the composition of the circulating blood and lymph from the burned area. Data were also obtained on the local effects of this form of treatment. It is important to distinguish between plaster confinement of a burn and pressure dressing. It is conceivable that pressure dressings applied late might be effective in returning some of the extravasated plasma to the blood stream; a result not to be anticipated with simple confining dressings. The experiments tend to substantiate the hypothesis that confinement of a burn in a cast protects the circulating blood volume. They also suggest that the time of application of the confining dressing is of major importance. From the point of view of preventing plasma loss this type of dressing therefore, is not perfectly adapted to the care of clinical burns that are treated more than an hour or so after injury. Since however, there is evidence that local tissue loss is decreased the use of this treatment is not contraindicated. Whether or not pressure dressings in contradistinction to simple confining dressings, are effective in returning already extravasated plasma to the circulation is not shown by this study.

**Vasoconstrictor Substance in Lymph from a Burned Area**—This study by Alrich offers evidence of the existence of a vasoconstrictor substance in the lymph from a burned area. Dogs under usual laboratory conditions were employed, divided into control and experimental animals. The latter were subjected under pentothal sodium anesthesia to a standard hot water burn of a paw according to the method of Glenn, Peterson and Drinker. In both groups a lymph vessel leading from the paw was cannulated and samples of lymph heparinized as the fluid entered the cannula, were collected. In the burned animals the lymph flow was spontaneous; in the control animals mechanically effected passive motion of the paw was necessary to obtain adequate samples. Hourly samples of lymph were obtained for study and were passed through the perfused rabbit's ear in varying amounts. The presence of a vasoconstricting substance was indicated by a decrease in the electrically recorded drop

rate from the ear vein. Since vasoconstrictor substances are developed in the process of coagulation, both the control and the experimental observations were carried out on previously heparinized as well as on normal dogs. The reported experiments give evidence of a vasoconstricting substance in the lymph from an experimentally burned area. It is not due to the process of coagulation since it is present when previously heparinized animals are employed. It is possible that this is the constrictor substance observed in the circulating blood by Page. The substance has not been identified nor its relation to a supposed "burn toxemia" established.

**Gynecomastia**—Seven cases of gynecomastia, are reviewed by Goel. Endocrine influences and trauma are probable etiologic factors. Only 1 patient presented any semblance of endocrine dyscrasia. Three patients in this series mentioned the possibility of trauma when questioned closely but only 1 was definite. Gynecomastia may be confused clinically with chronic mastitis. It is difficult to predict preoperatively exactly what pathologic change has occurred. Gynecomastia may be underlying, but mastitis or neoplasm may be contributory. Metaplasia in an intraductal papilloma was found in 1 case in this series. All patients in this series were treated by mastectomy. All were healed and ready for full duty in from ten days to three weeks. The surgical approach was through a slightly curved transverse incision made just inferior to the areola. This permitted easy dissection of the areola and nipple from the breast without injury, offered approach to all portions of the breast including the axillary prolongation and permitted a cosmetically desirable closure without distortion of the areola. The entire breast was excised. This apparently is important, since only a portion of the left breast in 1 case had been removed at the first operation, following which symptoms continued.

### United States Naval Med Bulletin, Washington, D C

43 1-208 (July) 1944 Partial Index

- Rheumatic Fever and Acute Arthritis as Causes for Evacuation from South Pacific Area. H B Sprague and S McGinnis—p 1  
Infectious Polynucleitis. Report of 4 Cases. A W Stearns and H I Harris—p 13  
Dermatologic Practice in the South Pacific. Review of 1500 Cases. C T Bingham and R I MacVe—p 17  
Factors in Efficient Malaria Blood Procurement. K P A Taylor—p 25  
Airsickness. R C Witter—p 34  
Ultraviolet Irradiation Relative to Anoxia and Bend Susceptibility. Preliminary Investigation. W M Davidon—p 47  
Experiment in Psychotherapy During Selection Examining. J H Closson and H M Hildreth—p 39  
Changing Picture of Postpneumonic Empyema Thoracis Complicating Sulfonamide Treated Pneumonia. C D Benson and C W McLoughlin Jr—p 46  
Knee Injuries in Service Personnel. J H Allan and J T Nicholson—p 63  
Surgical Casualties of Amphibious Warfare. L K Ferguson—p 75  
Renourteral Colic in South Pacific Area. M Glazier and C Olson—p 80  
Autoplastic Sutures in Repair of Inguinal Hernia. G G Chiles and H F Lenhardt—p 83  
\*Temporary Stimulation of Emmetropic Visual Acuity. J E Lebensohn and R R Sullivan—p 90  
Cosmetic Ocular Rehabilitation. M J Bliss—p 96  
Application of Crural Anesthesia to General Surgery. W M Russell and J E Conley—p 100  
Anesthesia in Military Medicine. Administration by Unskilled. M B Genauer—p 105  
Procaine Hydrochloride 4 per cent. Indications for Use. J C Farquhar—p 111  
Analysis of Low Incidence of Infectious Diseases at Secondary Training Center. W A Tulow and H B Benjamin—p 114

**Autoplastic Sutures in Inguinal Hernia**—Chiles and Lenhardt point out that the use of fascial strips for the repair of inguinal hernia was advocated more than four decades ago by McArthur. The type of hernia repair advocated in this paper is based on the technic of Robins, who in 1938 reported his results with the use of autoplastic sutures in hernia repair. The authors describe the operative technic and stress the following points: 1 The careful separation and identification of the various abdominal layers will not only facilitate the operation but also allow the structures to fall into their new relationship after suturing. 2 Fascial sutures are resistant to infection, they do not tear and are not absorbed. 3 The stress or strain is not all on the terminal end of the suture, but it is applied

after the principle of a windlass being equally distributed throughout the course of the suture. 4 The existing pathologic condition should be the guide as to the type of repair to be used. 5 When for any reason the external oblique muscle is inadequate the fascia can be secured from the fascial lata of the leg by the use of a Masson stripper.

**Temporary Stimulation of Emmetropic Visual Acuity**—Lebensohn and Sullivan say that visuopsychic excitation seems to be the only factor common to the procedures recommended for improving natural vision. An increase of interest attention and alertness affects keener interpretation of visuomotor stimuli. Drugs that accelerate cortical or sympathetic activity should be effective. This view is supported by recent experiments on one of the fundamental measurements of visual function, the fusion frequency of flicker which is indicative of the excitability of the visual system. An increase of acuity above that attainable by a careful refraction would emphasize how much the psychic cortex participates in visual acuity measurements. Fifty men were selected for study whose visual acuity in each eye was 20/20 or better naturally or with glasses. Acuity was tested on the double broken circles of the Ferris-Rand chart. From a stop watch record of the ten letter reading the speed per letter in tenths of a second was noted and the average of three trials recorded. In every subject the eyes were examined separately and binocularly so that each examination involved three tests for speed and acuity respectively. Each man was tested at 8 a m and was then given a placebo as a control or 10 mg of amphetamine or 3 cc of nikethamide and the tests were repeated at 10 a m and 2 p m. A consistent improvement in acuity and reading speed was induced by nikethamide and amphetamine in both slow and fast readers. Nikethamide or amphetamine improves reading speed more than visual acuity, but the effect of amphetamine on both visual functions is more pronounced than the effect of nikethamide. Analysis of 150 tests shows that in 44 cases amphetamine was relatively superior to nikethamide in stimulating visual acuity and in 126 cases in increasing reading speed. Amphetamine apparently exerts a more beneficial influence on normal than on ametropic vision. This was proved by comparative tests on 16 persons with ametropia. The authors conclude that the psychogenic origin of many visual complaints is probably insufficiently appreciated. The visuopsychic cortex can be stimulated by various measures but amphetamine in small doses (from 5 to 10 mg) is a simple safe and efficient agent for this purpose.

### Virginia Medical Monthly, Richmond

71 339-394 (July) 1944

- Plastic Surgery of Severe Burns. E J Evans and T J Alm—p 34  
Demerol—Substitute for Morphine in Surgical Practice. C S White—p 351  
Recent Progress in Physical Medicine. R Kovacs—p 354  
Case of Syphilitic Paralysis Cured by Fever. J O Fitzpatrick Jr—p 359  
Treatment of Certain Mental Disorders by Psychotherapy. R I Cress Jr and C L Neale—p 361  
Maternal Mortality Situation. C J Andrews—p 366  
Nutritional Activities of Virginia State Department of Health. H H Henderson, A L Carson Jr and J B Porterfield—p 371  
Nutrition from Doctor's Point of View. W Wilkins—p 374  
Sun and Heat Disease. G T Grinnan—p 380

### War Medicine, Chicago

5 349-432 (June) 1944

- Nutritional Disorders in Japanese Internment Camps. W H Alldrich, A V Greaves, Josephine C Lawney and H I Robinson—p 349  
Infectious Mononucleosis in Army. R H Mitchell and L Zetzel—p 356  
Constitutional Pathologic State and Military Fitness. J C Rheingold—p 361  
Hermiation of Muscles of Legs. H C Goldberg and G W Comstock—p 365  
Sodium Amytal Narcosis in Treatment of Operational Fatigue in Combat Aircrews. D W Hastings, B C Glueck and D G Wright—p 368  
Special Aspects of Procedures and Organization for Induction and Discharge in Canadian Army. L S Kubie—p 373  
Clinical Features and Diagnosis of Malingering in Military Personnel. Use of Barbiturate Narcosis as Aid in Detection. A O Ludwig—p 378  
Massive Cerebral Trauma from Airplane Propeller. Report of Case with Recovery. J D O'Connor—p 383  
Aneurostomiasis Associated with Hematuria. H Davis—p 385

## FOREIGN

An asterisk (\*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

## Journal of Mental Science, London

90 511-680 (April) 1944

- Psychogenic Amnesia: Refusal to Remember. D. N. Parfitt and C. M. C. Gell—p. 511
- Psychosurgery: Evaluation of 200 Cases Over Seven Years. W. Freeman and J. W. Watts—p. 532
- Crise of Narcolepsy with Oniric Manifestations. D. Furtado and F. F. P. Valente—p. 538
- Shock Therapy in Psychoses: Possible Rational Basis and Its Clinical Applications. Based on Three Years' Experience of Its Use in Military Psychiatry. C. T. Stockings—p. 550
- Some Problems Arising from Study of Mental Patients Over Age of Sixty Years. I. Post—p. 554
- Psychoneuroses in R. A. F. Ground Personnel. D. N. Parfitt—p. 566
- Paranoid Reaction Associated with Oculogyric Crises and Parkinsonism. W. H. Gillespie—p. 582
- Unusual Brain Injury with Note on Lesions of Superior Cerebellar Peduncle. J. C. S. Thomas—p. 588
- Lye Movements in Electrical Shock Procedure. I. F. Kimo—p. 592
- Parotid Gland Secretion in Affective Mental Disorders. H. J. Fysenck and P. M. Yap—p. 595
- Vitamins B<sub>1</sub> and C in Effort Syndrome. Phyllis C. Croft, M. S. Jones and D. Richter—p. 603

**Evaluation of Psychosurgery.**—Freeman and Watts state that different patients require the severing of different amounts of frontal lobe fibers. Those showing more or less pure affective reactions respond to minimal interruptions, whereas persons with long-standing obsessive neuroses or schizophrenia require maximal operations. Reoperations have been necessary in some 20 per cent of their 204 cases, recovery from distress being achieved only after a third operative procedure. Once the emotional nucleus of the psychosis has been successfully abolished the reconstruction of the personality can be attempted. Sometimes this is simple and rapid; at other times so much of the frontal lobe has had to be sacrificed by operation that return to independent existence is difficult, prolonged and incomplete. A table gives the present status of 154 living patients after an interval of six months to seven years following prefrontal lobotomy. 34 patients have been operated on too recently for proper evaluation while 16 have died: 4 from operation, 2 from suicide and the other 10 from natural causes. Sixty-one per cent of the patients are usefully occupied, whereas only 12 per cent are confined in institutions. Study of eight brains has shown that the cortical incisions are small and destroy few cells. The most striking alteration is the severe degeneration of the nucleus medialis dorsalis of the thalamus. The thalamofrontal radiation has been fairly completely severed. The severing of the thalamofrontal pathway prevents the patient from maintaining his obsessive preoccupation with his self-directed ideas. There is no falling off in the mental acuity after operation. Some reduction in speed is observed after operation but accuracy is generally greater. Above all, it is in social situations that these patients manifest a change from their previous condition. They laugh easily and flare up in anger, but there is none of the brooding intensity that characterized the psychosis preoperatively. Visceral complaints are forgotten. One of the commonest sequelae of prefrontal lobotomy is pronounced gain in weight resulting from a healthy appetite and a sound digestion. Naturally industrious persons are oblivious to fatigue and preoccupation with somatic sensations is lost. Interests are directed outward.

## Lancet, London

1 713-744 (June 3) 1944

- Education for Health. J. A. Ryle—p. 713
- Retrolbulbar Otic Neuritis: Pathognomonic Sign. R. A. Greeves—p. 715
- Wounds of Bladder. J. G. Sandrey and R. A. Mogg—p. 716
- \*Stomatitis Due to Riboflavin Deficiency. H. E. Jones and G. Armstrong, H. F. Green and V. Chadwick—p. 720
- Early Movement in Treatment of Closed Fractures. B. H. Burns and R. H. Young—p. 723

**Stomatitis Due to Riboflavin Deficiency.**—Jones and his associates observed stomatitis in 1,746 of 10,313 men in a camp in North Africa. The symptoms comprised sore tongue, sore lips, some degree of trismus from the cheilosis, and excessive

salivation. An early sign was the avoidance of pepper, of which these men ordinarily eat a considerable quantity. Salivation was often troublesome. In the mildest cases, soreness at the tip and/or edges of the tongue was complained of. These areas were seen to be reddened and the papillae less conspicuous than usual. As atrophy advanced, the redness usually diminished. During this intermediate stage it was not uncommon to see some of the papillae become enlarged and flat topped—a process best described as "mushrooming." In more advanced cases the tongue became increasingly smooth and shiny, and fissures developed. In the final stage the anterior part of the tongue was completely smooth and atrophic. Further examinations of the tongues were carried out by means of the slit lamp, which gives a clear picture at a large magnification. An angular stomatitis was an important clue. A less common finding on the mucosa of the lower lip was a group of small papular swellings each about the size of a pinhead and usually slightly paler than the surrounding reddened mucosa. One striking observation was the sparing of the upper lip. In only 20 of the 1,746 cases affected were lesions seen on the mucous membrane of the upper lip. The incidence of changes on the palate was about 5 per cent. They took the form of raw, red areas. The authors analyze the diets given to these men. On a diet containing an average of 1.61 mg. of riboflavin per day the camp population had been free from stomatitis. It developed about two months after the daily riboflavin intake was reduced to about 1 mg. per head, and it was not abolished by an intake of 1.28 mg. in the following month. It was noted that none of the 36 men employed in the bakery developed stomatitis. They were recustomized to test the saltiness of the dough by tasting it and by this means they may have obtained enough yeast to keep them healthy. The stomatitis cleared rapidly on addition of milk meat or eggs to the diet. Other remedies tried were calcium lactate, red palm oil, which contained large amounts of vitamin A and vitamin oil containing vitamins A and D. None of these remedies effected improvement, however fresh or dried yeast in ½ ounce doses effected rapid cure. Thus the cause of the stomatitis was evidently deficiency of a factor present in milk, meat, eggs and yeast, and further attention was directed to two vitamins present in yeast—nicotinic acid and riboflavin. The stomatitis yielded rapidly to treatment with riboflavin.

## Schweizerische medizinische Wochenschrift, Basel

73 1013-1036 (Aug. 21) 1943

- Role of Mondini's Suction Drainage in Collapse Therapy of Pulmonary Tuberculosis. A. Brunner—p. 1013
- Question of Pathogenicity of Trichomonas. O. Käser—p. 1021
- Functional Recuperation with Aid of Autoplastic Bone Grafts and of Skin Flaps with Tubulized Pedicle. A. Jentzer—p. 1023
- Observations on Metabolism of Iron and Vitamins in Course of Physical Effort and Training. A. Delachaux and W. Ott—p. 1026
- Diagnosis and Therapy of Conditions Caused by B. Hypovitaminosis. C. Braendli-Wyss—p. 1028
- Contract Emissions. J. Strübel—p. 1029
- Necrospemia Due to Condom. W. Lutz—p. 1031

**Suction Drainage in Pulmonary Tuberculosis.**—Brunner concludes that suction drainage produces permanent results in patients with isolated new cavities surrounded by healthy tissue. Mondini's method is also a valuable aid in the presence of residual cavities after collapse therapy. A combination of preliminary suction drainage with subsequent thoracoplasty holds promise of closure even in old and partly rigid tertiary cavities, and this procedure makes only comparatively moderate demands on the patient.

**Pathogenicity of Trichomonas.**—Käser believes that Trichomonas vaginalis is not pathogenic. It frequently occurs in the presence of completely normal vaginal conditions. Signs of inflammation or of leucorrhoea were present only when Trichomonas vaginalis concurred with an unfavorable vaginal flora, never with a pure Döderlein flora. Patients whose vaginal secretion contained Trichomonas vaginalis had neither a higher rate of postoperative complications nor a greater puerperal morbidity. The percentage of inflammatory genital disorders was no greater in women with Trichomonas vaginalis than in those without Trichomonas vaginalis.

## Book Notices

**Intravenous Anesthesia** By R. Charles Adams, M.D., C.M., M.S., Associate in Section on Anesthesiology, Mayo Clinic, Rochester, Minn. Cloth. Price \$12. Pp. 663 with 75 illustrations. New York: C. London, Paul B. Hoeber, Inc. 1943.

This monograph covers the development of intravenous anesthesia from 1872 until the present time. It includes chapters on chloral hydrate, hedonal, ether, isopropyl paraldehyde, magnesium sulfate, morphine, alcohol, tribromochlorol, somnifene, local anesthetics, allylisopropyl barbituric acid (alurate), phenobarbital sodium, dial, pernoston, sodium amytal, pentobarbital sodium, cyclo soluble, pentothal sodium, miscellaneous derivatives of barbituric acid and analeptics. Each of these subjects is introduced by a concise consideration of the historical data. This is followed by a consideration of the chemistry, pharmacologic action and clinical use. So completely is each subject treated that the book will be very useful for clinicians and teachers. A practically complete bibliography of references (3489) makes this book valuable for research workers.

Much effort was expended by the author and those who assisted him in clarifying the confusion which has existed regarding the names of the many derivatives of barbituric acid. To the anesthetist the value of this book is apparent. General practitioners, who use intravenous anesthesia only occasionally, can quickly obtain information about the action, the dangers, the dose and the method of administration of the drugs that are used for this purpose. An exhaustive consideration of pentothal sodium, which is at the present time the most useful and available of the derivatives of barbituric acid for intravenous use, is presented. The concluding chapter on 'Use of Intravenous Anesthesia and the Barbiturates in Military Surgery,' indicates the timeliness of the book.

Commendation of the author for the great effort which obviously was made in compiling this book, as well as its recommendation to all persons who have occasion to use or to study the drugs which are used intravenously is made after reading this valuable work, which is very well done.

**Fractures and Joint Injuries** By R. Watson Jones, B.Sc., M.Ch. Orth. F.R.C.S. Consultant in Orthopedic Surgery to the Royal Air Force. Volumes I and II. Third edition. Cloth. Price \$18 per set. Pp. 407 + 499. 960 with 1333 illustrations. Baltimore: William Wood & Company, 1943.

Mr. Jones is civilian consultant to the Royal Air Force on fractures and dislocations. He travels from one end of the British Isles to the other by air, by train, by bus, setting up fracture hospitals for R. A. F. fliers. He not only sets up the hospital but consults with the local hospital surgeons regarding treatment. He personally supervises and operates in some of the difficult cases. Mr. Jones is well known in the United States and Canada. He is especially well known to orthopedic surgeons and to traumatic surgeons, especially those who deal with fractures and dislocations. Because of the large number of additions this edition has been published in two volumes. More books like this are needed, that is, books that are based on (1) large experience, (2) careful study of the subject and (3) good judgment not only in diagnosis but in treatment.

The material is well selected, the composition is excellent and the sequence is proper. The illustrations consist of line drawings, photographs, x-ray reproductions, diagrams, color figures and "peep" illustrations. "Peep" illustrations are those which permit the reader to make a diagnosis from the illustration and then flip a flap covering another nearby illustration thereby uncovering the correct diagnosis. Many of the diagrams such as those illustrating blood supply to various sections of bones such as the ankle bones and the leg bones, are in color.

There are many excellent features in the book, from the standpoint both of basic principles of diagnosis and treatment and from that of specific diagnosis and treatment. (Some will consider Jones radical in several instances.)

The author states that the first edition of his book on fractures and joint injuries was written under the threat of war, the second with the realization of war and the third after the experience of war. The writing of many pages has been disturbed by the fall of bombs and the crash of timber. Manuscript

has been destroyed by the effect of fire and explosion. His proofs have been delayed by the emergency of casualty surgery.

The author has had a tremendous experience. In former editions he stated that he had experience with nearly 50,000 civilian casualties; for example, in the first two years of the war 75 cases of dislocation of the astragalus have occurred in the Royal Air Force Medical Service.

Every chapter has been revised; new sections have been added on open and infected fractures, war wounds, sequestrectomy, vascular injuries, immersion foot and shelter foot, traumatic edema and the crush syndrome, gangrene due to tourniquets, Volkmann's ischemic contracture, traumatic asphyxia and chest injuries, avascular necrosis of the hip joint, distraction of fractures, radiographic diagnosis of union, internal fixation of fractures, no touch technique, treatment by lay-on grafting, burns and contractures of the hand. New recommendations have been made in the treatment of supraspinatus tendon injury and various fractures and dislocations of the upper extremities. He describes methods of treatment for acromioclavicular dislocation and supracondylar fracture of the femur. The author is very strong for rehabilitation centers. It is evident that rehabilitation is the watchword of the hour. Treatment is concentrated not only on the union of fractures but on the function of limbs, not only on surgery and manipulation but on gymnastics and recreation, not only on the relief of disability but on the cure of psychologic disorders. This is the most striking development of fracture treatment in recent years and a special chapter is devoted to its consideration. The new addition has over 200 more pages than the early editions and therefore was published in two volumes. The expansion is due largely to added roentgenograms, diagrams and photographs. There is one interesting quotation which reads: "My story is not long, but it took me a long time to make it short," credited to Thoreau. Jones emphasizes the fact that a fracture is not to be labeled ununited simply because union is incomplete in a specific number of weeks or months. He emphasizes the prevention of edema of the leg.

One of the striking features of the book is the chapter on vascular injuries complicating wounds and fractures. Another section of importance is on the danger of x-rays to surgeons. He recommends the use of Unna's paste dressing to prevent edema after the removal of a plaster of paris cast of the leg. There is a good section on the complications of plaster immobilization. There is another on the indications for operative reduction. The second on scrupulous aseptic technique is well worth reading. There is an excellent section on open and infected fractures in war wounds. Over 40,000 amputations were performed in England during the last war and during the few years immediately following. Since then tremendous strides have been made in the surgery of wounds in compound fractures and amputations are becoming increasingly rare. For example, in one large series of casualties treated in R. A. F. base hospitals the incidence of secondary amputation or spreading infection, gas gangrene, secondary hemorrhage and other complications was as low as 0.1 per cent despite a high proportion of severely infected and grossly contaminated wounds and compound fractures.

There is a large number of references and it is remarkable how many of Mr. Jones's own contributions have been made to the subject at hand.

**Cancer: A Manual for Physicians** Published jointly by Michigan State Medical Society and Michigan Department of Health. Cloth. Pp. 225. Lansing, 1944.

This book is written by members of the Michigan State Medical Society under the editorship of its cancer committee. The Michigan Department of Health contributed toward the expenses of publication. Like that of similar books in other states its purpose is to assist the physician in making his diagnosis of early cancer and in reaching his decision as to the type of therapy to be employed without subjecting the patient to the dangerous delay that sometimes occurs. There are forty-four unsigned articles by thirty-eight authors. These articles deal with the general and special aspects of cancer, including tumors of the brain and of bones. The articles are

of course short but as a rule cover their topics well. The articles on biopsy in tumor diagnosis and on radiotherapy of cancer are especially praiseworthy. The statement about grading of cancer in the first of these articles merits quotation.

Many physicians attach far too much importance to the numerical grade of neoplasms. It must be kept in mind that the grade is assigned by the pathologist only in accordance with his impression of the level of differentiation. By itself, the grade tells nothing about the clinical state of the patient, nor does it indicate the prognosis. A grade 1 carcinoma may have been present for many years and may have spread widely by both infiltration and metastasis. It may still be grade 1 when the patient is about to die from its effects. Conversely, a grade 4 carcinoma may be so early and so small that the patient can be cured by a single sweep of a curet. Type of neoplasm, location, extent, duration and metastasis, as well as grade, determine the prognosis. It may be mentioned also that the fundamental principles of treatment remain the same whatever the grade. The article on carcinoma of the larynx is utterly inadequate because it does not even mention its treatment with external radiation which is now the treatment of choice of certain forms of laryngeal cancer. There are instructive articles on occupational cancer, on tumors of the endocrine glands, on the care of the patient with advanced cancer, on the Michigan program on lay education and on cancer from the general practitioner's point of view. The most worthwhile service the general practitioner can render his patients who may have cancer is in prompt initiation of the processes through which they will obtain the best diagnostic and therapeutic services possible.

**The Compleat Pediatrician. Practical Diagnostic Therapeutic and Preventive Pediatrics for the Use of Medical Students, Interns, General Practitioners and Pediatricians.** By William C. Davison, M.A., D.Sc., M.D., Professor of Pediatrics, Duke University School of Medicine, Durham, North Carolina. (Adaptation of the Title Page of the Compleat Angler by Isaac Walton 1633.) Fourth edition. Cloth. Price \$3.75. Pp. 206. Durham: Duke University Press, 1943.

Few books on pediatrics have had the widespread acceptance as *The Compleat Pediatrician*. The fourth edition of this excellent guide and compilation of pediatric facts is current and well edited. Practically all important contributions to the field of pediatrics since the text was last revised three years ago are included in the present edition. Sections on chemotherapy, tropical diseases and infectious diseases have received particular attention but almost every part of the book has been brought into line with recent work. The book has always enjoyed a merited reputation for its vast amount of practical pediatric facts in the most concise and readable form. Few books dealing with pediatrics are as current and as well edited. Practitioners have always shown a preference for the previous editions and it has served them well in their practical work. The last few editions have found an increasing acceptance among medical students who have found it invaluable on their pediatric clerkships. The author's extensive experience as scientist, clinician and educator is reflected in its pages, and few books on pediatrics are as authoritatively edited and as convincingly presented.

**Public School of Medicine at the University of Edinburgh.** Editor: Józef Brodzki. Cloth. Pp. 62 with 24 illustrations. London & Edinburgh: Oliver and Boyd Ltd., 1942.

This little volume tells the exciting story of a unique event in scientific history. Never before has any state set up its own medical school with its own professors teaching its own students in their native tongue on foreign soil and as a part of a foreign university. A considerable part of the Polish army was evacuated to Great Britain on the fall of France in June 1940. Included were several hundred medical officers, among whom were teachers, physicians and scientists of high professional standing. There were also numbers of recent medical graduates and men who had completed part of their medical training in Poland. The University of Edinburgh magnanimously offered its facilities, the Polish government in exile provided financial support and the Polish School of Medicine at the University of Edinburgh was organized. It opened its doors to Polish men and women, officers and civilians. March 22, 1941. Facilities provided by the University of Edinburgh

include the use of lecture theaters, tutorial rooms, hospital wards, laboratories, instruments and reagents, microscopes, specimens slides and films. The faculty includes fourteen former professors in Polish medical schools in addition to ten physicians without former academic connections. During the first year of operation there were seventy-nine students at various academic levels. Medical degrees were conferred on nineteen students during the second academic session. The faculty has contributed to scientific meetings and has published significant scientific articles on the basis of investigations conducted at the new school. This school represents not only the true international spirit of medicine but also the courage and persistence of Polish medicine and education and will provide an important beginning for the rebirth of medicine in Poland which has now been reduced by the Germans to an "intellectual desert."

**Human Constitution in Clinical Medicine.** By George Draper, M.D., Associate Professor of Clinical Medicine, College of Physicians and Surgeons, Columbia University, New York; C. W. Dupertuis, Ph.D., Physical Anthropologist, Constitution Clinic, Presbyterian Hospital, New York; and I. L. Coughley, Jr., M.D., M.Sc.D., Associate in Medicine, College of Physicians and Surgeons, Columbia University. Cloth. Price \$4.15. Pp. 237 with 29 illustrations. New York & London: Paul B. Hoeber, Inc., 1944.

This book is designed primarily for students, to give them an insight into the human constitution as it plays a role in clinical medicine. However, the practitioner will find it exceedingly interesting even though he will have to review some of his basic sciences to understand much of the discussion. From the cultural point of view it is a healthy addition to medical literature but from a practical standpoint one seriously questions the need for such exact measurements of a group of patients with pernicious anemia, duodenal ulcer, acute rheumatic fever, migraine, toxemia of pregnancy, gallbladder disease, carcinoma of the breast and carcinoma of the uterus. It is hoped that the authors in teaching this material to their students do not hold them too strictly accountable for the details of the textbook but teach the course with the distinct impression that it is something they have been vitally interested in and they are now happy to give to their students and the medical profession a field in which they have had an interest.

**Secretory Mechanism of the Digestive Glands.** By B. I. Babkin, M.D., D.Sc., J.L.D., Research Professor of Physiology, McGill University, Montreal, Canada. Cloth. Price \$12.75. Pp. 400 with 220 illustrations. New York & London: Paul B. Hoeber, Inc., 1944.

All students of gastroenterology are familiar with "The External Secretions of the Digestive Glands," written in lucid German and extraordinarily well documented by Dr. Babkin. The present volume constitutes another important contribution to gastroenterology. The subject matter deals principally with the mechanisms which are concerned in the regulation of the secretory activity of the digestive glands. It does not cover the older literature which was adequately covered in the preceding book. It presents a critical review and summary of the work done since 1929 by the author and his students and the contemporary work of other investigators in the field. However, adequate reference to older work and comprehensive reviews is not lacking. A copy of this book should be in every medical library and graduate students in the field of digestion will have to use it and will be thankful for having it available. Dr. Babkin and the publishers in providing this volume have rendered a definite service to physiology and medicine.

**Occupation and Health. Encyclopaedia of Hygiene, Pathology and Social Welfare Studied from the Point of View of Labour Industry and Trades. Special Supplement: Industrial Health in Wartime.** Paper. Price 25 cents. 1s. Pp. 39. Montreal: International Labour Office, 1944.

**Industrial Health in Wartime** reviews recent pertinent literature under headings of silicosis, metal poisoning, insecticides and fumigants, carbon monoxide, carbon disulfide, benzene and its homologues, explosives, rubber, chlorinated naphthalenes and diphenyls, radioactive luminous paints and rays, toxic limits, caisson sickness, hygiene in aviation and skin diseases, over the signature of Dr. Ludwig Teitel. Bibliographies are attached to each chapter and contain references for the period 1940-1942. A short general bibliography is also included.



## Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS BUT THESE WILL BE OMITTED ON REQUEST.

### POSSIBLE HAZARDS FROM FILARIASIS IN THE UNITED STATES

To the Editor—Recently I was reading an article on filariasis by James T. Culbertson Ph.D. in the July issue of the *American Journal of Nursing*. In this article it is implied that there is a definite danger of transmission of this disease from returned veterans infected with it to healthy persons in the United States including New England because infection is spread through the common house species of mosquito. This is a definite industrial problem because not a few of these men are working in schools learning welding with our native population in areas where mosquitoes are prevalent. Will you kindly let me know just the extent of this hazard and whether or not any preventive measures could be or should be taken.

David W. Parker M.D. Manchester N.H.

ANSWER—Dr. Culbertson in the article referred to states that "with an abundance of suitable mosquito vectors available almost everywhere in this country the transfer of the infection to native Americans, not only from these infected immigrants but also from the returning infected service men seems possible and poses a problem to which public health authorities must give careful scrutiny."

The transmission of filariasis from returning infected troops is possible but probably will be exceedingly rare for a number of reasons. The transmission of filariasis by mosquitoes is somewhat hazardous to them. Heavy infections may result fatally to the mosquitoes. Further there is no multiplication of the parasite in the mosquito as there is in malaria, hence the mosquito must secure from human blood a larva for every worm it transmits to a new victim. Further it is believed that the infectious larva is not injected into the blood stream of man by the mosquito but is merely deposited on man's skin and must make its own way into the blood stream. These factors militate against transmission from man to man. In many parts of the United States although mosquitoes are considered to be a pest and are certainly abundant, their numbers do not begin to approach those found in heavy filaria infected areas. It is possible however, that through a fortuitous combination of all circumstances a mosquito might bite an infected person in this country and live to reinfest another person.

A number of years ago a large group of Negroes from a filaria infected area were imported into Charleston S.C. Because of the climate there mosquitoes can breed much of the year and in the early days before mosquito control they were unusually abundant. Thus the unusual combination of a large number of filaria infected individuals and a large number of mosquitoes much of the year resulted in the transmission of filariasis to a considerable number of persons in Charleston. A survey made there by Johnson in 1915 of 400 individuals composed largely of routine hospital admissions revealed an infection rate of 19.25 per cent. Within the last few years control measures to eliminate mosquitoes in the Charleston area have been pushed vigorously, and the screening of homes has become much more common. For these and possibly other reasons the transmission of filariae in the area has practically ceased and no new infections have occurred in Charleston in the past few years. In other words the infection is dying out. If under the more or less ideal conditions of climate and a large initial infection this disease died out in Charleston it does not seem likely that it will spread in the Northern areas of the United States, where mosquitoes are found in numbers only during the hot summer months.

Filaria infected persons have been reported from Columbia, Beaufort and Georgetown S.C., Jacksonville, Fla. and Mobile, Ala. (France), Philadelphia, (Flint) and Boston (Lothrop and Pratt). These persons all give a history of having lived in Charleston S.C. or having come from a filarial area in the tropics. No endemic foci or secondary cases arising from these infections have been reported although the climate of several of these areas is favorable for mosquitoes and they are found in considerable abundance. In recent years thousands of Puerto Ricans and inhabitants of other infected Caribbean countries have entered the United States and made their homes here. A number of these individuals harbor large numbers of microfilariae in their blood but do not appear to have been the cause of additional cases of filariasis in this country.

On the other hand filaria infections have been reported in individuals who have never been to Charleston, S.C. or out of

the United States. Dunn reports such an infection in Philadelphia, Slaughter two from Richmond Va. and Martin one from Mobile Ala. Presumably these infections were acquired in these areas.

It is believed that the evidence at hand can be summarized as follows. It is remotely possible that returning filaria infected individuals may transmit through mosquitoes their infection to other individuals in this country. This occurrence however is extremely unlikely and although the possibility must be borne in mind it does not appear likely to be of any great importance.

#### References cited

- Johnson F.B. Filarial Infection—An Investigation of Its Prevalence in Charleston S.C. *South M. J.* 6:0 (July) 1915.  
France Edward. Filariasis in Southern United States. *Publ. 117 Hyg. Lab. U.S.P.H.S.* June 1919.  
Flint Austin C. A Case of Filaria Sanguinis Homini with Chyluria Treated Successfully with Methylene Blue. *New York M. J.* 61:77 (June 15) 1895.  
Lothrop H.W. and Pratt J.H. A Report of Two Cases of Filariasis. *Am. J. M. Sc.* November 1900 p. 1.  
Dunn Thomas D. A Case of Filaria Sanguinis Hominis. *Tr. C. P. Physicians of Philadelphia* 20:81 1898.  
Slaughter R.M. Two New Cases of Filaria Sanguinis Homini. *M. Rec.* 59:649 (July Dec.) 1891.  
Martin William M. The History of Filaria Sanguinis Homini. Its Discovery in the United States and Especially the Relationship of the Parasite to Chyluria of the Tunica Vaginalis Testis. *Ann. Surg.* 5:21 (July Dec.) 1888.

### QUARANTINE FOR POLIOMYELITIS

To the Editor—The distant poliomyelitis involved area (Louisville Ky. and Charlotte N.C.) has our local school board in a quandary. Owing to pressure of a citizen the school board has passed a resolution to quarantine all students and teachers who are not in the county. Actually the board intends to prohibit both from attending school until they have been in the county two weeks. This does not effect a quarantine because all are free to mingle when school is not in session and may contact one another at picture shows or other places. On the surface of it the effort seems to void itself before it is put in effect. As a physician I suggest that until the poliomyelitis problem is solved all that is reasonable to do is to put into effect the well known rules of communicable diseases namely isolate the victim quarantine those exposed. It seems rather arbitrary to rule a blanket quarantine. A county line has nothing to do with where or whether a person contracts a disease. A restriction of this kind certainly works hardship and extra expense (for teachers to pay board and the like) without accomplishing its purpose. So far as I know no student or teacher is coming here from the area around Louisville or Charlotte yet all must be kept out of school until they have been in this county two weeks. Will you give me some statement as to whether the health rules known to all as mentioned are enough to use as a guide in handling this problem? Your recommendation will be appreciated owing to the fact that the board's action seems rather radical.

M.D. Florida

ANSWER—There is no evidence that rigid quarantine of age groups is of any effect in the control of the spread of poliomyelitis. This but tends to spread panic and fear. There is no scientific reason for prohibiting persons from attending school until they have been in the county for two weeks. Most public health authorities agree that even in the presence of an epidemic there is no reason for not opening schools.

### FLUORIDE FOR THE PREVENTION OF DENTAL CARIES

To the Editor—I have been following the discussion on the advantages of fluoride in the prevention of dental caries and would like to obtain an authoritative opinion as to the practicability of using it as a prophylactic measure. What are the practical hazards and why is it not being used more widely in private practice?

M.D. Massachusetts

ANSWER—The use of fluoride in the prevention of dental caries is in the experimental stage. A large amount of epidemiologic evidence shows that children who have used continuously since birth a domestic water containing as little fluoride as 1 part per million have only about one-third the amount of dental caries of children who have used a fluoride free water. This observation points to the probability that low fluorination of the public water supply may achieve an appreciable degree of mass control of dental caries. Several long term studies (ten to fifteen years) are being planned to test this hypothesis by fluorinating selected fluoride free city water supplies. Faust has recently estimated the cost of raising a fluoride free water supply to 1 part per million as 75 cents per person annually. Such control procedures would presumably be of value only to those born subsequent to the low fluorination of the public water supply, e.g. those who calcified their teeth while using a water with this optimal concentration. Whether or not such procedures would be effective in inhibiting dental attack in persons whose permanent teeth are erupted awaits further investigation.

Other investigators have directed their attention to topical application of fluoride in order to learn whether or not post-eruptive fluoride therapy can be utilized as a prophylactic measure for (a) that third of the population dependent on private



wells or other supplies for their source of water and (b) that part of the population whose permanent teeth have already erupted

Several studies along these lines involving groups of school children have been reported. In each an appreciable reduction in the incidence of dental caries has been reported following multiple application of relatively high fluoride concentrations. In one study involving young men in a military population no change in dental caries attack was observed following a single application of a fluoride solution of 5,000 parts per million. Additional studies in this field are essential to determine the effectiveness of this therapy, the most desirable fluoride solution, the most efficacious concentration and the optimal number of applications to the teeth.

No practical hazards are known at this time, but much research is still needed to clarify some of the points discussed before recommendations for its general use seem warranted.

### BURNS FROM LITHIUM

**To the Editor**—An industrial plant has asked me to outline treatment and prophylaxis for burns by lithium chloride and hydroxide which occur on the hands, arms, face and legs and are penetrating ulcerating burns. Is there any preparation that can be applied to the exposed surfaces for prevention?

M D Pennsylvania

**ANSWER**—Lithium is a soft metal with a silvery luster, having a specific gravity of 0.59. It melts at 180 F and burns at 200 F. In order to prevent it from oxidizing, it is kept in petroleum. It readily decomposes in water, forming lithium hydroxide. Lithium, therefore, closely resembles sodium. Lithium chloride is similar to sodium chloride except that it deliquesces in air. Lithium hydroxide is caustic in its action similar to sodium hydroxide. If lithium chloride enters abrasions it can cause erosion and ulceration of the skin. Lithium hydroxide can cause ulcers in the skin and in the nasal mucosa similar to those caused by sodium hydroxide.

The prevention of burns by lithium hydroxide is the same as the prevention of burns from sodium hydroxide, namely, those handling the material should wear rubber gauntlets and rubber aprons in order to protect the arms and legs. Transparent face shields will give protection to the face. Protective ointments are less efficacious. If they are used they should be of the lanolin-castor oil type described as type 3 in "Protective Ointments and Industrial Cleansers" by Louis Schwartz, published in the *Medical Clinics of North America* (26: 1195 [July] 1942). The workers should also be instructed to insert petroleum jelly in the nostrils several times a day. In addition to this the tanks, vats or other containers of lithium hydroxide should be covered when not in use and vented by suction vents when they are in use so as to prevent exposure from vapors.

Workers should be instructed that if they get lithium hydroxide on the skin or clothing they should immediately flush it with water. Ulcers should be cleaned of crust and pus and treated aseptically.

### SEDIMENT IN GASOLINE FUEL LINE

**To the Editor**—In trying to suck gasoline through the fuel pump on his automobile a man received some finely granular precipitate in his mouth. About ten minutes later he complained of severe burning of his mouth and lips as if he had been burned by a corrosive poison. However there was slight if any coloration of the tissues. At the time he received this material in his mouth he vomited and later ate a good supper but during the night had severe cramps in the abdomen which cleared up rapidly with a milk and egg diet and calcium gluconate intravenously. What is this sludge that forms in gasoline cans and carburetors? Does it contain lead? If so, how soluble is it and what amount would be necessary to cause an acute lead colic? How is tetraethyl lead poisonous? Is it other than as a lead poison or does the tetraethyl have any poisonous property and would this cause any other symptoms than an acute lead colic?

John G. Beck, M.D., Sturgeon Bay, Wis.

**ANSWER**—Most of the sludge deposited along an automobile fuel line is ordinary dirt. This is admixed with traces of waxes, paraffins, zinc chloride and possibly a trace of lead and dyes. The quantity of any one substance is not likely to represent any prospective toxicity. If an appreciable quantity of gasoline was swallowed this becomes the likely source of irritation of the mouth and lips, abdominal cramps and similar symptoms. The quantity of tetraethyl lead in a gallon of gasoline does not lend plausibility to the idea of lead poisoning from an uncertain swallow of this material. Tetraethyl lead to a substantial degree resembles in its injurious properties other forms of lead but with two noteworthy differences. Tetraethyl lead along with some other organic compounds is absorbable through the skin, while inorganic lead compounds are not. Also tetraethyl lead appears to have a predilection for action on the central nervous system to an extent or frequency unknown for inorganic lead compounds. It may be doubted that in the instance described in this query any lead poisoning occurred.

### HYPERTENSION AND OBSTRUCTION OF THE URINARY TRACT

**To the Editor**—How is the hypertensive state associated with chronic urinary retention produced? Particularly in question is that type of hypertension which accompanies obstruction of the neck of the bladder which subsides after decompression.

M D North Carolina

**ANSWER**—Elevation of blood pressure following obstruction of the urinary tract has been frequently observed since its first description in the latter half of the nineteenth century. Secondary hypertension occurs in about one third of all cases of prostatic obstruction. The definite lowering of blood pressure after the relief of an obstruction in the urogenital tract has led many to postulate that all patients with hypertension have some interference with urinary flow. Many studies indicate that all urinary causes of hypertension must be excluded before the diagnosis of essential hypertension can be established. Since not all patients have a lowering of blood pressure on the relief of urinary obstruction there are other causes of hypertension.

Some of the more recent references to the literature on this subject include

Hayes B. A. and Ashley J. D. Urologic Factors Influencing Hypertension. *J. Urol.* 50: 366 (Sept.) 1943.

Brasch W. F. and Wood W. W. Jr. Clinical Perinephritis and Its Effect on Blood Pressure. *Tr. Am. Soc. Genito-Urin. Surgeons* 35: 87, 1943.

Wosika P. H., Jung I. T. and Maher C. C. Urologic Hypertension as an Entity. *Am. Heart J.* 24: 483 (Oct.) 1942.

Weiss Edward and Chasis Herbert. Failure of Nephrectomy to Influence Hypertension in Unilateral Kidney Disease. *THE JOURNAL*, Oct. 2, 1943, p. 277.

### BIOPSY AND SPREAD OF CANCER TISSUE

**To the Editor**—Can you give me statistics about the spreading of cancer cells after biopsy? Are there any clinical reports on that subject especially concerning biopsy of cancerous diseases of the tonsils, tongue and larynx?

Zdenko V. De Dwork, M.D., Santa Monica, Calif.

**ANSWER**—There is no evidence to indicate that biopsies performed under proper circumstances cause the spread of cancer cells. The literature contains numerous reports on the subject. There are probably no monographs dealing exclusively with this problem, but a discussion of the subject can be found in various textbooks dealing with cancer.

### CONSTIPATION AND HYPERTROPHIED HUSTON'S VALVES

**To the Editor**—A woman aged 60 has chronic constipation with an occasional tendency to slight prolapse. She has a mild cancer phobia. She was recently examined and told that the condition was probably due to hypertrophied Huston's valves and an operation was advised to section the valves. She was told there would be seven to eight stools a day for several months and that she should remain in the vicinity for observation during this period. Is this a well recognized operation?

M D Colorado

**ANSWER**—Constipation due to hypertrophied Huston's valves is a rare contingency. Operations on these valves at no time remove the cause of the constipation. The inspissated stool is initiated higher up in the colon and has nothing at all to do with the valvular derangement of the rectum. Unless a-ray evidence can show that there is a definitely dilated colon above these valves, their enlargement plays no part in the disturbed physiology of the gastrointestinal tract. Frequently patients of this age group suffer from constipation due to vitamin B<sub>1</sub> deficiency. Furthermore, it has been noted that in these individuals hypothyroid manifestations are not at all uncommon. This phase of the clinical picture should be investigated thoroughly.

### TICK REPELLENTS

**To the Editor**—Can you tell me of any substance or combination of substances that will act as a repellent of ticks? The Ozarks abound with several varieties of them, the so called seed ticks, deer ticks and others of like size. I am aware of methods of removal such as chloroform, kerosene and heat. Is there any repellent that will keep the ticks off the skin even if they do get on the clothing?

Wallace A. Belsey, M.D., Campbell, Mo.

**ANSWER**—Indalone, sold by the Skol Company, Inc., 250 East 43d Street, New York City 17, has been well recommended as a repellent for ticks. This synthetic compound is alpha, alpha-dimethyl-alpha-carbo-butoxydihydro gamma-pyrone.

Another material has been developed for use by the armed forces and is known as 622. Unfortunately, only enough supplies are available for the armed forces at the present time. Undoubtedly, when the needs of the armed forces have been satisfied other tick repellents of great efficiency will be made available to the general public.

# The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL 126, No 5

CHICAGO, ILLINOIS  
COPYRIGHT 1944 BY AMERICAN MEDICAL ASSOCIATION

SEPTEMBER 30 1944

## THE POSTWAR CHALLENGE TO ORTHOPEDIC SURGERY

CHAIRMAN'S ADDRESS

GUY A CALDWELL, MD  
NEW ORLEANS

It may be said that the specialty of orthopedics had its origin in 1780, when Jean-Andre Venel established in Orbe, Switzerland, the first orthopedic institute for the correction of curvatures and torsions of the spine.<sup>1</sup> Little more than tenotomies and mechanical corrections of deformities were developed, however, prior to the works of William John Little, who established the Royal Orthopaedic Hospital in London in 1837, and Hugh Owen Thomas of Liverpool (1834-1891), whose name is perpetuated in his extension splints.<sup>1</sup> Thus the specialty became recognized in England and America only about a century ago. It was nearly fifty years later, however, that Robert Jones and his associates in England and Whitman, Davis, Bradford, Lovett and others in America truly emancipated the specialty into orthopedic surgery as we know it today. Of the advent of surgery in orthopedics, Whitman<sup>2</sup> wrote "It transformed an ill found and static specialty to an important and progressive branch of surgery."

The impetus given to orthopedics by operative surgery found expression in America in the establishment of the American Orthopaedic Association and, a little later, the Section on Orthopedic Surgery of the American Medical Association. There was, however, no comparable organization in Great Britain before World War I, and Robert Jones and his associates were virtually the only widely known orthopedic surgeons in England. As Betts<sup>3</sup> stated, "At the outbreak of war in 1914 orthopedics as a special branch of surgery was comparatively unknown in Britain and Australia."

### EFFECT OF WORLD WAR I ON ORTHOPEDIC SURGERY

Sir Robert Jones recognized in the large number of wounded and disabled soldiers a challenge to orthopedic surgery, which, with his exceptional skill and knowledge combined with a marvelous personality and

ability to organize, he met with such success that the specialty emerged much stronger than ever before. James A. Dickson,<sup>4</sup> my illustrious predecessor as chairman of this section, stated in his address two years ago

Under serious opposition Robert Jones was entrusted with the establishment of the first military orthopedic service in any country, having 200 beds at Alder Hey in Liverpool. The results were so striking that within a short period 33,000 beds were equipped and staffed with English and American orthopedic surgeons.

According to Goldthwait 65 per cent of the casualties in the last war were orthopedic cases and by the time of the armistice 569 officers had served with the Orthopedic Division of the American Expeditionary Forces.

In a discussion of the evolution of orthopedic surgery Freiberg<sup>5</sup> has aptly indicated the stimulus which World War I provided in the progress of orthopedics.

The World War had a great influence on orthopedic surgery, especially in Great Britain and in the United States. By reason of the wider contacts which military experience brought to orthopedic surgeons reciprocal relationships with their colleagues of more intimate nature than civil life had furnished, were established. They returned from military to civil life with their own professional concepts greatly expanded.

Very few of them resumed their civil occupations without profound alteration in their attitude toward their professional activities and toward their colleagues. From the time when the identity of the orthopedic surgeon became recognized, the care and the rehabilitation of the cripple has been his particular province.

### PROGRESS DURING PEACETIME

Because the medical officers assigned to orthopedic services during World War I returned to their civil occupations with "profound alteration in their attitude toward their professional activities and toward their colleagues,"<sup>6</sup> rapid advancement of the specialty continued during peacetime. Numerous articles, journals and books began to appear in the literature. The American and British orthopedic associations flourished, the Section on Orthopedic Surgery of the American Medical Association became more active and soon many smaller groups appeared. Then twelve years ago the Academy of Orthopaedic Surgery was organized and two years later the American Board of Orthopaedic Surgery. The combined influence of these various groups and individuals began to be felt in medical schools, hospitals, communities, states and the entire nation. As a result a state and federal program was inaugurated to provide care for crippled children under the Social Security Act, the validity of the expert

<sup>4</sup> Dickson, J. A. Orthopedic Surgery Between Two Wars. J. A. M. A. 120:413-416 (Oct. 10) 1942.

<sup>5</sup> Freiberg, A. H. Orthopaedic Surgery in the Light of Its Evolution. J. Bone & Joint Surg. 19:279-296 (April) 1937.

From the Department of Surgery, Tulane University School of Medicine and the Section on Bone and Joint Surgery, Ochsner Clinic.

Read before the Section on Orthopedic Surgery at the Ninety-Fourth Annual Session of the American Medical Association, June 15, 1944.

<sup>1</sup> Garrison, F. H. Introduction to the History of Medicine. Philadelphia: W. B. Saunders Company, 1929.

<sup>2</sup> Whitman, R. The Emancipation of Orthopaedic Surgery. Proc. Roy. Soc. Med. 36:327-329 (May) 1943.

<sup>3</sup> Betts, J. O. Orthopaedics and the Great War. M. J. Australia 2:35-38 (July 13) 1940.

opinions of orthopedists was recognized in courts and by compensation commissions on disability ratings, and the National Foundation for Infantile Paralysis and similar agencies were organized

Although expansion of orthopedic surgery as a specialty was rapid during the twenty-four year interval of peace, it failed to keep apace of the demand. So well defined is the role of the orthopedic surgeon in the tables of organization of the armed forces that immediate demand for all physically fit surgeons under 45 years of age was made on the profession. The response was prompt, but unfortunately the number available was all too small. Whereas 288 surgeons certified by the American Board of Orthopaedic Surgery are now serving with the armed forces in responsible positions, each of them is being assisted by three or more partly trained orthopedic surgeons or general surgeons. In this way a large new group, approximately 900, is being drawn into intimate contact with the specialty and it is safe to predict that more than half of these will complete their training after the war, will limit their practice to this specialty and ultimately will be certified as orthopedic surgeons. Meanwhile a greatly diminished, nevertheless considerable, number of younger men, disqualified for military service, are continuing their training in routine channels at home. It is highly probable, therefore, that within the next five or ten years the number of men certified in the specialty of orthopedic surgery will be doubled or perhaps trebled, until it will reach 2,000 to 2,500 men in the United States.

At first glance it might appear that such rapid increase in the number of men certified to practice orthopedic surgery might overcrowd the specialty. If we study the probable postwar demands, however, it appears likely that the requirements will be far greater than the increased numbers can serve. The contacts of hundreds of thousands of young men and women now in the armed forces with organized orthopedic services are numerous. From the induction centers, where part of the physical examination is done by orthopedists, to minor or major injuries received while in training and treated on orthopedic services of the camp or station hospitals, on through combat duty, when those with wounds in the extremity trail back through evacuation hospitals to the orthopedic services of the general hospitals abroad and at home, thousands on thousands will learn for the first time the value of special training and skill in the care of crippling diseases and injuries. This knowledge is shared by other thousands of their buddies, families and hospital attendants and will go back with them into civil life. From the homes and families established by these men it is certain that greater and more frequent demands will be made for orthopedic care.

Large numbers of professional personnel with the armed forces—physicians and nurses not assigned to orthopedic services—are daily brought face to face with the fact that in army hospitals throughout this country 35 to 40 per cent of the patients are in orthopedic services, and in the combat areas 65 per cent of the wounded have injuries of the extremities. They perforce become "orthopedic conscious" by daily reference of patients and requests for orthopedic consultations. On their return to civil life it will be second nature to refer such patients for orthopedic care.

During the early postwar period Veterans' Facilities must necessarily be greatly expanded and the orthopedic services conspicuously enlarged. Already the Vocational Training and Rehabilitation Program under the Social Security Act as amended in June 1943 is providing a system for medical care which will include a large percentage of orthopedic cases. State crippled children's services which have been compelled to operate with skeleton staffs, will enlarge to their former size, and many new organizations will lend aid to orthopedic programs.

Therefore the postwar demand on the specialty of orthopedic surgery will be strikingly increased as a result of our awakened consciousness of the meaning and value of orthopedic service through observation of its work in the armed forces by thousands of lay and professional workers who will eventually return to civil life in widely scattered areas. Their demands will be supplemented by those growing out of the gradual spread and natural growth of civilian orthopedics through development and expansion of the programs for crippled children and vocational rehabilitation. Soon the man in the street will cease to stammer and stall when he attempts to pronounce orthopedist and to confuse the term with osteopath, chiropractor and chiropractist. Moreover the public is rapidly realizing the truth of Freiberg's statement that "from the time when the identity of the orthopedic surgeon became recognized the care and the rehabilitation of the cripple has been his particular province."

The postwar challenge to orthopedic surgery is presented by the assurance of an overwhelming demand for its assistance to rehabilitate the cripples and the equal certainty that, although the number of trained orthopedists available to meet this demand will be greatly increased, it will be insufficient. In 1942 there were 180,496 physicians in the United States, only 707 of whom were certified orthopedists, or 0.39 per cent. When this small percentage is balanced against the fact that in military hospitals about 40 per cent of the work is assigned to orthopedic services, it is not improbable that postwar civilian demands will require that 20 to 25 per cent of its hospital population be cared for by orthopedists. If we assume that the number of physicians will be 200,000 and the increased number of orthopedic surgeons 2,000, we are confronted by a situation in which 1 per cent of the physicians will be trying to care for 20 to 25 per cent of the hospitalized patients.

What can we do to meet this challenge? First, we must inventory our assets and organize them to meet this situation to the best advantage. It is obvious that the basic need is for the rapid but efficient training of a large number of younger physicians. To accomplish this it will be necessary for every practicing orthopedist to constitute himself a teacher and use his facilities and time to assist in training several younger men to succeed him. More articles, periodicals and books on orthopedic problems should be published. Organizations such as this one, the orthopedic section of the greatest medical association in the world, together with the American Orthopedic Association, the Academy and all of the smaller, more intimate, groups should plan constructive programs of instruction that will awaken interest and attract younger men to the field of orthopedic surgery. Medical schools and their

graduate departments should enlarge their facilities and apportion their time to provide more emphasis on instruction in this surgical specialty. Hospitals should begin to organize their orthopedic services for approved resident training in this special branch of surgery. Nursing schools should encourage some of their graduates to specialize in this field and others to train in physical therapy and occupational therapy.

At present the report of the Council on Medical Education and Hospitals lists only 84 approved resident training services in orthopedic surgery, most of these in the older centers or affiliated with universities or hospitals for crippled children. A survey of hospitals having orthopedic services for crippled children staffed by specialists certified by the American Board of Orthopaedic Surgery reveals 200 services which should be qualified and approved for training. Many other general hospitals have large services for fractures and other traumatic injuries of the extremities that have sufficient clinical material under competent supervision to provide adequate training for orthopedic residents for at least one of the three required years. Every medical school in the country can and should provide six months of graduate training, especially in the basic sciences of anatomy, pathology, physiology and biochemistry, to supplement the training of men who may acquire their clinical experience in hospitals and clinics not affiliated with universities.

Retired or demobilized medical officers will be eligible for graduate training in various specialties with governmental pay. Advantage should be taken of this to offer supplementary training to all officers who have served in orthopedic services with the armed forces and to attract additional young men who have been serving with the field units. Experienced orthopedic surgeons now in the service who are capable of teaching should be demobilized and returned to their teaching posts as rapidly as possible to assist in this great move. Every one of us must look ahead and begin now to arrange his work and hospital service to provide time and facilities for instruction for those who will be needed to meet this great postwar need.

#### SUMMARY

As rapid as have been the advances of the specialty of orthopedic surgery during the last fifty years, it has been unable to keep abreast of the increasing demand. World War II has accentuated the demand without helping materially to increase the number of trained orthopedists to meet it. It appears probable that in the postwar period 1 per cent of the physicians specializing in orthopedic surgery will be required to care for 20 to 25 per cent of the hospitalized civilians. It is therefore urgent that more men be trained in the specialty. To provide orthopedic training for the number of physicians who will be needed in the postwar era, all available hospital services should be qualified for approval by the Council on Medical Education and Hospitals and the American Board of Orthopaedic Surgery, and all medical schools should expand their teaching facilities for orthopedics, especially their graduate courses in the basic sciences of anatomy, pathology, physiology and biochemistry.

3503 Pristama Street

## A PSYCHIATRIC STUDY OF SUCCESSFUL SOLDIERS

CAPTAIN JACK G. SHEPS

ROYAL CANADIAN ARMY MEDICAL CORPS

Studies of soldiers who broke down in training or under what was considered to be minimal stress in battle led to the establishment of present standards for psychiatric screening. These standards have been criticized on the grounds that they were based on observations of selected groups. It has been suggested that men with good motivation and a desire to serve can cover up and compensate for psychoneurosis. This paper is an attempt to test our psychiatric screening standards by a study of 116 successful soldiers and compares the findings with those obtained in studies of neurotic soldiers.

Studies of neurotic soldiers have been done by Rosenberg<sup>1</sup> and Slater<sup>2</sup>, Ebaugh<sup>3</sup> and his associates studied 100 soldiers designated as well adjusted by their officers and compared them with 100 psychiatric cases. Uninjured combat veterans with no complaints were studied by Schwab, Finesinger and Brazier<sup>4</sup> and compared with cases of combat neurosis and neurosis developed in training. Steinberg and Wittman<sup>5</sup> studied ordinary soldiers and compared them with a group of neurotic and psychotic patients.

This is a study of 115 soldiers and 1 sailor. Fifty-eight at several camps in various phases of training were chosen by their training officers as the best all around men in a group—usually a platoon. Fifty-seven soldiers and 1 sailor injured in a theater of action were also studied. These men entered the service before psychiatric screening was established, but they were all front line fighting troops and had no presenting psychiatric disabilities. Men from base areas or lines of communication, subject only to air raids were excluded. In the case of the soldiers in training, a short report from the training officer accompanied the man explaining why he was chosen, together with a note by the personnel selection officer. A limited social service investigation was done in every case. A psychiatric interview of at least thirty minutes was carried out. The purpose of the study was outlined and the man's cooperation enlisted. It was stressed that the interview was unofficial and would in no way affect the soldier's career in the Army or the matter of pensions. All the men cooperated very well and spoke freely. Most of the combat veterans came from two regiments, and it was possible to check on their behavior with others in the same unit. Two of the veterans

From No. 2 District Depot Toronto Ontario Canada

Read before the Section on Nervous and Mental Diseases at the Ninety-Fourth Annual Session of the American Medical Association Chicago June 15 1944

1 Rosenberg S. J. and Lambert R. H. Analysis of Certain Factors in Histories of 200 Soldiers Discharged from the Army for Neuropsychiatric Disabilities. *Am J Psychiat* 99: 164 (Sept.) 1942

2 Slater E. The Neurotic Constitution. *J Neurol & Psychiat* 6: 116 (Jan-April) 1943

3 Billings E. G., Ebaugh F. G., Morgan D. W. and others. A Comparison of 100 Army Psychiatric Patients and 100 Enlisted Men. *War Med* 4: 283-298 (Sept.) 1943

4 Schwab R. S., Finesinger J. E. and Brazier M. Psychoneurosis Preceditated by Combat. *U S Nav Med Bull* 47: 535-544 (March) 1944

5 Steinberg D. I. and Wittman M. P. Etiologic Factors in the Adjustment of Men in the Armed Forces. *War Med* 4: 129-139 (Aug.) 1943

enjoyed a more intimate relationship—they were wounded by the same bomb. The study was restricted to noncommissioned men, all but 9 were privates. The soldiers in training had been in the Army from three to eight months and the combat veterans from two to four years, about half having been wounded in the Sicilian campaign and half in the Italian campaign. After each interview the man was graded as if he were a candidate for enlistment, without taking into consideration his progress and record in the Army.

#### FINDINGS

Ages ranged from 18 to 40 years, with 77 men between 20 and 30. The racial origins reflected approximately the distribution in the general population.

Army aptitude test scores were available for the 58 soldiers in training and 26 combat veterans. Forty-three per cent fell into the highest 5 per cent and only 10 per cent into the lowest 30 per cent.

Only 8 of the 116 did not complete elementary school, and only 3 of these had poor school records. Four of the men attended university and the rest attended high school.

#### *Greatly Diminished Incidence of Significant Psychiatric Data in Successful Soldiers as Compared with Psychiatric Discharges*

|   | Present Series,<br>% | Slater,<br>% | Rosenberg and Lambert<br>% |
|---|----------------------|--------------|----------------------------|
| Work history                            |                      |              |                            |
| Poor work record                        | 1.0                  |              | 64.0                       |
| Skilled and semi-skilled                | 85.0                 | 48.0         |                            |
| Family history                          | 14.6                 | 65.7         | 39.5                       |
| Childhood neurotic traits               | 31.0                 | 53.8         |                            |
| Bad home                                | 6.6                  | 20.0         |                            |
| Previous personality or mental disorder | 3.4                  | 40.0         | 69.0                       |

One hundred and seven men had worked for one or more years, 33 were classified as engaged in skilled work, 58 semiskilled and 16 unskilled. Only 1 had a poor work record.

Thirty-eight had had previous military experience in the militia or cadets.

The family history was considered to be significant where psychoses or epilepsy occurred in the immediate family or first degree relatives, or where neurosis and severe personality maladjustments, such as chronic alcoholism or constitutional psychopathy, occurred in the more immediate family. There were 17 significant family histories. These included 3 cases of epileptic seizures in an uncle, aunt and brother, and schizophrenia in an uncle. If one excludes these as not being a factor in the predisposition to neurosis, there remain 13 positive family histories.

A bad home, in the sense of excessive poverty, drunkenness or family disagreement with constant anxiety and uncertainty, was present in 8 cases, and in half of these one parent deserted the family when the soldier was under 13.

Forty-nine men showed some signs of instability.

- Ten had pulse rates of 90 to 100.
- Fifteen showed nail biting—only 1 severe.
- Twenty-four showed tremor and sweating of the hands—only 1 severe.

Neurotic traits in childhood were present in 36 of the men, 24 had one trait, 7 had two traits and 5 had three traits.

Personality assessment is difficult in one interview, but 18 men could be classed roughly as introverted and 23 as extroverted. Seventy-five fell into neither of these categories. All had made good social adjustments and had normal recreational outlets. None of the men had any spontaneous health or "nerve" complaints.

An effort was made to see if the men understood the principles at stake in this war. I considered them to have good motivation if they could define fascism as an authoritative, dictatorial form of government, if they understood the concept of "master race" as used by the fascists, if they were conscious that fascist and democratic states could not exist side by side and if they felt that there would be no place for them in a world ruled by fascism. A great deal of importance was attached to the last question, and the motivation was graded good, fair or poor. Ninety-four were found to have good motivation, 4 fair and 18 poor.

Four men were downgraded at the time of this study, 1 for base duties in a theater of action and 3 for service in Canada only. These were all in the group of training soldiers. Seven were graded "accept for recheck", that is, they would be seen by a psychiatrist at the end of a period of training.

#### COMMENT

The table compares certain of these findings with those of Slater<sup>2</sup> and Rosenberg<sup>1</sup> in their studies of soldiers with psychiatric disabilities and emphasizes the low incidence of significant psychiatric data in this series. Ebaugh,<sup>3</sup> Stenberg<sup>4</sup> and Schwab<sup>4</sup> do not give absolute figures, but all report a much greater incidence of signs and symptoms of instability, positive family and developmental histories and poor social and work adjustments as compared with their controls of normal men.

This study was undertaken to evaluate a criticism which few service psychiatrists take seriously, that is that our standards are too strict and that we screen out men who would make good combat soldiers. If this criticism were valid, one would expect to find more men who do not meet the present screening standards among the unscreened battle veterans than in the screened group of soldiers in training. The soldiers in training went through our screening, and there were indications for the downgrading of 4. All of the "accept for recheck" cases would have had their gradings for full duty confirmed. All the combat veterans enlisted in the Army before adequate psychiatric screening was established, but a natural selection had taken place, with weeding out of the psychiatrically unfit during training, the battle of Britain and a long period of waiting before action. All had been through battle stress, and none had developed a psychiatric disability. That our screening standards are no stricter than natural battle stress screening is shown by the fact that none of these men whose stability was unaffected by battle would have been rejected. Thus our errors are, if anything, in the direction of leniency.

It is interesting that only 15 of the training soldiers had clear family and developmental histories and presented no signs or symptoms of instability, but apart

from the 4 that were downgraded their original assessments were correct, and they were making good soldiers

Only 24 of the 58 combat veterans were completely "normal," and yet all of them had seen action without developing any psychiatric disability. This bears out the conclusions of Stenberg,<sup>5</sup> who says that "for every factor investigated there is a definite overlap of adjusted and maladjusted groups. The number and intensity of these factors evidently are cumulative in their effect and on the adjustment of the individual selectee." In this group the 2 cases showing severe fingernail biting, tremor and sweating of the hands, and 3 of the 5 men presenting three childhood neurotic traits were downgraded. Of the remaining 2, 1 would be accepted for recheck.

It must be emphasized, however, that the total picture of the individual man in his environment must be considered and all significant data evaluated in the light of his present civilian adjustment. The frank neurotic, psychopath or prepsychotic personality is not a diagnostic difficulty, yet it is generally agreed that if only these are rejected a considerable number of men will still break down in training or after minimal stress in a theater of action.

It is the feeling of psychiatrists in the Canadian Army that the maintenance of proper screening standards depends on the experience of the screening psychiatrists with men who break down in training or are returned from overseas because of psychiatric disability. Doubtful cases are accepted for recheck, and the screening psychiatrist receives a copy of the report of the examination at the training center. Study of the percentage and types of these cases that require a lowering of category provides a check on the validity and reliability of the psychiatric evaluations of the individual psychiatrists. It has been found that the rejection rates of the psychiatrists at the same induction centers differ very little in spite of varied training and professional backgrounds and in spite of the lack of objective criteria that can be laid down for rejection. It is not felt that psychiatric screening can ever exclude all psychiatric casualties, but, as Kubie<sup>6</sup> maintains it should greatly reduce the number occurring in training and under minimal battle stress.

#### SUMMARY AND CONCLUSIONS

1 Fifty-eight successful soldiers in training (screened) and 58 combat veterans (unscreened) with no presenting psychiatric disability were studied.

2 Screening standards in use at present in induction centers of the Canadian Army were applied. Using these standards, 4 training soldiers were downgraded, 1 to limited duty in a theater of action, 3 to service in Canada only. None of the combat veterans were downgraded.

3 There was no significant difference in the findings in the two groups of men.

4 Ninety-four were found to have good motivation and high morale. This factor can be adequately assessed only after studies of unselected groups have been made.

5 Soldiers who have stood the stress of battle without developing a psychiatric disability and the best soldiers in training are distinguished from their neurotic fellows by being stable, well adjusted and intelligent with fewer and milder significant psychiatric stigmas.

6 Results of this study indicate that psychiatric screening standards at present employed are not too strict.

#### ABSTRACT OF DISCUSSION

LIEUTENANT COLONEL J. D. GRIFFIN, R. C. A. M. C. One essential problem facing the psychiatrist in his examination of recruits at the induction center concerns the answer to the question: What are men being selected for? We are prone to think that our primary goal is to get the man through training and so we select men for training. It is obvious that that is not the only goal of selection. The goal of the soldier is to fight and so we must select for combat too and that makes it pretty hard for the man who is a good fighter and a good combat soldier is not necessarily also able to take the long dreary months of training, discipline, regimentation, education in the classroom sense and the separation from home and family and from his old job. There is another problem facing our psychiatrist. I refer to the unpleasant position the service and civilian psychiatrist finds himself in when he discovers that he is between the pressure of the politicians and the people at the top, who feel that the army is somehow not getting enough men, that the men already in are somehow melting away largely through the efforts of the psychiatrists, and on the other hand the pressure that comes from the training officers, the men in charge of the training camps, who say "You're doing a swell job, only do more of it. We don't want these fellows. They don't make good soldiers. Tighten your standards." There are six ways in which we try to keep our sights on the target. The first is that we use only service psychiatrists for screening recruits. All the psychiatrists in the induction centers are in the army. Secondly, we send the psychiatrists into the field frequently so that they may check up personally on the type of men they have let in. That makes it possible for them to reexamine after six to eight weeks of training many of the men whom they were rather doubtful of at the induction center. This is our so-called Accept for Recheck System. Our figures show that over 60 per cent of these men are making the grade as successful soldiers, which is a reasonable margin of error. I think. Thirdly, we have a social service organization in the army belonging to the medical corps which checks the social and medical background of doubtful cases. We have had in addition an experimental project under way by which we are deliberately taking into the army through our induction centers men who would ordinarily be rejected because of instability. These men, a hundred of them, are at present in training with a modified training program stressing group psychotherapy and special indoctrination and educational procedures.

Thomas Hodgkin—Thomas Hodgkin (1798-1866) after graduating in medicine at Edinburgh in 1823 and studying intensively in France and Italy, settled in practice in London and was appointed curator of the pathologic museum and demonstrator of pathology at Guy's Hospital, London. This was one of the first chairs of this particular subject to be created. Hodgkin held it for ten years and made many important studies of the pathologic collections. His paper on the diseases of the 'absorbent glands and spleen' published in 1832 first described the disease which Wilks in 1865 named Hodgkin's disease. Hodgkin was noted for his philanthropic labors. He was a close friend of Sir Moses Montefiore, the Jewish philanthropist, and while traveling with Sir Moses in the Orient contracted dysentery and died at Joffa, where he is buried—Clendening, Logan. Source: Book of Medical History, New York, Paul B. Hoeber Inc. 1942.

<sup>6</sup> Kubie, L. S. The Detection of Potential Psychosomatic Breakdowns in the Selection of Men for the Armed Forces. *Ann. New York Acad. Sc.* 44: 605-624 (Dec. 22) 1943.



## THE USE OF PENICILLIN IN RHEUMATIC FEVER

LIEUTENANT COMMANDER ROBERT F WATSON  
(MC), USNR

SIDNEY ROTHBARD, MD

AND

HOMER F SWIFT, MD

NEW YORK

Although the etiology of rheumatic fever is not fully understood, current data indicate that attacks of this disease are generally preceded by infections with group A hemolytic streptococci. The sequence of events is so regular that one is justified in advancing the hypothesis that the streptococcal infection induces rheumatic fever. Whether group A streptococci are the only infectious agents responsible for rheumatic fever or whether they merely activate some other specific micro-organism or virus and possibly act in concert with it to produce the disease has not been determined. The temporal relationship between the hemolytic streptococcal infection and the attack of rheumatic fever is generally not immediate. In fact, the usual sequence of events is streptococcal infection, quiescent period, rheumatic fever. These phases have been designated as I, II and III respectively. It has been shown that if the initiating or inducing streptococcal infection, phase I, is prevented in susceptible subjects, then rheumatic fever fails to occur.<sup>1</sup> This is presumably the basis for the prophylaxis of rheumatic fever by the sulfonamides.

With these relationships in mind, it appeared rational to test the influence on the course of rheumatic fever of such a potent antistreptococcal agent as penicillin, for it must be admitted that the drug therapy to date is far from satisfactory. Salicylates, and such chemically unrelated drugs as aminopyrine and neocinchophen, appear to act in the tissues by altering their response to the "noxious agent" and not directly on the inducing agent, the hemolytic streptococcus. Penicillin, on the other hand, appears to exert its curative action by inhibiting the growth of certain pathogenic micro-organisms. If, then, the continuing symptoms of rheumatic fever are due to the persistence of hemolytic streptococci in the patient's tissues, it might be expected that complete removal of these micro-organisms by means of penicillin would favorably affect the course of this disease.

It is well established that sulfanilamide, which is known to be effective against hemolytic streptococcal infections, exerts no beneficial influence on rheumatic

fever but often aggravates the symptoms when given during the active phase of the disease.<sup>2</sup> The sulfonamides, however, often do not completely eliminate hemolytic streptococci from patients with pharyngitis, tonsillitis or scarlet fever.<sup>3</sup> It therefore seemed desirable to test the effect on rheumatic fever of the more powerful antibacterial agent penicillin. Sufficient amounts of this drug were made available by Dr Chester S Keefer to study this problem, and the present report gives the details of this study.

### METHODS

Eight young men with typical acute rheumatic fever were each treated for two weeks with penicillin. During this period salicylates and other antirheumatic drugs were usually withheld as long as seemed justifiable. The changes in signs and symptoms were noted and charted daily as indicated in the case histories. In addition leukocyte counts, erythrocyte sedimentation rates, nose and throat cultures, electrocardiograms and x-rays of the chest were taken at frequent intervals. Samples of blood were also obtained once a week for determination of antistreptolysin and antifibrinolysin titers and at various intervals after injections of penicillin to determine its concentration in the patient's serum.

The method of administering the penicillin was varied. Two patients received the drug intramuscularly at four hour intervals during the night and intravenously at three hour intervals during the day for two weeks. Four patients were treated in a like manner for the first week and then only by the intravenous route at three hour intervals from 9 a m through 12 midnight for the second week. The 2 remaining patients were given penicillin by the continuous intravenous drip method for one week and then intravenously at three hour intervals from 9 a m through 12 midnight during the second week. Because of the possible danger of precipitating cardiac failure in patients with acute rheumatic fever, we hesitated to employ the continuous drip intravenously for long periods and particularly to use large amounts of isotonic solution of sodium chloride. For the constant intravenous method 37,500 units was dissolved in 500 cc of distilled water containing 5 per cent glucose or occasionally in isotonic solution of sodium chloride. The rate of delivery was 35 to 40 drops per minute or 500 cc every four hours. The individual intravenous injections contained 40,000 units each except in 1 case, in which the dose was 25,000. The intramuscular injections invariably contained 25,000 units.

The Westergren method was used to determine the erythrocyte sedimentation rate.<sup>4</sup> The antistreptolysin determinations were made according to the method of Todd and modified as previously described,<sup>5</sup> the antifibrinolysin determinations were made according to the methods described by Tillett, Edwards and Garner and

From the United States Navy Research Unit at the Hospital of the Rockefeller Institute for Medical Research and the Hospital of the Rockefeller Institute for Medical Research.

The penicillin was provided by the Office of Scientific Research and Development from supplies assigned by the Committee on Medical Research for clinical investigations recommended by the Committee on Chemotherapy and Other Agents of the National Research Council.

This article has been released for publication by the Division of Publications of the Bureau of Medicine and Surgery of the U S Navy. The opinions and views set forth in this article are those of the writers and are not to be considered as reflecting the policies of the Navy Department.

1 Coburn A F and Moore L V. The Prophylactic Use of Sulfanilamide in Streptococcal Respiratory Infections with Especial Reference to Rheumatic Fever. *J Clin Investigation* 18 147 155 (Jan) 1939.  
Thomas Caroline B and France R A. A Preliminary Report on the Prophylactic Use of Sulfanilamide in Patients Susceptible to Rheumatic Fever. *Bull Johns Hopkins Hosp* 64 67 77 (Jan) 1939.  
Kuttner A G and Reysersbach G. The Prevention of Streptococcal Upper Respiratory Infections and Rheumatic Recurrences in Rheumatic Children by the Prophylactic Use of Sulfanilamide. *J Clin Investigation* 22 77 85 (Jan) 1943.

2 Swift H F, Moen J K, and Hirst G K. The Action of Sulfanilamide in Rheumatic Fever. *J A M A* 110 426-434 (Feb) 1938.  
Massell B F and Jones, T D. The Effect of Sulfanilamide on Rheumatic Fever and Chorea. *New England J Med* 218 876 878 (May 26) 1938.

3 Unpublished observations.

4 Westergren A. Studies of the Suspension Stability of the Blood in Pulmonary Tuberculosis. *Acta med Scandinav* 54 247 282 (Jan) 1921.

5 Todd E W. Antigenic Streptococcal Hemolysin. *J Exper Med* 55 267 280 (Feb) 1932.  
Hodge B E and Swift H F. Varying Hemolytic and Constant Combining Capacity of Streptolysins. Influence on Testing for Antistreptolysins. *J Exper Med* 58 277 287 (Sept) 1939.

by Boisvert<sup>6</sup> Representative colonies of all hemolytic streptococci recovered from these patients were grouped and typed by the precipitin technique and tested in vitro for susceptibility to penicillin. These tests for susceptibility, as well as the determinations of serum concentrations of penicillin, were done by the dilution method described by Rammelkamp.<sup>8</sup> A standard strain of group A hemolytic streptococcus was used as a control in each experiment.<sup>9</sup> The samples of blood were defibrinated and stored in the ice box at 4 C for twelve to twenty-four hours before the determinations were made. We have found that specimens of blood may be thus stored for as long as two weeks without demonstrable loss in the concentration of penicillin.

#### REPORT OF CASES

**CASE 1—History** (chart 1)—D. H., aged 23, was admitted on Jan. 8, 1944 on the sixth day of an attack of rheumatic fever. Two previous attacks had occurred when he was 11 and 12 years of age respectively. An upper respiratory infection on December 15 was followed in nineteen days by pain and swelling in the left foot, shoulder, wrist and both knees.

On admission the temperature was 102.2 F, the pulse rate 92 and the respiratory rate 24 per minute. Arthritis was present as charted. The heart was enlarged to the left by percussion. Auscultation revealed a systolic murmur at the apex and a diastolic blow at the base. The blood pressure was 128/65.

Laboratory examination on admission revealed red blood cells 3,610,000, hemoglobin 79 per cent, white blood cells 10,950, erythrocyte sedimentation rate 115 mm per hour, cultures of the nasopharynx yielding no hemolytic streptococci, electrocardiogram essentially normal with a PR interval of 0.17 second, x-ray examination of chest disclosing heart enlarged in the region of the left ventricle.

**Course**—Penicillin was started on the day of admission. During the first twenty-four hours the patient was given 25,000 units intramuscularly every four hours. For the next six days he was given 25,000 units intravenously every three hours during the day and 25,000 units intramuscularly at four hour intervals at night. During the second week he received daily six intravenous injections at three hour intervals from 9 a. m. through 12 midnight. A total of 1,975,000 units was given over the two week period. The temperature remained elevated throughout the period of penicillin therapy. The arthritis increased during the first week to involve as many as ten different joints and gradually diminished during the second week. Three days after penicillin treatment was started the erythrocyte sedimentation rate had increased to 128 mm per hour. On the sixth day after the cessation of penicillin therapy it was 135 mm per hour and moderate fever persisted. At this time the patient was started on salicylates, with a prompt drop in temperature to normal.

About three and one-half months after the onset of the attack the erythrocyte sedimentation rate became normal, but the signs of aortic and mitral insufficiency persisted. Convalescence thereafter was uninterrupted.

In this case there was no evidence that penicillin treatment altered the course of the disease. The patient appeared ill until placed under full therapeutic doses of salicylates. The persistence of an elevated erythrocyte sedimentation rate for over three months indicates that the course of the rheumatic fever had probably not been curtailed by the penicillin therapy.

**CASE 2—History**—M. K., aged 18 was admitted on Jan. 11, 1944 with his first attack of rheumatic fever. Early in December 1943 he developed a cold, which was followed about two weeks later by pain and stiffness in the hips and in the toes of both feet. These symptoms persisted intermittently and at times were severe but did not confine him to bed. On January 3 he developed pain, tenderness and swelling of the right ankle, and during the next six days both hips, knees, the left ankle and the foot became involved. On January 9 he was transferred to the U. S. Naval Hospital, Brooklyn where erythema marginatum was noted over the trunk for only one day. During the two days in that hospital the patient received

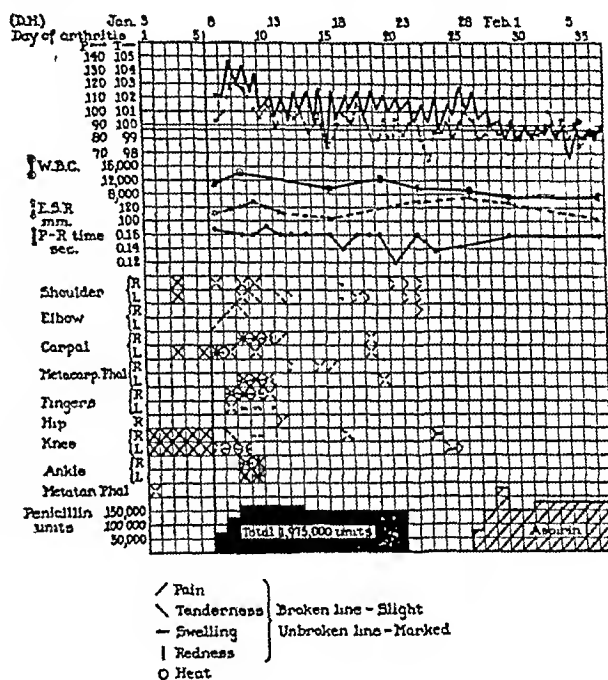


Chart 1—Course in case 1

about 3 Gm of acetylsalicylic acid, with partial relief of symptoms. On the day of admission to the Rockefeller Hospital stiffness in the right elbow was noted for the first time.

On admission the temperature was 100.4 F, pulse rate 80 and respiratory rate 20 per minute. The patient appeared acutely ill and had pallor of the skin and mucous membranes but no rash. There were pain and tenderness of the right elbow, the first interphalangeal joint of the left middle finger and both hips and slight tenderness over the left knee, ankle and the toes of the left foot. The right knee and ankle were painful, tender and swollen. The heart was at the upper limits of normal in size on percussion. A soft systolic murmur was heard along the left sternal border and a third sound at the apex early in diastole.

The blood pressure was 112/28.

On admission the laboratory examination revealed red blood cells 3,460,000, hemoglobin 74 per cent, white blood cells 9,400, erythrocyte sedimentation rate 128 mm per hour, throat culture yielding group A type 24 hemolytic streptococci, electrocardiogram essentially normal with a PR interval of 0.13 second, x-ray examination of chest disclosing heart slightly enlarged in its transverse diameter.

6. Tillett W. S., Edwards L. B. and Garner R. L. Fibrinolytic Activity of Hemolytic Streptococci. The Development of Resistance to Fibrinolysis Following Acute Hemolytic Streptococcus Infections. *J. Clin. Investigation* 13: 47-78 (Jan.) 1934. Boisvert P. L. The Streptococcal Antifibrinolysin Test in Clinical Use. *ibid.* 19: 65-74 (Jan.) 1940.

7. Lancefield Rebecca C. The Antigenic Complex of Streptococcus Hemolyticus. I. The Demonstration of a Type-Specific Substance in Extracts of Streptococcus Hemolyticus. *J. Exper. Med.* 47: 91-103 (Jan.) 1928. A Micro Precipitin Technique for Classifying Hemolytic Streptococci and Improved Methods for Producing Antisera. *Proc. Soc. Exper. Biol. & Med.* 38: 473-478 (May) 1938. Swift H. F., Wilson A. T. and Lancefield Rebecca C. Typing Group A Hemolytic Streptococci by Micro Precipitin Reactions in Capillary Pipettes. *J. Exper. Med.* 78: 127-133 (Aug.) 1943.

8. Rammelkamp C. H. A Method for Determining the Concentration of Penicillin in Body Fluids and Exudates. *Proc. Soc. Exper. Biol. & Med.* 51: 95-97 (Oct.) 1942.

9. The Standard Strain of group A hemolytic streptococcus number 98 was kindly furnished us by Dr. Chester Keefer.

**Course**—On January 12, the day after admission, penicillin therapy was started, and during the next fourteen days he received a total of 3,350,000 units by the intravenous and intramuscular routes. For the first four days the temperature gradually increased daily, so that by the fourth day of penicillin treatment it had reached 103.3 F and the arthritis had progressed to involve practically every joint in the body. During the next six days the fever gradually dropped to 99.3 F and the arthritis receded, so that by the tenth day of penicillin therapy only slight pain in the right shoulder, elbow and fingers of both hands was present. The erythrocyte sedimentation rate, however, was 95 mm per hour. During the next four days, while the patient was still receiving penicillin, the fever and moderate arthritis recurred. Following the cessation of penicillin on January 26 he continued to improve, the temperature again gradually fell to normal, the arthritis receded slowly and the erythrocyte sedimentation rate declined to 45 mm per hour by February 11. During the first week of penicillin therapy he developed a short systolic murmur at the apex, which disappeared again as he improved otherwise. The PR interval increased from 0.13 second on admission to

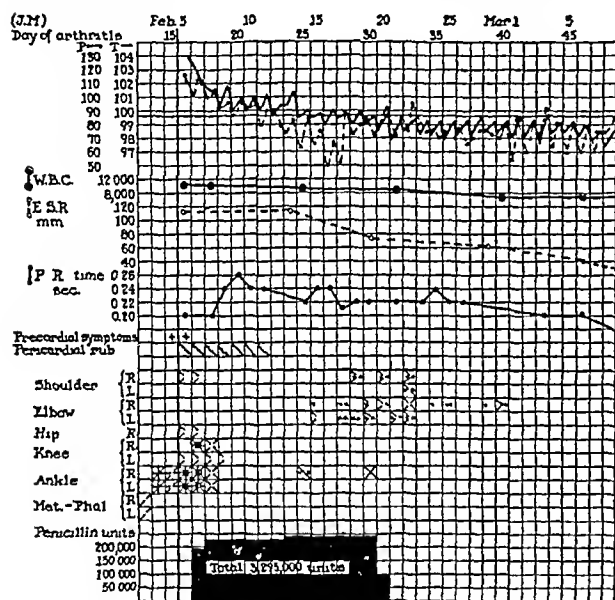


Chart 2—Course in case 3

0.17 second on January 24 and then again decreased to 0.13 second by February 11. At this time he was started on 9 Gm of acetylsalicylic acid daily. About the middle of February he developed an intercurrent group A hemolytic streptococcal infection, but other than a slight fever and leukocytosis at this time and a transient rise in his erythrocyte sedimentation rate one week later there was no evidence of an exacerbation in his rheumatic activity.

Although this patient had a definite remission of his signs and symptoms during the early part of the penicillin treatment, he suffered an exacerbation later while still receiving the drug, this suggested that his disease was running a polycyclic course. Moreover, he still had signs of active infection when salicylates were started fifteen days after penicillin was stopped, and following the discontinuance of salicylate three months later, the erythrocyte sedimentation rate again became elevated, indicating persistent rheumatic activity.

**CASE 3—History** (chart 2)—J. M., aged 31, was admitted on Feb 5, 1944 on the sixteenth day of an attack of rheumatic fever. A previous attack of polyarthritis, probably due to rheumatic fever, lasting three to four weeks had occurred in

August 1929. A mild sore throat on Jan 7, 1944 was followed in two weeks by pain and stiffness in both ankles. The day prior to entry, substernal pressure was noted.

On admission the temperature was 103.9 F, the pulse rate 116, and respiratory rate 22 per minute. The right shoulder, hip and left knee were painful and tender. Both ankles were painful, tender, swollen, red and hot. The heart was slightly enlarged by percussion, and at the base a rough coarse, leathery sound was heard throughout systole. The blood pressure was 120/80.

The laboratory examination on entry revealed red blood cells 4,150,000, hemoglobin 79 per cent, white blood cells 10,450, erythrocyte sedimentation rate 119 mm per hour, cultures of nasopharynx yielding many group A type 17 hemolytic streptococci, electrocardiogram essentially normal with a PR interval of 0.20 second and a rate of 120 per minute, x-ray examination of chest disclosing slight enlargement of the heart in its transverse diameter.

**Course**—Penicillin, started the day after admission, was given by continuous intravenous drip for the first week and by the interrupted intravenous method during the second week. He received a total of 3,295,000 units during the two weeks of treatment. During the first twenty-four hours after admission the arthritis progressed to involve the right knee and then gradually receded during the next few days, so that by the fifth day of penicillin treatment the patient was asymptomatic with the exception of epistaxes. The erythrocyte sedimentation rate, however, remained high and he developed first degree heart block which persisted until twelve days after the discontinuance of penicillin. On the ninth day of penicillin therapy mild arthritis recurred involving the knees, elbows and shoulders and persisted until nine days after this drug was stopped. By this time the patient was afebrile and the erythrocyte sedimentation rate had decreased to 65 mm per hour. His convalescence was uneventful thereafter.

Although it is difficult to evaluate the effect of penicillin in this case, it would appear that this patient had a rather mild attack of rheumatic fever with a single cycle of activity so often seen in persons of this age group.

**CASE 4—History**—H. P., aged 24, was admitted on January 14, 1944 with his first attack of rheumatic fever. On December 18 he developed a sore throat. Two days later pain was first noticed in the left hip and foot and subsequently in both feet and knees. During the next fortnight the joint pains spontaneously subsided, and he felt well for about five days. On January 9 he again developed pain in both feet and two days later his ankles became swollen. On the day before admission both knees became swollen and painful, and slight precordial discomfort was noticed.

On admission the temperature was 103.4 F, pulse rate 106 and respiratory rate 26 per minute. The patient appeared acutely ill. Both elbows were slightly painful. The knees, ankles and metatarsophalangeal joints of both feet were painful, tender, swollen, red and hot. The heart was at the upper limits of normal in size to percussion and there was a low pitched systolic murmur at the apex and a soft systolic blow along the left sternal border.

The blood pressure was 134/75.

The laboratory examination on admission revealed red blood cells 4,670,000, hemoglobin 73 per cent, white blood cells 12,150, erythrocyte sedimentation rate 80 mm per hour, cultures of the nasopharynx yielding group A type 30 hemolytic streptococci, electrocardiogram showing normal rhythm, rate 110 per minute, PR interval 0.20 second, T<sub>1</sub> upright, T<sub>2</sub> diphasic, T<sub>3</sub> negative and RT segment elevated, x-ray examination of the chest disclosing the heart normal in size and shape.

**Course**—On the day after admission penicillin therapy was started. During the first week the patient received 40,000 units intravenously at three hour intervals during the day and 25,000 units intramuscularly at four hour intervals during the night. Following the institution of penicillin treatment, the

patient's arthritis involved progressively the right hand, wrist, both elbows, shoulders and the sternoclavicular and acromioclavicular joints. On the sixth day after starting treatment the erythrocyte sedimentation rate had reached 112 mm per hour. His polyarthritis then rapidly cleared and the temperature fell to a normal level. During the second week the patient received 40,000 units of penicillin every three hours from 9 a. m. through 12 midnight. During this time the temperature did not exceed 100 F, the arthritis was much improved and the erythrocyte sedimentation rate decreased to 30 mm per hour. Nine days after discontinuance of the penicillin he was afebrile, his white blood cell count was within the limits of normal and the erythrocyte sedimentation rate had decreased to 15 mm per hour. He continued, however, to have some pain and tenderness in both elbows. Two days later pain recurred in both hips and the right knee and during the next forty-eight hours progressed to involve the spine and the left knee. He again became febrile, the white blood cells and the erythrocyte sedimentation rate increased. At this time 9 Gm of acetylsalicylic acid was given daily, which induced a prompt disappearance of fever and arthritis except for slight pain and tenderness in the elbows which persisted for several weeks, although the erythrocyte sedimentation rate and white blood cells rapidly fell to normal levels.

As indicated by the history and hospital course, this patient's disease was probably polycyclic in type. Penicillin therapy was apparently started during the second cycle of activity, and the remission which occurred during the latter part of the treatment probably represented the natural course for his disease. The recurrence in activity following the cessation of penicillin treatment indicates that this drug was not effective in curing the rheumatic fever.

**CASE 5—History**—W. W., aged 20 years, admitted on March 1, 1944, had postsaratinal arthritis when 14 years old and for many years had suffered attacks of paroxysmal tachycardia. About February 1 he developed nasopharyngitis. Three weeks later, and one week prior to his admission, pain in both feet, ankles and elbows occurred. On the day before admission the hips and shoulders became involved, swelling of the left knee appeared and substernal discomfort was noticed.

On admission the temperature was 101.4 F, pulse rate 96 and respiratory rate 28 per minute. The patient appeared moderately ill. The elbows, hips and knees were painful and there were small effusions in both knee joints. The left foot and ankle were tender, painful and hot. Examination of the chest revealed slight dullness, with a moderate number of moist rales below the angle of the right scapula. The heart was slightly enlarged to percussion and there was a soft systolic murmur along the left sternal border. The blood pressure was 105/60.

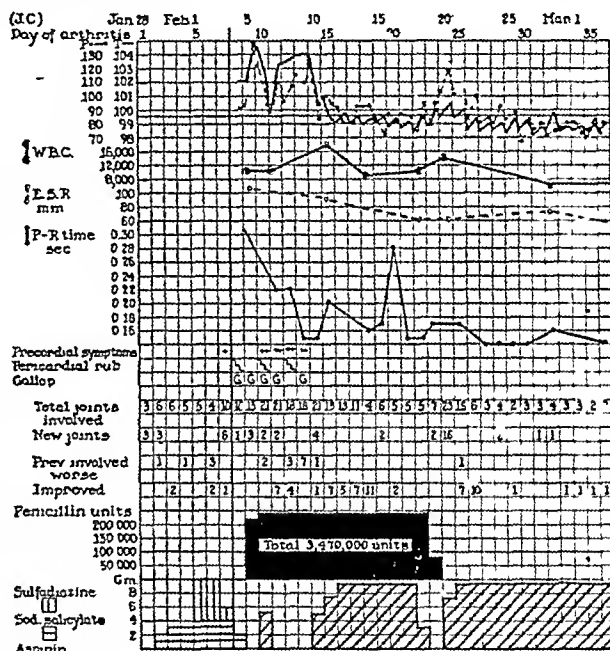
The laboratory examination on admission revealed red blood cells 3,870,000, hemoglobin 84 per cent, white blood cells 11,250, erythrocyte sedimentation rate 47 mm per hour. Cultures of the nasopharynx yielding group A type 19 hemolytic streptococci, electrocardiogram showing left bundle branch block with a PR interval of 0.12 second, x-ray examination of the chest disclosing peribronchiolar infiltration at the right base, and the heart slightly enlarged in its transverse diameter.

**Course**—On March 2, the day after admission penicillin therapy was started and during the next two weeks he was given 40,000 units intravenously at three hour intervals during the day and 25,000 units intramuscularly at four hour intervals at night. During the two weeks of treatment he received a total of 3,404,000 units of penicillin. On March 3 the polyarthritis had increased and the erythrocyte sedimentation rate was 52 mm per hour. It was therefore decided to give him enough salicylates to eliminate the fever and to render him asymptomatic and then withdraw this drug while he was receiving continuous penicillin therapy, hence he was given

15 Gm of acetylsalicylic acid every four hours for three days. Within eight hours after this treatment was started the temperature returned to normal and within twenty-four hours he was asymptomatic. When the salicylates were discontinued, however, no rheumatic manifestations reappeared and he made an uneventful convalescence. Except for minor changes in the form of the complexes his electrocardiograms remained essentially unchanged. It was felt that this electrocardiographic abnormality was not related to his rheumatic fever but that the patient probably suffered from the syndrome described by Wolff, Parkinson and White.<sup>10</sup>

This patient apparently suffered a mild attack of rheumatic fever with a single cycle of activity which was broken by the salicylate therapy, hence it is very difficult to appraise the value of the penicillin treatment.

**CASE 6—History** (chart 3)—J. C., aged 20 years, was admitted on Feb. 4, 1944 on the eighth day of a second attack of rheumatic fever. At the age of 9 he had an attack of polyarthritis. About four weeks and again one week prior



to his present illness he suffered upper respiratory infections with slight fever and malaise. During the week before admission he had migratory polyarthritis involving the feet, ankles, knees, hips, spine and shoulders. He was given 18 Gm of sodium salicylate and 8 Gm of sulfadiazine during the six days prior to hospital admission.

On admission the temperature was 102 F, pulse rate 92 and respiratory rate 24 per minute. The patient appeared acutely ill. The right elbow and shoulder were painful and there was slight stiffness of the left elbow. There was pain and tenderness over the right acromioclavicular joint and both hips. Both knees were red, tender, swollen and hot, and the right ankle and the metatarsophalangeal joints of both feet were painful and tender. The heart was slightly enlarged to the left and at the apex a third sound was heard early in diastole but no murmurs were present. Along the left sternal border there was a definite pericardial friction rub. The blood pressure was 120/70.

The laboratory examination on admission revealed red blood cells 3,790,000, hemoglobin 78 per cent, white blood cells 11,050

10 Wolff L, Parkinson J and White P D. Bundle Branch Block with Short PR Interval in Healthy Young People Prone to Paroxysmal Tachycardia. *Am Heart J* 5: 683-704 (Aug.) 1930.

erythrocyte sedimentation rate 111 mm per hour, cultures of nasopharynx yielding group A type 19 hemolytic streptococci, electrocardiogram showing first degree heart block with PR interval greater than 0.32 second, x-ray examination of the chest disclosing accentuated lung markings with a small amount of fluid in the left costophrenic angle, the heart being slightly enlarged in its transverse diameter

*Course*—On the day after admission, penicillin therapy was started with five intravenous injections of 40,000 units each every three hours during the day and two intramuscular injections of 25,000 units at four hour intervals at night, making a total of 250,000 units daily for the first week. During the second week he was given six injections of 40,000 units intravenously daily. Over the fourteen day period he received 3,470,000 units of penicillin. Within thirty-two hours after penicillin was started the patient's temperature had reached 104.7 F and the arthritis had progressively involved practically every joint. Therefore 4.8 Gm of acetylsalicylic acid was given over a period of nine hours, which induced a drop in the temperature to 99.6 F, with definite symptomatic relief. Within twenty-four hours after the salicylates had been discontinued,

was on continuous penicillin therapy all signs and symptoms of rheumatic activity promptly recurred. It therefore appeared that his disease was not altered by the penicillin.

*CASE 7—History* (chart 4)—S. P., aged 21, was admitted on Feb. 4, 1944, the thirteenth day of his first attack of rheumatic fever, which had been preceded by upper respiratory infections on Dec. 7, 1943 and Jan. 15, 1944. Although several episodes of epistaxis had occurred on December 26 and 27, pain in the arches of his feet first appeared on January 23, forty eight days after the first and eight days after the second upper respiratory infection. The pain increased progressively during the next eleven days and involved also the ankles and knees. The patient had received 13 Gm of sodium salicylate during the four days prior to hospitalization.

When admitted he appeared acutely ill, with a temperature of 103.2 F, pulse rate 100 and respiratory rate of 22 per minute. There were stiffness in the shoulders, elbows and wrists and slight pain and tenderness over the lower dorsal and upper lumbar spine. The right knee and ankle were painful, tender, swollen and hot. There was a small effusion in the right knee. The heart was slightly enlarged to the left and a soft prolonged, low pitched systolic murmur localized to the apex was present. The blood pressure was 120/75.

The laboratory examination on admission revealed red blood cells 3,930,000, white blood cells 10,950, erythrocyte sedimentation rate 87 mm per hour, cultures of nasopharynx yielding group A type 36 hemolytic streptococci, electrocardiogram being essentially normal with a PR interval of 0.20 second, x-ray examination of the chest disclosing the heart enlarged in the region of the left ventricle.

*Course*—On February 5, the day after admission, penicillin therapy was started with approximately 250,000 units daily by the continuous intravenous drip. Because of thrombophlebitis this form of treatment was discontinued after the first week, and during the second week the penicillin was given intravenously every three hours. He received a total of 3,278,750 units during the two week period. Forty eight hours after penicillin was started the temperature had reached 105 F and the polyarthritis had increased in severity. Because of the hyperpyrexia he was given 6.4 Gm of acetylsalicylic acid over a period of nine hours with prompt symptomatic relief and drop in temperature. Following the withdrawal of salicylates the fever recurred, and polyarthritis again increased in severity despite continuous penicillin therapy.

On the sixth hospital day the electrocardiogram showed first degree heart block with a PR interval of 0.22 second, and on the next day the T waves in leads 1 and 2 became inverted. On the tenth day of penicillin treatment the erythrocyte sedimentation rate had increased to 111 mm per hour, the temperature was 104 F and severe polyarthritis was present. On the following day the patient developed temporary nodal rhythm with intraventricular heart block. Because it seemed unwise to withhold salicylates longer he was started on 9 Gm per day with a prompt drop in the temperature and pronounced symptomatic relief. Salicylates were continued in this dosage for six weeks, when the erythrocyte sedimentation rate reached a normal level. Attempts were then made to reduce the dose of salicylates, but pain and tenderness recurred in both shoulders and it was necessary to return to the original dose to keep the patient comparatively symptom free for another two months. It thus seems probable that the penicillin failed to alter the course of this patient's disease.

*CASE 8—History* (chart 5)—N. L., aged 21, was admitted March 2, 1944 on the fourth day of an attack of rheumatic fever. Nasopharyngitis on February 12 was followed in sixteen days by severe pain in both shoulders and substernal pressure. Arthritis then progressively involved both elbows, hips, knees and ankles.

On admission the temperature was 104 F, pulse rate 120 and respiratory rate 28 per minute. Pain and tenderness were noted in the right sternoclavicular joint, both shoulders, elbows, knees, ankles and the right hip. The heart was enlarged to

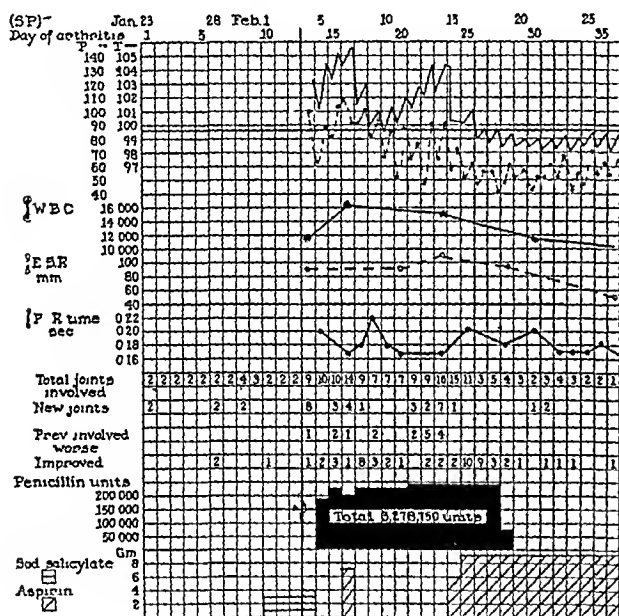


Chart 4—Course in case 7

however the temperature returned to 103.4 F and all joint manifestations recurred despite continued penicillin therapy. During the next two and one half days the high fever and severe polyarthritis persisted. On the sixth day of penicillin therapy 4.8 Gm of acetylsalicylic acid gave only slight relief, and on the next day the dose was increased to 9 Gm daily with a prompt drop in temperature and relief of symptoms. This dose daily for the next six days kept the temperature below 100 F and the arthritis in abeyance. A second withdrawal of salicylates on February 18, while the patient was still receiving penicillin, resulted in a recurrence of both fever and polyarthritis within twenty-four hours. By this time he had received a total of 3,470,000 units of penicillin without apparent benefit, hence this drug was discontinued, and the daily dose of 9 Gm of acetylsalicylic acid was resumed with another prompt drop in the temperature and relief of symptoms. This medication was then continued for approximately nine weeks about two weeks after all laboratory data had become normal. His subsequent convalescence was unremarkable.

It is clear that each time this patient received salicylates in sufficient dosage he obtained prompt symptomatic relief, but on withdrawal of salicylates while he



the left. At the apex a presystolic thrill was felt and a low pitched murmur was heard late in diastole. A systolic murmur, poorly transmitted to the axilla, was also present. The first sound at the apex was snapping in character, and at the base the pulmonic second sound was accentuated and greater than the aortic second sound. The blood pressure was 120/70.

The laboratory examination at entry revealed red blood cells 3,670,000, hemoglobin 74 per cent, white blood cells 13,650, erythrocyte sedimentation rate 118 mm per hour, cultures of the nasopharynx yielding no hemolytic streptococci, electrocardiogram showing normal rhythm, rate 115 per minute, PR interval 0.20 second, T<sub>1</sub> upright, T<sub>2</sub> diphasic, T<sub>3</sub> upright, x-ray examination of the chest disclosing the heart enlarged in its transverse diameter with a straight left border and prominent pulmonary conus, the lungs with hilar vascular shadows enlarged suggesting pulmonary congestion.

**Course**—Although the patient gave no previous history of rheumatic fever, the classic signs of mitral stenosis indicated earlier experience with the disease. Because of the severity of the attack and the early signs of cardiac failure, the patient was started on 9 Gm of acetylsalicylic acid daily on admission. Penicillin therapy was started on the day after admission with intravenous injections of 40,000 units every three hours during the day and intramuscular injections of 25,000 units every four hours at night. The patient received a total of 3,390,000 units of penicillin during the two weeks of treatment. On the first day of penicillin therapy pulmonary edema appeared hence the patient was digitalized rapidly, given a diet containing 2 Gm of salt daily with limited fluids, and placed in an oxygen chamber. The signs and symptoms of cardiac failure responded quickly to this regimen. Because of mild salicylism, aminopyrine was substituted for acetylsalicylic acid on the fourth hospital day and was well tolerated in daily doses of 4.5 Gm. Following the institution of salicylate therapy and then aminopyrine, the temperature fell to normal, the pulse rate slowed and the arthritis decreased definitely. During the second week of penicillin therapy, however, the arthritis increased in severity and several new joints became involved. This cycle of polyarthritis persisted during the week following cessation of penicillin, then decreased, but a third arthritic cycle occurred a few weeks later and a suggestive one a month later while the patient was receiving full doses of aminopyrine. The high erythrocyte sedimentation rate began to decrease in about three weeks and reached normal six weeks after discontinuance of penicillin treatment. The patient's condition began to improve at this time and the weight to increase, convalescence was well established, with only slight pain, tenderness, and stiffness remaining in a few joints. Signs of both mitral stenosis and insufficiency remained but whether they were more evident than before the present attack of rheumatic fever it is impossible to state.

While the necessity for both antirheumatic medication and digitalis in this patient may have obscured the effect of penicillin, the cycles of arthritis both during and after penicillin therapy indicated that this drug had little if any effect on the course of the patient's disease.

#### ADDITIONAL OBSERVATIONS

Samples of blood were taken of all patients at varying intervals after the injection of penicillin to determine the concentration of the drug in the patient's serum. These samples were obtained at various times during the periods of treatment, so that the one-half hour level may have been determined on one day, the one hour level on another day, and so on. The variation in the rate of excretion of penicillin from day to day in the same individual probably accounts for the fact that in case 7 in the table the one-half hour, one hour and two hour blood levels were the same, and in case 3 the two hour and three hour blood levels were similar. In addition the strains of group A hemolytic streptococci recovered on culture from the nasopharynx of 6 of the 8 patients

were tested for their susceptibility to penicillin *in vitro*. The results of these tests and a summary of the serum concentration of penicillin obtained on each patient are presented in the table. From these data it is apparent that all of the hemolytic streptococci recovered were susceptible to penicillin in concentrations much below the concentration maintained in the patient's blood serum during most of the period of treatment.

It may also be significant that the nasopharyngeal cultures of the 6 patients that were positive for group A hemolytic streptococci on admission became negative for these micro-organisms within a very short time after treatment with penicillin was started and remained negative after this drug was stopped. It is realized that this does not necessarily indicate that streptococci in deeper tissues such as the cervical lymph nodes were completely eliminated by the therapy.

Determinations of the antistreptolysin O and antifibrinolysin titers were made on the serum and plasma

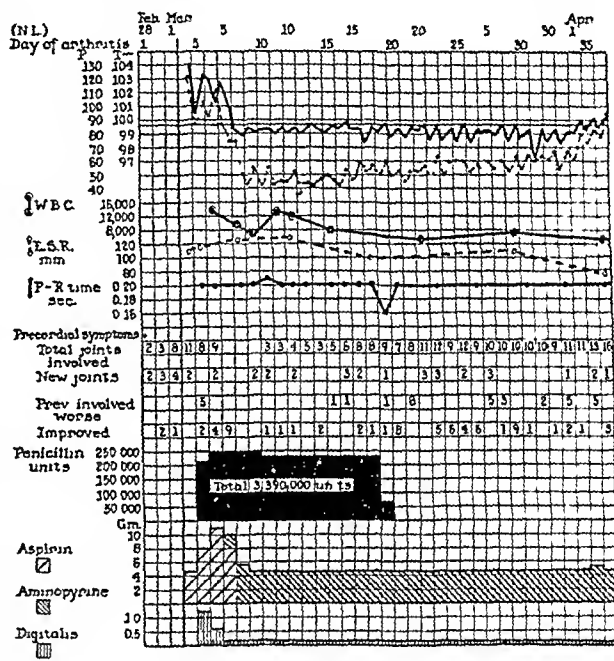


Chart 5—Course in case 9

respectively of all patients at weekly intervals during the course of study. The titration curves for both determinations followed courses similar to those that might have been expected among any 8 untreated rheumatic fever patients. The antistreptolysin O titer initially ranged between 100 and 1,200 units and in most instances increased moderately during the first one to two weeks of penicillin therapy and then remained stationary or began to fall slowly, but they usually persisted in an abnormal zone for several months. The antifibrinolysin titers of all the patients were 3 to 4 plus at the time of admission and usually remained elevated for several months.

In none of the 8 patients treated were any definite toxic manifestations to penicillin observed. Both patients 3 and 7 who received the drug by the constant intravenous drip method developed mild thrombophlebitis. We do not believe, however, that this was necessarily due to the penicillin, it may have been due in part to the glucose solution, as previously pointed



out by Herrell<sup>11</sup> Thrombophlebitis was not observed in any of the patients receiving more concentrated solutions of penicillin in isotonic solution of sodium chloride by vein at three hour intervals

COMMENT

Eight young men with rheumatic fever have been treated for a two week period during the acute phase of their disease with penicillin The total dose of penicillin varied from 1,975,000 to 3,470,000 Oxford units, and 7 of the 8 patients received over 3,000,000 units The routes of administration were varied Six of the 8 patients received the drug by the intramuscular and intravenous routes intermittently The remaining 2 were given penicillin by constant drip for one week and then by the intermittent intravenous method for the second week

All the patients were acutely ill with elevated temperatures and acute polyarthrits and, in addition, 2 of them had pericarditis and 1 developed pulmonary edema the day after admission There was no evidence that

maintain in the patient's blood a drug concentration greater than that required to inhibit the growth of the patient's own strain of streptococcus

On admission to the hospital group A hemolytic streptococci were isolated on culture from the nasopharynx of 6 of the 8 patients It was shown that 0.015 Oxford unit completely inhibited the growth of all 6 of these strains when this amount of penicillin was added to a culture containing from 1,000 to 5,000 bacterial cells It was also shown that the concentrations of penicillin maintained in the patients' blood during most of the period of treatment were many times that required to inhibit the growth of the streptococci isolated from these patients Another indication that the dose of penicillin was adequate is that the group A hemolytic streptococci were eliminated permanently from the nasopharyngeal mucous membrane of these patients within a short time after beginning treatment

Whether or not penicillin would be effective in preventing rheumatic fever if given during phase I or II

The Amount of Penicillin Required to Inhibit the Growth of Streptococci Isolated from Patients and the Concentration of Penicillin in Their Serum

| Ca c  | Strains Isolated |  | Serum Concentrations of Penicillin *<br>Oxford Units per Cubic Centimeter |                      |       |                  |        |        | During<br>Intravenous<br>Drip ‡ |
|-------|------------------|--|---|----------------------|-------|------------------|--------|--------|---------------------------------|
|       | Group<br>Type    | Oxford<br>Units<br>Inhibiting<br>Growth* | Route of<br>Injection †   | Time After Injection |       |                  |        |        |                                 |
|       |                  |  |   | ½ Hr                 | 1 Hr  | 2 Hr             | 3 Hr   | 4 Hr   |                                 |
| 1 D H |                  |  | Intravenous   | 0.100 (0.04)         | 0.106 | 0.078            |        |        |                                 |
| 2 M K | A 24             | 0.015                                    | Intramuscular   | 0.064                |       |                  |        |        |                                 |
| 3 J M | A 17             | 0.015                                    | Intravenous   | 0.012                |       | 0.078<br>(1½ hr) | <0.031 |        |                                 |
| 4 H P | A 30             | 0.015                                    | Intravenous   | 0.074                | 0.106 | 0.031            | 0.031  |        | 0.106                           |
| 5 W W | A 19             | 0.015                                    | Intravenous   | 0.012                | 0.106 | 0.071            | <0.031 |        |                                 |
| 6 J C | A 19             | 0.015                                    | Intramuscular   |                      | 0.156 | 0.078            | <0.031 | <0.071 |                                 |
| 7 S P | A 16             | 0.015                                    | Intravenous   | 0.074                | 0.024 | 0.074            | <0.031 |        |                                 |
| 8 N L |                  |  | Intravenous   | 0.012                | 0.156 | 0.078            | <0.071 |        |                                 |
|       |                  |  | Intramuscular   |                      | 0.156 | 0.078            | 0.031  | <0.071 |                                 |

\* The inoculum for each test contained between 1,000 and 5,000 bacterial cells  
† Intravenous injections contained 40,000 Oxford units except in case 1 in which the dose was 25,000 Intramuscular injections contained 25,000 units  
‡ The constant intravenous drip solution contained 75 units per cubic centimeter and was regulated so that each patient received approximately 3,000 cubic centimeters in a twenty four hour period

penicillin altered the course of the disease in 7 of the 8 patients It was difficult to evaluate the effect of this drug in the remaining subject (patient 5) On the second day of penicillin treatment he was started on 9 Gm of salicylates daily with the object of rendering him afebrile and asymptomatic and then of withdrawing this drug while he was receiving continuous penicillin therapy This patient made a prompt symptomatic response to salicylates but on withdrawal of this drug the signs and symptoms of rheumatic activity failed to recur, his erythrocyte sedimentation rate dropped to normal and he made an uneventful recovery It is now generally conceded that infection with group A hemolytic streptococci usually precedes and probably initiates the attack of rheumatic fever It moreover appears possible that the hemolytic streptococcus is the only infectious agent involved in the etiology of the disease and that persistence of these micro-organisms in the patient's tissues may be responsible for the continued signs and symptoms of rheumatic activity It was therefore desirable to know whether the dose of penicillin used was adequate to

cannot be answered as yet, but we do know that the sulfonamides are ineffective in this respect even when given at the onset of phase I Until the foregoing question can be answered it seems that the chief value of the antibacterial drugs today with respect to rheumatic fever is in the prevention of the streptococcal infection which appears to induce the disease It would thus seem that, once the preliminary streptococcal infection has started the mechanism leading to the onset of the rheumatic process in susceptible persons, the antibacterial agents now available do not materially alter the evolution of that mechanism It must be admitted that we have no conclusive evidence that deep seated foci of streptococci may not exist in these patients in spite of their receiving large enough doses of penicillin to remove them from the accessible mucous membranes, for persistence of these micro-organisms could theoretically be responsible for the continued rheumatic activity

CONCLUSION

Penicillin in doses ranging from 1,975,000 to 3,470,000 Oxford units given over a two week period to 8 young adults with acute rheumatic fever apparently failed to alter the course of their disease

11 Herrell W E The Clinical Use of Penicillin an Antibacterial Agent of Biologic Origin J A M A 124 622-627 (March 4) 1944

THE TREATMENT OF ACUTE RHEUMATIC  
FEVER WITH PENICILLIN

MAJOR FRANK P FOSTER

MAJOR GEORGE C McEACHERN

CAPTAIN JOHN H MILLER

LIEUTENANT COLONEL FRED E BALL

LIEUTENANT COLONEL CHARLES S HIGLEY

AND

MAJOR HARRY A WARREN

MEDICAL CORPS ARMY OF THE UNITED STATES

The probable relationship of Lancefield group A hemolytic streptococcal disease to rheumatic fever has led to the therapeutic trial of various antistreptococcal substances in this disease. Swift<sup>1</sup> and Jones<sup>2</sup> have described the effects of sulfanilamide in acute rheumatic fever. Swift<sup>3</sup> and his co-workers<sup>4</sup> have also reported the results of streptococcal antisera in this disease. Both of these entirely unrelated substances were found to be of no therapeutic value, and the evidence is suggestive that at times they may have been harmful. In view of these observations, when penicillin became available there was little cause for optimism that it would be beneficial in this disease.

However, because of the great need for a more satisfactory therapeutic agent for rheumatic fever and the knowledge that the value of penicillin in this disease would eventually need to be determined, it was felt that an organized study by producing an answer quickly and economically would, irrespective of the outcome, ultimately prove worth while.

## ORGANIZATION OF THE STUDY

Three army air force installations having high incidence rates for acute rheumatic fever and representing three geographic areas were selected. At each of the three posts the same plan of study was followed. Patients selected for penicillin therapy were those who had characteristic joint disease and who presented sufficient additional evidence of rheumatic fever to make them entirely acceptable from a diagnostic standpoint. Patients were not included who had previously received salicylates or sulfonamides. Some were treated as soon as the diagnosis was made, and the remainder after a period of observation of two or three days. Routine blood studies and urinalyses were done. Erythrocyte sedimentation rates were obtained every other day and electrocardiograms every second or third day. A careful record was kept of changes in objective and subjective evidences of the disease. Throat cultures were made at frequent intervals in the majority of the cases.

From the Army Air Forces Rheumatic Fever Control Program AAF Regional Station Hospitals at Buckley Field, Colorado (Majors Foster and McEachern), Kearns, Utah (Captain Miller and Lieutenant Colonel Ball) and Truax Field, Wisconsin (Lieutenant Colonel Higley and Major Warren).

1 Swift H F, Moen J A, and Hirst G K. Action of Sulfanilamide in Rheumatic Fever. *J A M A* 110:426-434 (Feb 2) 1938.

2 Massell B F and Jones T D. Effect of Sulfanilamide on Rheumatic Fever and Chorea. *New England J Med* 218:876-878 (May 26) 1938.

3 Swift H F. Conferences on Therapy. Treatment of Rheumatic Fever. *New York State J Med* 42:895-903 (May 1) 1942.

4 Hitchcock C H, McEwen C, and Swift H F. *Am J Med Sci* 180:497-514 (Oct.) 1930.

## PENICILLIN DOSAGE USED

Penicillin was administered intramuscularly in doses of 25,000 units at three hour intervals for daily dosage of 200,000 units. In the majority of instances this dosage was continued for five days or until a total of 1 million units had been administered. The dosage was thus twice that ordinarily acceptable for the usual forms of beta hemolytic streptococcal infections.

## INTERPRETATION OF RESULTS

Thirty-eight cases were studied. In 3 cases because of the progression of the disease the welfare of the patient made it necessary to stop penicillin and substitute salicylates before the completion of the five day period. The clinical impressions of the three groups of observers regarding the results of penicillin therapy are indicated in the accompanying table. A review of the recorded data reveals no consistent pattern which could be attributed to penicillin therapy. In the group of patients in whom the severity of the disease increased during penicillin therapy it was the opinion of the majority of investigators that penicillin was a contributory factor in this change. The possibility that this represents the natural course of the untreated dis-

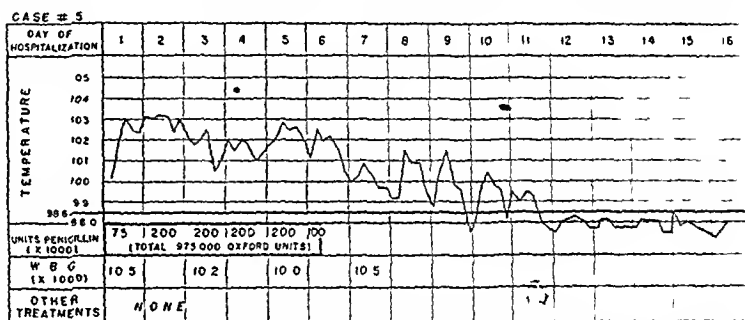


Chart 1—Acute rheumatic fever penicillin therapy given during a period of gradual improvement of the disease. Cessation of the drug produced no apparent change in the clinical course.

ease in these individuals cannot be excluded. The single case in which improvement appeared following penicillin treatment may similarly represent a spontaneous recovery not infrequently observed in the monocyclic form of the disease.

## Clinical Evaluation of the Results of Penicillin Therapy in Acute Rheumatic Fever

| AAF Hospital | No Change | Increased Severity | Improved |
|--------------|-----------|--------------------|----------|
| A            | 5         | 5                  | 0        |
| B            | 3         | 4                  | 1        |
| O            | 11        | 9                  | 0        |
|              | 19        | 18                 | 1        |

There were no changes in the electrocardiograms which could not be explained by the course of the disease. In 7 instances the erythrocyte sedimentation rate showed a temporary depression during the period of penicillin therapy. This has been observed also in other patients receiving conventional treatment. Two representative cases are illustrated in the accompanying graphs.

## BACTERIOLOGIC STUDIES

In 21 cases throat cultures were taken on admission and one or more times during penicillin therapy. The initial culture in 19 was found to be positive for group A

hemolytic streptococci. In all instances the throat cultures became negative for this micro-organism during penicillin therapy. Seven patients were subsequently followed by serial throat cultures. In 1, the throat culture again became positive before penicillin therapy was terminated, in 1 case two days after termination and in the remaining 5 four weeks after termination. The hemolytic streptococci recovered at this time in the latter group of 5 patients were found to belong to different types than were found at the initial examination.

**COMPLICATIONS**

Urticaria appeared in 4 cases, lasting an average of three and three fourths days and appearing an average of fourteen days after penicillin therapy was started. Three of these episodes of urticaria were followed by increased joint pains and elevation of the pulse rate and temperature.

**INITIAL ONSET OF ACUTE RHEUMATIC FEVER DURING PENICILLIN THERAPY**

In addition to the cases described in which the therapeutic effect of penicillin in rheumatic fever was studied, 2 patients were observed who developed characteristic manifestations of acute rheumatic fever during the course of penicillin therapy for severe group A

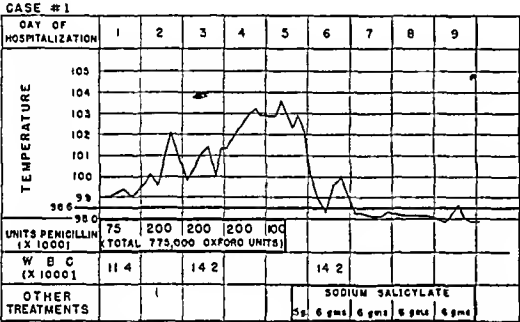


Chart 2—Acute rheumatic fever progression of clinical disease during period of penicillin therapy with prompt remission following a substitution of sodium salicylate.

hemolytic streptococcal infections. In these cases the joint manifestations developed two and four days respectively after the initiation of penicillin therapy and thus contrast to the allergic joint manifestations described. It therefore appears evident that penicillin exerts no beneficial influence in rheumatic fever when given after the establishment of the hemolytic streptococcal infection that apparently induces that disease.

- CONCLUSIONS**
1. A study of the value of penicillin therapy in 38 cases of acute rheumatic fever disclosed no evidence of benefit.
  2. In some cases it appeared clinically that the course of the disease was aggravated.

**Special Diabetic Food**—Special foods for the diabetic patient are seldom necessary. On the contrary, the effort today is to permit the patient as far as possible to eat the ordinary foods which come to the table, which, with the more liberal carbohydrate diets now in use and with the aid of insulin, is not difficult. There are the further objections that, while specially prepared diabetic foods are sometimes attractive, they are often unpalatable and they vary greatly in percentage composition. The claims made for them are sometimes misleading and as a rule they are expensive.—McLester, James S. Nutrition and Diet in Health and Disease. Philadelphia, W. B. Saunders Company, 1943.

**PENTOTHAL SODIUM INTRAVENOUS ANESTHESIA IN PEACE AND WAR**

THE FIRST TEN YEARS OF PENTOTHAL SODIUM INTRAVENOUS ANESTHESIA. JUNE 1934 TO JUNE 1944

R. CHARLES ADAMS, M.D.  
ROCHESTER, MINN.

It usually takes several years to establish a new method in any field of medicine. This has been especially true of the introduction of new anesthetic agents and methods and of intravenous anesthesia in particular. The attitudes of different members of the medical profession to the introduction of new methods of anesthesia have often been diametrically opposite; the skepticism of some has been overbalanced by the unbounded enthusiasm of others. These widely divergent attitudes have not always worked to the best interest of the new method or agent. The history of the evolution of intravenous anesthetic agents amply bears this out.<sup>1</sup>

In the case of intravenous anesthesia the skepticism on the part of many surgeons and anesthetists was not entirely without justification. For fifty years anesthetic agents had been introduced for intravenous administration, and only a few of them had produced uniformly safe and desirable anesthesia. Therefore, when pentothal sodium was introduced as another intravenous anesthetic agent it is understandable that many surgeons and anesthetists looked askance at the possibilities of its being of unusual clinical significance.

Pentothal sodium was introduced to clinical practice by Lundy in June 1934, so that this month marks the end of the first decade of its clinical use. While some of the ideas with regard to the use of the agent and method have changed, the original conception of its usefulness has been justified many times over, a fact which has been most gratifying to those of us who have had the opportunity to take a part in its development. Intravenous pentothal sodium anesthesia now stands on its own merits as an established method and has passed well beyond the experimental stages of its development.

However, each one of these ten years has brought about changes in our attitude toward the use of the method, its scope, administration and so forth. There are still many things that one should like to know about the pharmacologic action of pentothal sodium. The most important of these are its site of detoxication and the factors which influence its rapidity of detoxication in various persons. We are not at all sure that it is detoxicated by the liver, like its oxygen analogue pentobarbital sodium.

We are now convinced that pentothal sodium does not appreciably interfere with the function of the normal or damaged liver or kidneys and that it does not untowardly affect the metabolic processes of the body in general, provided it is administered with due regard to the patient's physical state.

In spite of the present day pharmacologic and clinical conceptions that have been generally accepted for pento-

From the Section on Anesthesiology, Mayo Clinic.  
Read before the Section on Anesthesiology at the Ninety-Fourth Annual Session of the American Medical Association, Chicago, June 15, 1944.  
1. Adams, R. C. Intravenous Anesthesia: Evolution of the Method, Application in Clinical and Military Practice, and Consideration of the Use of the Barbiturates and Analeptic. New York: Paul B. Hoeber, Inc., 1944.

that sodium intravenous anesthesia, the opinions of those who have employed the method extensively are still widely divergent, particularly in relation to the types of surgical cases for which it is suitable. Some feel that it is applicable for almost any type of surgical operation. Others are of the opinion that certain limitations must be recognized unless it is used as an adjunct to some other method of anesthesia—particularly for major surgical cases.

Despite the diversity of opinion on the subject it is possible to make a few general statements regarding the changes that have been made during the past ten years of its use in civilian surgical practice.

When the use of pentothal sodium was introduced it was felt that its field should be limited to short and minor operations, requiring little or no muscular relaxation, the duration of which would be approximately fifteen to twenty minutes. Used in this manner as the sole anesthetic agent its field of usefulness was comparatively narrow. Maximal doses were set between 0.5 and 1 Gm.

As physicians became more familiar with the action of pentothal sodium on patients with varying physical states and for different types of operations many features of its application were clarified. It was found that the solution of pentothal sodium might be used with safety after it had been made up for periods as long as forty-eight hours. My associates and I have reduced the concentration of the solution from the original 10 per cent to 5 per cent and then to 2.5 per cent. This, we feel, has increased the margin of safety of the method and has reduced the incidence of intravenous or extravascular irritation from the solution to practically nil. Furthermore, it became apparent that comparatively long operations which did not necessitate much muscular relaxation could be performed safely and that many patients would tolerate total doses exceeding 1 Gm if administered over longer periods.

At the same time it was recognized that debilitated and toxic patients had a lowered tolerance to pentothal sodium and took comparatively small doses to produce surgical anesthesia and that the administration to such patients must be carried out slowly and cautiously. The postoperative sleeping time was found to be more or less in direct proportion to the total amount of the drug administered, the amount of preliminary medicaments used and the capacity of the patient to detoxicate the drug. Additional observations revealed the fact that it was not a satisfactory method of anesthesia for most abdominal operations or for operations in regions where the reflexes were particularly hyperactive such as those of the nose, throat, larynx and the anal region. Some anesthetists are of the opinion that pentothal sodium anesthesia is satisfactory for such operations and provides sufficient relaxation. We continue to feel that its use for major abdominal operations, unsupplemented, does not carry the margin of safety that may be attained by the use of some methods of inhalation or spinal anesthesia. In other words, the advantages that one hopes to derive are often outweighed by the disadvantages if the operation is long and complicated and requires profound relaxation.

As a result of these findings the value of intravenous anesthesia in combination with other methods began to become apparent. The principle of such combinations was to take advantage of the desirable features

of pentothal sodium anesthesia without depressing respiration unduly and producing a prolonged post-operative sleep.

One of the important advances was the administration of oxygen during intravenous anesthesia. This served to decrease respiratory depression and to prevent anoxemia and seemed to favor better muscular relaxation and anesthesia using smaller doses of the drug than otherwise would be necessary. The oxygen may be administered by the ordinary face mask, B. L. B. mask, nasal catheter, nasopharyngeal tube or intratracheal tube.

The next step forward was the administration of 50 per cent nitrous oxide with the oxygen or if necessary as high as 70 per cent nitrous oxide. This serves to reduce further the amount of pentothal sodium required and increases the degree of anesthesia and relaxation. This combination of intravenous anesthesia with inhalation anesthesia has broadened the field of intravenous anesthesia and has increased its safety. The administration of oxygen or of nitrous oxide and oxygen is now routine at the Mayo Clinic during pentothal sodium anesthesia.

Combinations of other methods with intravenous anesthesia have been increasing during the last two or three years. This has been chiefly evidenced in its use with local or regional anesthesia. Among the purposes for which intravenous anesthesia may be combined with local or regional anesthesia are the following: (1) to render local infiltration and block anesthesia painless, such as during a block for bunionectomy; (2) during the course of an operation under local anesthesia if the patient is nervous; (3) to supplement local anesthesia that is wearing off or that is not quite adequate; (4) combined with block of the abdominal wall or intercostal block for abdominal operations in certain cases. These combinations result in adequate abdominal relaxation without one's having to employ large and depressing doses of pentothal sodium.

Similarly, intravenous anesthesia has been useful with spinal anesthesia for nervous patients who prefer to be asleep. Comparatively small doses will control nausea and prevent straining during the course of spinal anesthesia or to supplement spinal anesthesia that is wearing off.

Other combinations may be mentioned such as the use of intravenous anesthesia as an induction to an inhalation or an ether anesthetic and its combination with topical anesthesia for certain operations about the throat, larynx and upper part of the respiratory tract. For certain operations about the head and neck its combination with nitrous oxide and oxygen administered intratracheally has been particularly useful. With an intratracheal tube inserted, a free airway is established and since none of the agents in this combination are flammable or explosive, a cautery may be used freely and without hazard.

As a result of all these things, the frequency of intravenous anesthesia has been gradually increasing in civilian surgical practice over these first ten years of its use. Owing to the combinations mentioned heretofore pentothal sodium may now be used safely for many operations in which formerly we would have considered it contraindicated.

We continue to recognize certain contraindications. We do not consider intravenous anesthesia to be as

safe for young children as it is for adults. It should not be used for patients who have degenerative diseases of the myocardium, particularly if dyspnea is present. It is not as safe for operations in which the integrity of the airway cannot be assured as for other operations. One should always remember that intravenous anesthesia is another form of general anesthesia and that many of the complications that are associated with the latter can occur under intravenous anesthesia. We still feel that the method is safest when employed in institutional practice, although its use in the office or home is permissible provided the anesthetist has available equipment for establishing the airway and administering oxygen.

Having observed the progress that intravenous anesthesia has made in civilian practice over this ten year period, we have been extremely interested in what its value would be in army and navy medical practice in time of war. At the beginning of World War II we could only assume that it would play an important role for anesthesia in the armed forces. The simplicity of the equipment, the ease of transportation and its fire proof qualities were obviously in its favor, but we could not be sure how adequate it would be for robust soldiers and sailors or for patients in shock.

Doubts as to the safety of intravenous anesthesia for patients in shock were engendered in the minds of many at the very beginning of the war, when reports began to leak through from Pearl Harbor that its use had proved dangerous and even fatal in a number of such cases. At the same time, experience in civilian practice had convinced us that it could be used safely for many types of operations in such cases provided certain precautions were observed. Subsequent experience on the various battle fronts has corroborated the truth of this statement the details of which may be summarized as follows:

1. A patient in shock, with or without loss of blood, is much more intolerant to pentothal sodium and requires much smaller doses to produce anesthesia than does the same man without shock. As a result, the effective dose of the drug is materially reduced—sometimes to as little as a fourth or a sixth of the usual dose. If this decreased tolerance as a result of shock is taken into consideration throughout the administration, satisfactory anesthesia may be obtained without producing severe respiratory depression or otherwise endangering the life of the patient.

2. Shock should be controlled, at least partially, before the anesthesia is begun. This maxim applies equally to other methods of anesthesia.

3. Previous administration of morphine should be known as to time of administration and size of dose, in order that a cumulative effect of two depressant drugs may not be superimposed.

4. Airways and oxygen equipment are as essential adjuncts to intravenous anesthesia as they are to inhalation anesthesia. Whenever possible, they should be available when the method is used.

The use of intravenous anesthesia for military surgery not only varies from its present use in civilian practice but also varies in the different types of surgical units within the services. In army or navy base or general hospitals its use parallels that in a civilian hospital. When it must be used in setups close to the combat area such as dressing stations, casualty clearing stations and

on the beaches, some of the standard criteria for, and contraindications to, its use must necessarily be subordinated to the urgency of the need for prompt treatment. Perhaps equipment is not readily available or the wounded man may have food in his stomach. In other words, through necessity, certain chances may have to be taken when the method is used under such circumstances.

However, the important consideration here is that the anesthetist has been sufficiently trained in the use of the method and effects of the drug so that he may judge how far he may safely go. The army and navy training programs in various departments of anesthesia throughout the country have been an important factor toward improving anesthesia in the armed forces. We have had letters from all over the world from physicians whom we have trained in our institution and from these reports I should like to draw some conclusions regarding the present status of intravenous anesthesia in military surgery at home and abroad.<sup>2</sup>

Before the United States entered the war we had obtained some information regarding the use of intravenous anesthesia in the surgical services of the British army and navy and for victims of bombing during the battle of Britain. From these reports it was learned that the method had been useful for preliminary debridement of bomb-burn victims and persons who had sustained minor war injuries. When shock was minimal intravenous anesthesia did not appear to aggravate the shock further and some went so far as to say that its use appeared to protect somewhat against the increase of this state. Early reports from England bore out experimental work showing that pentothal sodium is not contraindicated when patients are undergoing treatment with the sulfonamide compounds. This is contrary to the former supposition.

Reports of the use of pentothal sodium from anesthetists in the armed forces throughout the world vary somewhat according to the type of hospital in which it is used. Most of the reports, however, tell the same general story that pentothal sodium is of outstanding value. Statements such as "It's been a godsend," "We couldn't do without it" and "If I had to choose a single anesthetic agent, it would be pentothal sodium" are read from the letters of medical officers abroad every day. One officer who had spent eighteen months in the New Hebrides stated that "pentothal sodium has been a life-saver, used as the sole anesthetic in some cases or in combination with other anesthetics." Most of these reports come from physicians who are trained in anesthesia and who recognize its disadvantages and dangers as well as its advantages. These men recognize the fact that there are many types of injuries and operations in which the method may be hazardous and do not use it under such circumstances. While some comparatively recent reports have come through to the effect that the mortality rate under pentothal sodium anesthesia is higher than it should be, the men who are administering it on the battlefronts say that in most instances the fault lies in improper methods of administration and dosage and improper selection of cases.

I should like to sum up some of this information from the personal experiences of anesthetists in the

<sup>2</sup> Information quoted from the communications of army and navy medical officers is understood to represent the personal opinion of these officers and does not necessarily reflect the attitude of the army and navy medical services in general.

armed forces at home and abroad. A 2.5 per cent solution is generally employed, but where syringes are scarce 5 per cent solutions or 3.3 per cent solutions are sometimes used. When made up in quantity and kept from exposure to light and air, solutions up to seven and even to ten days old have been employed.

The percentage of cases in which pentothal sodium is used as the sole anesthetic agent or in combination varies. The average appears to be between 25 and 50 per cent. One officer in charge of anesthesia in an outfit immediately behind the front lines stated that, of 500 patients, 95 per cent received pentothal sodium anesthesia. Another, under similar conditions, said that in 78 per cent of operations, excepting those that were intra-abdominal, intravenous anesthesia was used. The distribution of 1,730 anesthetics administered in a base hospital in England over a six months period is shown in the accompanying table.

While the dangers of administering pentothal sodium to a shocked patient who has received a large dose of morphine must be kept in mind, intravenous anesthesia produces better results in robust soldiers or sailors if full doses of barbiturates, morphine and atropine are administered as preliminary medicaments, provided no shock exists. Satisfactory results have been reported by one officer for certain intra-abdominal operations when other methods were not available. In

grafting, in most operations on the skin in operations on the eyes and for most operations that do not involve the cranial, thoracic or abdominal cavity or the upper part of the respiratory passages.

Army and navy anesthetists seem to be fully aware of the advantages to be gained by intravenous anesthesia in combination with other methods. As in civilian practice reports of its use with oxygen with 50 per cent oxygen and 50 per cent nitrous oxide and with local, block and spinal anesthesia are becoming routine. In those cases in which it is used for intra-abdominal operations it is supplemented by intracostal or abdominal wall block in most instances. It appears to be becoming more frequently used as an induction to general anesthesia, since it decreases the stage of excitation in some of these patients and also lessens the formation of mucus and secretion.

The fireproof qualities of pentothal sodium and its noninflammable supplementary agents are reported to be of decided advantage in the forward areas on battle-ships, during bombings or when operations must be performed with emergency lighting equipment which might ignite a flammable anesthetic agent.

While administration of pentothal sodium is by trained medical personnel or under their supervision it has often been found necessary to utilize the services of nurses or corpsmen, one medical officer supervising the administration of several intravenous anesthetics. Medical officers inform us that many of these corpsmen and nurses have been doing an excellent job under the proper supervision, and have fulfilled a very useful purpose. The principles of safe administration of pentothal sodium are quickly learned by intelligent nonmedical personnel. The instruction in venipuncture in this connection, has been of benefit to those who help the medical staff with the administration of plasma and intravenous fluids.

*Distribution of Type of Anesthesia*

| Type of Anesthesia | Percentage |
|--------------------|------------|
| Intravenous        | 41.6       |
| Spinal             | 31.4       |
| Regional           | 16.9       |
| Inhalation         | 5.3        |
| Combined           | 4.8        |

these cases thorough premedication and slow induction with pentothal sodium were used.

Total doses vary widely, but a possible average may be estimated to be between 1,000 and 2,000 mg. In 1 case 5.9 Gm. was used over a period of eight hours. This demonstrates a fact often repeated, that the total dose of pentothal sodium and its administration over several hours need not be a reason to discontinue its use if the patient's condition remains satisfactory throughout. Some very prolonged and extensive operative procedures are possible, provided a good airway can be maintained and if profound muscular relaxation is not essential. This is evidenced by the following report of a case of multiple fractures resulting from an airplane crash.

While the patient was under pentothal sodium anesthesia the following procedures were performed: open reduction of a compound fracture of the right humerus, suture of the ulnar nerve in the region of this fracture, open reduction of a compound fracture of the right olecranon and application of a cast, reduction of a fracture of the left radius and ulna with cast, reduction of fracture of right tibia and cast. These were done sixteen hours after the injury, shock was treated prior to the operation and 1,000 cc. of blood was administered during the operation.

The types of operations in which intravenous anesthesia has found most favor are too numerous to set down in detail. Most reports state that it is used in almost 100 per cent of orthopedic operations. It is used extensively for the debridement of burns, for skin

#### SUMMARY AND CONCLUSIONS

Pentothal sodium intravenous anesthesia has traversed the first ten years since its introduction. During each of these ten years its use has increased generally throughout the country. Knowing that it is an agent of unusual anesthetic value, many of us have purposely overemphasized certain precautionary measures relative to its method of administration, dosage and selection of cases for its use. This attitude, we believe is justified in teaching the use of a new anesthetic agent, the administration of which is so simple, the effects of which are so rapid and the results so satisfactory in most cases. The trouble has been that in the past many of the potential dangers incident to its use for certain patients and for certain operations have been overlooked or have been outweighed by its desirable effects. It is under these circumstances that untoward effects have occurred which at times have resulted in justifiable criticism of its safety. Pentothal sodium intravenous anesthesia carries as wide a margin of safety as any established method of anesthesia if it is correctly administered and correctly applied. Those who have had a wide experience with the method have naturally found it a suitable method in more complicated surgical interventions than are generally considered to be within its scope. The most important advance has been the recognition of its potentialities when combined with other methods of anesthesia. These



combinations have increased both the scope and the safety of the method

The value of the method in military surgery up to the present phase of World War II is more than gratifying. In the final analysis, the application of the method in military surgery does not differ materially from its use in civilian practice. The same principles apply to the two with the exception that the anesthetist must take into consideration those additional factors inherent in war surgery—shock, loss of blood and often the lack of skilled help and equipment. The anesthetist must weigh these additional factors if he would apply the method to the best advantage. The use of intravenous anesthesia up to the present stage of World War II has even yet been too limited to permit one to draw definite conclusions. Its use in military surgery should provide much additional information for those who will use it in future years.

There is still much to learn about intravenous anesthesia and no doubt our present attitudes will continue to be modified from time to time. Perhaps new and structurally different agents will be evolved which will completely alter our present opinions of the method. Until such changes do occur, one has in pentothal sodium an intravenous anesthetic agent of undisputed usefulness, which has probably resulted in the most significant advance in anesthesiology throughout the last decade.

#### ABSTRACT OF DISCUSSION

DR ALICE McNEAL, Chicago. In the earlier work in Germany anesthetists determined the dose by the patient's weight. Dr Lundy has changed it from a haphazard method to something that is as controllable as inhalation anesthesia. We are grateful to Dr Adams for bringing up the subject of untoward effects. I have seen statements that there are no warnings and therefore no possibility to anticipate difficulties. I have had Dr Adams' experience with the prolonged use of the anesthetic producing a depressing effect after the patient has been returned to the room. We have been using the drug for most vaginal operations. In the early period we were being called down a couple of times a week to see patients who were depressed. Now I have found how useful is Dr Lundy's method of a combination of nitrous oxide with the drug and I have reduced the amount of pentothal sodium toward the end of the operation and have had no further calls for resuscitation. I should like to ask Dr Adams about the use of the anesthetic for operations on the head and neck. The more I see of it the less enthusiastic I am. I have discovered that no surgeon is to be trusted to watch the airway properly or to do something about it if he does interfere with it. So far I haven't attempted to use the drug for abdominal surgery when complete relaxation is needed.

DR ROBERT A. HINGSON, U. S. P. H. S. I wish to report 10,000 pentothal sodium administrations. They have been administered in a somewhat unorthodox fashion. Because of the shortage of help in our larger marine hospitals we have solicited the aid of nurse anesthetists and medically trained pharmacists' mates. In the latter series of 5,000 cases, administered chiefly by nurses and trained pharmacists' mates, there has been only one anesthetic death, whereas in the first 5,000 cases administered wholly by physicians there were two deaths. Individuals with the background of a nurse anesthetist or pharmacist's mate can be trained to use this technique. We have trained 36 pharmacists' mates who have gone to Coast Guard cutters throughout the North Atlantic, and on occasion these Coast Guard pharmacists' mates have performed magnificently where there was only one physician on a cutter of 150 to 200

men and an anesthetic was needed. We believe that pentothal sodium in their hands is one of the safest forms of anesthesia. We would like to substantiate all of the warnings that Dr Adams has given. The group at the Mayo Clinic, in introducing this new agent, has always been fair in calling attention to the dangers as well as to the good points. I would urge individuals who report difficulty with this type of anesthetic to go to a clinic where it is being properly used. Only by such dissemination of information can we make final progress. Stimulation of the patient who has been overdosed can be accomplished by administration of 25 mg. of ephedrine in the vein just as promptly as with metrazol.

DR S. A. SWANSON, Rushville, Neb. In the hands of an expert there is little danger, although I think one death in 5,000 is rather high. That is about as high as with chloroform. We men out in the country using these methods of experts should use them with due care and with considerable awareness of the danger.

DR HUGH A. CUNNINGHAM, Milwaukee. I have administered intravenous pentothal sodium 212 times over a period of twenty-six months to a woman aged 27. In the light of the early work on pentothal, this would be strictly contraindicated. This patient has at varying times received all of the sulfonamides. Her lesions were caused by *Bacillus necrophorus*, an anaerobic that travels by way of the lymphatics leaving a necrotized area or a large abscess. Pentothal, as it was first introduced by Dr Rovenstine, should not be administered more than every third to fifth day and should then be carefully watched. This patient frequently has had pentothal as often as twice a day over an extended period of time. Since the thirty-third administration, periodic liver and kidney function tests have been taken. Over the last forty administrations she has demonstrated from time to time from 4 to 12 per cent dye retention in her liver function tests, but on a short rest she replaces this. She still has the disease, we are still using pentothal, so I would like to ask how often it can be repeated, what changes we should expect, and to how young a patient Dr Adams has ever given pentothal.

DR ARTHUR C. MCCARTY, Louisville, Ky. The Surgeon General of the Army has directed the medical officers to use greater care in the administration of pentothal sodium to avoid untoward results. A directive has been issued saying that pentothal must be limited to minor cases, shall not be used for operations around the head and neck, particularly when there is danger of hemorrhage into the respiratory passages when there is infection in that neighborhood, and in brain operations. Prolonged operations, it shall be used rarely or with great caution. This is no news to experienced anesthetists but obviously difficulties have arisen as the result of the use of pentothal in these circumstances. I am situated in a general hospital which is a neurosurgical center. We have found pentothal useful. One of the discussers mentioned the difficulty of controlling the airway in operations about the head. I have found it useful to pass an intratracheal tube with the patient under pentothal anesthesia, cocaine the throat sometimes. At other times I use a local anesthetic in the lubricating solution. Sometimes I use no supplementary anesthesia. I have found that the use of an intratracheal tube is of great assistance in controlling respiration in head operations, and it makes these much simpler and cuts down many of the complications that might otherwise arise from respiratory obstruction and from hemorrhage of the respiratory passages.

DR HERMAN LEONOWITZ, Maywood, Ill. At a government hospital we have given 5,000 pentothal anesthetics with one death attributable to the drug. The man was in partial convulsive failure before the anesthetic was given. We have used pentothal extensively for lesions about the head and neck and for genitourinary work as well as for orthopedic surgery. We do not hesitate to use pentothal in extensive prolonged operative procedures over a long period of time. We have

used as little as a few cubic centimeters of a 2.5 per cent solution and as much as 45 Gm. We frequently have occasion to work about the larynx. These are our troublesome problems, because the bleeding has to be controlled in some way and we have found that by introducing an intratracheal tube and giving oxygen with a catheter the patient does very well. This is particularly true in total glossectomies and in lesions of the nasopharynx. We have discarded the use of the 2.5 per cent sodium pentothal solution. We find a weaker solution is just as effective and that it gives the same type of anesthesia. The control is better, the toxicity is less and the reactions of the patient are very few. We have modified this solution to 1:250, 1:500 or 1:1,000, depending on the purpose for which it is being used. We have used it in conjunction with a spinal anesthetic for an apprehensive patient who wants to be asleep, although we find that spinal anesthesia is the procedure of choice in this particular case. We use it extensively in amputations, in genitourinary work and in thoracic surgery. We do not use it in pneumonectomies or lobectomies, but in thoracoplasties we find it to be a desirable agent.

DR STUART C. CULLEN, Iowa City. I want to ask Dr. Adams if he concurs in the opinion expressed by a previous discussor, that the administration of pentothal (which includes a knowledge of the care of the airway, judgment as to its use in certain situations and an ability to remedy untoward reactions promptly and efficiently) is so simple that this agent and technic can be turned over to nonmedically trained persons for unsupervised use.

DR R. CHARLES ADAMS, Rochester, Minn. Dr. McNeal's question about the use of pentothal for surgery about the head and neck has been answered by Dr. McCarty. I agree with what he had to say. For extensive operations about the head and neck, intratracheal anesthesia carries a wider margin of safety and control, particularly in regard to the airway, than does intravenous anesthesia. When it is necessary to maintain fireproof conditions, an intratracheal tube may usually be inserted under intravenous anesthesia without undue difficulty. This is facilitated by spraying the pharynx and glottic region with a local anesthetic solution. I have no argument with those who wish to use pentothal sodium as a sole anesthetic in abdominal surgery. I have not been able to provide most surgeons with the relaxation they prefer without using excessive doses of pentothal sodium and causing undue respiratory depression in most cases. Under these circumstances I feel that the advantages of intravenous anesthesia are outweighed by the disadvantages. However, by supplementing intravenous anesthesia with an abdominal wall or intercostal block, satisfactory anesthesia can be obtained without undue depression of respiration and without using a large dose of pentothal. In regard to the use of intravenous anesthesia for children I feel that we have much better and more controllable anesthetics for children under 10 years of age than pentothal sodium. Dr. Cullen's question as to how long it takes to attain judgment in selecting suitable cases for pentothal anesthesia and when you can and when you cannot control the airway is apropos. I believe that its intelligent application requires considerable skill and experience not only with intravenous anesthesia but with other types of anesthesia for the many and varied types of operations. It would be hazardous to entrust the administration of pentothal sodium under these circumstances to nonmedically trained persons, particularly if they were not carefully supervised. To illustrate this point I will cite the case of a boy of 15 years with a little fibroma in his postnasal region for implantation of five or six radon seeds. Pentothal sodium was used, and after the operation had been completed the boy became cyanotic and stopped breathing. I visualized his glottis with a laryngoscope and pulled a large clot of blood out of the trachea which had resulted in a complete respiratory obstruction and which would have caused his death if I had not had the equipment to remove it promptly.

## CLINICAL OBSERVATIONS IN TYPHUS FEVER

WITH SPECIAL REFERENCE TO THE  
CARDIOVASCULAR SYSTEM

MAJOR THEODORE E. WOODWARD

IN COLLABORATION WITH

MAJOR EDWARD F. BLAND

MEDICAL CORPS, ARMY OF THE UNITED STATES

This study was undertaken principally to observe the various physiologic changes occurring in typhus fever with special attention directed to the status of the general circulation. Previous descriptions of the disease frequently refer to cardiac collapse, cardiac failure or cardiac weakness and in areas where typhus is prevalent it is almost a routine procedure to administer cardiac stimulants in the form of digitalis, onabain or perhaps some other substitute. Likewise, in certain sections cardiac drugs are given because of the extremely weak and toxic appearance of the patient with the thought in mind that these cardiac tonics will improve the circulation. The latter is not in accord with the actual physiologic effect of digitalis and Luten<sup>1</sup> has shown that the only clinical indication for digitalis and drugs with digitalis-like action is "evidence of cardiac failure and in certain arrhythmias." In our study there was no clear indication for cardiac stimulants and hence they were not employed. Actually there was evidence to suggest that a possible harmful effect might come from their use.

On the other hand little mention has been given to "peripheral circulatory weakness" with minimal stress directed toward its explanation or to this factor playing the major role, exclusive of the heat per se as the real cause for this very apparent circulatory deficiency. Wolbach, Todd and Palfrey<sup>2</sup> mention 4 fatal cases showing irregular pulse which until death demonstrated no evidence of cardiac insufficiency. The very pathology of typhus suggests an overwhelming generalized involvement. The rickettsias invade the entire circulatory tree, causing swelling of the endothelial cells with actual thrombosis of the smaller and occasionally larger vessels. More commonly the changes are in the smaller vessels, causing multiple minute foci of necrosis (figs. 1 and 2). The typhus lesion has been especially well demonstrated in the skin, liver, kidney, cardiac and voluntary muscle and brain but also in every organ of the body.

Recent progress in handling the various forms of surgical shock<sup>3</sup> indicates an increase of capillary permeability which alters the electrolytic composition of the blood, lowers the osmotic pressure by escape of plasma proteins into the tissues (lowering blood volume) and finally, when circulatory failure is established, creates a vicious cycle with resulting tissue anoxia accentuating the capillary damage. In typhus one does not have to

Major Woodward is attached to the United States of America Typhus Commission. Major Bland is assistant chief of the medical service, 6th General Hospital.

Capt. Daniel S. Ellis, M. C. of the 6th General Hospital assisted in much of the clinical study. Major Eugene R. Sullivan, M. C. and Capt. Sedwick Meade, M. C. of the 6th General Hospital Laboratory aided to a considerable extent in the technical investigation.

1. Luten, D. *Clinical Use of Digitalis*. Springfield, Ill. and Baltimore: Charles C. Thomas Publisher, 1936.

2. Wolbach, S. B., Todd, J. L., and Palfrey, F. W. *Etiology and Pathology of Typhus*. Cambridge, Mass.: Harvard University Press, 1922.

3. Moon, V. H. *Shock: Dynamics, Occurrence and Management*. Philadelphia: Lea & Febiger, 1942. Blalock, A. *Principles of Surgical Care: Shock and Other Problems*. St. Louis: C. V. Mosby Company, 1940.

presume that there is capillary damage, because this is evident since the endothelial cell is the site of the specific lesion. The present study was outlined to evaluate the state of the circulation, to clarify the status of the "typhus heart" and to investigate the physiologic changes in the blood of severely ill patients.

#### PLAN OF STUDY

A ward was established in French Morocco to which patients were admitted as early in the illness as possible, regardless of prognosis. Thirty were studied, representing either severely or critically ill patients. After proper delousing procedures, base line studies were performed, following which the patient was put on a general supportive program. Along with the clinical studies fluid intake and output was observed with a check as to weight loss during the illness. Routine biopsy of the typical skin lesions was performed for



Fig. 1—Skin biopsy of a typhus lesion on the second day of exanthem. It shows swelling of the endothelial cells and a well defined perivascular cellular reaction. (Giemsa)

future pathologic study. The diagnosis was established by (1) clinical findings, (2) Weil-Felix agglutination, (3) complement fixation with egg antigens,<sup>4</sup> and in certain instances (4) virus isolation in guinea pigs.<sup>5</sup>

4 Castaneda, M. R. Studies on the Mechanism of Immunity in Typhus Fever. *J. Immunol.* 31: 285, 1936. Bengston, I. and Topping, N. Complement Fixation in Rickettsial Diseases. *Am. J. Pub. Health* 32: 48, 1942. Plotz, H. Complement Fixation in Rickettsial Diseases. *Science* 97: 20, 1943.

5 It is universally accepted that a positive proteus (OX 19, OX 2, OX K) agglutination in rising titer is definite evidence of a rickettsial infection. In certain localities where several such diseases occur (North Africa with epidemic and murine typhus along with *fièvre boutonneuse*) clinical differentiation may be difficult and other laboratory procedures are necessary. The three fevers mentioned may occasionally give proteus agglutination with the OX strains in which instance complement fixation helps. For example, serum from a case which fixes complement using a specific epidemic antigen is more than presumptive evidence of classic European typhus whereas fixation with a specific murine antigen in high titer indicates murine infection. Serum from a case of *fièvre boutonneuse* produces negative results with murine and epidemic antigens but fixes complement using a Rocky Mountain spotted fever antigen (which coincides with the known antigenic similarities of these strains). An antigen with pure Rickettsia conorii (*fièvre boutonneuse*) would be an additional aid in diagnosis.

#### CLINICAL OBSERVATIONS

**Cardiorespiratory**—Examination of the heart revealed no enlargement, and this was confirmed by x-ray study in 12 instances. Heart sounds were commonly distant, being frequently masked by respiratory sounds, and in this series gallop rhythm and cardiac arrhythmias were consistently absent. In none of the cases was there engorgement of the neck veins or evidence of liver enlargement. Ascites was not observed. Cyanosis of the lips, ears, fingers and toes was a fairly common sign. Peripheral edema was noted in 1 instance on the dorsum of the feet, at which time the patient showed a lowering of plasma proteins (4.98 Gm per hundred cubic centimeters), a secondary anemia, without concomitant signs of cardiac failure in the veins, liver or lungs.

The pulse at the height of illness was thready, of poor quality and usually in the neighborhood of 110 to 120. Patients responding poorly often had pulse rates of 130 or more and even at times imperceptible by palpation. Several patients with completely adequate circulation showed slightly increased rates even at the time of discharge, whereas in 4 cases a mild bradycardia of 48 to 60 occurred late in the second week of illness.

The pulmonary picture was dominated by varying grades of tracheobronchitis from a true bronchitis to a bronchiolitis. Circulatory congestion of the lung was not observed. Rhonchi and coarse, moist, sibilant and sonorous rales were frequently heard throughout both lungs without percussion impairment. Coughing, often persistent and bothersome, was for the most part non-productive, since the patient was often too weak to expectorate. Numerous sputum examinations revealed mixed flora with no one organism predominating. When these changes in the lung occurred along with the general circulatory picture of collapse, the patient appeared just as comfortable in the recumbent as in the sitting position, contrary to one suffering from pulmonary congestion of cardiac origin.

**Blood Pressure**—Daily blood pressures indicated generally a definite drop of both systolic and diastolic readings, in some instances figures as low as 68/40 existing for variable periods. The lowered blood pressure often persisted well into convalescence, a normal figure being noted in many cases six weeks after illness when a follow-up examination was made. Occasionally normal levels were regained soon after defervescence of the acute illness, while a minority sustained adequate tension throughout the illness. Diastolic readings were consistently low, ranging from 40 to 60.

Peripheral circulatory weakness caused by lack of blood vessel tone and low blood volume, rather than cardiac insufficiency per se, most likely accounts for these changes. Avtsin<sup>6</sup> observed this loss of vascular tone because epinephrine hydrochloride when instilled in the conjunctivas of typhus patients did not alter the vascular congestion whereas when instilled in normal conjunctivas prolonged paling occurs.

**Venous Pressures**—Venous pressure was measured during the first and second week of illness, during early convalescence and in many cases daily and before and after intravenous therapy. Readings were consistently low, ranging from 2 to 12 cm of water, the average of all cases being 8 cm of water. In 1 case a preliminary reading of 20 cm was observed on admission. This man was decidedly spastic and irrational, and it is

6 Avtsin, A. P. Conjunctival Exanthem in Spotted Typhus. *Arch. Path.* 36: 158 (Aug.) 1943.

probable that this apparent initial elevation was the result of technical difficulties (spastic muscles) since all subsequent readings were normal and there was no evidence of congestion of the cervical veins or of the liver. The tests were performed frequently when the respiratory signs were prominent. Furthermore, no increase of venous pressure or of pulmonary congestion was observed after the intravenous administration of 1,000 cc of fluid—a further indication of the absence of any important element of cardiac weakness in these otherwise seriously ill patients.

**Electrocardiograms**—Electrocardiograms consisting of the standard limb leads were secured of 24 patients of this series during the most active phase of their disease, usually toward the beginning of the second week. In 4 instances a second tracing was made during convalescence for further study of certain abnormalities previously observed. To supplement this series we had an opportunity during the recent Naples epidemic (1944) to secure records on 14 additional patients also severely ill with typhus. Four of the latter group were in terminal coma at the time records were taken and died two to four hours later.

In general the electrocardiograms exhibited no striking deviations from the normal as regards high grade conduction defects or important T wave changes. However, certain relatively minor abnormalities were recorded with sufficient frequency (in 18 of the 40 patients, or 45 per cent) to warrant a comment. 1 Low voltage of the QRS complexes in all of the standard limb leads of less than 5 mm deflection was recorded in 7 instances. In 2 additional patients there was slurring of the QRS complexes up to 0.10 second, but in no instance was well defined intraventricular block observed. 2 A delay in the auriculoventricular conduction time of slight degree (0.20 second or more) occurred in 6 patients, but in only 1 of these was the delay as much as 0.23 second. 3 Abnormally low T waves of less than 1 mm in all leads were noted in 5, and in 2 additional patients there was depression of the ST interval of more than 1 mm in all leads. 4 Auricular fibrillation with a relatively slow ventricular rate of 70 was recorded in a moribund patient who died two hours later. None of these patients had been taking digitalis or allied drugs.

These results are in accord with the clinical findings, which indicated that no serious disturbance of cardiac function per se appeared to be responsible for the circulatory phenomena previously discussed. A return to normal in the 4 patients in whom subsequent tracings were made during convalescence suggests that these minimal and transient electrocardiographic abnormalities are probably comparable to similar findings in patients severely ill with pneumonia, with typhoid and with uremia.

**Röntgenography**—We were unable to take routine films on every patient because of technical difficulties, but of the 12 examined cardiac enlargement was not encountered. One patient with a well sustained mitral systolic murmur presented slight prominence in the region of the pulmonary conus. This murmur was heard at the onset and was masked slightly during the illness by the pulmonary picture of tracheobronchitis, but during convalescence and eight weeks after departure from the hospital it was still present with radiation toward the axilla. Electrocardiographic changes in this man of slight left axis deviation and a PR interval of 0.22 second suggested a concurrent rheumatic infection. In most of the films of this as well

as of other patients the pulmonary fields were compatible with diffuse bronchitis and in 2 there were areas of localized infiltration of bronchopneumonia but in none was there evidence of circulatory congestion.

#### CLINICAL PATHOLOGIC FINDINGS

**Blood and Hematocrit**—In severe cases there was a drop in the red blood count of 1 million or more. Usually on admission the count was within normal limits at which time the patient was severely dehydrated. Once hydration was accomplished the red cells ranged from 2,500,000 to 3,700,000. The volume of cells ranged from 23 volumes per cent to 42 volumes per cent with the mean figure about 32 volumes per cent. All of the more severe cases presented during the acute phase of illness, a volume of cells much less than normal. White blood cell counts were more consistently on the lower edge of normal (4,000 to 6,000), but in some cases counts of over 10,000 were found. Patients with pyogenic complications showed the higher counts. Differential smears were not remarkable.

**Serum Protein**—A drop in the total protein level was not as striking as the corresponding deficiency of the

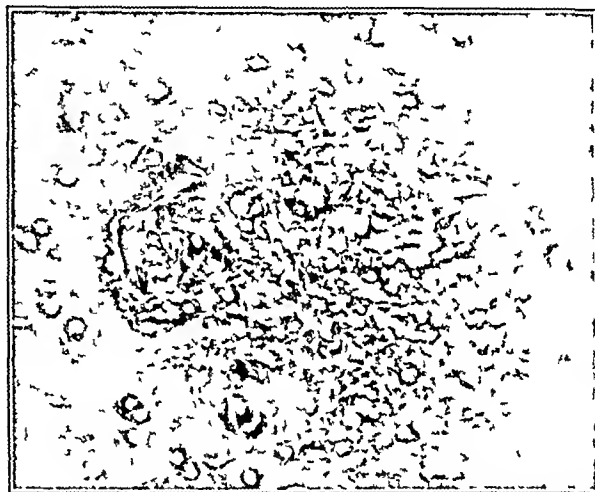


FIG. 2.—Typhus nodule in cerebral tissue of a fatal case. The perivascular elements are pronounced and the vessel is occluded by endothelial swelling and thrombus (Giemsa).

albumin fraction. The overall average for total protein was 5.2 Gm per hundred cubic centimeters. Fibrinogen determinations were not done, but a drop of albumin and globulin elements was almost consistent and in a large percentage of patients the albumin globulin ratio was reversed with albumin as low as 0.9 Gm per hundred cubic centimeters. These findings were pronounced in the second week of disease and persisted well into convalescence. The smaller albumin molecule may well escape into the tissues because of altered capillary permeability, resulting in the edema which is occasionally observed. Several factors account for the reduced total protein figures, (1) lack of adequate protein intake, (2) altered hepatic function and (3) the available protein reserve being quickly expended by the disease process.

**Chlorides**—This feature is reported by Julliard and was not adequately investigated in this study save for blood levels which were reduced and which could be elevated by oral and parenteral administration of

chloride. Blood levels varied from 70 milliequivalents per liter to 110 milliequivalents per liter. More work is needed to determine the persistence of this abnormality along with tissue analysis to clarify the fate of the chloride. Julliard has found the urine chloride low from early in illness and persisting until the first week of convalescence. This observer reports normal and urine chlorides in the murine typhus case.

*Carbon Dioxide Combining Power*—In association with the chloride deficit, a state of alkalosis existed in these patients and the semicomatose cases often showed figures of 90 volumes per cent. In those less severely ill this determination was within normal limits, the lowest reading observed being 50 volumes per cent.

*Urinanalysis*—The urine evidenced few abnormal features. The specific gravity was normal, indicating that the kidney was able to concentrate well. In the first and early in the second week variable amounts of albumin appeared, never exceeding 2 plus amounts with the Robert technic. Frequently there was no albumin whatever. The  $p_H$  of urine ranged from 7.0 to 8.0. There were few cellular elements noted microscopically, with an occasional white cell and a very occasional red blood cell. Casts were almost never seen. Various forms of crystals appeared, the more common being calcium and amorphous and triple phosphates. Findings for proteose were inconsistent and urobilin was rarely elevated above normal which indicates the absence of any active red blood cell destruction. Oliguria, commonly seen early in the illness in spite of an intake of 4,000 to 5,000 cc, often persisted until the middle of the second week, when a sudden diuresis frequently appeared. This fact alone is ample evidence of the profound state of dehydration and the need for active corrective measures.

*Nonprotein Nitrogen*—Severely ill patients, on admission without previous supportive therapy consistently showed an elevated nonprotein nitrogen and early in the second week 90 mg per hundred cubic centimeters was not uncommon. Comatose patients always presented this elevation but, once hydration was accomplished chloride administered and urinary output sustained this azotemia could be corrected, and in some instances a nonprotein nitrogen of 90 mg per hundred cubic centimeters was lowered to 30 mg per hundred cubic centimeters in three to four days. In less severe cases the nonprotein nitrogen was not remarkable.

In view of these findings it is difficult to explain the azotemia on a renal basis. Extrarenal azotemia is commonly seen in dehydration alone, but in typhus there are additional factors. The circulation is poorly sustained, so that reduced glomerular filtration pressure accompanies reduced arterial tension. The specific pathologic lesion causes widespread protein breakdown in the many minute areas of destruction in the muscle, brain and other tissues. Likewise a certain amount of hepatic dysfunction would tend to load the circulation with an excess amount of nitrogen waste. A small amount of endothelial damage is found in the typhus kidney but hardly enough to explain the suggested renal embarrassment. Exhaustive renal function tests would be of immense value in evaluating the typhus kidney, to determine whether the azotemia is entirely of renal or extrarenal origin.

*Spinal Fluid*—Lumbar puncture was done routinely. From the sixth to the tenth day of illness meningismus was commonly so pronounced in certain patients as to suggest a meningeal infection. The absence of Kernig's

sign was of great aid in the clinical differentiation. In agitated patients pressures of 240 to 260 mm of water were seen. Pressures within normal limits likewise existed. In patients subjected to repeat taps the higher readings had returned to normal after five to seven days. Two instances of pleocytosis were observed, 20 and 80 cells respectively, in each case the predominant cell being mononuclear. The Pandy test rarely showed more than traces of globulin. As previously reported by Blanc,<sup>8</sup> strain isolations were attempted in those patients with the more pronounced central nervous system symptoms. Virus was not successfully isolated from the spinal fluid in spite of attempts as early as the fifth febrile day. In 1 instance isolation was tried simultaneously from blood and spinal fluid, the former being successful and the latter producing only a non-specific type of temperature curve in the guinea pigs.

*Complications*—In this series complications were relatively uncommon. Several patients developed severe tracheobronchitis, with an inability to expectorate properly progressing into a patchy bronchopneumonia. One man developed a bilateral otitis media which in no way affected the progress of the disease. A middle aged woman developed a dry pleurisy which ran an acute course of four days and was otherwise not remarkable. Two women developed unilateral parotitis, 1 having been admitted with this infection. Both received adequate supportive measures of intravenous fluids when an adequate intake by mouth was difficult. In spite of the suggested harmful effects of the sulfonamide drugs on typhus,<sup>9</sup> small amounts of sulfadiazine were given with the possibility of preventing a bilateral parotid infection, which many times ends fatally. Sufficient urinary output was maintained during this period and it was felt that little danger from the drug would follow. One of the women (T. B. A.) required surgery for her unilateral parotid abscess, at which time incision and drainage were done, *Staphylococcus aureus* being subsequently cultured. Both she and the other patient made complete recoveries. Phlebitis was seen in 1 case without further complication.

*Deaths and Mortality Figures*—Of the 30 patients studied, 2 died. One, a woman aged 73 admitted late in the second week of illness, was hopelessly ill on admission and at the time of her death showed no evidence of cardiac insufficiency and her venous pressure was normal. Autopsy was not permitted. The other patient a man of 25 died in an overwhelming toxic state with a generalized severe tracheobronchitis with inability to expectorate mucus. Postmortem examination revealed a normal sized heart (350 Gm), the lungs showing an early patchy bronchopneumonia with thick, yellowish tenacious mucus expressed from the bronchi and bronchioles, the latter containing a mixed flora. Throughout the illness this man presented neither venous engorgement, liver enlargement, peripheral edema nor abnormal venous pressures.

In the hospital where this study was performed there were from the period January to June 1943, 679 cases of typhus with 81 deaths, representing a mortality of 12 per cent. The highest monthly mortality was 15.1 per cent and the lowest 10 per cent. These cases may be considered by our standards to have received inadequate supportive therapy. Our series of 30 cases with 2 deaths represents a mortality of 6.6 per cent. It is

<sup>8</sup> Blanc, C. Recherches sur le typhus exanthématique poursuivies au laboratoire de Niché d'Avril à Octobre 1915. Bull. Soc. path. exot. 9, 5, 1916.  
<sup>9</sup> Durand, P. and Balozet, L. Sérothérapie antityphique. Arch. Inst. Pasteur de Tunis 30, 363, 1941.



difficult to attribute great significance to this lowering, but the assumption that adequate supportive therapy was a factor may be safely made.

#### SUPPORTIVE PROGRAM

The general supportive measures employed in these cases and suggested as a rational approach for support of the severe typhus case are as follows:

1 *Nursing*—Attention to the mouth, care for the prevention of gangrenous skin lesions and the frequent changing of position to facilitate expectoration and to prevent pulmonary complications are most important. The use of sedatives for the agitated case is indicated.

2 *Adequate Fluid Intake*—At least 4,000 cc. should be given daily when possible by mouth. In the usual case, in spite of the extreme thirst, this amount may not be taken and the remainder may be given intravenously. This procedure is indicated when there is evidence of a poorly sustained circulation manifested by low arterial tension, a fast thready pulse and cyanosis along with the evidence given by hematocrit and other studies. Large amounts of subcutaneous fluids are administered with difficulty to the typhus patient and tend to the development of soft tissue edema. Concentrated glucose (50 per cent) has been found useful for patients with oliguria and anuria.

3 *Blood Plasma*—A small number of patients have been given transfusions of dried blood plasma and the effects have been excellent for supporting the circulation. This is a valuable means for restoring the depleted protein level.

4 *Chlorides*—The ammonium and sodium salt have been used to improve the hypochloremia. From 2 to 4 Gm. of ammonium chloride was used along with 3 to 5 Gm. of sodium chloride. The ammonium salt is preferable.

5 *Diet*—In severe cases in which efforts of high caloric drinks by mouth are not feasible, an indwelling stomach tube is of benefit. Nourishing protein and carbohydrate foods may be administered in this fashion to give considerable support to the patient. Vomiting is seen in the early stages of typhus but rarely during the actual course.

6 *Digitals*—This drug and other cardiac stimulants were not indicated in a single instance in this series and we suspect that the indiscriminate use of these for patients as seriously ill as ours may occasionally be actually harmful. In the presence of congestive heart failure or auricular fibrillation with an uncontrolled ventricular rate the cautious use of digitals combined with diuretic therapy (in the former instance) would seem a desirable adjunct to the general measures outlined.

7 *Sulfonamide Drugs*—Small amounts were given in cases complicated by purulent infection, during which time satisfactory urinary output was maintained. No ill effects were observed.

8 *Iron*—This is useful in convalescence for combating the secondary anemia.

#### SUMMARY OF FINDINGS

When the various clinical pathologic changes occurring during severe typhus are summarized a fairly definite physiologic picture is evident. The patient is acutely ill and very toxic, with a significantly low arterial tension and a labile pulse. Usually unless actively supported the patient becomes dehydrated, the red cells decrease and plasma proteins fall with a con-

siderable loss of the albumin fraction indicating a reduced colloidal osmotic pressure. All factors indicate a drop of blood volume with the pattern of hypoproteinemia, hypochloremia and hemodilution without blood destruction. The unstable circulation results in lowered glomerular filtration pressure and hence oliguria and anuria occur. The kidney, partially damaged by the specific pathologic condition and called on to eliminate an increased amount of nitrogenous waste is unable to function normally unless adequately supported by fluids. Lowered blood volume means less adequate filling of the heart during diastole and hence lowered cardiac output. Each beat of the heart is less efficient. The use of cardiac stimulants under these conditions is ineffectual but when the volume of the blood is restored the organ can operate more efficiently. For this reason it appears that cardiac drugs except perhaps in exceptional instances are contraindicated in typhus and once the blood volume is restored there is no indication for specific heart therapy unless unmistakable signs of cardiac failure exist, a condition that has not been observed in this series. Wolbrach and his associates have demonstrated the typhus lesion in heart muscle, the kidney and for that matter in every organ of the body with relatively few exceptions. However the degree of both cardiac and renal pathologic changes is in no way out of proportion to the changes occurring elsewhere, and from our clinical studies it seems unlikely that cardiac failure as such is often a significant factor in the outcome of the fatal case. It is not intended to convey the impression that the treatment of typhus is merely an automatic procedure and once blood chemical and abnormal physiologic processes are corrected that all is well. This is far from true. In typhus we are well aware of the central nervous system involvement with the profound effect of the rickettsial toxin<sup>10</sup> not only on the brain but throughout the entire system. Our studies indicate that in the severe typhus case the chance for recovery is greater by observing and attempting to counteract the various clinical pathologic alterations.

#### CONCLUSIONS

From a detailed clinical laboratory study of 30 patients with severe epidemic typhus with special reference to the circulation, it has been shown that:

1 The altered physiologic state, owing probably to widespread endothelial damage in severe cases, consists primarily of an inadequate circulating blood volume, hypoproteinemia (especially the albumin fraction), hypochloremia, hemodilution without blood destruction and an azotemia.

2 The circulatory collapse frequently encountered under these conditions is primarily of peripheral origin.

3 General supportive measures to increase the circulating blood volume are most beneficial.

4 Cardiac drugs (digitals and allied preparations) are probably of benefit only in exceptional cases with clear evidence of congestive heart failure. This was not encountered in this study.

5 Further investigation is needed to clarify:

(a) The blood electrolytes and tissue analysis to determine the rate of chloride.

(b) Carbon dioxide combining power and the general alkali reserve picture.

(c) Blood volume studies with the use of both whole blood and plasma in support of the reduced volume.

<sup>10</sup> Otto R. and Dieckhardt R. *Ueber das Gift der Fleckfiebersickett* im *Z. f. Hyg. u. Infektionskr.* 122: 447, 1941.



## REPORT OF CASES

CASE 1—A youth aged 19 was admitted on the fifth day of his illness with a severe headache and an ill defined pink macular rash on the trunk and proximal parts of the extremities. There were coarse rales and rhonchi in the lungs and a normal cardiac contour without venous engorgement, gallop rhythm, palpable liver or peripheral or sacral edema. The spleen was

TABLE 1—Clinical Pathologic Studies in Case 1

| Day  | Wbe   | Rbe  | NPN  | Serum                  |             |              |       | Cell<br>Vol<br>ume<br>% | Ve<br>nous<br>Pres<br>sure | Comple<br>ment<br>Fixa<br>tion | Well<br>Felix |
|------|-------|------|------|------------------------|-------------|--------------|-------|-------------------------|----------------------------|--------------------------------|---------------|
|      |       |      |      | Blood<br>Chlo<br>rides | Albu<br>min | Glob<br>ulin | Total |                         |                            |                                |               |
| 5th  |       |      | 29.6 | 106.1                  | 2.90        | 2.02         | 5.61  | 37                      | 10                         | 0                              | 0             |
| 6th  | 3.600 | 3.21 | 42.8 | 90.8                   |             |              |       |                         |                            |                                |               |
| 7th  |       |      |      |                        |             |              |       |                         |                            |                                |               |
| 9th  | 4.000 | 3.01 | 47.0 | 97.1                   |             |              |       | 24                      | 7                          | 2/16                           | 1/640         |
| 10th | 5.100 | 2.60 |      |                        |             |              |       |                         | 9                          |                                |               |
| 11th |       |      | 28.0 | 87.7                   | 1.48        | 3.90         | 0.42  | 27                      |                            |                                |               |
| 12th |       |      | 22.0 |                        |             |              |       | 78.7                    | 26.9                       | 4/1/192                        | 1/370         |
| 21st | 6.000 | 2.89 |      |                        | 2.10        | 0.82         | 6.76  | 20.5                    |                            | 4/1/192                        | 1/160         |
| 31st |       |      |      |                        |             |              |       |                         |                            |                                |               |

easily felt. Until the eighth day of illness he was not severely ill but on that day the headache was more intense and he developed definite and pronounced cervical rigidity, with a negative Kernig's sign. He became completely irrational but would take fluids well. In view of his low blood proteins and a circulation not well sustained (tension ranging from 95/52 to 78/40) he was given transfusions of dried blood

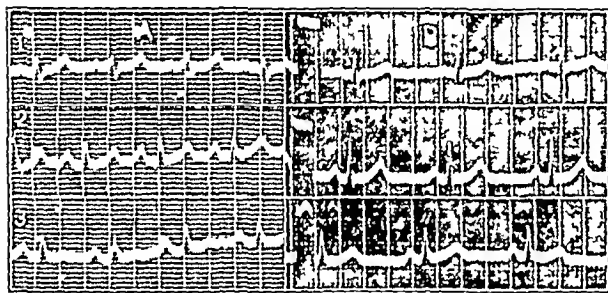


Fig. 3—Tracings in case 1. A on eighth day of severe typhus showing low voltage of QRS complexes and a PR interval of 0.19 second. B eighteenth day during convalescence showing normal voltage of the QRS complexes and a lessening of the PR interval to 0.15 second.

plasma of 250 cc daily for four days along with an intake of 4,000 to 5,000 cc of fluids orally. The urinary output was sustained throughout the illness on this regimen, along with the chloride mentioned previously. The rash was completely faded on the eleventh day. The mental lethargy persisted until the thirteenth day, with the temperature falling by lysis on the

TABLE 2—Clinical Pathologic Findings in Case 2

| Day  | Wbe    | Rbe | NPN  | Serum                 |             |              |       | Cell<br>Vol<br>ume<br>% | Ve<br>nous<br>Pres<br>sure | Comple<br>ment<br>Fixa<br>tion | Well<br>Felix |
|------|--------|-----|------|-----------------------|-------------|--------------|-------|-------------------------|----------------------------|--------------------------------|---------------|
|      |        |     |      | Blood<br>Chlo<br>ride | Albu<br>min | Glob<br>ulin | Total |                         |                            |                                |               |
| 9th  | 17.000 | 4.0 | 54.0 | 88.0                  | 2.02        | 2.04         | 0.66  | 11.5                    | 4/1/24                     | 1/640                          |               |
| 12th | 6.100  | 3.5 | 72.0 | 102.2                 |             |              |       | 6.5                     | 4/1/190                    | 1/1280                         |               |
| 13th |        |     |      |                       |             |              |       | 10.0                    |                            |                                |               |
| 14th |        |     | 26.0 |                       |             |              |       |                         |                            |                                |               |
| 18th |        |     | 23.4 | 94.1                  | 2.50        | 2.70         | 5.36  | 26.5                    | 8.0                        |                                | 1/1280        |
| 23rd |        | 3.3 |      |                       |             |              |       |                         |                            | 4/1/184                        | 1/80          |
| 47th |        |     |      |                       |             |              |       |                         |                            |                                |               |

fourteenth day. During the illness, the patient lost 16 pounds (7.3 Kg.). X-ray examination showed the heart and lungs normal. An electrocardiogram on the eighth day of illness showed a low voltage, which was normal on a recheck tracing on the eighteenth day. The PR interval during the acute illness measured 0.19 second but in the subsequent tracing had lessened to 0.15 second (fig. 3A and B). The diagnosis was confirmed by a rising titer of the Weil-Felix agglutination along with a positive complement fixation with an epidemic antigen. The clinical pathologic studies are given in table 1

CASE 2—A man aged 25, admitted on the sixth day of illness, was irrational and complained of a severe headache. There had been a slight cough from the onset of illness, which was present on admission. Dehydration was pronounced. There was a petechial type rash on the trunk, upper arms and thighs. The tongue was very dry, red and thickly coated. The conjunctivas were much injected, along with considerable suffusion of the eyes. The neck was decidedly stiff, with a negative Kernig's sign. The lungs were clear. The heart was normal without signs of cardiac embarrassment. The blood pressure was 84/60, the pulse rate 120. The liver was not enlarged. On deep palpation the splenic tip was felt. Following several days of an agitated state he developed severe mental lethargy, which persisted until the eleventh day. On this day he developed a bilateral otitis media. From the seventh to the tenth day there were spasmodic bouts of hiccuping, at which time the nonprotein nitrogen was elevated. The patient took orally from 4,000 to 5,000 cc of fluids, supplemented when necessary by intravenous glucose saline solution. Concentrated glucose (50 per cent) was given intravenously to help sustain the urinary output. Supplemental chloride was likewise administered orally. The cough, although not too bothersome, was present for ten days, being nonproductive and associated with rhonchi

TABLE 3—Clinical Pathologic Findings in Case 3

| Day  | Wbe    | Rbe  | NPN  | Serum                  |             |              |       | Cell<br>Vol<br>ume<br>% | Ve<br>nous<br>Pres<br>sure | Comple<br>ment<br>Fixa<br>tion | Well<br>Felix |
|------|--------|------|------|------------------------|-------------|--------------|-------|-------------------------|----------------------------|--------------------------------|---------------|
|      |        |      |      | Blood<br>Chlo<br>rides | Albu<br>min | Glob<br>ulin | Total |                         |                            |                                |               |
| 8th  | 12.000 | 4.98 | 97.0 | 100.6                  | 2.66        | 2.14         | 5.39  | 68.8                    | 42                         | 92                             | 0             |
| 11th |        |      |      |                        |             |              |       |                         | 0.2                        |                                |               |
| 14th | 6.100  | 3.83 | 40.0 | 107.4                  |             |              |       | 41.8                    |                            | 4/1/192                        |               |
| 14th |        |      |      |                        |             |              |       |                         | 7.2                        |                                |               |
| 18th | 6.300  | 3.7  | 25.0 | 100.7                  |             |              | 6.61  | 33                      |                            | 4/1/100                        | 1/70          |
| 30th |        |      |      |                        |             |              |       |                         |                            | 4/1/190                        | 1/70          |

TABLE 4—Clinical Pathologic Findings in Case 4

| Day  | Wbe    | Rbe  | NPN  | Serum                 |             |              |       | Cell<br>Vol<br>ume<br>% | Ve<br>nous<br>Pres<br>sure | Comple<br>ment<br>Fixa<br>tion | Well<br>Felix |
|------|--------|------|------|-----------------------|-------------|--------------|-------|-------------------------|----------------------------|--------------------------------|---------------|
|      |        |      |      | Blood<br>Chlo<br>ride | Albu<br>min | Glob<br>ulin | Total |                         |                            |                                |               |
| 13th | 10.000 | 5.02 | 53.2 | 72.0                  | 1.29        | 4.11         | 5.21  | 11.2                    |                            | 4/1/190                        | 1/370         |

Scale of Values: Nonprotein nitrogen milligrams per hundred cubic centimeters. Blood chloride milliequivalents per liter. Serum protein grams per hundred cubic centimeters. Carbon dioxide combining power volumes per cent. Venous pressure centimeters of water. Serologic studies represent the serum dilution. Weil-Felix agglutination with Proteus OX 19. Complement fixation with an epidemic egg antigen.

and coarse rales. At no time were there signs of cardiac weakness. Slight edema on the dorsum of both feet was noted on the eleventh day of illness, at which time there was a reversal of the albumin globulin ratio. The patient was clinically improved and regarded as "safe" on the twelfth day, when he was able to eat and perform voluntarily. The rash was completely faded on the thirteenth day, disappearing terminally on the legs. An electrocardiogram on the eleventh day showed normal voltage. The spinal fluid pressure on the seventh day was 230 mm of water with 2 lymphocytes. A repeat tap on the seventeenth day revealed a pressure of 40 mm of water, which was clear with 4 cells.

CASE 3—A woman aged 25, Arabian, admitted on the eighth to the ninth day of illness in a severe condition had a unilateral parotitis and a full blown petechial type rash of the usual distribution. She was dehydrated and had a dry filthy mouth and heavy brown coating on the tongue. The right parotid gland was diffusely enlarged, very tender and nonfluctuant. Flexion of the neck was moderately limited, the patient being in an agitated moderately delirious condition. There were no signs of cardiac enlargement or failure. Occasional rhonchi were heard in the lungs. The blood pressure on admission was 94/72. The spleen was palpable and moderately firm. The patient was given the usual supportive care. The spinal fluid was found to be under normal pressure with normal dynamics and clear fluid. Venous pressures on admission and throughout her illness were normal. The rash persisted until the fourteenth

day, when only faint pigmented spots remained. The agitation and delirium remained until the thirteenth day but throughout the illness thirst was constant, so that the patient was able to take adequate oral fluid. She was given small amounts of sulfadiazine with an initial dose of 3 Gm and 2 Gm daily with the possibility of preventing a bilateral parotid infection, which would probably have resulted fatally. *Staphylococcus aureus* was subsequently cultured from this infection, since a fluctuant abscess was incised and drained on the seventeenth day. The patient made a complete recovery but after developing a phlebitis, late in convalescence, of the right femoral vein when she was under observation in a surgical ward. The course of the latter was uneventful. An electrocardiogram on the tenth day of illness showed the same low voltage with the PR interval 0.18 second. The urine throughout the illness was normal other than the presence of an abnormal amount of proteose present at the height of the parotid infection. Other findings are given in table 3.

CASE 4—A white woman aged 73 was admitted on the twelfth to the thirteenth day of illness with pronounced delirium and in an almost completely comatose state. She had a petechial type rash, which was generalized and partially faded on pressure. There was dehydration, with a very dry mouth. Showers of moist rales and coarse rales were heard throughout the lungs, with a partially impaired percussion note posteriorly. The heart was not grossly enlarged, and the liver and spleen were not palpable. Gallop rhythm, venous engorgement, peripheral and sacral edema were absent. There was pronounced cervical rigidity. The respirations were noisy, shallow and rapid. She was obviously regarded as a critical case and was observed as a base line case since she was receiving cardiac and other stimulants by hospital authorities. A severe cough was nonproductive, and the tracheal and bronchial secretion was readily heard. Death came on the third day of hospitalization, and her case is presented because of the interesting physiologic changes. Venous pressure before death was 11.2 cm of water with no visible evidence of cardiac decompensation. Unfortunately autopsy was not permitted. Other findings are given in table 4.

## Clinical Notes, Suggestions and New Instruments

### TICK BITE PYREXIA

LIEUTENANT COLONEL ISIDORE A. FEDER  
MEDICAL CORPS ARMY OF THE UNITED STATES

From May 2 to June 25, 1943, during Tennessee maneuvers, approximately 2,600 patients were admitted to the wards of our evacuation hospital. Hundreds of these patients presented dermatologic evidence of having been bitten by ticks. The present illness of most of these soldiers was in no way related to the tick bites. Many had symptoms which could readily be attributed to secondary complications of the tick bites, such as dermatitis due to local irritation and scratching, cellulitis, lymphangitis and lymphadenitis resulting from secondary infection. Seven patients were proved to have contracted tularemia 3 showing a typical clinical course of this disease, the other 4 recognizable only by subsequent diagnostic titers of their serum in agglutinating *Pasteurella tularensis*.

A smaller group of patients was admitted whose essential complaint was fever, with or without chills. Associated symptoms included anorexia, malaise, headache and occasionally abdominal pain and vomiting. Physical examination was essentially negative except for the discovery of one or more engorged ticks attached to the skin. The only positive laboratory finding in 1 of the cases was a moderate increase in the percentage of the polymorphonuclear cells. Removal of the engorged ticks resulted in subsidence of the temperature and complete relief from the associated symptoms in from twelve to thirty-six hours. Further observation and subsequent serologic studies failed to reveal evidence of the development of any of the specific and recognized tick borne diseases. The

discharge diagnosis for these patients read 'fever simple caused by tick bite'. For the purpose of this article I have termed this condition 'tick bite pyrexia' to differentiate it from the many other pathologic states which have been grouped under the heading 'tick fever'. The latter name has been used to cover a multitude of conditions. Nuttall<sup>1</sup> expressed his opinion many years ago that this name has lost its significance and should be dropped from our nomenclature.

The following are 5 illustrative summaries of the group of cases which came under observation for this syndrome. (All temperatures were taken orally.)

CASE 1—A soldier was admitted May 7, 1943 with complaints of fever and pain in the abdomen of two days duration, slight headache and moderate vomiting. Examination revealed slight tenderness in the right lower part of the abdomen. The skin showed signs of numerous tick bites. Two engorged ticks were found embedded in the right axilla. The admission temperature was 104 F. Blood and urine examinations were normal. The ticks were removed by touching a lighted cigarette to their caudal ends. That evening the temperature had fallen to 100.6 F, the following morning to 99 F and for the next three days remained at a normal level. Coincident with the fall in temperature there was a subsidence of the complaining symptoms and the patient was discharged to duty on May 10.

CASE 2—A soldier was admitted during the evening of May 8, 1943 with a history of fever, chills, generalized pains and vomiting of one day's duration. The temperature on admission was 104.6 F. Physical examination disclosed only slight lower right rectus muscle spasm. The total white blood cell count was 7,400 with 88 per cent polymorphonuclears. The following morning inspection disclosed an engorged tick attached to the right buttock. The tick was removed. The temperature remained elevated to 102 F that day, but on the next morning it reached normal, where it remained for the next three days. There was a complete amelioration of the symptoms coincident with the fall in temperature. The soldier was discharged to duty on May 12.

CASE 3—A soldier was admitted May 10, 1943 with complaints of fever, headache and generalized pains of one day's duration. Examination was essentially negative except for the presence of an engorged tick attached to the skin in the region of the right flank. The temperature on admission was 102.8 F. The tick was not removed. On the following day the temperature was still elevated to 102 F. The tick was now removed. Twelve hours later the temperature had fallen to 98.8 F and remained within the normal range for the next three days. The patient was discharged to duty on May 14.

CASE 4—A soldier was admitted May 11, 1943 with complaints of fever, chills, headache and backache of two days duration. He stated that he had removed many ticks which had been attached to his skin. Physical examination was negative. The temperature was 101.4 F. The temperature subsided spontaneously and remained normal for thirty-six hours. On the evening of May 13 the temperature was again found to be elevated to 102.6 F. Reinspection of the skin disclosed an engorged tick embedded in the left axilla. The tick was removed. Thirty-six hours later the patient felt well and the temperature subsided to normal, where it remained for the following three days. The patient was discharged to duty on May 17.

CASE 5—A soldier was admitted May 15, 1943 with complaints of fever, headache and malaise of one day's duration. He stated that he had removed 27 ticks from his body. Examination disclosed 2 engorged ticks embedded in the abdominal wall. An admission temperature was not recorded. The ticks were removed. About eight hours later the temperature was noted to be 97.2 F and the patient stated that he felt perfectly well. He was discharged to duty on the following day.

### COMMENT

Ticks are most prevalent during the months of May, June and July. All of our cases of tick bite pyrexia were observed during May.

The role of the tick in the transmission of specific disease processes has long been definitely established. The tick may serve as a simple carrier and mechanically transfer the disease agent, or it may furnish the site where the parasites grow or multiply during their residence in this vector. Thus the tick has been incriminated in the transmission of tularemia, relapsing fever, Rocky Mountain spotted fever and the allied group of diseases.

It has also long been felt that ticks may serve as direct agents of disease. An ascending paralysis beginning in the legs and occasionally fatal in its outcome, termed 'tick paralysis,' has been frequently reported in the more recent literature. Strong<sup>2</sup> states that it is believed to be caused by a venom secreted by the salivary glands of the tick during the period of rapid egg development. Abbott<sup>3</sup> feels it is highly improbable that the cause of the paralysis lies with either a virus or a bacterium. It is more plausible that either a toxin or venom may be the underlying factor. The rapid disappearance of paralysis following removal of the tick seems to confirm this hypothesis.

The rapid subsidence of the temperature and amelioration of symptoms when the engorged, embedded ticks were removed in our cases suggest a similar causative factor in the development of tick bite pyrexia. One would hardly expect such rapid recovery if the fever was infectious in origin. It is more likely that some toxic substance injected by the tick as it takes its blood meal is the factor responsible for the development of the symptoms. That the ticks have been attached for a prolonged period of time is evidenced by their engorgement. Not all ticks carry this fever producing toxin, for only few of the soldiers with attached ticks developed symptoms of this condition. The few ticks which we were able to examine proved to be females of the genus *Dermacentor*. Mackie<sup>4</sup> states that "apparently *Dermacentor* ticks, in addition to producing tick paralysis, may in certain individuals cause a picture of chills and fever following tick bite." The exact manner in which the toxin or venom is produced in the tick is unknown but it can be postulated, as in tick paralysis, that it resides in the female, is associated with the production of eggs and becomes evident only after the tick is partially or fully engorged.

#### TREATMENT

A director memorandum June 3, 1943 stated that 'there is an indication of the need for preventive control of ticks by all military personnel. In the selection of bivouac sites, tick infested areas should be avoided if possible. Ticks should be removed from the body at least once daily. Careful examination of the body after coming from tick infested areas and on retiring should be routine.'

Ticks should be looked for especially on the scalp, neck, axillary and popliteal regions, lower part of the back and the gluteal folds and in the umbilicus. They should be removed intact with a thumb forceps, gasoline or ether or by touching the caudal end of the tick with a hot burned end match or the lighted end of a cigaret. I utilized the latter method. Ticks should never be crushed with bare fingers. The site of the tick bite should be painted with iodine.

#### SUMMARY AND CONCLUSIONS

- 1 Tick bite pyrexia appears to be a definite syndrome resulting from the bites of certain ticks.
- 2 It is presumably caused by a toxin or venom secreted by the female tick rather than by a bacterium or virus carried by it.
- 3 Removal of the offending tick is followed by a rapid subsidence of the temperature and associated symptoms.
- 4 Careful examination of the body and removal of all attached ticks is essential for the control of this syndrome as well as for the control of tick paralysis and other specific tick borne diseases.

<sup>2</sup> Strong R P. Stitt's Diagnosis, Prevention and Treatment of Tropical Diseases ed 6 Philadelphia Blakiston Company 1943 vol 2 p 1495.

<sup>3</sup> Abbott K H. Tick Paralysis Proc Staff Meet, Mayo Clin 18:39-43 (Feb 10) 1943.

<sup>4</sup> Mackie T T. Personal communication to the author May 15 1943.

## Council on Pharmacy and Chemistry

### REPORT OF THE COUNCIL

During the October 1943 Council meeting it was decided that a status report on the prophylaxis of *Hemophilus pertussis* infections would be of much value for the physician. Accordingly, Dr Harriet M. Felton and Miss Cecilio Y. Willard have prepared the following statement, which the Council has adopted for publication. The Council will now consider for inclusion in New and Nonofficial Remedies *H. pertussis* vaccines prepared according to the method of Sauer or of Kendrick and Eldering or of Harrison and Bell.

AUSTIN E. SMITH, M.D., Secretary

### CURRENT STATUS OF PROPHYLAXIS BY *HEMOPHILUS PERTUSSIS* VACCINE

HARRIET M. FELTON, M.D.  
AND  
CECILIA Y. WILLARD, M.S.  
PHILADELPHIA

In 1914 the Council on Pharmacy and Chemistry of the American Medical Association admitted pertussis vaccines to New and Nonofficial Remedies on the basis of what appeared at that time to be acceptable clinical evidence. During the next fifteen years these vaccines were used extensively for both prophylaxis and treatment. The reports, however, indicated that the results were not very satisfactory. Therefore in 1928 the Council voted to omit pertussis vaccines from New and Nonofficial Remedies with the close of the longest period for which any one had been accepted, unless new evidence proving efficacy was produced. Reports from different investigators continued to vary and in 1931 the Council<sup>1</sup> recommended that these vaccines be entirely omitted from New and Nonofficial Remedies.

It is interesting to note that in the same year one of the most important advances in the study of the pertussis organism was made. Leslie and Gardner<sup>2</sup> found that *Hemophilus pertussis* is a uniform species which when grown on artificial mediums, passes through a series of antigenically different phases. Strains recently isolated from cases of whooping cough were designated as phase I. These strains are virulent for guinea pigs and serologically distinguishable from the variant non-virulent phases. Since this discovery the majority of vaccines have been prepared from freshly isolated cultures, although stock cultures are still used by some workers who claim that the organisms remain in the virulent phase I if they are grown under suitable conditions.<sup>3</sup> It is quite possible that the varying reports on the use of the earlier vaccines were due in some measure to the lack of uniformity in antigenicity of the strains used in the preparation of the vaccines.

The reports on the use of the earlier vaccines were difficult to evaluate, owing to the fact that no adequate controls were included in the various clinical studies and that the vaccines used were of many types with poorly established, inadequate dosages. However, since 1933 there has been a succession of more careful clinical studies which seem to indicate that vaccines of greater

<sup>1</sup> Pertussis Vaccines Omitted from N. A. R. report of the Council on Pharmacy and Chemistry J. A. M. A. 96:610 (Feb 21) 1931.

<sup>2</sup> Leslie P. H. and Gardner A. D. Phases of *Haemophilus Pertussis* J. Hyg. 31:423-434 (July) 1931.

<sup>3</sup> Mishulow L. A Comparative Study of Agglutinin Response After Pertussis Vaccination with the Sauer Type and with a Toxin Vaccine and in Untreated Clinical Pertussis J. Pediatr. 9:492-504 (Oct) 1936.

efficiency have been prepared. In order to determine the current status of *Hemophilus pertussis* vaccines a summary of the most important of these studies will be presented.

The first encouraging reports on immunization were those of Madsen<sup>4</sup> who presented the results of two epidemics, in 1924 and 1929, in the Faroe Islands. The vaccine used was prepared by the Danish Serotherapeutic Institute Copenhagen, following the introduction of the cough plate method of diagnosis by Chievitz and Meyer.<sup>5</sup> A forty-eight hour growth of freshly isolated organisms was rubbed into phenolized or formaldehyde treated saline solution to a concentration of 10 billion organisms per cubic centimeter of vaccine. The total dosage was 22 billion bacteria given in three injections at three to four day intervals.

In the first epidemic vaccination was begun after the disease had reached the islands. Here 2,094 children were vaccinated, and there were 627 unvaccinated children of similar age used as controls. The majority of both groups developed the disease, but there were only five deaths in the vaccinated group as compared with eighteen in the control group, or fatality rates of 0.24 and 2.9 per cent, respectively. It was concluded that while the vaccination was of no prophylactic value it greatly reduced the severity and duration of the disease. The records showed that the best results were obtained when the vaccination was completed one week before the onset of the disease.

In the second epidemic vaccination was completed shortly before the outbreak occurred. In this instance prophylaxis was found to be much better. There were 1,832 vaccinated children, of whom 75 per cent contracted whooping cough, but among 446 controls the incidence was 98.2 per cent. The fatality rates were 0.07 per cent and 1.8 per cent respectively. It was thought that the favorable results were probably due to the fact that the vaccine was made from freshly isolated strains of *H. pertussis* and to the fact that the course of vaccination was completed shortly before the onset of the epidemic. In both epidemics the total number of bacteria in the immunizing dose of vaccine (22 billion) was larger than that used by others at this time (50 million to 3.5 billion).

In 1933 the first significant reports from the United States were published by Sauer.<sup>6</sup> After obtaining uncertain results with the various commercial vaccines available between 1915 and 1925 he prepared a new type of vaccine, and the results of its use gave definite indication of a more effective product. The preparation of the new vaccine incorporated the principles suggested by Madsen and followed closely the criteria for phase I *H. pertussis* as described by Leslie and Gardner. From five to seven recently isolated, strongly hemolytic strains were used. The culture medium of Bordet and Gengou<sup>7</sup> was modified to contain human blood instead of horse blood. A forty-eight hour growth of the organisms was scraped from the surface of the medium and suspended in phenolized saline solution in a concentration of 10 billion organisms per cubic centimeter of vaccine. It was found that the total dosage could

be increased to a total of 70-80 billion organisms without producing more than a transient local or systemic reaction. The first study included 394 vaccinated children. Of these, 162 were transiently exposed and 29 intimately exposed at some time between four months and four years after vaccination. There were 31 sibling controls for the intimate exposure group. Only 1 vaccinated child developed whooping cough (a mild case), whereas all of the intimate exposure controls developed the disease. In 1937 Sauer<sup>8</sup> reported a series of cases from the Municipal Whooping Cough Prophylactic Clinic at the Health Center, Evanston, Ill. In a three year period 1,122 children were vaccinated. In this group there were 128 exposures, 94 of them intimate with only 6 cases of whooping cough developing, a communicability rate of 4.7 per cent.

Probably the largest controlled studies on immunization against pertussis have been those of Kendrick and Eldering in Grand Rapids, Mich. Their vaccine<sup>9</sup> was prepared from recently isolated cultures in phase I, as described by Leslie and Gardner. The criteria for accepting any particular culture for a lot of vaccine included (1) typical morphology and growth characteristics, (2) agglutination to high titer by antiserum of phase I organisms, (3) ability to produce phase I agglutinins in the rabbit and (4) development of hemorrhagic necrosis on intradermal injection into rabbits. These criteria for the preparation of pertussis vaccine were included in the recommended procedure of the Committee on Standard Methods of the American Public Health Association.<sup>10</sup> Organisms were grown on Bordet-Gengou medium with 15 to 20 per cent human or sheep blood. The organisms were washed from the medium with saline solution, adjusted to a concentration of 10 billion organisms per cubic centimeter, centrifuged, and resuspended in saline solution containing either merthiolate 1:10,000 or 0.5 per cent phenol.

The results of a large study over a period of forty-four months were analyzed by the Committee on Administrative Practice of the American Public Health Association.<sup>11</sup> The study included 4,212 children between the ages of 8 months and 5 years. The injected and control groups were of relatively similar size with an equal distribution of age, sex, family size and geographic districts. There was found to be a striking similarity in the incidence of communicable childhood diseases other than pertussis in the two groups. The pertussis attack rate for the vaccinated group was 2.3 per cent and for the control group 15.1 per cent. The communicability rates for known exposures were 12.8 per cent and 68.5 per cent, respectively. When intimate household exposures alone were considered, the communicability rates were 34.9 per cent and 89.4 per cent. Further analysis<sup>12</sup> revealed a secondary familial attack rate of 36.4 per cent in the vaccinated group and of 92.0 per cent in the control group. Thus it would appear that vaccination resulted in about 60 per cent reduction in the risk of being attacked.

8 Sauer, L. W. Municipal Control of Whooping Cough. *J. A. M. A.* 109:487-488 (Aug. 14) 1937.

9 Kendrick, P. and Eldering, G. The Significance of Bacteriological Methods in the Diagnosis and Control of Whooping Cough. *Am. J. Pub. Health* 25:147-155 (Feb.) 1935.

10 Kendrick, P., Miller, J. J. and Lawson, G. M. Tentative Methods for the Bacteriological Diagnosis and Control of Whooping Cough in Yearbook of the American Public Health Association. New York, 1935. 1936 pp. 200-206.

11 Kendrick, P. and Eldering, G. A Study in Active Immunization Against Pertussis. *Am. J. Hyg. (Sect. B)* 29:133-153 (May) 1939.

12 Kendrick, P. Secondary Familial Attack Rates from Pertussis in Vaccinated and Unvaccinated Children. *Am. J. Hyg. (Sect. A)* 32:89-91 (Nov.) 1940.

4 Madsen, T. The Bacteriology, Diagnosis, Prevention and Treatment of Whooping Cough. *Boston M. & S. J.* 192:50-60 (Jan. 8) 1925. *Vaccination Against Whooping Cough. J. A. M. A.* 101:187-188 (July 15) 1933.

5 Chievitz, I. and Meyer, A. H. Recherches sur la coqueluche. *Ann. Inst. Pasteur* 30:503-524 1916.

6 Sauer, L. W. Whooping Cough. A Study in Immunization. *J. A. M. A.* 100:238-241 (Jan. 28) 1933. Immunization with Bacillus Pertussis Vaccine.

7 Bordet, J. and Gengou, O. Le microbe de la coqueluche. *Ann. Inst. Pasteur* 20:731-741 1906.

The most thoroughgoing unfavorable report on pertussis immunization was that of Doull, Shibley, McClelland and others.<sup>13</sup> The study was carried out in Cleveland in 1934 and 1935. Their vaccine was prepared from organisms grown for forty-eight hours on Bordet-Gengou medium containing human blood. The organisms were scraped from the medium, washed once with distilled water and resuspended in saline solution containing 0.5 per cent phenol to a concentration of 10 billion organisms per cubic centimeter. The children, who were between the ages of 6 and 15 months, were carefully selected and observed. There were 479 vaccinated children and 496 nonvaccinated children who were older siblings. The attack rates for the period from three months to 112 weeks after immunization were 15.8 per cent and 18.2 per cent, respectively. This indicates that the incidence of the disease in this study was only slightly less for the vaccinated than for the nonvaccinated group.

In a small study of intimate exposure in an orphanage during an epidemic in 1938 Kramer<sup>14</sup> found that, while vaccination two years previously with Sauer's vaccine did not prevent the disease in the 9 test children, it had produced a partial immunity so that the cases were extremely mild. Twelve control children developed moderately severe cases. In the same group 8 children who had previously had whooping cough also developed mild cases. This would appear to indicate that vaccination had been as effective as a previous attack of the disease in conferring immunity. The figures indicate attack rates of 18 per cent and 24 per cent respectively for the vaccinated and nonvaccinated groups and a communicability rate of 100 per cent for both.

Siegel and Goldberger<sup>15</sup> reported the results of an epidemic in a tuberculosis sanatorium. Sauer's vaccine had been given to 101 children whose average age was 2.8 years. A group of 82 control children whose average age was 2.7 years was selected. Attack rates were 8.9 per cent and 13.4 per cent, while communicability rates were 53 per cent and 58 per cent. The cases in the vaccinated group were somewhat milder and of shorter duration than those in the control group. These workers did not feel, therefore, that the vaccine was of notable value. Sauer,<sup>16</sup> on the other hand, reported good results in an epidemic in an orphanage.

These first two studies were small but were controlled and indicated that, while the vaccine did not prevent the disease where there was prolonged intimate exposure as under the conditions in an institution, it did give protection from severe attacks, the resulting cases being mild and similar to those in children with positive histories of the disease.

A controlled study with the Sauer type vaccine was presented by Singer-Brooks.<sup>17</sup> These studies were started in 1925 by Dr. J. J. Miller in the outpatient department of the University of California. Very severe criteria for exposure were held, and prob-

able or possible exposures were excluded. The vaccinated children were over 5 months of age, and sibling controls were used as far as possible. The follow-up study included educational measures and careful laboratory methods to establish bacteriologic diagnoses on primary cases and contacts. For a group of 330 vaccinated children and 200 sibling controls, communicability rates were reported as 7.8 per cent and 97.7 per cent, respectively. The figures indicate attack rates of 1.5 per cent and 22.0 per cent, respectively.

Silverthorne and Frazer<sup>18</sup> reported 2 cases of whooping cough developing among 747 vaccinated children, of whom 91 were exposed. In a group of 161 control children of whom 27 were exposed, 23 cases developed. These figures would indicate communicability rates of 2.2 and 85.1 per cent for the vaccinated and nonvaccinated groups respectively. Vaccination was by means of a dosage of 120 billion organisms in Sauer type vaccine. The children were followed over a period of five years by public health nurses or private physicians.

Miller and Faber<sup>19</sup> reported results on a small controlled series in the Well Baby Clinic of Stanford University, using Sauer type vaccine. Exact criteria of exposure and diagnosis were maintained. Of 346 vaccinated children 11 contracted the disease, indicating a communicability rate of 26.2 per cent. The communicability rate for a group of 182 control children was 88.9 per cent. Statistical analysis shows the difference between the two communicability rates to be significant.

Coppolino<sup>20</sup> reported favorable results with the Sauer type of vaccine on a small group of children in Philadelphia. Follow-up studies over a period of four and a half years indicated communicability rates for 152 vaccinated and 160 nonvaccinated children to be 7.1 per cent and 84.9 per cent, respectively. Only intimate exposures of two or more hours were recorded as exposure, and in most cases the exposure was for days or weeks.

Other reports, including those of Garvin,<sup>21</sup> Mitchell,<sup>22</sup> Rambar and his associates,<sup>23</sup> Perkins and his associates,<sup>24</sup> Daughtry-Denmark,<sup>25</sup> and others present comparable results with the most widely used types of vaccine—those of Sauer and of Kendrick. Although these results continue to vary somewhat, the consensus is that solid immunity is conferred on some children and partial immunity on others, such as may occur following an attack of pertussis.

The two types of vaccine used in most of the preceding studies have several differences in their method of preparation. The Sauer type vaccine is an unwashed suspension of organisms, while the organisms used in the preparation of Kendrick's vaccine have been washed once with saline solution. Sauer<sup>26</sup> stated that the

13 Doull J. A. Shibley G. S. and McClelland J. E. Active Immunization Against Whooping Cough. A Preliminary Report. *Am J Pub Health* 26: 1097-1105 (Nov.) 1936. Doull J. A. Shibley G. S. Haskin G. E. Bancroft H. McClelland J. E. and Hoelscher H. Active Immunization Against Pertussis. Final Report on the Cleveland Immunization of 1934-1935. *Am J Dis Child* 58: 691-698 (Oct.) 1939.  
14 Kramer J. G. A Study of the Prophylactic Effects of Pertussis Vaccination. *J Pediatr* 12: 160-164 (Feb.) 1938.  
15 Siegel M. and Goldberger E. W. Active Immunization of Tuberculous Children Against Whooping Cough with Sauer's Vaccine. *J A M A* 109: 1088-1092 (Oct. 2) 1937.  
16 Sauer L. W. The Known and Unknown of Bacillus Pertussis Vaccine. *Am J Pub Health* 25: 1226-1230 (Nov.) 1935.  
17 Singer-Brooks C. A Controlled Study of Pertussis Prophylaxis. A Comparison of Phase I H. Pertussis Vaccine with Undenatured Bacterial Antigen. *J Pediatr* 14: 25-38 (Jan.) 1939. Pertussis Prophylaxis.

18 Silverthorne N. and Frazer D. T. Whooping Cough. *Canad M A J* 38: 556-559 (June) 1938.  
19 Miller J. J. and Faber H. K. Immunization Against Pertussis. *J A M A* 112: 1145-1148 (March 25) 1939. Miller J. J.  
20 Coppolino J. F. Pertussis Prophylaxis. A Clinical Study. *J Pediatr* 21: 348-352 (Sept.) 1942.  
21 Garvin J. A. Efficacy of Sauer's Vaccine. Comparison of Incidence of Preschool Pertussis in a City with High and in One with Low Percentage of Immunization. *Ohio State M J* 36: 738-739 (July) 1940.  
22 Mitchell T. T. Experience with Sauer's Vaccine in the Prevention of Whooping Cough. *South M J* 33: 440-442 (April) 1940.  
23 Rambar A. C. Howell K. Denenholz, E. J. Goldman M. and Stenard R. Studies in Immunity to Pertussis. *Opsonocytaphic Test*, *J A M A* 117: 79-85 (July 12) 1941.  
24 Perkins J. E. Stebbins E. L. Silverman, H. F. Lembecke P. A. and Blum B. M. Field Study of the Prophylactic Value of Pertussis Vaccine. *Am J Pub Health* 32: 63-72 (Jan.) 1942.  
25 Daughtry-Denmark L. Whooping Cough Vaccine. *Am J Dis Child* 63: 453-466 (March) 1942.  
26 Sauer L. W. The Preparation of Bacillus Pertussis Vaccine for Immunization. *J A M A* 102: 1471 (May 5) 1934.



supernatant fluid in an unwashed suspension contains an appreciable amount of soluble toxin and that subsequent washing of the original suspension would result in a decrease in the antigenic content of the vaccine. Miller<sup>27</sup> found that saline solution and distilled water washings of *H. pertussis* organisms contained a specific substance which would combine with the antibody in antipertussis rabbit serum to give flocculation. It was suggested that this might partly explain the differences in the findings of those using washed and unwashed vaccines. However, Kendrick and Eldering<sup>9</sup> found that washing the organisms even three times with saline solution did not decrease the typical skin reaction or the ability to produce agglutinins in the rabbit and therefore washed their organisms once with saline solution before making the final suspension. The vaccine of Doull, Shibley and McClelland,<sup>13</sup> on the other hand which gave such unfavorable results, was of organisms washed once with distilled water. Miller suggests that perhaps distilled water may denature the surface antigen of *H. pertussis*, while saline solution simply removes a part of it.

Another difference between the vaccines used at present is in the type of blood used in the medium on which the organisms are grown. Sauer vaccine<sup>28</sup> is prepared from organisms grown on Bordet-Gengou medium that contains human blood, both for the prevention of sensitization of individuals to animal serum and for the maintenance of the organisms in phase I. The growth at forty-eight hours is scraped into saline solution rather than washed from the medium in order to avoid carrying over any extraneous material. Kendrick and Eldering,<sup>9</sup> on the other hand, used either human or sheep blood and found that both maintained the organisms in phase I. They point out that sheep blood is more uniformly constant and less limited in supply than human blood and have used it in the commercial preparation of their vaccine.

A number of workers have felt that the inclusion of toxic substance in *H. pertussis* vaccine would result in increased potency. In 1930 Mishulow, Mowry and Scott<sup>29</sup> prepared a "toxin-vaccine" by growing the organisms on solid medium with a small amount of horse serum-beef heart broth added to encourage elaboration of toxic material. Each lot of vaccine was tested for the presence of toxic substance by the Schwartzman method. This vaccine was found to elicit agglutinins in rabbits to a greater extent than Sauer's vaccine, which was used for comparison. Later Mishulow<sup>3</sup> reported results from a small clinical study, using material prepared by a modification of the original method. Agglutination studies showed that a greater response was obtained by the use of the toxin-vaccine than by Sauer vaccine. Shorr,<sup>30</sup> Park<sup>31</sup> and Lapin, Cohen and Weichsel<sup>32</sup> reported favorable results of protection in several small studies. It was noted that the local and general reactions to this type of vaccine were greater than with other types. This type of vaccine is distributed by the New York City Department of Health and has been in general use since 1930.

It will be noted that the total dosage of organisms administered in the vaccines in present use ranges from 80 to 120 billion organisms. Madsen<sup>4</sup> had obtained comparatively favorable results by increasing the dosage to 22 billion from between 50 million and 3.5 billion, as used by the majority of workers at that time. Sauer,<sup>28</sup> feeling that an adequate number of organisms is an important factor then increased the dosage to 70 to 80 billion. Many feel that 80 billion organisms is sufficient, but Daughtry-Denmark<sup>34</sup> and others advocate larger doses to be given to older children and in cases in which complement fixation is not complete after the regular course. Sauer prepared a double strength vaccine of 20 billion organisms per cubic centimeter. This however has been largely discontinued because of the numerous local reactions occurring<sup>35</sup> and now the "intermediate strength" vaccine of 15 billion organisms per cubic centimeter is that in common use.

Recently a number of investigators have attempted to prolong protection through the use of a stimulating dose of vaccine given at intervals after the initial course of immunization, as in the case of immunizations against diphtheria, tetanus, typhoid and other diseases. Wu and Chu<sup>36</sup> in 1938 found that a single stimulating dose of 15 billion organisms resulted in a large increase in agglutinative titer above that following the initial vaccination. Lapin<sup>37</sup> found close correlation between agglutinative titer, mouse protection and complement fixation in a small study of reinoculated children following exposure to sibling contacts. No cases of the disease developed. Miller,<sup>38</sup> Shaw<sup>39</sup> and others recommended yearly reinoculation. McLean<sup>40</sup> suggested a stimulating dose to be given on exposure and on entrance to school. It is now felt that the duration of immunity may perhaps depend in part on subclinical infection following exposures at a time when resistance is high, serving as a stimulus in increasing resistance. Thus the lower incidence of the disease among older children following exposures might be explained.

During the last few years several studies have been made to determine whether alum precipitation of pertussis vaccine might increase its antigenic efficiency as in the case of diphtheria toxoid. Harrison, Franklin and Bell<sup>41</sup> made a small study with a single dose of such a vaccine and obtained a lower incidence among vaccinated children than among controls, although the difference was not statistically significant. Considering the small dosage used, these preliminary results seemed to justify further study. Bell<sup>42</sup> later conducted a study on the use of two doses of alum precipitated vaccine with a four week interval. The total dosage was 20 billion organisms. This study was very carefully arranged epidemiologically so that the vaccinated and

27. Miller J. J. The Loss of Specific Substance in Washing Phase I *H. Pertussis* Vaccines. *Proc. Soc. Exper. Biol. & Med.* **37**: 45-49 (Oct.) 1938.

28. Sauer footnotes 6 and 26.

29. Mishulow, L. Mowry, I. W. and Scott, E. B. Pertussis Toxin Filtrates and Toxin Vaccines. *J. Immunol.* **19**: 227-235 (Aug.) 1930.

30. Shorr, E. A. Prophylactic Pertussis Immunization. *J. Pediat.* **9**: 49-55 (July) 1936.

31. Park, W. H. in Round Table Discussion on Whooping Cough. *J. Pediat.* **7**: 690-699 (Nov.) 1935. in Report of Proceedings of the Second International Congress on Microbiology, 1937, sect. 8, p. 457.

32. Lapin, J. H., Cohen, P. and Weichsel, M. Prophylactic Vaccination Against Whooping Cough. *Arch. Pediat.* **56**: 590-598 (Sept.) 1939.

33. Sauer, L. W. Immunization with *Bacillus Pertussis* Vaccine. *J. A. M. A.* **101**: 1449-1451 (Nov. 4) 1933.

34. Daughtry-Denmark, L. Studies in Whooping Cough. Diagnosis and Immunization. *Am. J. Dis. Child.* **52**: 587-598 (Sept.) 1936.

35. Sauer, L. W. and Tucker, W. H. Simultaneous Administration of Diphtheria Toxoid and Pertussis Vaccine in Young Children. *Am. J. Pub. Health* **32**: 385-388 (April) 1942.

36. Wu, J. P. and Chu, F. T. Effect of a Stimulation Dose of Pertussis Vaccine in Children Previously Immunized. *Proc. Soc. Exper. Biol. & Med.* **38**: 693 (June) 1938.

37. Lapin, J. H. The Stimulation Dose in Whooping Cough. *J. Pediat.* **20**: 18-25 (Jan.) 1942.

38. Miller, J. J. The Present Status of Immunization Against Pertussis. *California & West. Med.* **53**: 25-38 (July) 1940.

39. Shaw, E. B. in Round Table Discussion of Prevention of Contagious Diseases. *J. Pediat.* **17**: 402-418 (Sept.) 1940.

40. McLean, I. H. Prophylactic Inoculation Against Whooping Cough. *Proc. Roy. Soc. Med.* **33**: 425-432 (May) 1940.

41. Harrison, W. T., Franklin, J. P. and Bell, J. A. Prophylactic Value of a Single Dose of Precipitated Pertussis Vaccine. *Pub. Health Rep.* **53**: 793-796 (May 20) 1938.

42. Bell, J. A. Pertussis Prophylaxis with Two Doses of Alum Precipitated Vaccine. *Pub. Health Rep.* **56**: 1532-1546 (Aug. 1) 1941.



nonvaccinated groups were identical in all respects without selection, uniformly observed over an adequate period of time and with the definition of clinical pertussis strictly adhered to. Under such well controlled conditions the attack rates were considered significant. For older children the attack rates for vaccinated and nonvaccinated groups were 11.2 per cent and 39.1 per cent, respectively, and for younger children these rates were 9.4 and 29.7 per cent. It was therefore concluded that real protection had been conferred by this vaccine.

Kendrick<sup>43</sup> compared her standard vaccine of 70 billion organisms, given over a period of three weeks, with an alum precipitated vaccine, using a total dosage of 30 billion organisms over a five week period in three injections. There was a one week interval between the first and second and a four week interval between the second and third injections. No significant difference was found between the attack rates of the two vaccinated groups. Daughtry-Denmark,<sup>45</sup> in a comprehensive study of seven different types of vaccine, found alum precipitated vaccine to be as effective as standard vaccine of the same strength when judged by complement fixation reactions.

The combination of pertussis vaccine with diphtheria and/or tetanus toxoid has been suggested by a number of workers. This would be a convenient means of reducing the number of routine immunization injections generally recommended for infants and children. Bordet<sup>44</sup> reported the use of mixed H pertussis vaccine and diphtheria toxoid given in three injections at three week intervals. Schütze<sup>45</sup> and Mathieson<sup>46</sup> found that, in guinea pigs, alum precipitated pertussis vaccine and diphtheria toxoid inoculated simultaneously were compatible and that the immune response to the toxoid was enhanced, while the response to pertussis vaccine was the same as the response to vaccine alone. Sauer and Tucker<sup>35</sup> obtained development of complement fixing antibodies in response to mixed H pertussis vaccine and diphtheria toxoid in three doses at three week intervals equal to that obtained with H pertussis vaccine alone. Daughtry-Denmark<sup>25</sup> obtained like results with three doses at one week intervals. Kendrick<sup>43</sup> has reported satisfactory response in a small study in which pertussis vaccine alone was injected first, followed in one week by a dose of alum precipitated combined diphtheria toxoid and pertussis vaccine. Lapin,<sup>47</sup> Daughtry-Denmark<sup>25</sup> and Miller and Saito<sup>48</sup> have reported encouraging results with the combinations of pertussis vaccine, diphtheria toxoid and tetanus toxoid.

Recent investigations in the field of immunochemistry have shown that H pertussis has several distinct antigenic components. A "toxic substance" was described by Bordet and Gengou<sup>49</sup> in 1909, but it was not until twenty years later that a toxic factor was shown to be

antigenic. Teissier and his associates<sup>50</sup> and Lawson<sup>51</sup> demonstrated the production of neutralizing antibodies in animals by the use of a toxic filtrate of cell extracts. In 1937 Evans and Maitland<sup>52</sup> described a thermolabile toxin and were able to produce neutralizing antibodies in animals. Antitoxin production in human beings, however, was not reported until 1940, when Evans<sup>53</sup> was able to show that careful injection of the toxin over a long period of time could produce a low antitoxic titer. Florsdorf and Kimball<sup>54</sup> later demonstrated the thermolabile toxin of Evans and Maitland and described a second less antigenic thermostable toxin. Strean and Grant<sup>55</sup> prepared what they consider to be pertussis endotoxin by repeatedly freezing and thawing the organisms. The purified preparation was found to contain no agglutinin. They were able to produce an antitoxin in rabbits by inoculation of this material or a toxoid prepared by formaldehyde treatment.

The role of the pertussis toxin in the clinical disease continues to be unknown, but some workers have felt that, if antitoxic as well as antibacterial immunity could be produced by immunization, the individual might have better protection against whooping cough.

Roberts and Ospeck<sup>56</sup> have prepared a toxic filtrate from broth cultures of strains, not necessarily in phase I, shown to have strong toxic properties. This filtrate is detoxified by solution of formaldehyde and is known commercially as "detoxified pertussis antigen." This preparation has been used in both prophylaxis and treatment. Weichsel and his associates<sup>57</sup> published a report on a clinical study on immunization in a small group of children. Significant antitoxic titers could be produced if adequate dosage was given. The extent of the immunity produced has been measured by laboratory methods, but clinical data on this study are not yet available. Bullowa and Alterman<sup>58</sup> and Joslin and Christensen<sup>59</sup> have described the use of detoxified pertussis antigen as a prophylactic agent, but the studies have not progressed far enough for the results to be properly evaluated. Strean<sup>60</sup> reports that investigation into the value of combined pertussis bacterial vaccine and pertussis toxoid for prophylaxis is under way.

Several other preparations for immunization to pertussis have been developed and given clinical trials in recent years. These include "Undenatured Bacterial Antigen" and "Topagen." The Undenatured Bacterial

50 Teissier, P. Reilly, J. Rivalier E. and Cambessedes H. Nouvelles recherches sur l'immunité et la sérothérapie anti-endotoxiques. Le sérum antioquelucheux. J. de physiol. et de path. gen. 27: 549-564 (Sept.) 1929.

51 Lawson, G. M. The Epidemiology of Whooping Cough. Am. J. Dis. Child. 46: 1454 (Dec.) 1933.

52 Evans, D. G. and Maitland H. B. The Preparation of the Toxin of H. Pertussis. Its Properties and Relation to Immunity. J. Path. & Bact. 45: 715-731 (May) 1937.

53 Evans, D. G. The Production of Pertussis Antitoxin in Rabbits and the Neutralization of Pertussis Parapertussis and Bronchiseptica Toxins. J. Path. & Bact. 51: 49-58 (July) 1940.

54 Florsdorf, E. W. and Kimball, A. C. Separation of the Phase I Agglutinin of H. Pertussis from Toxic Components. J. Immunol. 39: 475-493 (Dec.) 1940.

55 Strean, L. P. and Grant, G. The Preparation and Properties of Haemophilus Pertussis Endotoxin. Canad. M. A. J. 43: 528-531 (Dec.) 1940.

56 Roberts, M. E. and Ospeck, A. G. Pertussis Toxin. J. Infect. Dis. 71: 264-269 (Nov. Dec.) 1942.

57 Weichsel, M., Katona, N. and Liu, I. Pertussis Antitoxin. Am. J. Dis. Child. 64: 110 (July) 1942.

58 Bullowa, J. G. M. and Alterman, J. Pertussis Immunity with Toxin and Antitoxin. J. A. M. A. 120: 886-890 (Nov. 21) 1942.

59 Joslin, C. L. and Christensen, T. A. Prophylaxis and Treatment of Whooping Cough with a Pertussis Antigen. Am. J. Dis. Child. 60: 1269-1276 (Dec.) 1940.

60 Strean, L. P. Immunological Studies on Pertussis Toxin Prepared Free of Agglutinin. Abstr. J. Bact. 43: 80 (Jan.) 1942.

43 Kendrick, Pearl L. Use of Alum Treated Pertussis Vaccine and of Alum Precipitated Combined Pertussis Vaccine and Diphtheria Toxoid for Immunization. Am. J. Pub. Health 32: 615-626 (June) 1942.

44 Bordet, J. A propos du vaccin antioquelucheux. Bruxelles med. 16: 503-505 (Feb.) 1936.

45 Schütze, H. Simultaneous Immunization Against Whooping Cough and Diphtheria. Lancet 2: 192-193 (Aug. 17) 1940.

46 Mathieson, D. R. A Laboratory Evaluation of a Combined Antigen for Diphtheria and Whooping Cough Prophylaxis. Abstr. J. Bact. 43: 81 (Feb.) 1942.

47 Lapin, J. H. Combined Immunization of Infants Against Diphtheria, Tetanus and Whooping Cough. Am. J. Dis. Child. 63: 225-237 (Feb.) 1942.

48 Miller, J. J. and Saito, T. M. Concurrent Immunization Against Tetanus, Diphtheria and Pertussis. J. Pediat. 21: 31-44 (July) 1942.

49 Bordet, J. and Gengou, O. L'endotoxine coquelucheuse. Ann. Inst. Pasteur 23: 415-419, 1909.

Antigen, known as "U B A," was prepared by Krueger and his co-workers<sup>61</sup> by washing the organisms three times in Locke's solution, grinding them in a ball mill and retaining the filtrate. Dow,<sup>62</sup> Miller,<sup>63</sup> Lawson<sup>64</sup> and Florsdorf, Kimball and Chambers<sup>65</sup> have given varying reports on the antigenicity of this substance. Singer-Brooks,<sup>66</sup> in a small clinical study, found communicability rates for vaccinated and control groups very similar. It has been suggested that a loss of immune principle may in part be due to the fact that the preparation is carried out at room temperature, at which part of the toxin would be destroyed during the procedure. "Topagen" is a soluble antigen which is administered by the intranasal route. It is prepared by macerating the organisms in saline solution, centrifuging, precipitating the soluble antigen by acetone and redissolving in saline solution. Slesinger,<sup>67</sup> Barksdale<sup>68</sup> and Gold<sup>69</sup> reported good results in the treatment of contacts. However, Dow<sup>62</sup> in animal experiments found Topagen considerably less effective than other vaccines. No large study on prophylaxis with this substance has appeared. It has been suggested for treatment of contact cases.

## COMMENT

The data presented here have been assembled from a number of different investigators who have carried out independent studies under a variety of test conditions. Clinical whooping cough is notoriously unpredictable in the severity of individual attack and epidemic course. However, the majority of the studies have indicated that the incidence of whooping cough can be lowered by the administration of either the Sauer or the Kendrick type of pertussis vaccine in adequate dosage, after six months of age. These new vaccines appear to lower the attack rate in vaccinated individuals and to decrease the severity of the disease.

Although extensive laboratory studies have been carried out in an effort to determine the degree of immunity conferred by pertussis vaccines, the relationship between serologic findings and actual protection of the individual is not clear. There has been in the past no simple index of immunity, such as a reliable skin test. Within the last few years new skin testing techniques have been reported,<sup>70</sup> with promising preliminary results. If the results of these methods continue to be satisfactory the control of whooping cough will be greatly simplified.

61 Krueger A P, Nichols V C and Frawley J M. The Preparation of Active Undenatured Antigen from *Haemophilus Pertussis*. *Proc Soc Exper Biol & Med* 30: 1097-1099 (May) 1933.

62 Dow R P. Active Immunization by the Intranasal Route. A Comparison of Various *H. Pertussis* Antigens. *Canad Pub Health J* 31: 370-375 (Aug.) 1940.

63 Miller J J. Experimental Observations on the Antigenic Potency of *H. Pertussis* Extracts. *J Immunol* 26: 247-265 (April) 1934.

64 Lawson G M. Immunity Studies in Pertussis. *Am J Hyg* 29: 119-131 (May) 1939.

65 Florsdorf E W, Kimball A C and Chambers L A. Studies on *H. Pertussis*. I. Liberation by Sonic Vibration of a Soluble Component That Absorbs Phase I Agglutinins. *Proc Soc Exper Biol & Med* 41: 122-126 (May) 1939.

66 Singer-Brooks C. Pertussis Prophylaxis. A Controlled Study. *J A M A* 114: 1734-1740 (May) 1940.

67 Slesinger H A. The Treatment of Pertussis with Intranasal Antigen. A Preliminary Report. *J Pediatr* 9: 42-48 (July) 1936.

68 Barksdale I S. Further Studies on a Simplified Cough Plate Method for the Early Diagnosis of Whooping Cough. Evaluation of Installation of Topagen Intranasally in Prevention and Clinical Arrest of the Disease. *South Med & Surg* 103: 176-180 (April) 1941.

69 Gold H. The Treatment of Pertussis with Specific Soluble Antigen. *J Pediatr* 10: 641-647 (May) 1937.

70 Florsdorf E W, Felton H M, Bondi A and McGuinness A C. Intradermal Test for Susceptibility to and Immunization Against Whooping Cough Using Agglutininogen from Phase I, *H. Pertussis*. *Am J M Se* 206: 421-425 (Oct.) 1943. Strean L P. A Skin Test for Susceptibility to Pertussis. *Canad M J* 42: 525-528 (June) 1940. Strean L P, Lapoint D and Dechene E. Clinical Studies in Immunity to Pertussis with Use of Pertussis Skin Testing Toxin and Antitoxin. *ibid* 45: 326-332 (Oct.) 1941. Smolens J and Mudd S. Agglutininogen of *Haemophilus Pertussis* Phase I for Skin Testing. Theoretical Considerations and a Simple Method of Preparation. *J Immunol* 47: 155-163 (Aug) 1943. Felton and Florsdorf.

At present the incidence and severity of the disease as the result of actual exposure under adequately controlled field conditions are the only means of proving the efficiency of whooping cough vaccines. Improved culture methods<sup>71</sup> have given more accurate bacteriologic diagnoses and have aided somewhat in differentiating whooping cough caused by *H. pertussis* from a similar but milder paroxysmal disease caused by *Bacillus parapertussis*.<sup>72</sup> Wider use of these methods is advocated for the more adequate control of whooping cough.

The role of pertussis toxin in the disease has not been established. A lack of correlation has been found between the production of antitoxic antibodies and the severity of an attack. The antitoxin is demonstrable for only a short time after the disease and is not found in normal serums. Experimental evidence, on the other hand, has shown agglutinins to phase I organisms over a long period of time after either an attack of the disease or vaccination against it.<sup>73</sup> It would seem therefore, that whole bacterial vaccines would produce the proper protective antibodies.

A report of the Committee on Therapeutic Procedures for Acute Infectious Diseases and on Biologicals of the American Academy of Pediatrics<sup>74</sup> recommends immunization against pertussis as a routine procedure with the following specifications: 1. Pertussis Vaccine Immunizing (Sauer) 6 cc of vaccine standardized to 15 billion organisms per cubic centimeter, three injections at three week intervals, or (on the West Coast) 2.5 cc of vaccine standardized to 40 billion organisms per cubic centimeter, three injections at two to four week intervals. Pertussis Vaccine Immunizing (Kendrick and Eldering) 7 cc of vaccine standardized to 10 billion organisms per cubic centimeter four injections. The committee recommends the use of phase I vaccine. 2. Pertussis detoxified antigen, 1.5 to 2.0 cc subcutaneously for three to five doses every two to three days. 3. Alum precipitated pertussis vaccine (Harrison-Bell) 0.2, 0.3 and 0.5 cc every four to eight weeks, standardized at 40 billion killed pertussis organisms per cubic centimeter.

Vaccines for the prophylaxis of whooping cough were eliminated from New and Nonofficial Remedies in 1931 because of the fact that convincing evidence of their value was not presented during the years in which they were in extensive use. There was no general agreement on the method of preparation and administration, and clinical reports from physicians varied widely. However, the evidence presented in this report from studies during the period since 1931, with more recent preparations, demonstrate that whole bacterial vaccines prepared from virulent phase I *H. pertussis* given in proper dosage after 6 months of age do confer significant protection as measured by reduction in the attack rate and severity of pertussis.

71 Saito T M, Miller J J and Leach C W. Nasopharyngeal Swab in the Diagnosis of Pertussis. *Am J Pub Health* 32: 471-474 (May) 1942. Miller J J, Leach C W, Saito T M and Humber J B. Comparison of Nasopharyngeal Swab and Cough Plate in Diagnosis of Whooping Cough and *Haemophilus Pertussis* Carriers. *ibid* 33: 839-843 (July) 1943. Kendrick Miller and Lawson.

72 Eldering G and Kendrick P. *Bacillus Parapertussis* Species Resembling Both *Bacillus Pertussis* and *Bacillus Bronchiseptus* But Identical with Neither. *J Bact* 35: 561-572 (June) 1938. Miller J J, Saito T M and Silverberg R J. Parapertussis. Clinical and Serological Observations. *J Pediatr* 19: 229-240 (Aug.) 1941.

73 Felton H M and Florsdorf E W. Clinical Results with the Use of Agglutininogen from Phase I *Haemophilus Pertussis* as a Skin Test for Susceptibility to Whooping Cough. *J Pediatr* 22: 259-264 (March) 1943. Miller J J, Silverberg R J, Saito T M and Humber, J B. An Agglutininative Reaction for *Haemophilus Pertussis*. *J Pediatr* 22: 637-643 (June) 1943.

74 Report of the Committee on Therapeutic Procedures for Acute Infectious Diseases and on Biologicals presented at the meeting of the American Academy of Pediatrics October 1943.

# THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

535 NORTH DEARBORN STREET - - CHICAGO 10, ILL

Cable Address

Medic Chicago

Subscription price

Eight dollars per annum in advance

*Please send in promptly notice of change of address giving both old and new always state whether the change is temporary or permanent. Such notice should mention all journals received from this office. Important information regarding contributions will be found on second advertising page following reading matter.*

SATURDAY, SEPTEMBER 30, 1944

## THE MALE CLIMACTERIC

Some fifteen years have elapsed since the first report on the use of standardized estrogenic substance as treatment of women in the climacteric syndrome. Skepticism about the nature of the menopause and the value of its endocrine therapy has been allayed and the indications for use have been more clearly defined. Those clinicians who believed that the symptoms of the climacteric were wholly psychogenic in etiology and to be treated by sedation or psychotherapy are now convinced of the dependability and efficacy of a variety of estrogenic materials, natural and synthetic. Conviction has been aided by widespread clinical success. Objective proof has included the demonstrations of the effect on the vaginal epithelium and the mammary tissues of the two ovarian hormones both estrogenic and progestational in type. Apparently only the estrogens are involved in the prevention or relief of the autonomic and psychic symptoms which are usually spoken of as the menopause syndrome. A further important observation has been the demonstration of an increase in the urinary excretion of gonadotropic material following castration or the occurrence of the spontaneous menopause. This phenomenon is apparently uniformly observed unless the pituitary is in some way destroyed or removed. The phenomenon has therefore been interpreted as meaning an excessive secretion of pituitary gonadotropic hormone following the elimination or atrophy of the ovaries. There is still room for debate as to whether this is excessive secretion by the pituitary or the excretion by the kidneys of unused anterior lobe gonadotropic hormone.

More recently extensive debate among clinicians has concerned the validity of the concept of the male climacteric syndrome. Castration of male adults is apt to be followed by a group of symptoms essentially identical with those noted in women after removal of the ovaries or spontaneous menopause. Men who do not suffer surgical extirpation of the testicles may never experience such symptoms. Not infrequently, however, complaints of a similar character are made by men in

any age from the third decade on. Whether this is to be attributed to testicular atrophy or failure of testicular secretion is the point in question. Many cases of such disorders have been treated with synthetic testosterone propionate or methyltestosterone, the latter being demonstrably active when administered orally. Satisfactory clinical improvement has been reported by several clinicians. Such success might possibly be attributed to the general stimulation of secondary sex characters by these substances or even to the increase in muscle tissue as well as in physical vigor produced thereby. However, the recent work of Heller and his associates from the Wayne University Medical School shows that there is an increase in the anterior pituitary gonadotropic hormone in the urine of men who have been castrated, of men whose testicles have atrophied and of a group of patients who fit the concept of a male climacteric. This is analogous to the situation in the female. Therapy with androgenic materials has given distinct relief to these patients fitting likewise the probability of the existence of the climacteric. Another group of individuals with somewhat similar complaints had rather indifferent benefits from the use of the androgen, they were shown also to be different in that there was no significant increase of the pituitary gonadotropic hormone in the urine samples investigated.

The facts that are here cited serve to indicate with increasing probability that the male climacteric is just as truly a syndrome based on endocrine disturbances as is the menopause syndrome in women. Unfortunately objective means for making these differentiations are still limited to investigative clinics and hospitals.

## PHYSIOLOGIC ACTION OF IN VIVO ANTICOAGULANTS

Such substances as heparin and dicumarol and to a lesser degree salicylates are known to have definite anticoagulant properties in vivo. The mechanism of this action, as yet not clearly defined, has been partially clarified by the work of numerous investigators, this information has been recently summarized by Quick.<sup>1</sup> In the case of heparin the strongly acid property of the structure assigned to it (mucotin-sulfuric acid-like) by Charles and Todd is considered to be significant. By virtue of this property it is able to form stable salts with many proteins, particularly those with basic reaction. The union of heparin and an as yet unidentified protein co-factor of the albumin fraction of the blood is advanced by Quick to explain the antithrombic activity of heparin. The complex so formed has the power to bind thrombin, thus preventing this substance from assuming its essential role in the coagulation of blood. The participation of this co-factor appears to be necessary, since heparin by itself is not an anticoagu-

<sup>1</sup> Quick A J. The Anticoagulants Effective in Vivo with Special Reference to Heparin and Dicumarol. *Physiol Rev* 24: 297 (July) 1944.

lant This reaction is reversible when a strongly basic protein like protamine is added to the blood. The antithrombic activity is lost when the heparin breaks its combination with the albumin factor in favor of the more strongly basic protamine, thus releasing the thrombin. Brinkhous and his associates<sup>2</sup> describe another *in vivo* action of heparin. This involves the blocking of the conversion of prothrombin to thrombin. Here again an unidentified plasma factor appears to be necessary. At present it is not clear whether this represents an interference at the thromboplastic or prothrombic level. Ferguson and Glazko<sup>3</sup> reason that the effect occurs at both points. If this was so the presence of heparin would offer a block to coagulation at several stages.

The effect of heparin on blood platelets is important, since the starting point of a thrombus is a small mass of agglutinated platelets. There does not appear to be a direct action of heparin on the platelets, but clumping of these cells is prevented as a result of the anticoagulant property. Baronofsky and Quick<sup>4</sup> did not find clumping or reduction in the number of platelets in blood to which 0.25 mg of heparin per cubic centimeter had been added, while Best and his co-workers did not prevent agglutination of platelets in dog blood with the clotting time raised to six hours by heparin. Greater doses were effective in preventing the clumping, however. In general a lack of uniformity in degree of response to heparin has been evident. Possible explanations lie in the variability of the compound itself as obtained from different sources and aberrations in the plasma protein of the subjects studied.

From studies on the hemorrhagic disease in cattle resulting from ingestion of spoiled sweet clover hay has come the isolation by Link and his associates<sup>5</sup> of the active principle, dicumarol. Its chemical structure has been determined and mode of action postulated. The anticoagulant effect is attributed to a depression of synthesis of prothrombin rather than a direct effect on this substance. Quick has demonstrated that prothrombin consists of two components. One of these is known to be diminished in dicumarol poisoning. The mechanism of this reduction is not clear, but it has been suggested that there results an inability of the liver to utilize vitamin K for the production of this prothrombin component, possibly because of a toxic effect on the enzyme system producing prothrombin. The fall in prothrombin after administration of dicumarol takes place rather slowly, reaching its lowest point in about forty-eight to ninety-six hours and returning to

normal in a week. Bollman and Preston<sup>6</sup> found a fall of about 15 per cent after three days when a dosage of 10 mg per kilogram was administered to dogs. According to Quick a critical minimum dose appears necessary, and greatly increased amounts will not hasten the fall in prothrombin. The return of the prothrombin level to normal may be speeded by administration of natural vitamin K<sub>1</sub> oxide. Using this material Davidson and MacDonald<sup>7</sup> reported a reversal of dicumarol effect in 4 out of 5 cases by the use of large doses. There is thought to be either a neutralization of the toxin or a synthesis of prothrombin in the presence of excess vitamin K. Synthetic vitamin K counteracts the dicumarol hypoprothrombinemia in most cases when large doses are used. The transfusion of either fresh or citrated banked blood has not been consistently effective in restoring the prothrombin. Thus there is not available at present any thoroughly dependable agent to combat the hypothrombinemia induced by dicumarol.

The antiprothrombic activity of dicumarol in the liver appears to be its sole effect on this organ. The livers of animals subjected to repeated injections of this material have been found entirely normal at necropsy by several investigators. Liver function tests likewise show no impairment. When dicumarol is used in the presence of existing hepatic damage or when fever exists, a heightened response is reported. There is conflicting evidence of the effect on capillary fragility and sedimentation rate. Wright and Prandone state that increase in capillary fragility was not detected in the patients receiving dicumarol under their observation. However, dicumarol has been noted to cause vascular dilatation and purpura after massive doses. As found with the use of heparin, when the blood coagulation time is greatly delayed by administration of dicumarol, platelet clumping no longer occurs.

More recently Link and his associates and independently Rapoport and his co-workers have made the observation that salicylates administered either orally or intravenously cause hypoprothrombinemia which can be prevented or counteracted by administration of synthetic vitamin K. Several workers who have studied this effect of the salicylates believe that the action is essentially that of dicumarol but less powerful. One of these substances may actually complement the activity of the other. Salicylates show an effect in cirrhosis similar to the increased response found with dicumarol. The potentialities of these actions are great whether or not the agents are used therapeutically under adequate control or exert their effect as an undesirable side reaction. More information on methods of controlling the effects of these anticoagulants and on their potential toxicity is urgently needed.

6 Bollman J. L. and Preston F. W. The Effect of Experimental Administration of Dicoumarin. *J. A. M. A.* 120: 1021 (Nov. 28) 1943.

7 Davidson C. S. and MacDonald Harriet. A Critical Study of the Action of 3,3'-Methylene Bis (4-Hydroxycoumarin) (Dicoumarin). *Am. J. M. Sc.* 205: 24 (Jan.) 1943.

2 Brinkhous K. M., Smith H. P., Warner E. D. and Seegers W. N. The Inhibition of Blood Clotting. *Am. J. Physiol.* 125: 683 (April) 1939.

3 Ferguson J. H. and Glazko A. J. Heparin and Natural Anti-prothrombin in Relation to Activation and Assay of Prothrombin. *Am. J. Physiol.* 134: 47 (Aug.) 1941.

4 Baronofsky I. D. and Quick A. J. Heparin and the Agglutination of Platelets in Vitro. *Proc. Soc. Exper. Biol. & Med.* 53: 173 (June) 1943.

5 Campbell H. A., Roberts W. L., Smith W. K. and Link K. P. Studies on the Hemorrhagic Sweet Clover Disease. *J. Biol. Chem.* 136: 47 (Oct.) 1940.

## CORONARY HYPERSUSCEPTIBILITY

Klinge<sup>1</sup> and Vaubel<sup>2</sup> of pre-Nazi Germany showed fifteen years ago that in rabbits parenteral administration of large doses of horse serum is often followed by vascular and perivascular alterations in the smaller branches of the coronary arteries, other parts of the vascular system being unaffected. They described the coronary lesions as closely resembling those of "human rheumatism." Interest attaches to these observations, owing to the increasing use of large doses of antiserum in clinical medicine and to the contemplated use of heterologous plasma or plasma fractions in human transfusion. The experiments were therefore repeated by Rich and Gregory<sup>3</sup> of Johns Hopkins University and later studied in greater detail by Fox and Jones<sup>4</sup> of St. Louis University.

The St. Louis investigators made careful microscopic studies of 31 adult albino rabbits previously given one or more intraperitoneal or subcutaneous injections with large doses (10 cc per kilogram) of horse serum followed by one or more 1 cc doses given intravenously. The rabbits were killed at arbitrary intervals after the last injection. The investigators found severe coronary lesions in 20 of the 31 injected rabbits, with 7 rabbits showing milder coronary alterations. All noninjected controls were negative.

The vascular changes noted in the injected animals were characterized by intimal hyperplasia and proliferation of adventitial cells, the latter being frequently interspersed with lymphocytes and mononuclear cells or surrounded by them, with an occasional polymorphonuclear neutrophil. Fibroid degeneration was occasionally noted in the intima and media, but without definite necrosis. The coronary lesions closely resembled those often described under such terms as "rheumatoid arteritis" or "rheumatic carditis."<sup>5</sup> The vascular changes were usually limited exclusively to the coronary arterioles, though mild vascular lesions were occasionally found in the liver, lungs, testes, kidneys or mesentery.

Fox did not find any significant relationship between the severity of the coronary lesions and the number of doses, time interval or sequence of large and small doses of horse serum. Some rabbits exhibited severe vascular changes following a single large dose of serum. There was, however, a suggested correlation between the severity of the coronary lesions and the degree of acquired cutaneous sensitivity to horse proteins. All animals with the necrotic type of reaction to routine skin tests exhibited material degenerative changes in the coronary arterioles. Equally manifest changes, how-

ever, were occasionally noted in rabbits with non-necrotic skin sensitivity. Twelve of the 31 rabbits developed Fleisher's<sup>5</sup> "serum sickness reaction" of the ears, following a large parenteral dose of horse serum. This "scarlatinal reaction" was invariably associated with appreciable degenerative changes in the coronary arterioles.

Aside from its bearing on current problems of serum therapy and plasma transfusion, this latest confirmation of the Klinge-Vaubel phenomenon is of basic clinical interest. It is experimental proof that the coronary arterioles are more highly susceptible to mild toxic injury than other parts of the vascular system.

## RENAL DAMAGE FROM SULFONAMIDE COMPOUNDS

Shortly after the sulfonamide compounds came into general use, physicians recognized that the kidney may be damaged in the course of therapy with these drugs. Two types of renal complications were observed: (1) those due to mechanical obstruction of the pelves, the ureters and the renal tubules by crystals of the sulfonamide compounds and (2) those due to toxic lesions of the kidney without obstruction. Combination of the two forms has likewise been described. In addition to tubular necrosis which is the usual expression of damage by toxic substances, instances were observed in which interstitial tissue reaction with necrosis was also present. Murphy and his associates<sup>1</sup> observed 1 such instance in the series reported by them. They feel that this type of reaction is probably an expression of severe idiosyncrasy on the part of the renal tissue to the drug. This inflammatory response was also seen in tissues outside of the kidney represented by giant cells and perivascular granuloma-like cell accumulations suggesting a similarity with periarteritis nodosa and similar lesions. The hepatic damage observed in these cases is probably related to the nephrotoxic complications.

Study of the clinical data of 14 patients with renal insufficiency following use of sulfonamide compounds in relation to postmortem observations on 13 revealed that the quantity of the sulfonamide compound administered and the drug level in the blood appeared to be unimportant in producing the renal damage. As much as 41 grams and as little as 0.6 gram was responsible for fatal renal injury. In a few of their cases deposits of crystals of the drugs in the urinary tract causing some degree of mechanical obstruction were found associated with the nephrotoxic lesion, this was not the

1 Klinge F. Beitr. z. path. Anat. u. z. allg. Path. **83**: 185, 1929.

2 Vaubel E. Beitr. z. path. Anat. u. z. allg. Path. **89**: 374, 1932.

3 Rich A. R., and Gregory, J. E. Bull. Johns Hopkins Hosp. **72**: 65, 73, 239, 1943.

4 Fox R. A. and Jones L. R. Proc. Soc. Exper. Biol. & Med. **55**: 294 (April) 1944.

5 Fleisher M. S. and Jones L. J. Exper. Med. **54**: 597 (Oct) 1931.

1 Murphy Francis D., Kuzma Joseph F., Polley Theodore Z. and Grill John. Clinicopathologic Studies of Renal Damage Due to Sulfonamide Compounds. Arch. Int. Med. **73**: 433 (June) 1944.

rule, however, as in most of the cases the nephrotic lesions were independent of mechanical blocking. Microscopic alterations in tubular epithelium were observed all the way from simple degeneration to tubular necrosis and intense inflammatory reaction outside the nephron. The investigators feel that these tubular lesions represent degrees in the severity of one process rather than different kinds of response. The study failed to correlate the clinical features with the specific site for the renal tubular damage.

Of the numerous toxic complications caused by sulfonamide compounds, that affecting the kidney is most serious. Fortunately these complications are comparatively uncommon. The mechanical type of complication, particularly that outside the kidney, in the pelvis and the ureter, responds best to therapeutic measures. When, however, obstruction occurs within the kidney a cure is not easily accomplished, although always retrograde lavage should be done and the drug discontinued. Precipitation of the sulfonamide compound is the etiologic factor in these obstructions. Precipitation should be prevented as far as possible by the administration of adequate fluids and maintenance of an alkaline urine.

### Current Comment

#### PLASMA LEVELS OF VITAMIN A AND CAROTENE IN RHEUMATIC SUBJECTS

The explanation for the greater frequency of rheumatic fever in persons in low income groups has been sought in a number of studies. Shank and his colleagues<sup>1</sup> recently determined the levels of vitamin A and carotene in the plasma on four groups of subjects whose intakes of vitamin A had been calculated. The first included 12 normal children in the high income class, their average daily intake was 109 per cent above the recommended amount for age and sex. The other three groups consisted of children with rheumatic infection who no longer showed signs of the active disease but whose diets contained varying quantities of vitamin A. Those in the second group were 24 children who received more than average amounts of vitamin A, their diets averaging 23 per cent above the calculated requirements. In the third group were 46 children who received vitamin A in adequate amounts with an average intake only 5 per cent in excess of calculated needs. The fourth group included 25 children with low vitamin intakes, the average for the group being 44 per cent less than optimum. The subsequent observations revealed a clearcut association between the levels of vitamin A and carotene in the plasma as related to the intake of vitamin A in the

diets. Regardless of the concentration of vitamin A or carotene in the plasma prior to the onset of active exacerbations of the disease there is a fall in the level of vitamin A in the plasma with the development of acute rheumatic fever, the carotene in the plasma was not significantly altered quantitatively during rheumatic attacks. Furthermore, it was found that the degree of decrease of vitamin A in plasma varies directly with the intensity of the rheumatic attack. In the presence of severe attacks concentrations in the plasma varied between 0 and 70 international units of vitamin A per hundred cubic centimeters of plasma. Delayed or decreased absorption of vitamin A was thus shown in patients with rheumatic fever. Nevertheless, uncertainty prevails as to whether vitamin A is destroyed in some abnormal manner or whether it is utilized normally but with increased speed of metabolism and that this accounts for its lowering in the presence of the active disease. Whether or not the vitamin A disturbance is a causative factor in the rheumatic process or merely a result of the process remains for further investigation.

#### DISHWASHING IN RESTAURANTS

The sanitary procedures of restaurant operation including the adequacy of the methods of sanitizing eating and drinking utensils, are matters of general concern. Recently mobile laboratory units of the United States Public Health Service have cooperated with state and local health departments in making swab tests of restaurant utensils in numerous communities in different sections of the country. Unpublished reports of this work, according to Andrews,<sup>1</sup> reveal that improvement is needed in dishwashing methods in most, if not all, of the communities visited. This disappointing condition exists in spite of the availability of adequate information on choice of detergents and machine and hand washing techniques. The fault is primarily in personnel. Frequently a person doing the dishwashing has not been properly instructed in technique. Good equipment is worthless if improperly operated. Since the outbreak of the war, the problem of maintaining good sanitation in restaurants has obviously become intensified by shortages of manpower, materials, increased customer loads and reduction of health department inspection facilities. In the face of evidence that the amount of disease spread in restaurants is increasing, health departments should intensify their efforts at control. Experience has shown that health authorities achieve the most satisfactory results by education rather than by policing. Properly organized training courses for employees of restaurants will probably prove more effective than any other one measure. As pointed out by Andrews, restaurant sanitation is an important public health activity, and wartime conditions with the probability of long continued overloading of restaurants in many areas gives this problem a special urgency.

<sup>1</sup> Shank, Robert E. and others. The Level of Vitamin A and Carotene in the Plasma of Rheumatic Subjects. *J Clin Investigation* 23: 289 (Mar.) 1944.

<sup>1</sup> Andrews, John. Methods of Sanitizing Eating and Drinking Utensils. *Pub Health Rep* 59: 1103 (Aug. 25) 1944.



# MEDICINE AND THE WAR

## ARMY

### NEW VACCINE TO PROTECT ARMY AGAINST SPREAD OF INFLUENZA

The War Department announced recently plans for the procurement and possible use of a vaccine to combat the spread of influenza in the Army, should the disease occur in epidemic form. The plans are based on evidence presented by the Commission on Influenza under the Army Epidemiological Board. The vaccine will not be administered routinely but will be given only on definite indication of the threat of influenza and only to personnel under risk of exposure to the disease. A statement of policy and a summary of the evidence for the prophylactic value of influenza vaccine was recently issued to all medical officers in a technical bulletin from the Office of the Surgeon General.

One of the main projects of the Board for the Investigation and Control of Influenza and Other Epidemic Diseases in the Army, ever since its establishment in 1941, has been the development of protection against influenza. This board, now called the Army Epidemiological Board, is under the presidency of Dr Francis G Blake, Dean of Yale University School of Medicine, New Haven, Conn. Under this board the Commission on Influenza, of which Dr Thomas Francis Jr, professor of epidemiology at the University of Michigan School of Public Health, is director, was asked in 1943 to carry out a controlled clinical trial of the prophylactic efficacy against epidemic influenza of a concentrated vaccine containing the killed influenza viruses types A and B. In cooperation with a number of civilian and military agencies an extensive investigation was carried out. On the whole, the results showed that there was a reduction of about 75 per cent in the incidence of influenza among the vaccinated as compared with the unvaccinated controls and that loss of manpower hours was reduced because the illness in vaccinated persons was milder and shorter. The vaccine which was used was developed by Dr Thomas Francis Jr, Dr Jonas E Salk and their associates.

### BRIG GEN CHARLES R GLENN APPOINTED DEPUTY AIR SURGEON

Brig Gen Charles R Glenn, surgeon at the AAF Training Command, Fort Worth 2, Texas, has been appointed Deputy Air Surgeon. Col Neely C Mashburn, General Glenn's executive since July 1943, will succeed him. In his new assignment General Glenn will serve as assistant to Major Gen David N W Grant, Surgeon on the Air Staff at AAF headquarters in Washington, D C. Both General Glenn and Colonel Mashburn are Regular Army officers.

General Glenn who graduated from Jefferson Medical College of Philadelphia in 1914, became a first lieutenant in the reserve on May 13, 1917. He was commissioned in the Regular Army before the end of the first world war. It was largely under his direction that training command surgeons, together with a group of highly specialized psychologists, developed the now famous system for the selection and classification of air crew trainees—pilots, bombardiers, navigators and gunners—a system designed to find the right man for the right job. In June and July of this year General Glenn made a sixty day world encircling inspection and observation flight during which he covered 40,000 miles, visiting U S combat air forces in every active theater except England and Alaska.

Colonel Mashburn graduated from Vanderbilt University School of Medicine, Nashville, Tenn in 1914. He went overseas and served with the medical corps in Paris in February 1918 at the 18th Hospital of Evacuation and Operations south of Dunkirk, with the 32d, 29th and 88th divisions of the Alsace front in the x-ray section of a field hospital, with the Johns Hopkins unit in a general hospital center near General

Pershing's headquarters and finally at La Rochelle, just above Bordeaux. After his return to the United States in July 1919 he was ordered to the station hospital for the 1st Division at Louisville, Ky. From May 1920 to 1934 Colonel Mashburn experienced a variety of duty tours. He served as an instructor in the School of Aviation Medicine, Randolph Field, Texas, from 1934 to 1940. In 1941 he was appointed command surgeon for the Southeast Training Center at Maxwell Field. He became post surgeon at Ellington Field, Texas, in the Central Flying Training Command, known then as the Gulf Coast Training Center.

### NEW PENICILLIN STUDY INSTITUTED AT FORT BRAGG

Dr Charles Rammelkamp, member of the commission on Acute Respiratory Diseases, Epidemiological Board, Preventive Medicine Service, Office of the Surgeon General, and Capt William Leifer, M C, Regional Hospital, Fort Bragg, North Carolina, recently spent several days in the Office of the Surgeon General conferring on the new method of administering penicillin developed by Capt Monroe J Romansky, M C, at the Army Medical Center. The new technic prolongs the action of penicillin by suspending it in a mixture of 4 per cent beeswax and peanut oil. Dr Rammelkamp will act in a consulting capacity with Dr Leifer, who is instituting a study of the method at Fort Bragg Regional Hospital. It is believed that the new method will have important effects on the use of this agent.

### COL ROBERT H KENNEDY APPOINTED TO MAYO GENERAL HOSPITAL

Col Robert H Kennedy, former director of surgery at Beekman Hospital, New York, and attending surgeon at the New York Post-Graduate Hospital, has recently been appointed chief of surgical service at Mayo General Hospital, Galesburg, Ill. Dr Kennedy, a veteran of World War I, succeeds Col Emory Neff, former surgical chief, who left for treatment at Percy Jones General Hospital. Dr Kennedy was called to active duty in World War II with the rank of lieutenant colonel in June 1942. He was promoted to colonel on April 3, 1943. Dr Kennedy graduated from Columbia University College of Physicians and Surgeons in 1912.

### DR H JACKSON DAVIS WITH ARMY CIVIL PUBLIC HEALTH DIVISION

Dr H Jackson Davis, chief medical officer of the State Department of Social Welfare, Albany, N Y, has been granted military leave from the department to accept a commission as major in the newly established Civil Public Health Division, U S Army Medical Corps. The Civil Public Health Division will develop public health policies and practices in liberated and occupied countries in all war theaters, establish supervisory and liaison relations with local public health officials and provide certain essential medical supplies in those areas. Dr Davis is a veteran of World War I. He graduated from Yale University School of Medicine, New Haven, Conn, in 1926.

### MAJOR ALFRED GOLDEN GIVEN NEW ASSIGNMENT

Major Alfred Golden, formerly of Madison, Wis, who has been on duty for the past four years at the Army Medical Museum, has been transferred to the Division of Health and Sanitation, Office of the Coordinator of Inter-American Affairs. Dr Golden will be assigned to duty in Latin America to study the pathology of certain tropical diseases.

### TROOPS EXPOSED TO FILARIASIS PARASITE BEING OBSERVED AT WAKEMAN GENERAL HOSPITAL

More than five hundred servicemen who have been exposed to filariasis are being observed at the Wakeman General Hospital, Camp Atterbury, Indiana. Although the presence of the disease has been established in only a small percentage, the condition of none of the men is serious. The men were returned to the United States in accordance with War Department policy of evacuating military personnel from endemic regions after exposure to the disease in order to avoid complications that might develop following prolonged exposure. All the men just returned were evacuated after a comparatively short exposure to filariasis and there is little likelihood that the more serious permanent consequences, including elephantiasis, will develop.

Transmission of the disease is possible only when immature forms of the parasite are circulating in the blood of an infected person. Such larval forms must be taken up by a mosquito in order to complete their development. None of these immature forms have been found in the blood of any of the returned soldiers. Consequently there is no risk that they will spread the disease in this country. Most of the men will receive furloughs, after which they will return to the convalescent hospital. It is expected that the majority will return to duty within a short time.

### THIRTY-TWO MEDICAL OFFICERS RECEIVE REGULAR ARMY APPOINTMENT

Thirty-two medical officers who successfully completed examinations for regular army appointment held in January were nominated in the Senate recently and confirmed by that body as first lieutenants in the Regular Army Medical Corps. The officers who hold grades higher than those to which they are appointed in the Regular Army will retain such higher temporary grades. Those nominated were:

|  |  |
|--|--|
| Capt A L Baker Jr. Dover N J                         | Capt J M McIver Boston                     |
| Major B H Bennett Washington D C                     | 1st Lieut G B Milburn San Antonio Texas    |
| Capt A S Blauw Boulder Colo                          | Capt T M Mulford San Diego Calif           |
| Major H Boyd Jr. Kingston N Y                        | Capt J R Paul Lincoln Neb                  |
| Capt D H Cahoon Roswell N M                          | Lieut Col G S Richardson Roswell, N M      |
| Capt J S Clapp Erie Pa                               | Major H L Riva Charleroi Pa                |
| Capt W D Dugan Eugene Ore                            | Capt J N Schaeffer Miamisburg Ohio         |
| Capt H V Ellington Rochester N Y                     | Capt Edward Shaw West Hartford Conn        |
| Capt R C Feamster New Orleans                        | Major F R Sloan Marquette Ia               |
| Capt C C Flood Ramsey N J                            | 1st Lieut N R Spencer (M Res) Bethesda Md  |
| Major E J Genetti Bessemer Mich                      | 1st Lieut R W Thometz (M Res) Oak Park Ill |
| 1st Lieut F E Harrigan Jr (M Res) West Hartford Conn | Capt C F Vorder Bruegge Memphis Tenn       |
| Capt K D Heuser Denver                               | Lieut Col J E Walther Rushville Ind        |
| Capt R R Jones Dallas Texas                          |  |
| Major V C Kelly Baltimore                            |  |
| Capt K A Koerner St Louis                            |  |
| Capt Robert Landesman New York                       |  |
| Capt R E Lau York Pa                                 |  |
| 1st Lieut J P McEvoy (M Res) St Paul                 |  |

### RECONDITIONING NEWS LETTER

A new publication, *Reconditioning News Letter* is now being distributed monthly by the Office of the Surgeon General to all ASF hospital commanders and service command surgeons. Its aim is to familiarize hospital personnel with new ideas, practices and procedures connected with the reconditioning program. Sources of the items published are reports made by inspecting officers from the Surgeon General's Office, chiefs of the reconditioning branches in service commands, medical officers and others familiar with the program.

### INCIDENCE OF POLIOMYELITIS AMONG U S TROOPS

In the two week period ended September 2, 20 cases of poliomyelitis were reported by army installations in the United States. This represents a slightly higher incidence than for the corresponding period last year. The total incidence since the first of the year is somewhat lower than in the corresponding eight month period of 1943. While most of the cases have occurred in the states which have a high civilian incidence of the disease, they have been widely scattered.

### ADVANCE IN AURAL REHABILITATION PROGRAM

Borden General Hospital Chickasha Okla. has installed electroacoustical apparatus enabling it to fit the individual patient with the best combination of manufactured hearing aids. Such equipment is rarely found in civilian institutions and represents a progressive step in the aural rehabilitation program. Hoff General Hospital Santa Barbara Calif. and DeWitt General Hospital, Butler, Pa., will be similarly equipped in the near future.

### ARMY AWARDS AND COMMENDATIONS

#### Captain Cecil D Conrad

The Soldier's Medal was recently awarded to Capt Cecil D Conrad, formerly of Highland Park, Mich. The citation accompanying the award reads: "On March 22, 1944, when a fully loaded bomber crashed on takeoff at Decemurumum Sardina, he observed that one engine was cutting out as the airplane sped along the runway and realized that a crash was imminent. He started his vehicle and arrived at the scene of the accident immediately after the plane struck. The terrific impact which shattered and set fire to the B-26, killed one member of the crew and seriously injured others. With complete disregard for his own safety, and despite exploding ammunition and the great danger of fire setting off the bombs, he made his way into the wreckage and, with the aid of a comrade, removed the stricken crew members from the danger area. His heroism and selfless devotion to duty in risking his life to save others reflect highest credit on himself and the armed forces of the United States." Dr Conrad graduated from Wayne University College of Medicine, Detroit, in 1941 and entered the service Oct 24, 1941.

#### Major John Connell

Major John Connell, formerly of Des Moines, Iowa, has been awarded the Silver Star Medal "for gallantry in action in October 1943 in Italy. During an attack by an infantry regiment over a river, Captain Connell followed the infantry across the river and by his own ingenuity organized routes of evacuation of battle casualties. All through the attack, which lasted two days, Captain Connell supervised the proper function of new routes and constantly recomputed to improve, shorten or hasten the evacuation even though the routes were under enemy fire. He made several trips across the river which was still under enemy observation and heavy artillery and mortar fire. Undoubtedly the ingenuity and perseverance of Captain Connell, and the calm and courageous manner in which he performed his duties, saved the lives of many battle casualties and was instrumental in their being evacuated more quickly from the front lines. His coolness under fire and devotion to duty were exemplary and a credit to the armed forces of the United States." Dr Connell graduated from Washington University School of Medicine, St Louis, in 1937 and entered the service Feb 10, 1941.

#### Captain Harlan Alfred Alexander

Capt Harlan A. Alexander, formerly of Minneapolis, was recently presented with the Bronze Star Medal "for heroic achievement" in military operations against the Japanese on Attu Island in May 1943. The citation read: "Capt Harlan A. Alexander, Medical Corps, United States Army. For heroic achievement in connection with military operations against the enemy on May 16, 1943, during the Attu operation. After a furious battle an infantry company was forced to withdraw under withering enemy fire, leaving 5 casualties which had not yet been evacuated. After the withdrawal Captain Alexander, with complete disregard for his own safety, three times led a small group of aid men up a mountain and successfully evacuated 5 wounded men, although the entire route was over enemy terrain. His courageous action was an inspiration to the men of the battalion and resulted in saving the lives of 3 of the 5 wounded soldiers. His courage, coolness under fire and disregard for his personal safety reflect great credit on himself and the military service." Dr Alexander graduated from the University of Minnesota Medical School, Minneapolis, in 1930 and entered the service Sept 8, 1942.

## NAVY

## FIRST AID STATION AT GUAM

Seven machine guns set up in the windows of a besieged American first aid station held a bitterly contested sector of the Marine front lines for several hours recently at Guam. The station was commanded by Lieut George W Eldering formerly of Los Angeles, who in desperation had asked for weapons support when the Japs ignored the aid station's immunity under international law and had launched an attack toward it. The station was located in a shell battered Jap storehouse well in advance of the Marine lines and had been established by Dr Eldering and his men while some of the fighting of this campaign raged about them. "It was the best place we could find at the time," Dr Eldering stated. "The front and side walls of the storehouse were still standing and offered some protection, though the roof and back wall were gone. After I had ordered the guns set up, I could find only five fit Marines to man them so 2 of the patients took over the others. I ordered all patients evacuated immediately after first aid because I wasn't sure we could hold out for any length of time in that spot. Finally the orders came for us to fall back to a position about 500 yards behind the front lines. It was then we learned that our machine guns had held that part of the front alone."

## NAVY AWARDS AND COMMENDATIONS

## Lieutenant Commander Tom T Flaherty

The Air Medal was recently awarded to Lieut Comdr Tom T Flaherty formerly of Long Beach, Calif. The citation accompanying the award read: "For meritorious achievement in aerial flight as crew member of an R4D Transport Plane attached to the South Pacific Air Transport Command from July 15 to 25, 1943. When his craft was unable to land on the densely overgrown jungle terrain while transporting urgently

needed supplies to our forces on New Georgia Island, Lieutenant Commander Flaherty skilfully performed his duties and rendered invaluable assistance to his pilot in accurately dropping the cargo as the unarmed plane flew in at terrific speed and at tree top level to avoid intense enemy antiaircraft fire and aerial opposition, making several hazardous runs on the targets to complete the mission and frequently returning to base without the protection of covering planes. Lieutenant Commander Flaherty's cool courage and unwavering devotion to duty under extremely difficult conditions contributed materially to the success of these vital missions and were in keeping with the highest traditions of the United States Naval Service." Dr Flaherty graduated from the University of Southern California School of Medicine, Los Angeles, in 1939 and entered the service July 14 of that year.

## Lieutenant Commander Ben H Keyserling

The Silver Star Medal was recently awarded to Lieut Comdr Ben H Keyserling, formerly of Columbia, S C. The citation accompanying the award read:

"While his unit was engaged with the enemy, Commander Keyserling displayed a high degree of courage, initiative and professional skill under the most hazardous of conditions.

"Dr Keyserling after all available stretchers had been evacuated to the rear with wounded, advanced to within a few yards of the front line assault companies, coolly and expertly treated wounded as they fell and evacuated them to the rear under heavy machine gun and rifle fire, for a full half hour.

"The fact that many were saved who would otherwise have perished may be attributed to Dr Keyserling's courage in the rendering of treatment. His actions were a great inspiration to all those with whom he came in contact and were in keeping with the highest traditions of the Navy."

Dr Keyserling graduated from the Medical College of the State of South Carolina, Charleston, in 1940 and entered the service Aug 28, 1941.

## MISCELLANEOUS

TYPHUS COMMISSION MEDAL  
AWARDED TO FOUR

The United States of America Typhus Commission Medal has been awarded by order of the President to Dr Abdel Wahed El Wakil, Egyptian minister of health, and to three British brigadiers of the Royal Army Medical Corps for the help they have given representatives of the commission in investigating typhus in the Middle East and southern Italy. The members of the Royal Army Medical Corps are Brigadiers John S K Boyd, George B Parkinson and Rudolf W Galloway.

Dr Wakil's citation reads:

"For meritorious services in connection with the work of the United States of America Typhus Commission. Ever since the arrival of the United States of America Typhus Commission group at Cairo His Excellency, Dr Wakil, as Minister of Health, has cooperated closely with the Commission. Through his interest and influence, facilities and opportunities were made available for the investigation of typhus fever in the laboratory and hospital, while extensive tests and new developments in methods for the control of typhus fever were made possible. The information derived from the results of these studies, conducted with the cooperation of Dr Wakil, has been of benefit to the military forces."

The following is Brigadier Boyd's citation:

"For exceptionally meritorious service in connection with the work of the United States of America Typhus Commission. From the time of the arrival of the first contingent of the United States of America Typhus Commission at Cairo in January 1943 and throughout the remainder of that year, Brigadier Boyd assisted the commission in formulating and effectuating programs for research on typhus fever and in development of measures for control. He furnished detailed information concerning the incidence of typhus fever in British forces in the Middle

East in a manner which advanced coordination between American and British procedures for typhus control. Brigadier Boyd cooperated with the United States of America Typhus Commission in clinical studies, conducted to evaluate the properties of antityphus serum. In his capacity as a member of the Middle East Supply Center (Medical Section), Brigadier Boyd was extremely helpful and cooperative in arranging for distribution of typhus vaccine throughout the Middle East. Through his generous cooperation and through his many years of experience in the field of pathology, Brigadier Boyd as a consultant aided the Commission in practically every phase of its work in the Middle East."

Brigadier Parkinson's citation reads:

"For exceptionally meritorious service in connection with the work of the United States of America Typhus Commission. During the epidemic of typhus in Naples in the period of Dec 20, 1943 to Feb 20, 1944 Brigadier Parkinson actively cooperated with the United States of America Typhus Commission and rendered service of the greatest value in support of the typhus control program in southern Italy. Through his assistance to the Commission measures which prevented the spread of typhus in southern Italy were greatly strengthened."

Brigadier Galloway's citation follows:

"For exceptionally meritorious service in connection with the work of the United States of America Typhus Commission. During the period of from Dec 20, 1943 to Feb 20, 1944, the critical period of the outbreak of typhus at Naples and in southern Italy, Brigadier Galloway actively supported the work of the United States of America Typhus Commission in southern Italy. In addition, he took special steps to see that the danger of typhus fever was brought to the attention of all British medical officers in the area. He initiated an active typhus control program throughout the entire military forces in southern Italy."

## MALARIA EPIDEMIC DANGER IN U S IS REMOTE

Major O R McCoy, chief of the Tropical Disease Control Division in the Preventive Medicine Service of the Office of the Surgeon General of the Army, recently stated that he believed there is little danger of any serious epidemic of malaria in the continental United States traceable to soldiers returned from malarious battle fronts. It was reported recently that among soldiers the malaria situation has improved to a point where the effectiveness of combat units is no longer seriously threatened so long as "atabrine discipline" is properly maintained. Nevertheless some civilian authorities have indicated their fear that the return of malaria victims to the homeland might cause new epidemics or reestablish the disease endemically in areas which have not known it for several generations. Major McCoy stated that such fears are unwarranted. He pointed out that there is no reason to presume that mosquito control work, on which our principal dependence has been placed for malaria control, will not continue to operate effectively despite the presence of returned soldier victims. Brig Gen Hugh J Morgan, head of the Medicine Division, who is chief consultant in medicine to Major Gen Norman T Kirk, Surgeon General of the Army, pointed out that the research work and experiences of the Army, Navy and other governmental agencies in malaria during this war have shed much light on many phases of the disease. "We are able to assure the American public that there is no reason for unfounded fears of malaria, if the disease is properly treated," he said.

Every soldier in a malarious area receives "suppressive treatment"—a small dose of atabrine six days a week, which controls the disease if he should contract it while in the lines and keeps him functioning as part of his unit. If the disease should develop, or if it appears after he is withdrawn to a nonmalarious rest area, he is given substantially larger curative doses, repeated each time the disease reappears. Most victims of vivax malaria have one relapse. At the same time the soldier is trained to protect himself against the mosquito which transmits the infection. He is supplied with mosquito netting, with mosquito repellents and "mosquito bombs" to clear out his tents or living quarters, and he is taught not to expose himself at sunrise or sunset.

## HEALTH NEWS FROM EUROPE

Public health work in Naples, after the initial cleanup and refitting of hospitals, was largely a matter of modernizing and supplementing the efforts of the Italian civilian government. Drug supplies and equipment were imported and modern developments in techniques applied. Rapid treatment centers for victims of venereal disease were instituted and hospitals established for prostitutes. Wider case finding was stimulated and steps in education were undertaken.

Special emphasis also was laid on malaria control measures, on sanitation to prevent typhoid and dysentery infections and on antityphus work. Owing to overcrowding and lack of water and soap, an epidemic of lice borne typhus was building up when the Allies moved into Naples.

Typhus is a seasonal disease, and the number of cases usually begins to increase in the fall and winter and reaches its peak in April and May. It is particularly virulent among the underfed and poorly housed parts of the population, and during and after the last war it literally killed millions in eastern Europe. In Naples public health measures taken under the direction of the allied military government and the Typhus Commission of the United States stopped the epidemic cold for the first time in history. In January nearly 1000 cases were reported, in February there were fewer than 200 cases, and in March case incidence was unimportant.

A few sporadic cases still occur in Naples, but the strenuous delousing campaign, use of repellent powders perfected for the U S Army and the immunization with U S Army vaccine of civilian public health workers proved effective. Exact figures on the death toll of the epidemic have not yet been assembled, but the rates ran about as usual, from 4 per cent among children to 54 per cent among persons over 70 years old. There were no cases among Allied soldiers. Naples had not had a reported case of typhus for fifteen years prior to this outbreak.

Records of the local regime were so confused that it was possible to form no clear picture of previous health averages for Naples, but current conditions in the city are described by the Army as good. Typical of the Fascist records was an instance applying to a Sicilian city in which certain buildings were listed as hospitals with so many beds allotted for civilian care. Some of the buildings so listed were actually houses of prostitution.

## LIEUT OLIVER AUSTIN MISSING IN ACTION

Dr Jean Austin, wife of Lieut Oliver Austin, who has been missing in action since July 5, will carry on her husband's work. He vanished after taking off on a mercy flight July 5 from Churchill, Canada. His destination was Eskimo Point, 160 miles north, where he hoped to check an epidemic among the Eskimos and forestall danger of its spreading to the United States Army Air Force station near Churchill, where he was post surgeon. Searching parties found the plane wrecked on July 9 on a submerged reef in the Hudson Bay. The pilot's body was found but no trace of Lieutenant Austin. Dr Jean Austin, who is resident surgeon at Cook County Hospital, Chicago, plans to leave for the isolated Hudson Bay outpost 1,000 miles north of Winnipeg, where there are no other doctors for a distance of 600 miles, as soon as possible. Drs Jean and Oliver Austin both graduated from Northwestern University Medical School, Chicago, in 1943 and 1941, respectively. Dr Oliver Austin entered the service in September 1943.

## HOSPITALS NEEDING INTERNS AND RESIDENTS

The following hospitals have indicated to the Council on Medical Education and Hospitals that they have not completed their house staff quota allotted by the Procurement and Assignment Service.

(Continuation of list in THE JOURNAL September 23 page 242)

### CALIFORNIA

Stanford University Hospitals San Francisco Capacity 372 admissions 9,588 Dr Anthony J J Rourke Superintendent (residents—surgery obstetrics and gynecology anesthesiology psychiatry medicine, October 1)

### ILLINOIS

Walther Memorial Hospital Chicago Capacity 209 admissions 5,665 Mr William C Martens Jr Superintendent (3 interns)

### MICHIGAN

Saginaw General Hospital, Saginaw Capacity 151 admission 3,961 Mrs Kate J Hand Superintendent (interns)

### MISSOURI

Christian Hospital St Louis Capacity 135 admissions, 3,201 Miss Agnes Heman RN Superintendent (2 interns 1 resident mixed service)

### NEW YORK

Beth David Hospital New York City Capacity 187, admissions 3,985 Mr Harold M Salkind Executive Director (6 interns, October 1)  
Ellis Hospital Schenectady Capacity 470 admissions, 14,385 Miss Mary G McPherson, RN Administrator (interns resident, mixed service October 1)

### TENNESSEE

Protestant Hospital Nashville Capacity 222 admissions 4,895 Mrs Elizabeth S Hain RN Superintendent (3 residents—mixed service)

### WASHINGTON

Pierce County Hospital Tacoma Capacity 239 admissions 2,768 Dr Burton A Brown Administrator (intern October 1)

## WARTIME GRADUATE MEDICAL MEETINGS

The following subjects and speakers for Wartime Graduate Medical Meetings have just been announced.

Mayo General Hospital, Galesburg, Ill Blood Dyscrasias, Drs Louis R Limarzi and Howard L Alt October 4

Camp Ellis, Camp Ellis Illinois Orthopedic Problems of General Interest, Drs Edward L Compere and Paul B Magnuson, October 4

Chanute Field, Rantoul, Ill Gallbladder and Liver Disease, Drs Andrew C Ivy and Walter L Palmer, October 4

# ORGANIZATION SECTION

## WASHINGTON LETTER

(From a Special Correspondent)

Sept 25 1944

### Sensenich Urges Physical Fitness Program

A nationwide program of physical fitness, "not a Hitler youth movement, but routines of living for the purpose of hardening or attainment of physical vigor," was advocated by Dr R L Sensenich of the Board of Trustees of the American Medical Association in his testimony before the Pepper committee. He was the first witness called at the opening of the past week's three day session, when the health condition of four to five million young American men found physically and mental unfit for the armed forces was under discussion.

"The greatest significance in reports of rejections for the armed forces," said Dr Sensenich, "would seem to be in the notable lack of self interest and effort to secure or maintain a high level of mental and physical fitness. Those without recognizable defects fail to observe even the simplest program of regulation or discipline directed to the maintenance of good health. Routines of living for purposes of hardening or attainment of physical vigor are often referred to only with contempt."

Dr Sensenich revealed that plans are well along for the broadest national activity to stimulate an interest in physical fitness. These are directed to homes, schools, churches, labor and industry and social and professional groups. This activity is being organized under leadership of a joint committee for the American Medical Association and the Committee on Physical Fitness of the Federal Security Agency. The work will be financed from many private groups. Dr Sensenich estimated that approximately one out of six men were rejected because of remediable defects. Failure was most often due to lack of interest or willingness to accept treatment to correct conditions rather than to inability to obtain such medical service. He said that there are numerous provisions for those unable to pay for medical service. Final failure to obtain needed medical care, if it is sought, he said, generally rests on failure of some agency of government to carry out the purpose for which it is directed to assist those in need. On the question of availability of medical care he said that the Procurement and Assignment Service for Physicians, Dentists and Veterinarians had done an excellent job in preventing serious depletion of medical personnel where their services were needed by the civilian population.

### Cutting Hospital and Medical Costs for Wage Earners

Dr C Rufus Rorem, director of the Hospital Service Plan Commission of the American Hospital Association, told the Pepper committee that if the government provided all necessary medical and hospital care for the indigent, doctors and hospitals could reduce their rates so much that all wage earners, even with very low incomes, could probably provide such care for themselves and their families. Dr Rorem said that providing hospital and medical service for beneficiaries of public assistance, who at most make up no more than 15 per cent of the population, may seem a trivial procedure that avoids the basic need of adequate care for all the people, but he declared that it "strikes directly at the heart of an important economic problem of sickness. If the hospitals and physicians were individually (and as groups) relieved of financial responsibility for care of the indigent public," he said, "the subscription rates and hospital payments of the Blue Cross plans might be reduced to make participation possible by even the low income employed person and his dependents."

During the past week's hearing, views of labor leaders were expressed. The American Federation of Labor went on record as believing that the remedy to the national health problem lies in the principle of social insurance to apply to the health needs of all the people. Its spokesmen were in favor of the programs for hospitals and district hospital centers proposed by Dr Thomas Parran, Surgeon General of the U S Public Health Service.

In addition to the American Medical Association spokesmen, testimony was given by Professor Walter W Palmer, chair-

man, Committee on Postwar Medical Service, American College of Physicians, Dr Jean Curran, dean, Long Island College of Medicine and member of the board, Bingham Associates Fund, Dr Samuel Proger, medical director, Pratt Diagnostic Hospital, Boston, Dr Victor Heiser, chief medical consultant, National Association of Manufacturers, Dr Leverett D Bristol, chairman, Health Advisory Council, U S Chamber of Commerce, Dr John P Peters, secretary, Committee of Physicians for Improvement of Medical Care, Dr George Stevenson, medical director, National Committee for Mental Hygiene, Dr E I Robinson, president, National Medical Association, Dr Ernst P Boas, chairman, Physicians Forum, Dr John Radford Boling, president, Florida State Medical Society, Dr Perry Prather, general practitioner, Hagerstown, Md, and Dr T Henshaw Kelley, secretary, California Physicians Service.

### Commission on Children Urged by Pepper Committee

Three recommendations from the Pepper Subcommittee on Wartime Health and Education, made at the conclusion of sittings here this past week when the juvenile delinquency problem was discussed, were (1) Establishment of a commission for children and young people in the Office of War Mobilization, (2) fuller participation of children in the home front war effort through a central administrative authority and (3) national publicity and educational policy to acquaint the people of the United States fully with facts about children and their needs.

Juvenile delinquency, the hearings indicated, does not have any single cause and it cannot be cured by any single remedy. Prevention is believed to be the soundest approach to the problem, the committee found from testimony of witnesses with experience in child health and welfare. Many governmental agencies are struggling with the problem, but overall leadership and coordination are needed. It was pointed out in a summary of testimony that, although there are at least twelve agencies in the federal government alone performing special services for children, the services of none of them, from the Children's Bureau to the Federal Bureau of Investigation, can be spared. Nor is there any federal agency known to the committee which is set up in a way to provide adequate leadership and coordination in delinquency prevention.

### Veterans Hospital Facilities Extended

Addition of 14,100 beds to the hospital system of the Veterans Administration has been given presidential approval, reports Brig Gen Frank T Hines, chairman of the Federal Board of Hospitalization. This includes approximately 2,700 beds for mental patients, 7,900 for general medical and surgical care and 3,500 for tuberculous patients. This program is in addition to projects already approved for 17,400 beds in mental hospitals, 2,100 for general medical and surgical patients and 500 for the tuberculous. It is reported that most of the 20,000 beds are already under construction. Altogether, 34,100 beds are to be added to present Veterans Administration hospitals.

The latest program was approved after a nationwide study of prospective needs for veterans' hospitals, made jointly by the Veterans Administration and the Federal Board of Hospitalization. The study does not recommend individual sites for new hospitals or suggest where additions should be made. The way is cleared now for detailed planning by the Veterans Administration.

General Hines said that planning for future hospitalization of veterans must be continued. Locations will be chosen and hospitals designed two or three years in advance, the presidential approval having ordered that the whole program be reviewed frequently.

It is estimated that there will eventually be about 112,700 hospital beds available for veterans' care, and of the 27,700 to be made available for 1947 some 5,700 are for Veterans Administration patients in other federal, state and private hospitals. Adding some 12,800 beds that will be available for domiciliary care, a grand total of about 125,500 beds will be available ultimately to veterans.



## Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES NEW HOSPITALS EDUCATION AND PUBLIC HEALTH)

### CONNECTICUT

**Society News**—Dr Joseph Jordan Eller, New York will address the Waterbury Medical Society, November 9, on 'Tumors of the Skin'

**Yale Library Acquires Herb Cabinet**—The Yale Medical Library recently acquired the herb cabinet of Dr Seth Bird (1733-1805), Bethlehem. The *Connecticut State Medical Journal* reported that no Connecticut physician of his time was more famous as a practitioner or medical preceptor than Dr Bird. On June 14, 1941 the Beaumont Medical Club of Connecticut paid tribute to Dr Bird in a visit to his house which at that time was owned by Mr William B Sprague of New York City. On this occasion Dr Creighton Barker, New Haven, presented a paper on Dr Bird.

### DISTRICT OF COLUMBIA

**Personal**—Dr Hugh H Hussey Jr has been named chairman of a medical advisory committee appointed by the district office of price administration to pass on all applications for extra food rations for convalescents and persons in ill health. Other members of the committee are Drs Roy L Sexton, Roger O'Donnell Jr, Thomas F Collins Jr and James M Moser.—Dr Nelson Mercer, medical officer at Virginia Polytechnic Institute, Blacksburg, Va. has been named chief medical officer of the tuberculosis division of the Gallinger Municipal Hospital, effective August 1. Dr Mercer succeeds Dr Charles P Cake, who resigned to enter the U S Public Health Service.—Dr Herbert P Ramsey has been appointed chairman of the health division of the Council of Social Agencies.

**Blood Bank Incorporated**—The new community blood plasma bank, successor to the former Office of Civilian Defense blood bank, has been incorporated and will soon begin operation, according to *Medical Annals* (THE JOURNAL, June 24, p 587). Dr Roger M Choiser is the new president of the bank, and members of the governing board include Dr John A Reed, vice president, Dr Charles Stanley White, Dr Oscar B Hunter, Dr John M Orem and Fred A Walker of the Central Labor Union secretary-treasurer. Plans are to maintain bank supplies with contributions by patients after they recover or by their friends. It will be a nonprofit organization, and plasma will be available at the cost of production plus a donation of blood.

### ILLINOIS

**Personal**—Dr Joseph S Maxwell, formerly missionary to Ethiopia, has been appointed physician at Wheaton College, it is reported.

#### Chicago

**The Bevan Lecture**—Dr Howard C Naffziger, professor of surgery, University of California Medical School, San Francisco will deliver the sixteenth annual Arthur Dean Bevan Lecture before the Chicago Surgical Society, October 6. The subject of his lecture will be 'Exophthalmos and the Thyroid: Experiences with Major Surgery of the Orbit'.

**Mr Shepard Joins Saunders Company as Art Editor**—Mr Willard C Shepard for many years connected with Rush Medical College and recently Rush associate in illustration studios at the University of Illinois College of Medicine, has been appointed art editor of W B Saunders Company, publishers Philadelphia and London in which position he will be available for consultation with authors in the preparation of illustrations for important textbooks. Mr Shepard studied under the late Professor Max Brodel of Johns Hopkins University School of Medicine, Baltimore. Since 1916 he has been medical artist to Rush Medical College and the Presbyterian Hospital and for the past several years a general faculty member of the department of illustration of the University of Illinois College of Medicine. In his new work Mr Shepard will concentrate on the more effective utilization of medical illustration to the benefit of medical education and clinical practice.

### INDIANA

**Personal**—Dr Love E Pennington, superintendent of the Milledgeville Ga., State Hospital has been appointed to a similar position at the Madison State Hospital, North Madison.

**Medical School Affiliates with St Elizabeth Hospital**—An affiliation of St Elizabeth Hospital, La Fayette with the Indiana University School of Medicine, Indianapolis for postgraduate instruction of the hospital's interns and staff has been announced by Dr Willis D Gatch, dean of the medical school. The affiliation, which was requested by Sister M Amelia, superintendent and Sister M Renata, librarian of the La Fayette hospital is the first of a series of joint arrangements by which the university's school of medicine will extend its facilities to local hospitals. The university will outline the training, send members of the faculty to conduct monthly meetings of interns and staff, and conduct examinations. The major portion of the instruction will be conducted by La Fayette physicians under Dr Franklin S Crockett, director of postgraduate instruction of St Elizabeth Hospital.

### LOUISIANA

**New Diagnostic Center**—The New Orleans Diagnostic Center has been opened in the old criminal courts building for the examination of women arrested for violations of the moral code. Women found to be infected with venereal diseases will be sent to the Delgado Memorial Hospital, a unit of Charity Hospital, New Orleans.

**Anton Carlson to Give New Lecture**—Dr Anton J Carlson, professor emeritus of physiology, University of Chicago School of Medicine, will deliver the first lecture to be given at the Tulane University of Louisiana School of Medicine, New Orleans, October 2 under the newly created Alpha Omega Alpha Lectureship. Established by the Tulane University Stars and Bars chapter of Alpha Omega Alpha, one lecture will be given each academic year on the initiation of new members. Twelve Tulane students will be initiated on October 2 in addition to Dr Hiram W Kostmayer, dean of the medical school, who has been chosen an honorary member.

**Symposium on the Heart and Circulation**—The Louisiana State University School of Medicine, New Orleans, will conduct a symposium on the heart and circulation, October 25-27. There will be no fee. Those interested are invited to attend. Among the speakers will be Drs Maurice B Vissler, University of Minnesota Medical School, Minneapolis, who will discuss cardiac efficiency and metabolism, Isaac Starr, University of Pennsylvania School of Medicine, Philadelphia, the ballistocardiograph and Frank N Wilson, University of Michigan Medical School, Ann Arbor, electrocardiography. Other speakers will be from Tulane University of Louisiana School of Medicine and Louisiana State University.

### MASSACHUSETTS

**Nutrition Instruction**—The Harvard School of Public Health through its department of nutrition is expanding its teaching activities in nutrition. Nutrition A, consisting of three lectures per week for the first semester (November through February) covers the following subjects: proteins, fats, carbohydrates, minerals, vitamins, water, foods as sources of nutrients, nutritional requirements versus recommended allowances, losses of food nutrients in processing and the enrichment and fortification of foods, food habits, nutrition in relation to pregnancy, lactation, childhood, adolescence, dental health, medicine and blood regeneration, the use and abuse of commercial vitamins and mineral preparations, food fads versus facts, food budgeting, evaluation of nutritional status—dietary histories, laboratory methods, clinical studies, surveys, evaluation of diets, mass feeding, nutrition in industry, the nutritionist in a public health program, tools for nutrition education, nutritional problems of rehabilitation, nutrition in preventive medicine and public health. Nutrition B is offered throughout the entire year and consists of practical experience under supervision in food clinics in a community nutrition project or in experimental nutrition depending on the students' qualifications and interests. Nutrition C, a weekly journal club and seminar in nutrition covering both fundamental and applied nutrition meets throughout the academic year.

### NEBRASKA

**The C W M Poynter Foundation**—Alumni and friends of Dr Charles W M Poynter, dean of the University of Nebraska College of Medicine, Omaha, have set up an endowment fund to establish the C W M Poynter Foundation. The purpose of the foundation will be to create a Poynter lectureship and fellowship at the college of medicine and the



painting of a portrait of Dr Poynter Persons wishing to contribute to the fund should address Dr Willson B Moody, treasurer of the foundation, 530 Medical Arts Building, Omaha 2

### NEW JERSEY

**Brandenburg Arrested for Illegal Narcotic Sale**—Dr Leopold W A Brandenburg, 57 years old, Union City physician who in recent years has been involved in several criminal complaints (THE JOURNAL, July 11, 1942, p 893 and Sept 12, 1942, p 135), was arrested by federal narcotic agents, September 12, on a charge of illegally selling narcotics. He was held in \$5,000 bail to await action by the federal grand jury. Assistant United States Attorney Charles Stanziale said the charges involved the sale of morphine to "four or five drug addicts over a period of time." The arrest was made by federal narcotic agents at the physician's office at 2802 Hudson Boulevard, Union City.

**Court Orders Physician Restored to Civilian Job**—The U S Circuit Court of Appeals for the Third District, Philadelphia, in its first decision construing terms of the amendment to the Selective Service Act which requires employers to reinstate returned veterans to their jobs, ruled on September 12 that a medical director for an industrial corporation is an employee within the meaning of the law and entitled to his old job after discharge from the armed forces, according to the New York Times. The unanimous decision, written by Judge William H Kirkpatrick, orders the General Cable Corporation at Perth Amboy, N J, to reinstate Dr Albert E Kay, Perth Amboy, as the company's medical director. Dr Kay enlisted in December 1942, after he was classified 1-A by his draft board, and attained the rank of captain in the army before he was discharged for physical disability. The company refused to rehire him, claiming that he was an independent contractor rather than an employee. It also contended that, since an employees' health association for which Dr Kay had been medical examiner had engaged another physician and refused to take Dr Kay back it would be more beneficial to the employees if the same doctor was medical director for both the company and the association. Judge Kirkpatrick ruled that the law does not say a returned veteran must be an employee but is intended to protect "a position in the employ of an employer" and that Dr Kay held such a position. As to the company's contention that there would be "loss of efficiency" and "additional expense if separate doctors were employed by the company and the employees' association, Judge Kirkpatrick said that if such a claim was upheld it "would defeat the main purpose of the act and limit its operation to merely capricious or arbitrary refusals." The ruling was made on an appeal taken by Dr Kay from a decision handed down by Judge Thomas F Meany of the New Jersey Federal District Court last February 7 dismissing a lawsuit the doctor had filed to compel the company to reinstate him.

### NEW YORK

**Cancer Teaching Day**—On October 17 a cancer teaching day will be held at the Hermann M Biggs Memorial Hospital, Ithaca, under the auspices of the Medical Society of the County of Tompkins, the state medical society and the division of cancer control of the state department of health. The speakers will be Drs John H Garlock, New York, and John J Morton Jr, Rochester, on "Carcinoma of the Colon" and "Bone Tumors" respectively. An evening session will be addressed by Drs Andrew H Dowdy, Rochester, on "Epithelioma of the Skin" and Frank E Adair, New York, "Carcinoma of the Breast."

**Graduate Lectures**—On October 31 Dr Frank L Meleney, New York, will discuss "Penicillin Therapy before the Nassau County Medical Society in Rockville Centre. Dr Foster Kennedy, New York, discussed "The Neuroses Related to the Manic-Depressive Constitution" before the Otsego County Medical Society, September 13, and Dr Stockton Kimball, Buffalo, addressed the St Lawrence and Jefferson county medical societies, September 14, on "The Diagnosis and Treatment of Malaria and the Dysenteries." These lectures are jointly sponsored by the state medical society and the state department of health.

### New York City

**Gastroenterology Conferences**—Bellevue Hospital announces a series of conferences on gastroenterology beginning October 2 and continuing every Monday throughout the coming year. The sessions will consist mainly in the presentation of a clinical, pathologic and radiologic study of current abdominal cases that have come to operation or necropsy.

**Meeting on Diabetes**—The New York Diabetes Association was addressed September 28 at the Blumenthal Auditorium, Mount Sinai Hospital, New York, by Drs Martin G Goldner and George Gomori, both assistant professors of medicine at the University of Chicago School of Medicine, on "Alloxan Diabetes" and "Histology of the Normal and Diseased Pancreas" respectively.

**Columbia Receives Penicillin**—A grant of 100,000 Oxford units of penicillin was recently made to students of the College of Pharmacy at Columbia University for demonstration purposes, newspapers reported August 30. The drug is not suitable for human consumption, it was stated, but will prove an important addition to the laboratory to enable pharmacy students to gain first hand knowledge of the drug.

**Million Dollar Fund for Crippled Children**—The Association for the Aid of Crippled Children, 580 Fifth Avenue, will receive about 10 million dollars under the will of Mrs Annie Kirk Belding, who died September 4. The late Mrs Belding's husband, Milo M Belding, who died in 1931, had provided that the income from a trust fund after the death of his wife was to go to the association. The gift will be known as the Milo M Belding Fund.

**Health Education**—The Health Education Committee of the National Publicity Council for Health and Welfare Services, Inc., announces two health education clinics at the Hotel New Yorker, New York, October 2. One on printed matter to be addressed by Milton Glover, Arthur Kudner Advertising Agency, and Horace H Hughes, director of public information, Maternity Center Association, will be a practical analysis of printed pieces and posters in the health field. The second on radio, will be a clinical discussion of the various types of radio programs, speakers will be Paul F Lazarsfeld, director, Office of Radio Research, Columbia University, Harrison B Summers, manager, public service division, Blue Network, and Herta Herzog, radio research department, McCann Erickson Advertising Agency.

**Mayor Vetoes Boric Acid Bill**—Mayor Fiorello H La Guardia recently vetoed the Vogel bill passed by the city council, which would require that all boric acid products be labeled "poison," according to the Journal of the Medical Society of the County of New York. The mayor based his veto on three main points:

1 He doubted that the jurisdiction or police powers of the city council covered the subject.

2 He regarded the question as one of a highly technical and medical nature more properly and wisely entrusted to the board of health.

3 He preferred opinions of several medical authorities including Dr Ernest L Stebbins, city health commissioner and Dr Edward S Godfrey Jr, state health commissioner.

It was stated that Mayor La Guardia found that the amendment to the sanitary code, recently passed by the city board of health and effective September 15, adequately meets all the precautions. The amendment governs the handling for purposes of selling of boric acid in the form of powder, crystals or solutions unless the container contains a label with the words "boric acid" and "Caution—Not for Internal Use Except as a Mouth Wash, Eye Wash or Douche."

### PENNSYLVANIA

#### Philadelphia

**Personal**—Gustav J Martin, ScD, has been appointed research director of the National Drug Company, he has been assistant director in charge of the division of chemistry for the Warner Institute for Therapeutic Research, New York.

**Joint Medical Meetings**—On September 13 the Philadelphia County Medical Society and the College of Physicians of Philadelphia opened their regular joint medical meetings with a talk, among others, by Dr Reginald H Smithwick, Boston, on "Experiences with the Surgical Treatment of Hypertension." Subsequent speakers will include:

John F Enders, PhD, Boston: Immunity in Mumps (John Herr Musser Lecture) October 4.

Dr Andrew C Ivy, Chicago: The Gastrointestinal Hormones, Their Physiology and Application November 8.

Dr Stanley P Remann: The Cancer Problem as It Stands Today (Thomas Dent Mutter Lecture) December 6.

Dr George W Thorn: Boston: Asthenia of Adrenal and Thyroid Origin—Differential Diagnosis and Treatment, January 10.

Dr Chester S Keefer: Boston: Penicillin (Nathan Lewis Hatfield Lecture) February 7.

Dr Joe V Meigs: Boston: The Delay Period in the Diagnosis of Cancer March 14.

Dr Charles C Wolferth: The Diagnosis of Coronary Artery Disease (Mary Scott Newbold Lecture) April 4.

## SOUTH CAROLINA

**Personal**—Dr Henry W Tobias for more than six years chief medical officer of the Veterans Administration Facility Columbia has resigned. Newspapers report that he will return to Washington to live.—Dr Caleb W Harris, Bishopville recently completed fifty years in the practice of medicine.

**Executive Director Named for Ten Point Program**—Mr M L Meadors Florence a practicing attorney has been elected executive director of the "ten point program" sponsored by the South Carolina Medical Association (THE JOURNAL June 17, p 505). The program was launched September 1 and is intended to raise the level of medical care for all people of South Carolina and keep the practice of medicine in the hands of the medical profession. The plan was approved at the recent annual meeting of the state medical association. Mr Meadors formerly served as a member of the South Carolina House of Representatives.

**Refresher Courses**—The Medical College of the State of South Carolina Charleston will conduct its third annual refresher course November 1-3 with the following speakers: Drs Hilger Perry Jenkins, Chicago; Albert David Kaiser, Rochester N Y; Eugene M Landis, Boston; Bret Ratner, New York; Harold George Wolff, New York; George Edward Pfahler, Philadelphia; Paul Titus, Pittsburgh; Henry N Harkins, Baltimore; and Julius Lane Wilson, New Orleans. Dr Victor Johnson, Secretary of the Council on Medical Education and Hospitals, American Medical Association, Chicago, will address the banquet session on founders day, November 2 on "Medicine After the War." A special session on physical medicine will be held Friday in the Stark General Hospital Medical Library. The speakers will include Lieut Col Charles H Fair, M C, Major John G Reid, M C, Capt Arthur M Pruce, M C, on "Physical Medicine and War Injuries" and Lieut Elizabeth Kelly, P T A and Captain Pruce on "Peripheral Nerve Injury. The Role of Splinting and Physical Therapy in Preoperative and Postoperative Care" a demonstration. A refresher course organized by the South Carolina Society of Ophthalmology and Otolaryngology will be conducted October 31 to November 2, among others by Drs Henry M Goodyear Cincinnati, James S Shipman Philadelphia, James W White, New York, and Oscar V Batson, Philadelphia.

## TEXAS

**Memorial to Dr Randall**—The amphitheater in the outpatient clinic building of the University of Texas Medical Branch, Galveston, has been named Randall Hall in honor of the late Dr Edward Randall professor emeritus of therapeutics, formerly chairman of the board of regents of the University of Texas and chairman of the board of directors of the Sealy and Smith Foundation. Dr Randall died August 12.

**Changes in the Faculty at Baylor**—The following appointments to the clinical faculty of the Baylor University College of Medicine, Houston, have been announced:

Dr Theodore R Hannon to associate professor clinical surgery  
Dr Frank O McGhee to associate professor of orthopedic surgery  
Drs John E Skogland and Zidella M S Brenner to associate professors clinical neuropsychiatry  
Dr Paul R Stalnaker associate professor clinical urology  
Dr A Louis Dippel Salt City City to associate professor obstetrics

## WEST VIRGINIA

**Advisory Committee Named for Physical Restoration Program**—A professional advisory committee to the physical restoration section of the West Virginia board of vocational education has been appointed by the West Virginia State Medical Association at the request of F Ray Power, director of the new division because of their outstanding contribution in a similar advisory capacity to the adult physical restoration program of the department of public assistance. Members of the committee are Drs Thomas H Blake, St Albans, and Hugh A Bailey and Thomas G Reed Charleston. The physical restoration program of the division of vocational rehabilitation includes provisions for surgical, medical and psychiatric care, hospitalization, physical therapy, occupational therapy and artificial appliances for clients who meet the criteria for eligibility for the services of the division and who are medically indigent. The duties and responsibilities of the professional advisory committee will include meeting from time to time to advise the division of rehabilitation and the supervisor of physical restoration with respect to general policies setting of standards, selection of rates and methods of payment for services, supplies and prosthetic appliances, methods of medical

reporting and record keeping by case workers, and assisting in interpreting to the professional personnel and institutions participating in the program the policies and procedures adopted by the state board of vocational education. Dr Norman G Angstadt Fayetteville director of the bureau of county health work of the state department of health has been named a part time medical (administrative) consultant. His work will include day to day consultation with the supervisor of physical restoration in individual cases and specific medical problems, advice with regard to the execution of the policies for physical restoration assistance to the supervisor in representing the state agency in its contacts with the medical and associated professions assistance in the maintenance of the standards established by the state agency for the selection of physicians, hospitals and other medical personnel and facilities qualified to serve various types of cases and for payment to physicians, hospitals and others and assistance in training the rehabilitation case work staff. The physical restoration program is already functioning with medically indigent clients being provided with such prosthetic appliances, surgical correction and therapeutic treatment as is necessary to restore them to physical fitness for jobs in industry which is the objective of all physical restoration in the new division.

## GENERAL

**National Hearing Week**—The week beginning October 22 has been designated National Hearing Week and will be devoted to the theme "Twenty-Five Years of National Service in the Cause of Better Hearing." The observance will be emphasized at the twenty-fifth anniversary meeting of the American Society for the Hard of Hearing at the Waldorf Astoria Hotel New York November 10-12. This will be the eighteenth annual observance of National Hearing Week.

**Graduate Courses**—The American College of Physicians has announced its autumn postgraduate courses the first on cardiology to be held at the Massachusetts General Hospital Boston October 2-7. Other courses include:

General Medicine University of Oregon Medical School Portland October 9-14

Internal Medicine Center for Continuation Study University of Minnesota Medical School Minneapolis October 9-14

Allergy Roosevelt Hospital New York October 16-21

Special Phases of Internal Medicine various Chicago institutions October 23-November 4

Special Medicine various Philadelphia institutions December 4-15

**Dr Hanson Joins Red Cross**—Dr Millard C Hanson who recently resigned as city health director of Richmond Va, has been appointed medical director for the American Red Cross in charge of the Pacific area, with headquarters in San Francisco. Dr Hanson will have charge of medical activities of the Red Cross in seven Western states and the territory of Alaska. Dr Hanson, who graduated at Rush Medical College, Chicago, in 1923 served in the Richmond position for more than eight years.

**New Journal of Clinical Psychology**—A new *Journal of Clinical Psychology* will make its appearance in January 1945 under the auspices of the University of Vermont College of Medicine, Burlington. Dr Frederick C Thorne Brandon Vt, is the editor. The new publication seeks to improve interprofessional relations between psychology and psychiatry. It will appear quarterly and will be limited to the publication of original research reports and of authoritative theoretical articles in the field of clinical psychology. The journal hopes to bring about closer understanding between psychology and the medical profession particularly in the borderline fields of psychometrics, guidance, counseling, child development and remedial work with speech, reading and special disabilities.

**Special Society Elections**—Dr Walter A Younge St Louis was chosen president-elect of the National Medical Association at its annual meeting in St Louis, August 17 and Dr Emery I Robinson Los Angeles was installed as president. Other officers are Dr John T Givens, Norfolk Va, general secretary and Dr Eugene T Taylor, St Louis treasurer. The 1945 session is planned for Louisville Ky.—Will Ross a director of the Wisconsin Anti-Tuberculosis Association, Milwaukee, was recently chosen president-elect of the National Tuberculosis Association at its meeting in Chicago. Mr Ross is the first layman to be elected to this office in thirty-two years and the second in the association's history.

**Cancer Society Changes Name**—The American Society for the Control of Cancer, Inc., has changed its name to the American Cancer Society, Inc. In the future the society's lay organization the Women's Field Army will be known as

the Field Army in recognition of the fact that men as well as women are vitally concerned in the work. Mr. George B. Larson, formerly assistant secretary, Wisconsin State Medical Society, Madison, has joined the staff of the cancer society as director of publicity and public relations. The society plans to expand and extend its efforts not only to educate the public but to obtain from the public funds for cancer research, diagnosis and treatment, and education. The society will not itself conduct any research or own or operate any hospitals, clinics or laboratories but will raise and distribute funds to aid such institutions and projects as may be approved by its board of directors.

**Conference of Professors of Preventive Medicine**—On October 2 the Conference of Professors of Preventive Medicine will hold its annual meeting in the Hotel Pennsylvania, New York, with Dr. Wilson G. Smilie, New York, acting as chairman and Leland W. Parr, Ph.D., Washington, D. C., secretary. Among the speakers will be

Dr. Jacques P. Gray, Richmond, Va., Integration of the Teaching of Preventive Medicine with Clinical Teaching.  
Dr. Dwight O'Hara, Boston, Teaching of Industrial Hygiene in the Department of Public Health and Preventive Medicine.  
Dr. William W. Peter, New Haven, Conn., Use of Teaching Films in Preventive Medicine and Public Health.  
Dr. Fred I. Moore, Brooklyn, Teaching of Social and Economic Factors in the Department of Preventive Medicine.  
Dr. Henry C. Meloney, New York, Teaching of Tropical and Parasitical Diseases in the Department of Preventive Medicine.

**Course in Allergy**—The American College of Allergists will conduct a graduate course in allergy at the Coronado Hotel, St. Louis, November 4-8, preceding the meetings of the American Academy of Pediatrics and the Southern Medical Association. Among the instructors will be

Dr. French K. Hansel, St. Louis.  
Dr. Ralph Bowen, Houston, Texas.  
Dr. Herbert J. Rinkel, Kansas City, Mo.  
Dr. Leon Unger, Chicago.  
Dr. Rudolf I. Baer, New York.  
Dr. Albert V. Stoesser, Minneapolis.  
Dr. Thomas Wood Clarke, Utica, N. Y.  
Dr. Jonathan Forman, Columbus, Ohio.  
Dr. Homer E. Prince, Houston.  
Dr. Cecil M. Kohn, Kansas City.  
Dr. Michael Zeller, Chicago.  
Dr. Frederick W. Wittich, Minneapolis.

Additional information may be obtained from Dr. Wittich, secretary-treasurer of the college, 401 La Salle Medical Building, Minneapolis 2, or Dr. Hansel, president, 634 North Grand Boulevard, St. Louis 3.

**Borden Award in Nutrition**—The American Institute of Nutrition announces the Borden Award in nutrition in recognition of distinctive research by investigators in the United States and Canada which has emphasized the nutritive significance of the components of milk or of dairy products. The award will be made primarily for the publication of specific papers, but the judges may recommend that it be given for important contributions over an extended period of time. The award may be divided between two or more investigators. Employees of the Borden Company are not eligible for this honor. The formal presentation will be made at the annual meeting of the institute at Cleveland, May 8, 1945. To be considered for the award, nominations must be in the hands of Dr. Fredrick J. Stare, Harvard Medical School, Boston, chairman of the nominating committee, by Jan. 15, 1945. The nominations should be accompanied by such data relative to the nominee and his research as will facilitate consideration for the award.

**Incidence of Poliomyelitis**—The peak of the 1944 epidemic of infantile paralysis for the nation as a whole apparently has been passed, and the incidence of the disease is now tapering off, according to the the National Foundation for Infantile Paralysis, September 18. The heaviest incidence of cases for the nation occurred in the week of September 2, when 1,683 cases were reported to the U. S. Public Health Service. The week of September 9 showed a drop to 1,487, and reports since then from epidemic states indicate that the decline is continuing. The total for the year up to September 9 was 10,959 cases, or more cases for the comparable period than at any time since America's worst epidemic year in 1916. This year's total for the first thirty-six weeks is 2,030 cases higher than for the same period in 1931, which to date is the second highest epidemic year. In combating the epidemic the National Foundation has sent out seven doctors, fifty physical therapists and more than 7 tons of wool as well as emergency financial relief. The American Red Cross has recruited approximately 700 nurses to supplement local facilities in epidemic areas. All twenty-six of the respirators owned by the National Foundation are still in active use.

**B Complex Award**—Nominations are solicited for the 1945 award of \$1,000 established by Mead Johnson and Company to promote researches dealing with the B complex vitamins. The recipient of this award will be chosen by a committee of judges of the American Institute of Nutrition, and the formal presentation will be made at the annual meeting of the institute at Cleveland on May 8, 1945. The award will be given to the laboratory (nonclinical) or clinical research worker in the United States or Canada who, in the opinion of the judges, has published during the previous calendar year, January 1 to December 31, the most meritorious scientific report dealing with the field of the "B complex" vitamins. The prize may be divided between two or more persons and it may be recommended to a worker for valuable contributions over an extended period but not necessarily representative of a given year. Membership in the American Institute of Nutrition is not a requisite of eligibility for the award. Nominations must be received by the secretary by Jan. 15, 1945. Arthur H. Smith, Ph.D., Wayne University College of Medicine, Detroit, is the secretary of the institute.

**Army Medical Library Meeting**—On October 5 a formal program will be held at the Army Medical Library to observe the selection of the proposed site for a new building for the library. After an address of welcome by Norman T. Kirk, Surgeon General of the Army, the following will speak:

Lieut. Francis R. St. John, The Findings and Recommendations of the Survey Committee.  
Col. Harold W. Jones, M. C. Librarian, Army Medical Library. The Program of Reorganization in the Army Medical Library. Its Relation to War Activities and to Postwar Operation.  
Mr. Archibald MacLeish, Librarian, Washington, D. C., The Holmes Memorial.  
Mr. Otto R. Eggers, Architect, New York. Demonstration of a New Army Medical Library and Museum Building.

An afternoon session will be devoted to a discussion, among other things, of the program of restoration in Cleveland, the new classification system, the task of shelf listing and cataloging, and a new library and museum building. An evening session at the Hotel Statler to honor consultants participating in the survey for the new library building will be addressed by Dr. Morris Fishbein, Editor of THE JOURNAL, and Dr. Reginald Fitz, Boston, consultant to the Procurement and Assignment Service for Physicians, Dentists and Veterinarians, Washington, D. C. The Army Medical Library, which has been in existence for more than a hundred years, still occupies the building into which it moved in 1887. In 1941 Congress authorized a new library and museum, a project which will cost more than \$4,000,000. In July 1942 the Cleveland branch was established.

**Meeting of Academy of Ophthalmology**—The forty-ninth annual convention of the American Academy of Ophthalmology and Otolaryngology will be held at the Palmer House, Chicago, October 8-12, under the presidency of Dr. Lawrence T. Post, St. Louis. Included among the speakers will be

Dr. Nelson M. Black, Miami, Fla., Empirical Treatment of Nyctalopia by a General Practitioner in Central America in 1912—A Reminiscence.  
Dr. Joseph H. Kier, New Brunswick, N. J., An Analysis of Colds in Industry.  
Dr. Moses H. Jurie, Boston, Deafness, Its Causes and What Can Be Done About It.  
Dr. Sam E. Roberts, Kansas City, Mo., A New Sinus Syndrome.  
Dr. John B. Erich, Rochester, Minn., Treatment of Laryngeal and Tracheal Stenosis.  
Dr. Jack S. Guyton, Baltimore, Choice of Operation in Eyes with Primary Glaucoma and Cataracts.  
Carl R. Brown, Ph.D., Ann Arbor, Mich., Configurational Aspects of Visual Acuity.  
Drs. Harry S. Gradle, Chicago, Cecil S. O'Brien, Iowa City, and Daniel B. Kirby, New York, Enucleation and Substitute Operations—Discussion of Factors Important for Better Cosmetic Effect.  
Dr. Raymond I. Pfeiffer, New York, Effect of Enucleation on the Orbit.  
Capt. Benjamin F. Souder, M. C., and Capt. Harvey J. Forester, D. C., Plastic Ocular Prostheses in Unusual Cases.  
Drs. Samuel J. Meyer and Paul Sternberg, Chicago, Surgical Management of Glaucoma in Correlation with Gonioscopy and Biomicroscopy.  
Drs. William I. Hughes, Jr., and William C. Owens, Baltimore, Extraction of Senile Cataract—A Statistical Comparison of Various Techniques and the Importance of Preoperative Survey.  
Dr. Dohrmann K. Fischel, San Francisco, Basic Principles of Retinal Detachment Operations with Special Reference to the Eyeball Shortening Operation.  
Lieut. Col. C. Dwight Townes, M. C., Operative Treatment of Heterophoria.  
Dr. Edmund B. Spaeth, Philadelphia, Iridocyclitis Complicating Cataract and Retinal Separation: Their Interrelationship.  
Drs. Leighton F. Johnson and Louis Weinstein, Boston, Pemphigus in Acute Surgical Mastoidectomy Wounds and with Primary Suture.  
Major I. Jerome Hauser and Capt. Walter P. Work, M. C., Treatment of Sinusitis with Penicillin.  
Dr. James S. Greene, New York, Speech and Voice Defects Due to Oral and Laryngeal Anomalies.  
Capt. Michael J. Lewin, M. C., Late and Definite Treatment of War Injuries of the Face and Neck.

The program also includes a series of special courses in ophthalmology and otolaryngology. There will be individual

and sequential courses in both fields. A series of motion picture sessions will be run during the meeting. There will be alumni dinners and luncheons. The sixth annual meeting of the American Association of Eye, Ear, Nose and Throat Society Secretaries, Wednesday evening October 11, will be devoted to extension study courses for eye, ear, nose and throat societies presented by Dr. William L. Benedict, Rochester; Dr. Gradle, Dr. Dean M. Lierle, Iowa City; and Dr. Albert D. Ruedemann, Cleveland. The American Orthoptic Council will hold an examination Saturday, October 7, at 2 o'clock at the Illinois Eye and Ear Infirmary. The American Board of Otolaryngology will hold its examinations at the Palmer House October 4-7. Part I of the examination of the American Board of Ophthalmology will be held at the Edgewater Beach Hotel October 5-6 and part II at the Illinois Eye and Ear Infirmary October 7. The American Orthoptic Council and the American Association of Orthoptic Technicians will hold a joint symposium Sunday with the following speakers: Miss Jean Robinson, Memphis, on "Follow-Up in Orthoptics"; Dr. Frank D. Costenbader, Washington, D. C., "Analysis of Failures in the Treatment of Squint"; and Miss Louisa Wells, Washington, "Orthoptic Fictions and Misconceptions". Other scientific programs will be concerned with the conservation of hearing, industrial ophthalmology and otosclerosis study group. A feature of the academy meeting will be a symposium on "Head and Face Pain" by Drs. Walter I. Lilhe, Philadelphia; Arthur W. Proetz, St. Louis; Bayard T. Horton, Rochester; and Lewis J. Pollock, Chicago.

### MEDICAL BILLS IN CONGRESS

**Bills Introduced**—S 2144, introduced by Senator Andrews, Florida, proposes to provide more efficient dental care for the personnel of the United States Navy. It provides for a director of the Dental Corps of the Navy with the rank, pay and allowances of a rear admiral, provides for the establishing on ships and on shore stations of dental services to be administered under the senior dental officer, and authorizes the Secretary of the Navy to provide for a suitable number of dental technicians of appropriate ratings and ranks and for their training, detail, retention, supervision and direction by appropriate dental officers. S 2163 introduced by Senator O'Mahoney, Wyoming, for himself and Senator Ferguson, Michigan, proposes to incorporate the Medical Women, Army-Navy Club. The objects of the corporation will be (a) to endow a memorial to honor nurses of the Army and Navy who served as officers of the armed forces in World War II; (b) to maintain a domicile for the comfort and service of all women who have served as commissioned officers of the Medical Departments of the Army and Navy; (c) to establish a club to aid in the continuance of the high morale of the medical women of the armed forces; (d) to provide a place of meeting and room accommodations and to promote entertainment for the best interest and efficiency of the medical women officers of the armed services; and (e) to engage in such other activities for the promotion of the general welfare of the women commissioned officers as the corporation shall from time to time determine. H R 5265, introduced, by request, by Representative Pace, Georgia, provides for the development of better diets and an improved nutritional status for the people of the United States. H R 5388 introduced by Representative Bradley, Pennsylvania, proposes that no member of the land or naval forces of the United States shall be required to pay the cost of his transportation from an army or navy hospital in which he is a patient, or from any other hospital or institution in which he is undergoing treatment at the expense of the United States to another such hospital or institution on the ground that such transfer was made at his own request. H R 5402, introduced by Representative Fay, New York, proposes an appropriation of \$3,000,000 to construct a Veterans Administration general medical and surgical hospital and domiciliary facility in the Borough of Manhattan, city of New York. H R 5414, introduced by Representative King, California, proposes to construct in Los Angeles a marine hospital for the accommodation of approximately 300 bed patients.

### LATIN AMERICA

**Health Activities in Latin America—DDT Experiments**—The Puerto Rico Insular Health Department is planning a series of experiments with DDT (dichloro diphenyl-trichloroethane) insecticide to determine its efficiency and effects on human beings, livestock and agriculture, provided permission to purchase DDT can be obtained from the War Production Board in Washington. The department's malaria control bureau is preparing a report on projected experiments with DDT which will be submitted to the War Production Board. Experiments are planned with the insecticide in marshes for the destruction of mosquitoes.

**Personal**—Dr. Emilio Mattar, who has been doing post-graduate work at Michael Reese Hospital, Chicago, returned to Brazil July 24. He has received an appointment to set up and direct a metabolism laboratory in the department of medicine of the University of São Paulo.

**Medical Congress**—The second Pan American Conference on Leprosy will be held in Rio de Janeiro sometime in 1945; the exact dates to be chosen later.

**Program Against Typhus**—The Guatemalan government has signed a contract with the United States for a cooperative campaign of sanitation to end typhus and eliminate malaria from the middle highlands of Guatemala. The *New York Times* reports that the cost was expected to be \$600,000, of which Guatemala will provide \$300,000 and will borrow an equal sum from the United States to be repaid in four years. The work will be carried out by both Guatemalan and American experts and technicians.

**Health in Panama**—An excellent water system is the first reason for the success of public health work in Panama City, Colon and the Canal Zone, says Brig. Gen. Henry C. Dooling, M. C. chief health officer of the Panama Canal. Health conditions in these communities are highly satisfactory; it was stated and will tend to remain so if the soundness of the water system which was hard to surpass is maintained. Typhoid will be eliminated once sewage disposal facilities are removed from harbors and beaches. General Dooling stated a joint sewage disposal board made up of Canal Zone and Panama representatives is now at work on long range plans for the coordination of sewage disposal in the Sabanas, Bella Vista, Panama City and Balboa districts. General Dooling also stated that Panama's high tuberculosis rate is attributable to poor housing conditions. Good results are expected from the extensive housing projects undertaken by the recently organized Urbanization Bank. The liquidation of Panama's rat population would expel another health menace confronting the people of the republic.

### FOREIGN

**Jeffries Prize Goes to Air Marshal Whittingham**—The Institute of Aeronautical Sciences announced September 3 that the annual John Jeffries Prize for contributions to aeronautical medical research has been awarded to Sir Harold E. Whittingham, Director General, Medical Services of the Royal Air Force.

**Nutrition Research Unit**—A human nutrition research unit has been established by the British Medical Research Council, London, with Dr. Benjamin S. Platt as director. Science reports. The unit is already engaged in investigations affecting colonial nutrition and is offering hospitality for study and research to nutrition workers from the colonies. It will also be available to advise colonial governments on technical questions.

**Ophthalmic Gold Medal**—The Ophthalmological Society of Egypt announces that a gold medal will be awarded annually for the contribution deemed most valuable that year in the field of ophthalmology. A competitive essay will determine the award which will be considered at the annual congress of the society. Additional information may be obtained from the Ophthalmological Society of Egypt, Dar el Hekma, 42 Kasr el Ainy Street, Cairo.

### Deaths in Other Countries

**Sir Hugh Mallinson Rigby**, "sergeant surgeon" to King George V from 1928 to 1932. He performed an operation credited with saving the king's life in 1928. Sir Hugh died July 17.—**Dr. Juan Carlos Llamas Massini**, professor of obstetrics, Faculty of Medical Sciences of the University of Buenos Aires and president of the Society of Obstetrics and Gynecology, Buenos Aires, died July 2.—**Sir Humphry Rolleston**, physician to the late King George the Fifth, died at his home in Surrey, September 24, aged 82.

### CORRECTION

**Iodized Table Salt to Combat Goiter**—The Brazil Letter published in *THE JOURNAL* September 9, page 120, under the paragraph "Iodized Table Salt to Combat Goiter," stated that the product shall contain 10 mg. of iodine per kilogram of table salt. This presumably should have been 100 mg. of potassium iodide per kilogram, which conforms with the usual proportions followed in this country.

## Foreign Letters

### LONDON

(From Our Regular Correspondent)

Aug 26, 1944

#### Questionnaire on the National Health Service

Some months ago the British Medical Association issued a questionnaire to the whole medical profession on the proposed national health service. Forms were sent to 53,728 physicians, and replies were received from 25,435, or 48 per cent. A large number of forms were sent to physicians in the fighting services. The following are the most important questions and a summary of the replies. Is your reaction to the white paper of the government favorable or unfavorable? The replies were 39 per cent favorable and 53 per cent unfavorable, 6 per cent did not know. Will the country's medical service be improved or suffer? Thirty-two per cent thought it would be improved, 12 per cent that it would be unaffected and 44 per cent that it would suffer. In 1943 the representative meeting of the British Medical Association voted that any national health service should be confined to 90 per cent of the public and exclude the 10 per cent upper income group. The white paper proposes that every one should be included but that no one should be required to use it. Should this basic proposal be accepted? It was accepted by 60 per cent and refused by 37 per cent. Should complete hospital and specialist services be available to every one in a general ward? Sixty-nine per cent of the answers were favorable to this. Should a patient who wanted to choose his own hospital or go into a private or semiprivate ward be permitted to pay a 'hotel charge' and still receive medical attention under the service? The answers were 41 per cent affirmative and 54 per cent negative. Two out of every three voters approved the principle of health centers. Should the buying and selling of practices be maintained or abandoned on the assumption that adequate compensation is paid to existing owners? Thirty-three per cent were in favor of maintaining this practice and 56 per cent were against it. Thus the replies to the questionnaire reveal a greater difference of opinion than was supposed to exist.

#### The Problem of the Rheumatic Child

The Cardiac Society and the British Pediatric Association have prepared a joint report on the care of rheumatic children. It states that acute rheumatism is primarily a disease of school age, that means of prevention are not known, and that efficient treatment depends on early diagnosis and methods known to limit cardiac damage. Three measures are proposed: (1) establishment of cardio-rheumatic clinics where the diagnosis can be established early and certainly, (2) organization of hospital schools where children can be treated as long as necessary while education continues and (3) compulsory notification of all cases of acute rheumatism, chorea and rheumatic heart disease. These steps might first be tried in large cities with medical schools where an appropriate staff can be found. The clinic should be held weekly and associated with a key hospital where laboratory facilities are available, the report states. The patients could be used for teaching, it is pointed out. The clinic should undertake supervision and follow-up, which should be continued into adult life. The staff should include physicians experienced in children's and heart diseases and should have the help of an assistant physician or registrar. Besides having access to a laboratory for sedimentation rates, blood counts and biochemical investigations, the clinic should be equipped with the means to measure heights and weights, to screen and x-ray hearts and to take electrocardiograms. The clinic physicians should arrange treatment to minimize cardiac damage, supervise the

life of the children, collect data on prevention, direct adolescents and adults into suitable occupations, and educate doctors in the diagnosis of acute carditis and other heart diseases, the report says.

Hospitals for the treatment of children with cardiac rheumatism should be established throughout the country. The serious results of rheumatic carditis require that all cases of suspected acute rheumatism, chorea and rheumatic heart disease in children under the age of 16 should be made notifiable. A committee should be formed to keep the clinics in touch with one another and to coordinate research.

#### Proposed Register of Specialists

In this country the status of specialists is well recognized, but they have no legal status apart from that of physicians in general. A special committee appointed by the General Medical Council (which, among other matters, controls medical registration) to consider the formation and maintenance of a register of specialists has issued its report. This recalls that last February the council reaffirmed its view that it is desirable and in the public interest that a register of specialists should be formed and maintained by the council. The immediate object of such a register would be to provide the authorities responsible for the organization of specialists' services as part of the proposed national health service and, in particular, the authorities for making appointments of specialists in that service, with an authoritative means of ascertaining whether or not any particular registered medical practitioner is eligible for appointment. The future object of the register of specialists would be to establish a standard of postgraduate medical qualification and experience for those who can be accepted for registration by the council.

#### Institute for Research and Teaching of Ophthalmology to Be Established in London

The plan to establish at Oxford University a center of ophthalmic research and postgraduate study has been reported in *THE JOURNAL* (June 17, p. 507). A similar plan has now been formed in London. The council of the Royal Eye Hospital has decided to establish an Institute of Ophthalmology where teaching and research can be carried out systematically and coordinated with the work of laboratories and general hospitals. The institute, with an independent board of governors, will work under the patronage of the Archbishop of Canterbury, the Archbishop of Westminster and other prominent persons. To ensure that the institute is broadly established, panels of advisers have been set up to help in planning and carrying out the work. These include eminent scientists, physiologists, physicians, surgeons and ophthalmologists. The courtesies of the institute will be available to all ophthalmologists, and offers of cooperation will be welcomed.

#### The F.R.C.S. in Ophthalmology

The fellowship of the Royal College of Surgeons is the highest surgical qualification in England and is held by the leading ophthalmic surgeons, who have obtained it by the same examination that general surgeons undergo. But, in this age of specialism, an innovation has been proposed. The Council of British Ophthalmologists has asked the council of the Royal College of Surgeons to grant a special diploma of the college as a higher diploma in ophthalmology. The council of the college has given this request careful consideration and agrees that a special examination would be more suitable than the usual final fellowship examination for those specializing in this important branch of practice. It is also clear to the council that the present regulations for the 'F.R.C.S. with Ophthalmology' are too exacting in that candidates are required to have passed the usual final examination of the fellowship. The council members therefore agree that there should be a special



final examination for the fellowship for those specializing in ophthalmology and that, since the standard would be comparable to that of the usual final examination, successful candidates should rank as fellows of the college, with all their privileges. Under the existing charters the council has no right to make this arrangement, but it is prepared to seek it. It is anticipated that two ophthalmic surgeons will be required on the examination board. It is proposed that they should be fellows of the college. Two other surgical members of the examination board would be selected from the general surgeons on the court of examiners and would take part in some portions of the theoretical examination.

#### Woman Professor of Obstetrics and Gynecology

Mrs Bertram Lloyd has been appointed to the chair of obstetrics and gynecology in the University of Birmingham left vacant by Sir Harold Beckwith Whitehouse, who died when he was president of the British Medical Association. Mrs Lloyd graduated in science in 1914 and in medicine two years later at Birmingham University. She then became medical officer to the Maternity Hospital and the Midland Hospital for Women. In 1920 she took the fellowship of the Royal College of Surgeons and became obstetric surgeon to the Maternity Hospital and acting surgeon to the Hospital for Women. In 1930 she married Mr Bertram Lloyd, who is professor of forensic medicine and lecturer on clinical surgery at the University of Birmingham. Mrs Lloyd was appointed assistant to the chair of obstetrics before succeeding to it.

### AUSTRALIA

(From Our Regular Correspondent)

July 17, 1944

#### Deficiency of Thiamine in the Australian Diet

The average diet eaten by the Australian is estimated to contain about 12 mg of thiamine daily per "adult male." Many diets are much lower than this and there are probably few people in Australia whose thiamine intake is up to the National Research Council standard of 18 mg per day for the moderately active man.

The Nutrition Committee of the National Health and Medical Research Council has given consideration to measures designed to increase the thiamine content of the Australian ration. These studies were directed along two lines: (a) the raising of the percentage of extraction from flour and (b) the enrichment of the flour with synthetic nutrients.

The first line of study showed that there were considerable technical difficulties associated with the manufacture of high extraction flour. Most of the flour milled in Australia is "straight run" flour. Milling practice in Australia does not divide the flour into separate types, as is the practice in other countries, nor is the general standard of milling machinery in Australia as good as elsewhere. Many Australian mills fall far short of what is necessary for the manufacture of good flour even at normal percentages of extraction. The redesigning of the machinery for making high extraction flour in Australia would necessitate the use of skilled manpower, which is not at present available. Furthermore, the climatic conditions and the long distances in Australia are not conducive to the long storage of high extraction flour.

The so called mill offal (bran and pollard) is more than fully utilized in the feeding of poultry and dairy animals, and the production goal for the product of these animals has increased considerably. The estimated requirement of these mill by-products is already in excess of the available supply. New Zealand, moreover, requires about 60,000 tons yearly of bran and pollard.

On the basis of an 80 per cent extraction flour the amount of vitamin B<sub>1</sub> supplied by bread made from this flour would be

about 50 per cent greater than that provided by bread made from the present white flour of 70-72 per cent extraction. The use of an 80 per cent extraction flour would increase the total thiamine intake of the Australian citizen living on an average diet by about 10 per cent. This 10 per cent would come almost entirely from the pollard fraction of the offal. This would mean that up to two thirds of the supply of pollard would be withdrawn and the remaining third would not have the same nutritional value for animal feeding as that now produced. Accordingly, the committee did not feel justified in recommending the introduction of a flour of high extraction (80-85 per cent) for the manufacture of bread in lieu of white flour of 70-72 per cent extraction.

The baking interests in Australia are opposed to the baking of either whole meal or high extraction flour. They fear that such bread, in that it differs from that acceptable to the Australian palate by custom, would tend to be consumed in smaller quantities. Their activities have been directed toward an advertising campaign to encourage the consumption of more white bread. This campaign has been notorious for its misleading inaccurate statements.

The Nutrition Committee of the National Health and Medical Research Council was opposed to the enrichment of flour with synthetics on the ground that "there is no evidence that vitamin B<sub>1</sub> produces its complete nutritional effect by its own unaided physiological action."

Estimations of the thiamine content of Australian wheat and flour during one season have shown that the thiamine content of Australian wheat is higher than it is in wheats from other countries, but, even so, bread made from Australian flour provides only 0.34 microgram of thiamine per nonfat calory. As it is considered that complete metabolism is achieved only with a ratio of 0.5 microgram of thiamine per nonfat calory, it will be seen that the Australian white bread does not carry sufficient thiamine for its own complete oxidation.

The Australian army in its field bakeries produces bread of either 40 per cent wheat meal or 6 per cent wheat germ. This bread is estimated to provide 43 micrograms of thiamine per ounce. This compares with white bread at 25 micrograms per ounce and whole meal bread at 71.

The Australian army and air force have banned the sale of "ready to eat" breakfast foods by army canteens. This was done as a result of analyses which showed that there was an average thiamine destruction in the factory preparation of 94 per cent in the leading brands. The practice had developed of army units substituting the thiamine rich oatmeal and wheat meal issue by such devitaminized foods. No "ready to eat" breakfast food in Australia is enriched by synthetic nutrients.

The increasing taste and demand for sugar among service personnel also is causing some concern.

---

### Marriages

---

HENRY L. HARRIS, Los Angeles, to Miss Mary Wallace Austin in Alabama, June 15

LAWRENCE J. O'NEIL to DR CORNELIA ST. ROMAINE, both of New Orleans, May 23

NELSON A. WOLFE to Miss Betty Denny, both of New Albany, Ind. August 24

EDWARD G. RIVET, New Orleans, to Miss Judith McMahon of Clinton, La., June 10

JAMES V. KAUFMAN to Miss Elizabeth H. Toye, both of New Orleans, June 3

JAMES M. BUIE, Mertens, Texas, to Miss Margaret Stell of Irene in July

VERNON N. BALOVICH, New Orleans, to Miss Sue Fernandez, May 25



## Deaths

**Edward Clarence Moore** \* Los Angeles, University of Southern California College of Medicine, Los Angeles, 1904, clinical professor of surgery at his alma mater, founder member of the American Board of Surgery, member of the American Surgical Association and the American Urological Association member and past president of the Pacific Coast Surgical Association fellow of the American College of Surgeons, at one time on the staff of the Mayo Clinic, Rochester, Minn. during World War I served as major and consulting surgeon in the medical corps, American Expeditionary Forces stationed at Base Hospital number 26, past president of the state fish and game commission, chief surgeon and a founder of the Moore-White Clinic, on the staffs of the California, Cedars of Lebanon and Good Samaritan hospitals, died July 10, aged 62 of carcinoma of the left kidney with metastasis to the lungs

**Lester Low Watson** \* Passed Assistant Surgeon, U S Public Health Service Reserve Milton, Mass., Boston University School of Medicine 1928, member of the Massachusetts Medical Society, fellow of the American College of Physicians formerly instructor in medicine at his alma mater served as visiting physician and secretary of staff, Massachusetts Memorial Hospitals Boston and visiting physician, Milton Hospital and Convalescent Home, formerly examiner, tuberculosis division Boston Health Department, examining physician, Randolph District, Massachusetts Selective Service, formerly chief of the Milton Civilian Defense, recently stationed at the U S Public Health Service Hospital, Sheephead Bay, Brooklyn, where he died June 14, aged 43, of coronary occlusion

**Ralph Farnsworth Harloe** \* Brooklyn, Long Island College Hospital, Brooklyn, 1918, also a pharmacist, since 1937 assistant clinical professor of surgery at his alma mater, fellow of the American College of Surgeons past president of the Brooklyn Surgical Society, served as special examiner for the U S Civil Service Commission and the U S Veterans Bureau in Washington, D C, served during World War I on the staffs of the Sea View Hospital Staten Island, Long Island College Hospital, Kingston Avenue, Bushwick, Evangelical Deaconess and Bay Ridge hospitals director of thoracic surgery at the Kings County Hospital, where he died July 31, aged 64, of coronary occlusion

**William Figures Lewis** \* Colonel, U S Army retired Pasadena, Calif. University of Maryland School of Medicine, Baltimore, 1893 entered the army as an assistant surgeon in 1893 became a major in the medical corps of the U S Army in 1908 a lieutenant colonel in 1916 and a colonel in 1917 retired Dec 15 1922 after twenty-nine years service received the Distinguished Service Cross for bravery in action during the Philippine Insurrection, served in the Boxer Rebellion in China and the Spanish-American War, chief surgeon of the Allied Expeditionary Forces in Siberia during World War I, died September 10, aged 78 of arteriosclerotic heart disease

**Michael Milton Lucid**, Syracuse, N Y, Syracuse University College of Medicine, 1896, member of the Medical Society of the State of New York member of the House of Delegates of the American Medical Association in 1915 fellow of the American College of Surgeons served during World War I colonel in the medical reserve corps of the U S Army not on active duty formerly on the staff of the Cortland County Hospital, Cortland, and a founder of the Homer Hospital, Homer, died in the Hospital of the Good Shepherd Syracuse University, July 11, aged 75 of lobar pneumonia, generalized arteriosclerosis and acute nephritis

**James Cornelius Austin**, Spencer, Mass., College of Physicians and Surgeons, Baltimore 1896 member of the Massachusetts Medical Society, past president of the Worcester District Medical Society, chairman of the board of health for twenty-five years and school physician for many years, died July 10, aged 69, of cerebral hemorrhage

**Paul Harold Bikle** \* Mifflinburg, Pa. University of Pennsylvania Department of Medicine, Philadelphia 1904 formerly on the staff of the University Hospital, Philadelphia, served as company surgeon for the Williamsport District of the Pennsylvania Railroad died in the Harrisburg Hospital, Harrisburg, July 30, aged 65, of coronary occlusion

**James Walter Van Blaricum** \* Minneola, Kan., Kansas City (Mo.) Medical College 1901, for many years member of the school board died June 4, aged 70, of bronchial asthma

**George Proctor Cooper** \* Angels Camp, Calif. Cooper Medical College, San Francisco, 1906, served as county health officer and county physician, chief examiner for the Calaveras County Selective Service Board during World Wars I and II, commissioner, Angels Fire Department for many years president of the board of education, superintendent of the Calaveras County Hospital, died in St Luke's Hospital, San Francisco, July 18, aged 64, of carcinoma of the colon

**Channing Ellery Dakin**, Mason City Iowa, Bennett College of Eclectic Medicine and Surgery, Chicago 1899, member of the Iowa State Medical Society fellow of the American College of Surgeons, served as health officer of Mason City, attending surgeon and chief of staff, St Joseph's Mercy Hospital, died July 8, aged 68, of carcinoma of the colon

**Alice Mabel Woods Fiddes**, Morgan Hill, Calif., Woman's Medical College of the New York Infirmary for Women and Children, New York, 1885 died July 24, aged 83 of arteriosclerotic heart disease

**James Berry Gilbert** \* Tulsa Okla., Mississippi Medical College Meridian 1912, served as county physician, on the staffs of the Hillcrest Memorial and St John's hospitals, died July 4, aged 55

**Fred Thomas Hauser** \* Purcellville, Va. Medical College of Virginia, Richmond 1933, on the staffs of the Loudoun County Hospital, Leesburg, and the Winchester Memorial Hospital, Winchester, died July 25, aged 41, of brain tumor

**William James Latimore**, Hermine, Pa., Eclectic Medical Institute, Cincinnati, 1897, examiner of schools and in 1902 school director, died in the Westmoreland Hospital, Greensburg, July 16 aged 72, of peptic ulcer

**John H Runyon**, Seymour, Iowa, College of Physicians and Surgeons, Keokuk, 1890, member of the Iowa State Medical Society, died July 30 aged 77, of coronary thrombosis

**Frederick Parker Scribner**, Manchester, N H, Dartmouth Medical School Hanover, 1909, member of the New Hampshire Medical Society and the American Society of Anesthetists Inc., on the staffs of the Hillsborough County General Hospital, Grasmere and the Elliot Hospital, died in Bedford July 17, aged 60, of coronary thrombosis

**Isaac Grafton Sieber Jr** \* Passed Assistant Surgeon, U S Public Health Service Reserve, Cleveland, Temple University School of Medicine, Philadelphia 1932 intern and a staff member at the St Alexis and Glenville hospitals, on the staff of the Booth Memorial Home and Hospital, entered the U S Public Health Service in 1942 and was assigned to the Coast Guard in Boston, died August 5, aged 39, of carcinoma of the left lung

**Lewis C Snell**, Neosho Mo., University Medical College of Kansas City, 1900, died in St John's Hospital, Joplin July 20, aged 79, of myocarditis

**Charles Ira Stephen**, Ansonia, Ohio. Starling Medical College Columbus, 1897, member of the Ohio State Medical Association, past president of the Darke County Medical Society served in the medical corps of the U S Army during World War I a member of the board of education and for many years a member of the county board of health on the staff of the Wayne Hospital, Greenville, where he died July 13, aged 70, of carcinoma of the liver

**M Eugene Street** \* Glendon N C, College of Physicians and Surgeons, Baltimore 1893, on the staff of the Moore County Hospital, Pinchurst where he died July 14, aged 78 of coronary occlusion

**Basil Mitchell Taylor**, Portland Ind., University of Louisville (Ky.) Medical Department, 1892 member of the Indiana State Medical Association for many years secretary of the Jay County Medical Society, health officer of Portland, formerly state senator in Kentucky served as secretary-treasurer of the staff of Jay County Hospital, died July 10, aged 74, of coronary occlusion

**John Quiney Thomas** \* Conshohocken Pa. University of Pennsylvania Department of Medicine, Philadelphia 1898 served two terms as president of the Conshohocken town council and for many years as president of the Mary H Wood Park commission a trustee of the Norristown State Hospital, Norristown, for eighteen years on the staffs of the Bryn Mawr Hospital, Bryn Mawr and the Montgomery Hospital, Norristown, where he died July 26 aged 69, of cerebral arteriosclerosis

**George S Trotter**, Olney, Ill. Kentucky School of Medicine, Louisville, 1898 served as president of the board of education and on the inductees examining board during World War I, died July 23 aged 75 of arteriosclerosis

## DIED WHILE IN MILITARY SERVICE

**Melbourne Wells Boynton** @ Chicago, Rush Medical College Chicago, 1935 diplomate of the National Board of Medical Examiners, specialist certified by the American Board of Obstetrics and Gynecology Inc, member of the Central Association of Obstetricians and Gynecologists fellow of the American College of Surgeons, served an internship at St Luke's Hospital chief resident and later on the attending staff of the Chicago Lying-In Hospital and Dispensary, resident in obstetrics at the Chicago Maternity Center and the University of Chicago Clinics instructor of obstetrics and gynecology, University of Chicago School of Medicine commissioned a first lieutenant in the medical reserve corps of the U S Army on Aug 26, 1935 began active duty on March 7, 1941, in charge of obstetrics and gynecology at the William Beaumont General Hospital El Paso, Texas later promoted to captain, major and lieutenant colonel chief, medical safety division with headquarters at the Army Air Forces, Office of Flying Safety, Winston-Salem, N C killed in an experimental parachute jump from high altitude at Clinton County Army Air Base, Wilmington, Ohio, August 19, aged 39

**George Kremer Rhodes**, San Francisco Johns Hopkins University School of Medicine, Baltimore, 1915 diplomate of the National Board of Medical Examiners and founder member of the American Board of Surgery, associate clinical professor of surgery at the University of California Medical School, member of the California Medical Association, Western Surgical Association and Pacific Surgical Association, fellow of the American College of Surgeons, associate visiting surgeon San Francisco Hospital, and assistant chief surgeon, San Francisco Emergency Hospital, volunteer surgeon of the American Ambulance Corps in France during World War I commissioned a lieutenant colonel in the medical reserve corps of the U S Army on Dec 20, 1940 began extended active duty on May 15, 1942 served overseas with the 30th General Hospital (affiliated unit of the University of California Medical School) and later became surgical consultant in the southern district of the European theater, where he died July 23, aged 54, of coronary occlusion

**Lloyd Thomas Sussex** @ Havre, Mont, Northwestern University Medical School, Chicago, 1926, diplomate of the National Board of Medical Examiners, fellow of the American College of Surgeons, intern at the Wesley Memorial Hospital, Chicago from July 1925 to April 1927, later fellow in surgery at the Mayo Foundation in Rochester, Minn served on the staffs of the Sacred Heart and Kennedy Deaconess hospitals, commissioned a lieutenant in the medical corps of the U S Naval Reserve on Feb 10, 1937, promoted to lieutenant commander on June 30, 1942 and commander on Oct 1, 1942, spent eighteen months in the South Pacific area, four months at Guadalcanal, some time in New Zealand and was in the battle of Tarawa, had been given honorable mention for having performed operations on 140 wounded men during seventy-two consecutive hours, died in the U S Naval Hospital, Farragut, Idaho, June 8, aged 45, of coronary thrombosis

**Martlin Pendry Smith**, Erie, Pa, University of Pittsburgh School of Medicine 1933, member of the Indiana State Medical Association specialist certified by the American Board of Otolaryngology, served an internship at the Pittsburgh Medical Center, a residency in obstetrics at the Elizabeth Steel Magee Hospital, Pittsburgh, a residency in eye, ear, nose and throat at the Buffalo General Hospital and the Children's Hospital in Buffalo, and the New York Polyclinic Medical School and Hospital, New York, formerly a member of the visiting staff of the Ball Memorial Hospital, Muncie, Ind commissioned a lieutenant (jg) in the medical corps of the U S Naval Reserve on June 2, 1941, later promoted to lieutenant and lieutenant commander, died in the African area on July 5, aged 35, of injuries received in an automobile accident

**Morton Atherton Cundiff**, Somerset, Ky, University of Louisville School of Medicine, 1941, served an internship at St Joseph Hospital, Lexington, commissioned a

first lieutenant in the medical corps, Army of the United States, on May 26 1942, began active duty on July 2 1942 later promoted to captain, flight surgeon in the Air Corps died in the European theater of operation July 4, aged 29 of injuries received in an airplane accident

**Foster Leonard Dennis** @ Dodge City Kan Jefferson Medical College of Philadelphia 1921 served during World War I, fellow of the American College of Physicians, commissioned a major in the medical corps Army of the United States on Feb 24 1943 formerly stationed at the Walter Reed General Hospital Washington D C and formerly attached to the Twenty Second General Hospital died June 26 aged 48 of cerebral hemorrhage

**Judge William Fuller**, Assistant Surgeon Lieutenant (jg) U S Navy, Jacksonville Fla Tulane University of Louisiana School of Medicine New Orleans 1942 served an internship at the Naval Hospital where he had been on the staff, drowned at sea in the Atlantic area January 7 aged 28

**Julian Leo Hargrove** @ Bartow Fla Emory University School of Medicine Atlanta, Ga 1924 served in the U S Navy during World War I superintendent of the Polk County Hospital for many years commissioned a lieutenant commander in the medical corps of the U S Naval Reserve on March 28, 1942 executive medical officer of the Deland Naval Air Station, died July 3 aged 46, of injuries received when his automobile struck a bridge abutment on the Deland Daytona Beach Highway

**Charles Albert McNeil** @ Toledo Ohio University of Michigan Medical School Ann Arbor 1923 completed an internship and served on the staff of St Vincent's Hospital, served during World War I commissioned a lieutenant commander in the medical corps of the U S Naval Reserve on July 2, 1942 senior medical officer of the Naval Officer Procurement in St Louis had also been stationed in Chicago died in the U S Naval Hospital Great Lakes, Ill, July 27 aged 51, of hypertension and heart disease

**Leslie Bertram Roberts**, Brooklyn New York University College of Medicine New York 1938 served an internship at the Jewish Hospital and a residency in the Montefiore Hospital for Chronic Diseases and the Bellevue Hospital in New York, formerly a research fellow in medicine at his alma mater, commissioned a first lieutenant in the medical corps Army of the United States on Aug 21, 1942 and began active duty on Sept 2 1942 promoted to captain in June 1943, chief flight surgeon, Army Air Base, Bruning Neb, killed in an airplane accident in Naper, Neb, August 3, aged 28

**Gregory Albert Skully**, Detroit, Wayne University College of Medicine, Detroit, 1937, member of the Michigan State Medical Society, interned at the Eloise Hospital Eloise, commissioned a first lieutenant in the medical corps Army of the United States, on June 19 1942 and subsequently promoted to captain, began active duty on July 4, 1942, flight surgeon in the air corps, in charge of the eye, ear, nose and throat division at the Syracuse (N Y) Army Air Base Hospital, died in the Station Hospital, Syracuse, N Y, July 13, aged 32, of pneumonitis complicated by bronchial asthma

**Edwin Theodore Tellman**, Palmyra, N Y Rush Medical College, Chicago 1936, member of the Medical Society of the State of New York, served an internship and residency at the Rochester General Hospital, Rochester, commissioned a first lieutenant in the medical reserve corps of the U S Army on Nov 23, 1936 subsequently promoted to captain and major, died in the Letterman General Hospital, San Francisco, July 16, aged 34, of agranulocytosis with generalized hemorrhage and bronchopneumonia

**Ralph Milton Wyatt** @ Hiawatha, Kan, University of Kansas School of Medicine Kansas City, 1933 served as health officer of Brown County commissioned a first lieutenant July 21, 1942 and began active duty in the medical corps of the Army of the United States on Aug 22 1942, later promoted to captain flight surgeon, died in an airplane accident in Aldershot England, June 8, aged 38

## Bureau of Investigation

### STIPULATIONS

#### Agreements Between Federal Trade Commission and Promoters of Various Products

Following are abstracts of stipulations in which promoters of patent medicines, medical devices and cosmetics have agreed, following action by the Federal Trade Commission, to discontinue certain misrepresentations in their advertising. These stipulations differ from the 'Cease and Desist Orders' of the Commission in that such orders definitely direct the discontinuance of misrepresentations. The abstracts that follow are presented primarily to illustrate the effects of the provisions of the Wheeler-Lea Amendment to the Federal Trade Commission Act on the promotion of such products.

**Foster's Wonder 30 Minute Corn and Callous Remover**—This is sold by Stomar Products Company, Kansas City, Mo. In November 1943 the concern and its advertising agency stipulated with the Federal Trade Commission to cease representing that the product promotes healing and disseminating any advertisement which did not warn that care should be taken not to allow the preparation full strength to remain too long in contact with the corn lest its corrosive action extend to the underlying tissue.

**H B Cough Drops**—The C. A. Briggs Company trading as H. B. Sales Company, Cambridge, Mass., stipulated with the Federal Trade Commission in November 1943 that it would cease describing its cough drops by the term 'Hospital Brand' which might give the erroneous impression that the product is made in accordance with a formula prescribed or endorsed by a hospital. Further, it agreed to cease representing that the cough drops contain vitamin A, that their use will impart the benefits derived from the consumption of that vitamin or that they purify and soften all hardened places in the throat.

**Imperial Lax 101**—This is put out by William H. Braun and Alice C. Braun trading as Imperial Brands Company, Chicago. A stipulation which they entered into with the Federal Trade Commission in December 1943 provided that they would cease representing that the product is a gentle or mild laxative and will move the bowels easily without irritation to the intestinal walls, that it will change an unhealthy evacuation to a healthful one, that it contains no habit forming drugs, that delayed evacuation will poison the system and lower bodily resistance, and that their preparation will remedy such conditions. Further, they agreed to discontinue any advertisement which did not reveal that Imperial Lax 101 should not be used when abdominal pains or other symptoms of appendicitis are present, provided however that such advertisements need only contain the statement 'Caution: Use Only as Directed' when the labeling carries a warning to the same effect.

**Lax Aid**—Frank M. Spors and Esther Spors trading as the Spors Company, LeCenter, Minn., who distribute this product stipulated with the Federal Trade Commission in November 1943 to discontinue any advertisements which did not reveal that the product should not be used when abdominal pain, nausea or other symptoms of appendicitis are present, provided however that such advertisements need only contain the statement 'Caution: Use Only as Directed' if and when the directions for use when appearing in the labeling contain a warning to the same effect.

**Mamie's New Discovery Scalp Ointment**—In December 1943 one Mamie Wilson of Los Angeles stipulated with the Federal Trade Commission that she would cease representing that this product will prevent loss of hair or baldness, counteract conditions causing hair loss or be a cure for dandruff or other scalp ailments except to the extent that it may mitigate itching of the scalp, that it will nourish or stimulate the hair roots or make the hair grow or take on new life or will tone the oil glands of the scalp or the blood corpuscles or have any other effect on the latter.

**NR Tablets or Nature's Remedy**—The Lewis Howe Company, St. Louis, which sold this product entered into a stipulation concerning it with the Federal Trade Commission in November 1943. In this the concern agreed to discontinue any advertising which failed to reveal that the preparation should not be used when abdominal pain, nausea or other symptoms of appendicitis are present, provided however that it would be sufficient if the advertising made the statement 'Caution: Use Only as Directed' if the instructions for use on the label or elsewhere in the labeling should contain a warning to the same effect.

**Othine Face Bleach**—This is put out by the Othine Corporation of Buffalo, N. Y. In February 1944 that concern stipulated with the Federal Trade Commission that it would discontinue any advertisement which did not reveal that the product should not be applied at any one time to an area of skin larger than that of the face and neck, that too frequent applications over excessive periods of time should be avoided, that adequate rest periods between series of treatments should be observed, that the bleach should not be used where the skin is cut or broken, and that in all cases a proper patch test should be made to determine whether the user is allergic or sensitive to the preparation. The stipulation provided however that it would be sufficient for future advertisements to contain only the statement 'Caution: Use Only as Directed' if the instructions for use on the label contain a warning to the same effect.

## Correspondence

### QUESTIONABLE VALUE OF VITAMIN C FOR HAY FEVER

*To the Editor*—Almost every year, with the approach of the pollen season, the public becomes repeatedly apprised of some new 'cure' or remedy for this affliction. Through the medium of newspapers, magazines and radio such an impression is made on people that they ask their physicians for these drugs or, what is worse, use them themselves prior to obtaining a medical opinion. One year ionization of the nose was popular, then phenol cauterization, a few years ago potassium chloride was the rage. Careful observation by allergists subsequently disproved the value of these remedies.

This year it is vitamin C. My associates and I undertook a study of this work, commencing with the tree pollinating season in April 1944 in the New York area. It subsequently included the grass and early part of the ragweed season. Some persons were pure hay fever sufferers, others had pollen asthma. The two sexes were about equally represented. Ages varied from 4 to 73 years. Occupations were diversified. The average adult daily dose was 500 mg. of ascorbic acid given in divided doses for a two week period.

It is important to know that pollen symptoms may change remarkably during the day. A victim may be in much distress and quickly be relieved spontaneously, depending on the pollen content in the air, which is quite variable during the day. In appraising results, it is therefore necessary to utilize a large enough group of cases, observe them particularly through the peak of the pollen seasons, and make comparisons with at least one previous year. This we carried out on 48 patients.

Our preliminary findings absolutely do not warrant the recommendation of vitamin C in pollinosis, either as the sole measure of therapy or in conjunction with the injection treatment. We are making observations on allergies other than pollinosis, as well as noting the effects of vitamin C on the peak of the ragweed season, but its value on tree, grass and early ragweed sufferers is highly questionable. In my opinion, therefore, vitamin C cannot be regarded as a useful form of therapy in pollinosis.

DAVID LOUIS ENGELSHER, M.D., New York  
Chief in Allergy, Bronx Eye and Ear Infirmary,  
Morrisania City Hospital and Fordham Hospital

## Medical Examinations and Licensure

### COMING EXAMINATIONS AND MEETINGS

BOARDS OF MEDICAL EXAMINERS  
BOARDS OF EXAMINERS IN THE BASIC SCIENCES  
Examinations of boards of medical examiners and boards of examiners in the basic sciences were published in THE JOURNAL Sept 23 page 258

NATIONAL BOARD OF MEDICAL EXAMINERS  
NATIONAL BOARD OF MEDICAL EXAMINERS Parts I and II Various centers Nov. 13-15 Part III Various centers September or October Exec. Sec. Mr. E. S. Elwood, 225 S. 15th St., Philadelphia

EXAMINING BOARDS IN SPECIALTIES  
AMERICAN BOARD OF ANESTHESIOLOGY Written Part I Various centers Jan. 19 Final date for filing application is Oct. 21 Sec. Dr. P. M. Wood 745 Fifth Ave., New York 22

AMERICAN BOARD OF INTERNAL MEDICINE Written Feb. 19 Final date for filing application is Dec. 15 Asst. Sec. Dr. W. A. Werrell, 1301 University Ave., Madison 5 Wis.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY Written Part I Various centers Feb. 3 Sec. Dr. Paul Titus 1015 Highland Bldg. Pittsburgh 6

AMERICAN BOARD OF OPHTHALMOLOGY Los Angeles January Final date for filing application is Oct. 1 New York June Chicago October 1945 Final date for filing application is Dec. 1 Sec. Dr. S. Judd Beach 56 Live Road Cape Cottage Maine

AMERICAN BOARD OF OTOLARYNGOLOGY Oral Chicago Oct. 4-7  
Sec. Dr. Dean M. Lierle University Hospitals, Iowa City Ia  
AMERICAN BOARD OF PEDIATRICS Oral New York April 14-15  
Final date for filing application is Dec 15 Chicago May 19 20 Final  
date for filing application is Jan 19 Sec. Dr. C. A. Aldrich 115 1/2  
First Ave. S W Rochester Minn  
AMERICAN BOARD OF PSYCHIATRY & NEUROLOGY Oral New York  
December Final date for filing application is Sept 30 Sec. Dr. Wal-  
ter Freeman 1028 Connecticut Ave. N W Washington 6 D C

## Bureau of Legal Medicine and Legislation

### MEDICOLEGAL ABSTRACTS

**Workmen's Compensation Acts Silicosis Not an "Injury by Accident"**—For thirteen years during the winter months Johnson was employed in a rock or stone crushing plant operated in South Dakota by the defendant. Eventually he contracted pneumoconiosis or silicosis. Later he instituted an act at law against his employer based on the theory that he had contracted the pulmonary dust disease referred to during the course of his employment because the employer had negligently failed to maintain in its plant an adequate ventilating system or to install exhaust fans and dust chambers or other suitable contrivances for the removal of dust. The employer moved to dismiss the action on the ground that the injury, if any, suffered by the workman was a compensable "injury by accident" under the workmen's compensation act of South Dakota and that consequently any action based on that injury must be instituted under that act and not at common law. The trial court overruled the motion and the employer appealed to the Supreme Court of South Dakota.

The sole question here involved, said the Supreme Court, is whether or not, under the circumstances, the injury suffered by the workman is an "injury by accident" within the meaning of the workmen's compensation act, which provides that a compensable "injury" or "personal injury" shall mean "only injury by accident arising out of and in the course of the employment, and shall not include a disease of any form except as it shall result from the injury." SDC 640102 (4). The complaint filed by the workman describes an injury resulting from repeated inhalations of silica over an extended period of time. In *Frank v. Chicago, M. & St. P. R. Co.* 49 S. D. 312, 207 N. W. 89, 91, in which a thrombus or clot of blood in the femoral vein was under consideration, in construing the language quoted from SDC 640102 (4), supra, this court said "Before he can recover it must appear that some mishap, some untoward and unexpected event, occurred without design, that some accidental injury was suffered, traceable to a definite time, place and cause." In *Mellquist v. Dakota Printing Co.* 51 S. D. 359, 213 N. W. 947, 949, in which an acute heart attack was under consideration, we said "The requirements of *Frank v. Chicago M. & St. P. R. Co.*, 49 S. D. 312, 207 N. W. 89, 91, have been met, in that the uncontradicted statements of two physicians show that the injury was of a definite, sudden occurrence, directly traceable to a strain." In *Johnson v. La Bolt Oil Co.*, 62 S. D. 391, 252 N. W. 869, this court receded from the view that the cause of the injury must be some unforeseen and unusual operation, act or condition and held that it is sufficient if the injury itself is unexpected. That we did not by that decision recede from the view that the injury must be traceable to a definite time, place and cause is implicit in the language of the decision and is made clear in the subsequent case of *Meyer v. Roettelle* 64 S. D. 36, 264 N. W. 191, 194. The record in that case discloses an injury as a result of ingesting bacillus botulinus. It was there said:

We are of the view that a disease may be an injury by accident within the meaning of our statute. The exclusion is of any disease which is not an accidental injury or which does not result from such injury. It is generally recognized that accident as contemplated by the workmen's compensation law is distinguished from so-called occupational diseases which are the natural and reasonably to be expected result of workmen following certain occupations for a considerable period of time. On the other hand if the element of suddenness or precipitancy is present and the disease is not the ordinary or reasonably to be anticipated result

of pursuing an occupation it may be regarded as an injury by accident and compensable. The inception of the disease under the evidence in the instant case is attributable to the unexpected and unintended occurrence of the presence of the poisonous toxin and is as ignorable to a definite time, place and circumstance. In our opinion death was the result of an accidental injury.

Subsequent to these pronouncements the legislature reenacted the quoted section of the workmen's compensation act as a part of the revision of 1939. It is presumed the legislature intended that this language should be likewise construed as we construed it prior to its reenactment.

The employer contended, however, that the interpretations made by the Supreme Court referred to had been overruled by the court in its opinion in *Hanzlik v. Interstate Power Co.* 67 S. D. 128, 289 N. W. 589. In that case, said the Supreme Court, we held compensable under the workmen's compensation act encephalitis contracted following a period of exhausting work and exposure. Because the particular work and exposure described in the evidence in that case extended over a period of five days, the employer argues that this court has eliminated the factors of 'suddenness and precipitancy' as a condition precedent to the compensability of an injury under the compensation act. That we did not so intend is indicated by our language in that case, for there we said:

Viewing the record in the light of the tests announced in *Meyer et al v. Roettelle et al* supra we are of the opinion that findings based upon substantial evidence support the conclusion that claimant's disease constituted an injury by accident. His collapse came suddenly upon the heels of unusual exertion, exposure and exhaustion as an untoward, unexpected and unanticipated result of pursuing his employment.

The Supreme Court accordingly held that since the complaint failed to describe an injury attributable to a definite time and cause or circumstance it did not describe an 'injury by accident' within the meaning of the compensation act and that accordingly the trial court was correct in ruling that an action under the common law was properly maintainable. The order of the trial court was accordingly affirmed.—*Johnson v. Concrete Materials Co.* 15 N. D. (2d) 4 (S. D., 1944).

## Society Proceedings

### COMING MEETINGS

- American Academy of Ophthalmology and Otolaryngology Chicago Oct. 8-12 Dr. W. L. Benedict 102 Second Ave. S W, Rochester Minn. Secretary
- American Academy of Pediatrics St. Louis Nov. 9-11 Dr. Clifford G. Grulee 636 Church St. Evanston Ill. Secretary
- American Hospital Association Cleveland Oct. 2-6 Mr. George P. Bugbee 18 East Division St. Chicago Executive Secretary
- American Public Health Association New York Oct. 3-5 Dr. Reginald M. Atwater 1790 Broadway New York 19 Executive Secretary
- Annual Conference of State Secretaries and Editors Chicago, Nov. 17-18 Dr. Olin West, 535 N. Dearborn St. Chicago Secretary
- Association of American Medical Colleges Detroit Oct. 23-25 Dr. Fred C. Zapffe 5 S. Wabash Ave. Chicago Secretary
- Association of Military Surgeons of the United States New York Nov. 2-4 Col. James M. Phalen Army Medical Museum Washington 25 D C Secretary
- District of Columbia Medical Society of the Washington Oct. 5-7 Mr. Theodore Wiprud 1718 M St. N W Washington Secretary
- Indiana State Medical Association Indianapolis Oct. 3-5 Mr. T. A. Hendricks 23 East Ohio St. Indianapolis 4 Executive Secretary
- Inter State Postgraduate Medical Association of North America Chicago Oct. 17-20 Dr. Arthur G. Sullivan 16 N. Carroll St. Madison Wis. Managing Director
- International College of Surgeons U. S. Chapter, Philadelphia Oct. 3-5 Dr. Desiderio Roman 250 South 17th St. Philadelphia Secretary
- Kansas City Southwest Clinical Society Kansas City Mo. Oct. 2-4 Dr. William M. North 1115 Grand Ave. Kansas City 6 Mo. Secretary
- Midwestern Section of American Federation for Clinical Research Chicago Nov. 2 Dr. Richard H. Lyons University Hospital, Ann Arbor Mich. Secretary
- Oklahoma City Clinical Society Oklahoma City Oct. 23-26 Dr. L. C. McHenry 512 Medical Arts Bldg. Oklahoma City Secretary
- Omaha Mid West Clinical Society Omaha Nebraska Oct. 23-27 Dr. J. D. McCarthy 1036 Medical Arts Bldg. Omaha 2 Secretary
- Southern Medical Association St. Louis Mo. Nov. 13-16 Mr. C. P. Loran Empire Building Birmingham 3 Ala. Secretary
- Virginia Medical Society of Richmond Oct. 23-25 Miss Agnes V. Edwards 1200 E. Clay St. Richmond 19 Secretary

## Current Medical Literature

### AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1934 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (\*) are abstracted below.

### American J Obstetrics and Gynecology, St Louis

47 741-888 (June) 1944

- \*Ovarian Fibromas. Clinical and Pathologic Study of 283 Cases. M B Dockerty and J C Masson—p 741
- Effect of Pregnancy on Blood Pressure in Normotensive and Hypertensive Dogs. S Rodbard and L N Katz—p 753
- Transplantation of Abdominal Fascia for Relief of Urinary Stress Incontinence. W E Studdiford—p 764
- Capillary Counts. Capillary Disappearance Pressure and Cutaneous Lymphatic Flow in Normal Pregnancy. E Roberts, J Q Griffith Jr and R A Kimbrough Jr with the technical assistance of Anna Callaghan—p 776
- Endometriosis Interstitiale with Report of 3 Cases. J R Miller and R Tennant—p 784
- \*Elderly Primipara. Katherine Kuder and D G Johnson—p 794
- Possible Significance of Vaginal Smears in Diagnosis of Certain Disturbances of Pregnancy. W Schuman—p 808
- Suggested Proposal for Classification of Toxemias of Pregnancy. P Titus—p 817
- Intravenous Administration of Vinbarbital Sodium for Induction of Obstetric Amnesia. J R Evans—p 821
- Congenital Vaginal Occlusion of Cervix. W T Dannreuther—p 826
- Vesical and Rectal Incontinence in Same Patient. Complete Laceration of Perineum Following Childbirth and Large Vesicovaginal Fistula Following Abdominal Panhysterectomy. L E Phancuf—p 835
- \*One Day Sulfonamide Treatment of Chronic Gonorrhea in Female. H Strauss, S Goldstein, E A Horowitz and E Meyer—p 838
- Torsion of Ovarian Cysts in Children. Ruth Ellis Lesh—p 845
- Pelvic Actinomycosis Treated by Surgery and Roentgen Ray with Recovery. M Rashbaum and Harriet C McIntosh—p 849
- Ophthalmia Neonatorum with Special Reference to Sulfonamides in Treatment and Continued Importance of Silver Preparations in Prevention. C Berens—p 855

**Ovarian Fibromas**—Dockerty and Masson examined records from the Division of Surgical Pathology and the section on pathologic anatomy of the Mayo Clinic for tumors bearing the designation fibroma, fibromyoma, fibroblastoma, xanthofibroma and the like, affecting the ovary. Approximately 350 such tumors had been found at surgical exploration or at necropsy on patients seen at the clinic from 1907 to 1942 inclusive. Pathologic material was next secured and the tumors were studied for data pertinent as to site, size, color, consistency, degree of encapsulation, edema and formation of cysts. Associated pathologic lesions of the uterus and fallopian tubes were recorded when these tissues were present. Multiple blocks were cut from the tumors and attempts were made to select regions which included also (in the same block) material from ovarian substance. These blocks were placed in solution of formaldehyde U S P diluted 1:10, cut at a thickness of 10 microns on a freezing microtome, and stained routinely with hematoxylin and eosin. When indicated, special stains such as the Galantha stain for mucin, sudan III stain and the van Gieson stain for hyaline substance were also employed. Several thousand sections were thus made available for study. Preliminary microscopic "scouting" eliminated the occasional examples of granulosa tumor, theca cell tumor, Krukenberg tumor and Brenner tumor. A fair number of adenofibromas was found and similarly deleted. There remained 312 ovarian fibromas occurring in a group of 283 patients. These 312 tumors accounted for 5 per cent of all ovarian tumors surgically removed at the Mayo Clinic. Ovarian fibroma was never encountered before the age of puberty, and this observation has been taken to indicate an origin possibly based on a desmoplastic reaction to the hemorrhage of ovulation or ovarian endometriosis. Fibroma did not produce specific diagnostic symptoms, and rarely was it possible for the clinician to go further than to say "ovarian tumor," "solid ovarian tumor" and

so forth. Abdominal ascites in 51 cases and hydrothorax in 2 cases suggested the existence of a malignant process, but the patients never presented the picture of cachexia. Most of the tumors were solid, white and invested by a smooth capsule free from adhesions. Many of the tumors were edematous, and a number of these had undergone degenerative changes with central cysts or "geodes." The common denominator relating to both ascites and formation of cysts was a weeping edema effected through partial obstruction of the venous return. Hydrothorax was rare. In 90 per cent of cases the tumor was unilateral. Bilateral fibroma-like tumors sometimes proved to be metastatic tumors of the Krukenberg type. A yellowish color suggested theca cell tumor, especially in cases in which postmenopausal bleeding was noted. In others the yellow color resulted from fatty metamorphosis. A grayish brown color and firm consistency were noted in several tumors that later proved to be of the Brenner type. A brownish color and soft consistency indicated malignant change, which occurred in 1 per cent of the tumors studied. Microscopically, both cellular and fibrous types appeared to arise from the spindle cells of the ovarian cortex, with hemorrhage as a possible inciting element.

**Elderly Primipara**—Kuder and Johnson present a study of the histories of 830 elderly primiparas delivered in the Women's Clinic of the New York Hospital during the eleven year period from 1932 to 1943. The total number of deliveries during this period was 30,880. The elderly primiparas accounted for 2.68 per cent of the total. About half of the 830 elderly primiparas were between 35 and 36 years of age, whereas 104, or 12.5 per cent, were 40 or over. The incidence of toxemia of pregnancy in the elderly primiparas was 13.98 per cent as compared with 7.29 per cent in the clinic as a whole. Myoma uteri occurred in 5.9 per cent as compared with 1.9 per cent in the total clinic. Although the incidence of contracted pelvis in this series was 13.0 per cent in contrast to 9.2 per cent for the total clinic, the greatest difference appeared in the incidence of funnel pelvis. This type made up 45.3 per cent of the contracted group in the elderly primiparas and 28.2 per cent in the clinic. When the elderly primipara goes two weeks or more past the expected date of delivery, the incidence of prolonged labor is 28.91 per cent, of operative delivery 69.87 per cent and of infantile mortality 24.09 per cent as compared with 17.59 per cent, 55.54 per cent and 7.64 per cent respectively for the entire group of elderly primiparas. The average duration of labor for this group was 20.41 hours. The average duration of labor for primiparas in the clinic is 18.0 hours. The incidence of operative deliveries was 55.54 per cent and of cesarean section 13.38 per cent while in the clinic as a whole these incidences are 24.3 per cent and 2.9 per cent respectively. The gross infantile mortality was 7.64 per cent as compared to 3.7 per cent for the clinic as a whole. The maternal mortality was 7.2 per thousand pregnancies as compared to 1.6 per thousand pregnancies for the total clinic. The mere fact that a patient is an elderly primipara is not in itself an indication for cesarean section. If, however, there is an added factor which under any circumstance would be an indication for cesarean section or would increase the fetal mortality rate, this operation is justifiable.

**One Day Sulfonamide Treatment of Chronic Gonorrhea in the Female**—Strauss and his associates state that beginning in January 1943 patients sent to their service at the Kingston Avenue Hospital with a culture report positive for the gonococcus were given sulfonamide medication routinely for only one day. A complete history, physical and gynecologic examination, complete blood count and urine analysis were first recorded. Patients were confined to the hospital but were ambulatory. They were on a general hospital diet. Fluids were forced before, during and after chemotherapy, the average intake being over 2,000 cc. The day preceding the administration of the sulfonamide each patient was given 32 Gm of sodium bicarbonate. The first group of 96 patients was given sulfadiazine 6 Gm during a single day—half at 9 a m and the other half at 3 p m. An equal amount of sodium bicarbonate was administered at the same time. The second group of 97 patients was treated identically except that 8 Gm of sulfadia-



zine was administered during one day. The third group comprising 88 patients was given 8 Gm of sulfathiazole in the same fashion. In all cases cultures and spreads were taken from the urethra and cervix (Skene's and Bartholin's, when indicated) the day following treatment and once or twice weekly during their hospital stay. The patients were examined gynecologically each week by the resident staff and also by the visiting staff working independently. The period of observation following chemotherapy averaged thirty days. The administration of sulfadiazine or sulfathiazole during a single day to hospitalized women with cultures positive for the gonococcus was followed by the disappearance of gonococci in 86.6 to 90.9 per cent of the cases. There was no significant difference of results following 8 Gm of sulfathiazole, 8 Gm of sulfadiazine or 6 Gm of sulfadiazine. There was a difference in response of patients of the Negro and white races, the failures being three to four times greater in the white race. The authors are not ready to advocate the general use of the "one day treatment" of gonorrhea and believe that it should be used only for hospitalized patients when time is at a premium.

### Am J Roentgenol & Rad Therapy, Springfield, Ill. 51 669-794 (June) 1944

- Actinomycosis of Vertebrae M. Lubert —p 669  
Hereditary Factors in Multiple Congenital Deformities Report of 2 Cases  
A. A. Hobbs Jr —p 677  
Osteochondritis of Capitellum (Panner's Disease) H. C. March —p 682  
Roentgenologic Findings in Bilateral Symmetrical Thinness of Parietal Bones (Senile Atrophy) Report of Case with Review of Literature  
A. K. Wilson —p 685  
Encephalographic Appearance in 2 Cases of Pontine Glioma in Children  
W. J. Gardner and E. W. Shannon —p 697  
\*Lesions of Acromioclavicular Joint Causing Pain and Disability of Shoulder A. Oppenheimer —p 699  
Traumatic Separation of Upper Femoral Epiphysis Birth Injury P. C. Kennedy —p 707  
Oscillating Pleural Hernia C. G. Lyons, F. G. Bell and L. S. Ellenbogen —p 720  
Simplified Method of Bronchography P. A. Robin —p 724  
Use of Modified Opaque Barium Sulfate Mixture in Roentgenography of Colon M. H. Poppel and Celia Berrow —p 727  
Treatment of Accessible Malignant Tumors with Short Distance Low Voltage Roentgen Rays D. W. Smithers —p 730  
\*Concentration Method of Radiotherapy for Cancer of Mouth, Pharynx and Larynx Report of Progress M. Cutler —p 739  
Radium Dosage for Linear Sources Table and Nomogram B. S. Wolf —p 747

#### Acromioclavicular Joint Causing Pain of Shoulder—

According to Oppenheimer, among the various lesions which may induce persistent or recurrent pain and disability of the shoulder, those involving the acromioclavicular joint have received little attention, although they seem to be common. Arthritis of the acromioclavicular joint causes pain in the shoulder, often radiating into the arm, wrist and fingers, with limitation of the movements involved in bringing the arm above shoulder level across the chest and onto the back. Other signs and symptoms are not characteristic, as they may be produced by bursitis, myositis, traumatic lesions of the muscles, tendons and bones of the shoulder and radicular neuritis caused by disease of the cervical spine. The diagnosis is determined by the x-ray appearances in a majority of cases. During the past eleven months, when special attention was paid to acromioclavicular lesions, 28 cases were observed. A review of roentgenograms of the shoulder made before that time seems to show that this incidence is the usual one. Acromioclavicular lesions were about eight times as frequent as humeroscapular arthritis, three times as frequent as subdeltoid and subacromial bursitis combined, nearly as frequent as the various traumatic lesions of the muscles and tendons of the shoulder girdle and about one half as frequent as radicular neuralgia caused by disease of the cervical spine. All the patients were referred to the roentgenologic department because various modes of therapy, such as heat applications, analgesics, splints and injections of a local anesthetic into the deltoid region, had failed to produce permanent relief. Short wave therapy was ineffective. Small doses of roentgen therapy were applied. In some of the patients pain began to subside after the second irradiation, in others, six to eight treatments were required to bring about complete or

almost complete relief. The movements of the arm in the shoulder usually became normal about ten days after disappearance of the pain. A decrease of the capsular enlargement was noted on roentgenograms in all instances.

**Concentration Method of Radiotherapy**—Cutler presents the results achieved by the new method of irradiation called concentration radiotherapy. During the five year period 1938 to 1943, 290 cases were treated divided as follows: cancer of the pharynx and larynx 116 cases, cancer of the mouth 116 cases, cancer of the tongue 38 cases, cancer of the accessory nasal sinuses 20 cases. The basis of the method of concentration is the use of large daily doses over a comparatively short treatment period (ten to eighteen days). The total dose is sufficient to produce an 'epithelitis' and in some instances an epidermitis, and there is reason for believing that the total dose under the given conditions constitutes a maximum irradiation. It is not certain that all the factors are the most favorable except that the increase in the daily dose and diminution in the total treatment period has caused regression, disappearance and apparent cures of lesions that have failed to respond to the former divided dose technique. Roentgen rays or radium may be used. This method has resulted in the eradication of the more radioresistant carcinomas of the mouth, pharynx and larynx which have failed to respond to the previous methods of external irradiation. The initial disappearance and apparent cures have been observed in a group of intrinsic squamous carcinomas of the larynx which are generally regarded as radioresistant and for which surgery is usually claimed to be the only effective treatment. In many of these cases the only alternative to radiotherapy was complete laryngectomy. A radiotherapeutic test has been developed for certain borderline cases of intrinsic cancer of the larynx in which a decision between radiotherapy and laryngectomy is difficult. Approximately half the full dose of treatment is given in six days as a test of the sensitivity of the lesion. This is followed by an interval of fifteen days of observation. The degree of regression of the lesion at the end of the twenty-one days can be used as a reasonably accurate index of the radiocurability of the lesion. If the response to the first course of treatment is adequate, the second course is administered. If the response has been inadequate, laryngectomy may be performed with safety. This method has been a great help in certain difficult borderline cases and affords a chance of cure with preservation of the voice in the event that the lesion proves to be sensitive to radiation. It also does not eliminate the chances of cure by laryngectomy if the lesion proves to be radioresistant.

### American Review of Tuberculosis, New York

49 485-578 (June) 1944

- Pulmonary Tuberculosis in Navy Recruits. Review of 50 100 Photofluorographic Chest Examinations R. Shapiro —p 485  
Accidentally Discovered Pulmonary Tuberculosis H. Abeles and M. Pinner —p 490  
Tuberculosis Among Hospital Personnel W. G. Childress —p 501  
\*Promin in Pulmonary Tuberculosis Progress Report R. J. Dancy, R. H. Schmidt Jr and J. M. Wilkie —p 510  
Effects of *pu* Temperature and Salicylate on Bacteriostasis of Tubercle Bacilli by Sulfonamides and Diaminodiphenylsulfone G. Middlebrook and J. B. Lloyd —p 535  
Bacteriostatic Activity of Some New Derivatives of Diaminodiphenylsulfone and Naphthoquinones Against Tubercle Bacillus J. B. Lloyd and G. Middlebrook —p 539  
Chemotherapy of Benzophenone and Allied Compounds. II. Further Experiments on Tuberculostatic Action in Vitro B. L. Freedlander —p 543  
Effect of Inorganic Iodides on Tubercles W. P. Featherston —p 549  
Virulence of Tubercle Bacilli In Vitro Method for Its Estimation P. Schain —p 551  
Treatment of Severe Tuberculin Reactions J. D. Fletcher —p 556  
Personal Problems in Treatment of Tuberculosis Edith G. Seltzer —p 558

**Promin in Pulmonary Tuberculosis**—Promin, a highly water soluble member of a group of sulfones, has been used with success against guinea pig tuberculosis. In human pulmonary tuberculosis its ineffective use by the intravenous route has been reported by some investigators while its beneficial effect by the oral route has been suggested by others. Dancy and others investigated the pharmacology of oral promin and its effect on the course of pulmonary tuberculosis in man. Promin was given by the oral route, occasionally supplemented



by parenteral administration, in a critical series of 16 patients with pulmonary tuberculosis. Cases selected were largely those presenting relatively recent exudative lesions in which the prognosis was poor under any form of treatment. The median average daily dose was 1.07 Gm, and the median length of treatment was five and one-half months. No other treatment except bed rest was employed. The degree and rapidity of improvement during promin therapy, as indicated by x-ray appearances, were greater than would have been anticipated in the same group of cases under rest treatment alone. In certain cases the course of the disease was abruptly reversed from progression to retrogression, but in a few instances the disease remained stationary or progressed during seemingly adequate promin treatment. Promin probably exerts a beneficial effect on human pulmonary tuberculosis when the lesions are of recent origin. Few observations have been made on chronic lesions, but it seems unlikely that they would be appreciably affected by promin. The curative action of promin in human pulmonary tuberculosis is not very potent, and promin alone should not be relied upon to effect an arrest. If these conclusions are borne out by further investigation, promin will have a place in the therapy of pulmonary tuberculosis but strictly as an adjunct to other modes of treatment. The potentially serious toxic effects of promin require that the use of the drug be adequately supervised. They also limit the therapeutic dosage. The high degree of solubility of promin facilitates its parenteral use and therefore appears to give promin a definite therapeutic advantage over relatively insoluble compounds in instances of temporary intolerance to oral medication.

## 50 1-84 (July) 1944

- Comparison of Roentgenograms with Pathology of Experimental Military Pulmonary Tuberculosis in Rabbit E M Medlar G S Pesquera and W H Ordway—p 1  
Patients Discharged Alive from County Sanatorium D R Hastings and B Behn—p 24  
Tuberculoma of Posterior Mediastinum B Blades and D J Dugan—p 41  
\*Loeffler's Syndrome Transient Pulmonary Infiltrations with Blood Eosinophilia H B Pirkle and Julia R Davin—p 48  
\*Chemotherapy of Clinical Tuberculosis with Promin P P Diamino diphenylsulfone N N Dioxetose Sulfonate Second Report of Progress H C Hinshaw, K H Pfuetze and W H Feldman—p 52  
Cultivation of Bovine Tubercle Bacillus A R Arena and A Cetran—p 58  
Cutaneous Activity of Old Tuberculin Prepared by Same and by Different Methods R Y Gottschall A B Mitchell and C J Stringer—p 68  
Further Observations on Production of Autolytic Tuberculum H J Corper and M L Cohn—p 81

**Transient Pulmonary Infiltrations with Blood Eosinophilia**—Loeffler's syndrome, according to Pirkle and Davin, consists of asthma with cough, the occurrence of eosinophilia ranging from 10 to 60 per cent, the presence of a low grade fever accompanied by mild leukocytosis and an elevated sedimentation rate. X-ray examination reveals pulmonary infiltrations in various parts of the lungs, usually in the lower fields. They disappear rapidly and do not cavitate. Loeffler did not stress the possible allergic nature of the condition, but subsequent observers have suggested and sometimes demonstrated that the pulmonary infiltrations are on the basis of an allergy. The authors state that a woman aged 54 presented a history different from some of the other reported cases of Loeffler's syndrome in the absence of asthma and in the long duration of the pneumonic migrations. The pneumonitis continued to migrate for eight months. This woman is now employed as a nurse's aid. She continues to be nervous with easy fatigability, and a tendency to tachycardia, but chest x-ray films taken at intervals of two months remain clear and there is no eosinophilia. The etiology of the syndrome remains obscure.

**Promin in Tuberculosis**—Hinshaw and his co-workers presented in May 1942 a preliminary report on their experiences with promin (a diaminodiphenylsulfone derivative) with special reference to a group of 36 patients who had received supposedly adequate doses for from four to twelve months. The originally described clinical trends have been consistent and progressive on further observation. The results are sufficiently encouraging to justify controlled studies on a large series. Exudative lesions of recent origin appear to be more promising types for chemotherapy than those with caseation, necrosis, cavitation and

fibrosis. The toxic manifestations of promin and related drugs are to be constantly reckoned with but are measurable, reversible and controllable and do not appear to have an adverse effect on the clinical course of tuberculosis. Anemia of considerable degree does not appear to hinder the healing process in tuberculosis. A few patients of this series made striking and consistent gains during a time when the hemoglobin content of their blood, as a result of chemotherapy, was constantly less than 10 Gm per hundred cubic centimeters. The authors also direct attention to the use of promin in the treatment of human leprosy.

## Anesthesiology, New York

5 329-440 (July) 1944

- Studies on Barbiturates \\\ II Tolerance and Cross Tolerance to Barbiturates M W Green and T Koppanyi—p 329  
Intraspinal Ammonium Salts for Intractable Pain of Malignancy B D Judovich W Bates and K Bishop—p 341  
Spinal Cord Level Syndrome Following Intrathecal Ammonium Sulfate and Procaine Hydrochloride Case Report with Autopsy Findings S A Guttman and I Pardee—p 347  
Subarachnoid Ammonium Sulfate Therapy for Intractable Pain L V Hand—p 354  
Inhalation Therapy Method for Collection and Analysis of Statistics M Saklad N Gillespie and E A Roventine—p 359  
Clinical Use of [Sodium 5 Ethyl 5 (1 Methyl 1 Butenyl) Barbiturate] Vinbarbital Sodium as Preanesthetic Agent P H Lorhan—p 370  
Effective Administration of Ether in Tropics M P C Storm and J S Lundy—p 380  
Respiratory Sequelae of Anesthesia in Military Practice G Kaye—p 383  
Nasoendotracheal Intubation Advantages and Technique of 'Blind Intubation' C K Elder—p 392  
Role of Anoxia in Gastrointestinal Effects of Anesthesia E J Van Liere—p 400

## Annals of Allergy, Minneapolis

2 189-280 (May-June) 1944

- \*Allergy of Central Nervous System T W Clarke—p 189  
Etiology of Seasonal Hay Fever in District of Columbia G T Brown—p 197  
Presence of Thermolabile Inhibiting Factor in Serums of Patients Treated for Hay Fever by Injections of Pollen Extract E A Brown and E M Holden—p 207  
Sympathectomy as Aid in Relief of Familial Nonreaginic Food Allergy Preliminary Report A T Coca—p 213  
Protection of Asthmatic Patient Against Lung Irritants with Special Reference to Chemical Agents Used in Warfare K J Deissler—p 225  
Unusual Case of Sulfathiazole Sensitivity of Renal Type J Peters and A J Koven—p 230  
Importance of Vitamin C in Bodily Defenses I Antianaphylactic Effect of Vitamin C in Prevention of Pollen Reactions L Felner—p 231

**Allergy of Central Nervous System**—Clarke believes that symptoms of increased intracranial pressure such as headache, vomiting, dizziness, pressure on the optic nerve, convulsions, hyperesthesia, anesthesia, paralysis and psychosis may occur as the result of an allergic shock. Many cases of migraine, of Meniere's disease and of infantile convulsions are of allergic origin. In 1922 Ward suggested that epilepsy is a manifestation of allergy. Clark examined a large number of epileptic patients from the point of view of allergy and concluded that in some there was an allergic etiology. Favorable results may be obtained if this is discovered early enough. He cites several examples and suggests that epilepsy is a manifestation of various conditions, one of which is allergy. It is improbable that an allergic study will relieve more than 10 per cent of the patients. The mental effects of allergy have received little study, though nervous symptoms are so common in association with the allergic diseases that until recently asthma, urticaria, angioneurotic edema and migraine were thought to be primarily diseases of the nervous system. It is a matter of common experience that the asthmatic child, though amenable normally, becomes irritable during an asthmatic seizure. Insomnia and excessive somnolence also have been overcome by correcting the diet of allergic patients. Though it has been demonstrated that allergic shock can cause mental depression, bewilderment and even active delirium, the psychiatrist has entirely overlooked the possibility of some of the recurrent types of psychoses having an allergic background. When patients with recurring psychoses give a family or personal history of allergic disease, they should be given a thorough investigation of their allergic idiosyncrasies and the appropriate treatment indicated thereby.

## Annals of Surgery, Philadelphia

119 801-968 (June) 1944

- \*Physiologic Analysis of Nature and of Treatment of Burns W W L Glenn—p 801
- \*Nutritional Care of Cases of Extensive Burns with Special Reference to Oral Use of Amino Acids (Amigen) in 3 Cases Co Tui A M Wright J H Mulholland I Barcham and E S Breed—p 815
- Adenomatosis of Islet Cells with Hyperinsulinism Virginia Kneeland Frantz—p 824
- Pancreaticojejunostomy and Other Problems Associated with Surgical Management of Carcinoma Involving Head of Pancreas Report of 5 Additional Cases of Radical Pancreaticoduodenectomy C G Child—p 845
- Neurogenic Sarcoma of Jejunum Associated with von Recklinghausen's Disease J B Hamilton P C Kennedy and P C Herauld—p 856
- Estimation and Significance of Blood Loss During Gastrointestinal Surgery A Oppenheim, G T Pack J C Abels and C P Rhoads—p 865
- Enterogenous Cysts at Ileocecal Junction S A Rosenberg—p 873
- Differential Diagnosis of Causes of Pain in Lower Back Accompanied by Sciatic Pain P B Magnuson—p 878
- Anatomic Study of Lumbosacral Region in Relation to Low Back Pain and Sciatica W A Larmon—p 892
- Chronic Spinal Epidural Granuloma Report of 2 Cases M O Grossman B H Kesert and H C Voris—p 897
- Venography Its Value in Diagnosis and Management of Venous Disturbances of Lower Extremities A Lesser and G Danielius—p 903
- Pectus Excavatum Report of 2 Cases Successfully Operated on R H Sweet—p 922
- Brachial Plexus Block Anesthesia Improved Technique D R Murphy Jr—p 935
- Basal Cell Lesions of Nose Cheek and Lips W B Davis—p 944
- Effect of Locally Implanted Sulfonamides on Wound Healing H A Zintel—p 949
- Anesthetic Deaths in 54 128 Consecutive Cases J C Trent and Ellen Gaster—p 954

**Physiologic Analysis of Nature and Treatment of Burns**—Glenn discusses the use of closed plaster dressings in burns. There is no local harm from this treatment. There were no instances of injured circulation. The prompt return of function of a part immobilized in plaster over prolonged periods has been one of the most gratifying features. The treatment is comfortable. The plaster dressing is easy to apply to burns of the extremity. The slight after-care is one of the chief advantages. Pain or discomfort in an encased extremity occurring twenty-four to thirty-six hours after application of the dressing was relieved by elevation of the part. After minimal cleaning and debridement and without breaking blisters, two layers of sterile gauze are laid over the burned surface extending above the area to be covered by plaster. If fingers are involved they are enclosed separately in the gauze. A thin sheet of roller plaster bandage is then applied to the part without pressure, extending over the end of the extremity and 2 to 4 inches above the burn. In mild burns the encasement is removed in seven to fourteen days. In more severe burns it may be left in place for as long as four weeks.

**Nutritional Care in Extensive Burns**—Co Tui and his collaborators deal with the nutritional care of 3 cases of thermal third degree burns of, respectively, 10, 30 and 50 per cent of the body surface. The patients were given high caloric and high nitrogen feedings in the form of dextrimaltose and amigen. The nitrogen balance was followed throughout convalescence and the plasma proteins and body weight were determined periodically. All 3 patients were maintained in an excellent nutritional state. There seemed to be a mathematical relationship between the extent of surface burned and the amount of nitrogen required to maintain nutrition. Transfusions were reduced to a minimum. Preparations such as amigen seem to be better tolerated and utilized than natural protein food and appear to be the solution to the problem of nutritional care of severe cases of protein drain. The development of shock following immediately on the first skin grafting is a phenomenon which may have an important bearing on the safety of this procedure in extensive burns. Theoretically it is to be expected that in patients undergoing severe protein loss with protein synthesis barely keeping up with the loss the opening up of new areas of the skin surface, with resulting increase in exudation and bleeding, would readily lead to the development of shock. If this explanation is correct, patients in this condition should have no skin grafting attempted unless the protein nutrition has been improved and measures for the therapy of shock are at hand.

## Archives of Ophthalmology, Chicago

31 453-584 (June) 1944

- Evaluation of Ocular Angiospasm S R Gifford—p 45
- Dickey Operation for Ptosis Results in 21 Patients and Thirty Lids F C Cordes and L Fritsch—p 461
- Role of Sarcoidosis and of Brucellosis in Uveitis A C Wood and J S Givton—p 469
- Development of Anterior Peripheral Synchiae in Experimental Acute Glaucoma M U Troncoso—p 481
- Appraisal of Value of Orthoptic Clinic in Private Practice E C Ellett R O Ryckner and J S Robinson—p 503
- Drusen of Optic Nerve Simulating Cerebral Tumor—S S Schlegel J Waldman and B J Alpers—p 509
- Uveitis Associated with Hodgkin's Disease Report of Case S Kamellin—p 517
- Uveitis Dysaesia Alopecia Poliosis and Vitiligo Theory as to Cause E B Hague—p 520
- \*Autonoculation of Eyelids with Vaccinia W R Klunzinger—p 539

**Autonoculation of Eyelids with Vaccinia**—Klunzinger reports the case of a boy aged 8 who developed redness and swelling of the lids of both eyes three days after he had been vaccinated on the right arm. Examination a week after vaccination revealed severe redness of both eyes swelling and induration with several ulcerations along the margins and moderate mucopurulent discharge. There was a nontender swelling from eye to ear bilaterally. A tentative diagnosis of vaccinia reaction was made. Irrigations of boric acid were made every hour during the day together with application of hot compresses for twenty minutes three times a day. Under this treatment there was decided improvement in five days. The patient was discharged, with instructions to use hot compresses three times a day followed by instillation of aqueous solution of metaphen (1:2,500). Sulfadiazine was used for a short time since the diagnosis was at first questionable. Its use was discontinued after examination of smears revealed no causative organisms, and its effect was probably only to reduce the febrile reaction. Although ocular complications after vaccination are uncommon the possibility of their occurrence should be remembered. Lesions of the lids and conjunctiva have been found to run a self-limited course, healing in seven to ten days with no sequelae. Corneal involvement, however, requires a much longer period for healing, and visual impairment often results. It is of the utmost importance to prevent corneal involvement.

## Archives of Pathology, Chicago

37 351-414 (June) 1944

- Adrenal Medulla in Various Diseases Histophysiological Study R L Drake J S Hubbard and C A Hellwig—p 351
- Encephalitis Complicating Virus Pneumonia Report of Case with Autopsy Helen Ingleby—p 359
- Anomalous Pulmonary Veins C W Hughes and P C Rumore—p 364
- Primary Neoplasms of Liver W N Warr—p 367
- Feather Germ Reaction to Urine from Patients with Cancer and Other Conditions Preliminary Study Mary Juhn—p 383
- Origins of Cell Concept in Pathology H G Schlumberger—p 396

## Archives of Surgery, Chicago

48 423-498 (June) 1944

- \*Syphilis of Tendon of Long Head of Biceps Muscle and of Olecranon Bursa V L Schragar—p 423
- Tuberculous Abscess of Thyroid Gland Report of Case and Review of Literature R W Postlethwait and P Berg Jr—p 429
- \*Role of Allergy in Delayed Healing and Disruption of Wounds I Antigenicity of Catgut H C Hopps—p 438
- \*Id II Effect of Specific Sensitivity to Catgut on Reaction of Tissues to Catgut Sutures and of Healing of Wounds in Presence of Catgut Sutures H C Hopps—p 445
- \*Id III Delayed Healing and Disruption Produced by Local Allergic Reaction (Auer Phenomenon) H C Hopps—p 450
- Progressive Gangrene in Operative Wound D W Leonard—p 457
- Regional Enteritis Pathologic Study of 22 Cases F M Owens Jr—p 465
- Results of Long Term Experimental Constriction of Hepatic Veins in Dogs C D Armstrong and V Richards—p 472
- Chemosurgical Treatment of Cancer of Lip Microscopically Controlled Method of Excision F E Mohs—p 478
- Effects of Continuous and of Intermittent Application of Tourniquet to Traumatized Extremity A Blalock—p 489
- Effect of Hypoproteinemia on Susceptibility to Shock Resulting from Hemorrhage I S Ravdin H G McNamee J H Kamholz and J E Rhoads—p 491

**Syphilis of Tendon of Biceps and of Olecranon Bursa**—Schragar's patient, aged 61, gave a long history of pain in different joints which had been diagnosed repeatedly as rheumatism and arthritis. A 4 plus Wassermann reaction years before led to treatment with neocarsphenamine and bismuth compounds.

but the treatment was discontinued when jaundice developed. The patient presented a tumor mass in the upper part of the arm. Operation revealed a tumor mass in the tendon sheath of the long head of the biceps muscle. It was removed together with a few strips of tendon and its sheath, which were red and frayed. An olecranon bursa the size of a large walnut was present over the right elbow. It had a thick capsule. The contents of the bursa were exactly like those found in the tendon sheath of the biceps muscle. Both wounds healed by primary intention. Microscopic examination of the tumor mass revealed changes compatible with a syphilitic granuloma, and the olecranon bursa showed a picture characteristic of a syphilitic gumma. Spirochetes were found in the granulation tissue. The author thinks that syphilis of tendons and bursas should be suspected more often in the diagnosis of tendinitis and bursitis.

**Antigenicity of Catgut**—Hopps attempted to determine whether or not a state of hypersensitivity to catgut can be induced. It was considered that catgut per se, because of the probable denaturation of protein and the chemical alteration sustained during preparation and because of its relative insolubility, is a poor antigen. Sheep serum or sheep intestine might be more effective in stimulating the formation of antibodies to catgut than catgut itself. For these reasons the following materials were used as antigens: (1) plain surgical catgut, (2) sheep intestine, (3) sheep serum. The author produced hypersensitivity to catgut in rabbits and guinea pigs, as shown by positive cutaneous reactions, positive reactions to catgut implanted in the anterior chamber of the eye and demonstration of humoral antibodies (precipitins, agglutinins, complement fixing antibodies and anaphylactins) in vivo and in vitro. Catgut, sheep intestine or sheep serum is capable of inducing this hypersensitive state. In addition to antibodies which will react with either catgut or sheep serum, catgut stimulates the production of antibodies specific for itself. These antibodies specific for catgut may also be specific for collagen or for mucoprotein. Heterophile antibodies do not react with catgut.

**Effect of Sensitivity to Catgut on Reaction of Tissues to Catgut Sutures**—These experiments were designed to evaluate the effects of hypersensitivity to catgut on the reaction of tissues to catgut sutures and on the healing of surgical wounds repaired with catgut. Hopps observed evidence of slightly heightened reaction of the tissues to catgut sutures in animals which were hypersensitive to catgut. There was, however, no appreciable difference between normal rabbits and rabbits sensitized to catgut in the rate of dissolution or digestion of catgut sutures during the critical period of healing of wounds. There was no significant difference between normal rabbits and rabbits sensitized to catgut in the healing of laparotomy wounds repaired with catgut sutures. The absence of significant allergic reaction to catgut in the wounds of animals sensitized to catgut is attributed to the relative insolubility of catgut sutures.

**Delayed Healing and Disruption Produced by Local Allergic Reaction**—Hopps directs attention to Auer's phenomenon of "local autoinoculation of the sensitized organism with foreign protein." It is generally accepted that disruption of the wound is more prone to occur when an abdominal operation is performed in the presence of preexisting infection, such as pelvic abscess or peritonitis. Although this increased incidence of breakdown of the wound may be in response to direct infection of the wound, the possibility of yet another mechanism appears. In the presence of a well localized infection the patient may be assumed to have a rather high degree of immunity or sensitivity to the specific infectious agent and a high humoral antibody titer. As the result of operative manipulation of such a localized infectious lesion an appreciable amount of dead or living bacteria and their products may be forced through the protective barrier of granulation tissue to enter the general circulation. Under these conditions all of the necessary requirements for the development of an Auer reaction would be fulfilled: (1) the surgical wound, providing a localizing lesion, (2) the chronic infection, stimulating a high humoral and tissue antibody titer, and (3) manipulation of the localized infectious process, allowing for the introduction of specific antigen into the blood stream. Experiments demonstrated that the healing of laparotomy wounds is profoundly altered in rabbits previ-

ously sensitized in which specific antigen is reinjected post operatively. The most obvious explanation is that a local anaphylactic reaction plays a predominant part. Other possibilities to be considered are a direct or indirect effect of general anaphylaxis and local formation of antibodies. The author concludes that local allergic reaction at the site of a surgical wound will delay healing and encourage disruption. The mechanism of such delayed healing appears to rest in a failure of the maturation of macrophages, with resultant failure in the production of the reticulum and collagen.

## California and Western Medicine, San Francisco

60 273-356 (June) 1944

Aviation Medicine in Peace and War C. R. Glenn—p. 278  
Venereal Disease Control in Military Scene J. R. Scholtz—p. 283  
Placenta Previa P. H. Arnot—p. 287  
Psychoses Following Prostatic Surgery A. G. Folte—p. 289

61 1-48 (July) 1944

Public Relations Survey of California J. R. Little—p. 10  
\*Carbon Tetrachloride Poisoning Report of Cases B. E. Konwaler and C. B. Noyes Jr.—p. 16  
Public Health Medical Specialty W. L. Halverson—p. 21  
Leukemia as Cause of Nasal Obstruction Report of Case F. N. Hatch—p. 23

**Carbon Tetrachloride Poisoning**—Konwaler and Noyes add 3 more cases of poisoning from carbon tetrachloride to those reported by others. The 3 men drank heavily over the weekend and reported for duty Monday morning with "hang overs." They worked from 8:30 a. m. to 11:30 a. m. in a poorly ventilated compartment. Three other men, who had not been drinking liquor recently, were also working in the same compartment. The men were cleaning machinery with rags soaked in carbon tetrachloride. They had volatilized approximately 1½ quarts of the liquid in three hours when they noticed that the smell of the vapor became quite heavy. Only 1 of the men developed symptoms during the period of exposure. One patient, who later died, first felt sick at 10 a. m. The second victim felt well until 6:30 that evening. The third man had left the compartment frequently and had been exposed much less than the first two. He showed no symptoms of poisoning until the following morning. The three nonalcoholic workers developed no symptoms and continued at their duty. The 3 cases illustrate three grades of severity of carbon tetrachloride intoxication. Carbon tetrachloride is a potent renal poison resulting in severe cases in acute toxic nephrosis with uremia. Hepatitis is also found but is not severe. Alcohol ingestion prior to exposure assumes a synergistic role.

## Canadian Medical Association Journal, Montreal

51 1-98 (July) 1944

Problems of Future for Organized Medicine D. S. Lewis—p. 1  
Factors Influencing Rate of Flow of Intravenous Infusions H. E. Pugsley and R. F. Farquharson—p. 5  
Studies on Increased Coagulability of Blood T. R. Waugh and D. W. Ruddick—p. 11  
\*Simple Office Test for Uterine Cancer Diagnosis J. E. Ayre—p. 17  
Generalized Granulomatous Reaction Following Sulfonamide Therapy W. S. Hartroft—p. 23  
Drug Eruptions with Special Reference to Sulfa Drugs J. F. Burgess—p. 25  
Thiouracil in Treatment of Thyrotoxicosis E. M. Wat on and L. D. Wilcox—p. 29  
Thiouracil and Its Effects on Hyperthyroidism J. K. McGregor—p. 37  
Thiouracil in Treatment of Hyperthyroidism Elizabeth M. Martin—p. 39  
Fractures of Femur in Canadian Army in England A. D. McLachlin and J. A. MacFarlane—p. 41  
Incidence of Pulmonary Tuberculosis in Royal Canadian Naval Service C. B. Peirce, G. Jarry and A. C. Richardson—p. 46  
Septate Vagina Complicated by Pregnancy N. H. Olesker—p. 51

**Simple Office Test for Uterine Cancer Diagnosis**—Ayre points out that in many cases intensive study of several smears is required to arrive at a correct diagnosis when the smears are taken directly from the vagina. He suggests a modification which consists in taking a smear directly from the external os of the cervix. Here the concentration of cancer cells is greater. In Ayre's series of cases, smears from the vagina were compared with smears from the external os, and in both cervical and fundal carcinoma a much greater concentration of cancer cells was consistently present in smears from the cervix. The vaginal smear test for cancer may be con-

sidered a surface biopsy of the cells and cell clumps being shed by the genital tract. The finding of cancer cells in these secretions would appear to be strong presumptive evidence of cancer. The mere finding of the cells does not always point to the origin of the growth. Since malignant growths of the genital tract are chiefly cervical or fundal, these sites should be the first to be subjected to biopsy. Diagnosis of cancer cells in smears should be confirmed by biopsy before operation or radiotherapy. At the author's clinic 40 cases of uterine cancer were proved by biopsy, and of these 38 showed cancer cells in the smear.

### Hawaii Medical Journal, Honolulu

3 213-260 (May-June) 1944

\*Weil's Disease. Report of 37 Cases. H. M. Patterson—p. 213  
Bacillary Dysentery with Special Reference to Epidemic on Maui. W. B. Patterson—p. 222

**Weil's Disease**—Patterson reports observations on 37 cases treated by him at Olaa Hospital between October 1941 and November 1943. In the Olaa area of Hawaii this disease is essentially an occupational one occurring principally in young cane cutters. The first symptom in half of the patients was headache. All the patients had loss of appetite and generalized malaise, with 50 per cent having more pain in the calf muscles than elsewhere. Nineteen patients had chills and 13 vomited before admission. All patients had eye symptoms such as conjunctivitis and scleritis, which is the most important manifestation in this disease. All patients were listless and 36 had muscle weakness. Jaundice was present on admission in only 7 patients and developed later in only 9 others. Weight loss averaged 11½ pounds. The average peak temperature was 102.8 F. Twenty-nine patients showed albumin in the urine, 18 showed cells of some kind in the urine and only 1 showed casts. Repeated blood serum agglutination tests are the most reliable laboratory procedure. All patients had positive blood serum agglutinations for *Leptospira icterohemorrhagiae* in dilutions of 1:300 or more. The treatment of choice is whole blood transfusions from convalescent patients. Otherwise the treatment is largely symptomatic. Sulfathiazole and sulfadiazine seem ineffective. The medical profession and industry in the territory should cooperate in the development of a vaccine to be used in the immunization of field workers, and possibly the entire population, against Weil's disease.

### Journal of Clin Endocrinology, Springfield, Ill

4 179-228 (May) 1944

\*Thiourea and Thiouracil in Treatment of Thyrotoxicosis. K. E. Paschke, A. Cantarow, A. E. Rakoff, A. A. Walking and W. J. Tourish—p. 179  
Precocious Sexual and Somatic Development in Male Infant with Pre-Sacral Teratoma Containing Androgen Producing Tissue with Discussion of Mechanism of Precocity Caused by Teratomas. A. E. Rhoden—p. 185  
Insulin Requirement of Man After Total Pancreatectomy. M. G. Goldner and D. E. Clark—p. 194  
Effects of Testosterone and of Testosterone Propionate on Protein Formation in Man. J. C. Abels, N. F. Young and H. C. Taylor Jr—p. 198  
Excretion of Sodium Pregnanediol Glucuronide in Urine Following Oral Administration of Anhydrohydroxyprogesterone and Progesterone to Patients with Secondary Amenorrhea. W. M. Allen, Ellenmae Vieregger and S. D. Soule—p. 202  
Optimal Requirements for Adrenal Cortical Hormones as Observed in Adrenalectomized Animals. Brief Review. D. J. Ingles—p. 208  
Some Recent Advances in Experimental Endocrinology. E. W. Dempsey—p. 211

**Thiourea in Thyrotoxicosis**—Paschke and his associates report their experience with the use of thiourea and thiouracil in 21 cases of thyrotoxicosis. They found that thyrotoxicosis can be suppressed with either drug. Thiourea proved to be more toxic and was discontinued as soon as thiouracil became available. Toxic manifestations from thiouracil, consisting of cutaneous eruption, fever, arthralgia, leukopenia and jaundice, were observed in 3 cases. Improvement was usually noticeable after from four to six days of treatment with complete suppression of thyrotoxic manifestations after two to three weeks. In most cases 1 Gm of thiouracil was effective but in 3 instances no response was achieved with 1 Gm and full effect required 2 Gm. Thiouracil was used for preoperative treatment in 3 cases, the preoperative and postoperative course being satisfactory in 2 and death in thyroid crisis occurring in the third,

in which iodine also had been administered preoperatively. The drug proved particularly valuable in cases in which operation was deemed inadvisable. An attempt was made to establish a permanent maintenance dosage level rather than to employ intermittent treatment. After full effect was achieved doses as small as 0.1 to 0.2 Gm daily proved satisfactory. Evidences of myxedema developed in 2 cases and subsided after the drug was temporarily discontinued.

### Journal of Nat. Cancer Inst., Washington, D C

4 539-600 (June) 1944

Production of Malignancy in Vitro. VIII. Observations on Mitochondria and Golgi Material. A. J. Dalton and W. R. Earle with the technical assistance of E. L. Schilling, Virginia B. Peters and Emma Shelton—p. 539  
Ciliated Cells of Thyroid of Mouse. Thelma B. Dunn—p. 550  
Growth Rate and Development of Tumors Induced with Ultraviolet Radiation. H. F. Blum—p. 559  
Review of Serodiagnostic Tests for Cancer. Mary E. Mayer—p. 571  
Influence of Environment on Mammary Cancer in Mice. H. B. Anderson—p. 579  
Effect of Two Azo Compounds When Added to Diet of Mice. H. B. Anderson, J. White and J. E. Edwards—p. 583  
Administration of 3,5-Cholestadiene and Dicholesteryl Ether to Mice and Rats. C. D. Larsen and M. K. Barrett—p. 587  
Test of Desoxycholic Acid for Carcinogenicity in Rats and Mice. M. K. Barrett and C. D. Larsen—p. 590

### Journal of Nervous and Mental Disease, New York

100 1-114 (July) 1944

Immediate Circulatory and Respiratory Effects of Convulsive Shock (Curare Protected Metrazol and Electric Shock). L. F. Woolley—p. 1  
Central Nervous System in Diphtheria. A. B. Baker and H. H. Noran—p. 24  
Relationship of Concept Formation Test to Drug Addiction and to Intelligence. C. K. Aldrich—p. 30  
Unusual Types of Anosognosia and Their Relation to Body Image. N. Roth—p. 35  
The Absolute and the Unconscious. Freud and America. W. Elashberg—p. 44  
Psychiatric Adventure in Comparative Pathophysiology of Infant and Adult with Some Theoretical Suggestions in Regard to Regression in Somatic Visceral Functions. J. J. Michaels—p. 49  
Psychomotility in Behavior Disorders as Seen in Handwriting of Children. Selma Schryver—p. 64  
Prevention of Fatality and Fracture During Electric Coma Therapy. H. F. Darling—p. 70

### Michigan State Medical Society Journal, Lansing

43 483-526 (June) 1944

Problem of the Mild Psychoneurotic in Army. W. B. Martin and P. A. Petree—p. 483  
Postpartum Sterilization. E. A. Schumann—p. 488  
Edema in Children. I. McQuarrie—p. 492  
Office Treatment of Rectal Disease. A. E. Souda—p. 501

43 527-626 (July) 1944

Newer Trends in Industrial Sanitation. M. H. Solworth—p. 558  
Psychiatric Approach to Current Mental Health Problems in Industry. L. E. Himler—p. 564  
Prevention of Epidemics of Dermatitis in Industry Including Dermatitis. S. M. Peck—p. 568  
Criteria for Employability of Individuals with Lung Pathology. C. F. Long—p. 574  
Reconditioning Problems for Disabled Veterans. M. W. Jocz and J. J. Prendergast—p. 577  
Ocular Pathology Due to Organic Compounds. M. H. Pike—p. 581  
Pencil in Surgery. J. W. Hirshfeld—p. 584

### Northwest Medicine, Seattle

43 185-218 (July) 1944

Penicillin and Its Therapeutic Uses. F. B. Queen—p. 188  
Varicose Veins of Lower Extremity. M. S. Rosenblatt—p. 195  
Parathyroid Extract in Preeclamptic Toxemia. J. C. Brougher—p. 198  
Staphylococcal Septicemia Following Uncomplicated Upper Respiratory Infection. Reported Case with Recovery. M. Scarf, S. Rosenthal and H. H. Marquis—p. 201  
Meniere's Syndrome with Results of Treatment with Histamine. S. E. C. Turvey—p. 203

**Histamine for Meniere's Syndrome**—Turvey reviews the results of treatment with histamine in 36 cases of Meniere's disease. Four of the patients had meningovascular neurosyphilis and received no other treatment except malaria and chemotherapy. They made an excellent recovery. Sixteen have been treated by histamine intravenously with subsequent subcutaneous injections of histamine phenobarbital orally and occasionally ammonium chloride. Of these 6 have had no attacks of vertigo

for periods varying from one to three years, 5 are improved and 5 are unimproved. Of the remaining 16 patients who were treated with the Furstenburg regimen, consisting of a low sodium chloride diet and ammonium or potassium chloride orally as well as phenobarbital, 3 have been cured for periods varying from one to five years, 4 are improved and 9 are unimproved. Histamine is not a specific and is only a useful adjunct in therapy which frequently fails. Surgery should always be a last resort to be delayed as long as possible.

### Union Medicale du Canada, Montreal

73 617-752 (June) 1944

- Tumors of Fourth Ventricle or of Median Line R Amyot—p 621  
Disturbances During Intermenstrual Period F B Kozlowski—p 631  
\*Pathologic Relations of Beriberi and Poliomyelitis W J McCormick—p 638  
Importance of Direct Test in Determination of Compatibility of Blood in Transfusion A Bertrand—p 646  
\*Paroxysmal Tachycardia of 350 Pulsations per Minute in Nursing N Vezina—p 648  
Lymphangioma of Mesentery E Cabana and L Mainville—p 655  
Solitary Diverticulum of Cecum G D Argencourt—p 660  
Hemophylia and Articular Manifestations L Morrisette—p 662  
Pyridoxine (Vitamin B<sub>6</sub>) and Radiation Sickness J E Gendreau and L Lafleur—p 666  
Epidemic Pemphigus of the Newborn Prophylaxis and Treatment H Smith—p 671

**Relationship of Beriberi and Poliomyelitis**—McCormick made comparisons between beriberi and poliomyelitis during the Toronto poliomyelitis epidemic of 1937 and has arrived at the hypothesis that poliomyelitis can depend largely on a B avitaminosis. The modern conception of the virus of poliomyelitis, which makes of it a chemical substance of known molecular size rather than a living organism, demands a revision of the interpretation of the experiences of Flexner regarding the specificity and transmissibility of the disease. It would then be necessary to envisage the possibility of the endogenic origin of the virus. The paralysis of poliomyelitis could depend directly on a severe deficiency in vitamin B<sub>12</sub> which in turn would depend on certain factors of activation of the general metabolism and the augmentation of the organism's need for the vitamin. These factors will include febrile conditions, age, sex, atmospheric conditions and physical overexertion at play, work or pregnancy. Thus, poliomyelitis becomes a clinical form of avitaminosis rather than a specific autonomic disease. The virus becomes a biochemical product of the pathologic process itself and, although it may be capable by catalytic action on the nervous system to reproduce paralysis in the laboratory animal, it must not inevitably be considered as a transmitting agent of the disease in ordinary circumstances. It is possible that a substance identical with the virus can be obtained from the nervous system of patients with beriberi. The term poliomyelopathy expresses the nature of the disease better than poliomyelitis.

**Paroxysmal Tachycardia in Infant**—Vezina describes 3 successive attacks of paroxysmal tachycardia in an infant. The first attack occurred when the infant was 6 weeks old after having been in his perambulator for three hours under a hot July sun. When taken from his perambulator the child was extremely pale and had a rapid respiration. Heat stroke was thought of, but when severe symptoms persisted the child was hospitalized and a diagnosis of paroxysmal tachycardia was made and medication with digitalin was begun at once. At the end of fourteen days the child was discharged from the hospital apparently entirely well. About two months later the child was hospitalized again. At this time the heart action was so rapid that the beats could not be counted on auscultation. Electrocardiography revealed a sinus tachycardia of from 330 to 350 beats a minute. At the age of 7 months the child had a third attack. During the second and third attacks digitalin was given again, but, while the fortunate development during the first attack must be attributed to oral medication with digitalin, this effect of digitalin was less evident during the second and third attacks. It was impossible to determine the cause of this paroxysmal tachycardia. It is characterized by the sudden appearance of polypnea accompanied by cyanosis. Hepatomegaly is pathognomonic. The author is convinced that paroxysmal tachycardia will be discovered more often in infants if electrocardiography is used more often in pediatrics.

### Yale Journal of Biology and Medicine, New Haven

16 395-612 (May) 1944 Partial Index

- Comments on Immunity to Virus Diseases T Francis Jr—p 401  
Use of Immune Bodies in Treatment of Certain Infectious Diseases (Virus and Rickettsial Diseases) Caused by Intracellular Parasites J Stokes Jr—p 415  
Protective or Curative Element in Type B Haemophilus Influenzae Rabbit Serum H E Alexander M Heidelberger and Grace Leidy—p 425  
\*Use of Sulfaguandine for Prophylaxis in Sonne Bacillary Dysentery and in Control of Carrier State H Yannet Joyce V Deutsch and Rose Lieberman—p 443  
\*Presence of Poliomyelitis Virus in Human Cases and Carriers During Winter R Ward and A B Sabin—p 451  
Susceptibility of East African Monkeys to Experimental Poliomyelitis J R Paul—p 461  
Observations Concerning Pathogenesis and Epidemiology of Mouse Poliomyelitis S Gard—p 467  
Vitamin B<sub>12</sub> Deficient Animals and Poliomyelitis J A Toomey W O Froehring and W S Takacs—p 477  
Rocky Mountain Spotted Fever in Children J V Cooke—p 495  
Cardiac Hypertrophy in Newborn Infants H C Miller—p 509  
Note on Agglutination of Meningococcus C P Miller—p 519  
Typhus Among American Troops in South Pacific Island Group R W Huntington Jr, R H Fogel S Eichold and J G Dickson—p 529  
Relation of Insulin to Phosphate Metabolism W C Stadie—p 539  
Renal Disease Consequent on Intravenous Injection of Low Viscosity Methyl Cellulose R Katzenstein M C Winternitz and J Meneely—p 571  
Congenital Adrenal Cortical Insufficiency with Virilism Case Report D C Darrow—p 579  
Fatal Case of Rat Bite Fever Due to Streptobacillus Moniliformis F G Blake Dorothy M Horstmann and Hildegard Arnold—p 589  
Eczema and Hemolytic Streptococcal Disease in Children P L Boisvert and G T Powers—p 595

**Sulfaguandine for Prophylaxis of Sonne Dysentery**—Yannet and his collaborators showed the effectiveness of sulfathiazole in a previous outbreak of Sonne dysentery in a home for mental defectives. However, the sulfonamide did not curtail the period during which the organism could be recovered by rectal culture. On the contrary, there was evidence that this period was prolonged when compared with untreated controls. It was hoped that the administration of a poorly absorbed drug, such as sulfaguandine, might correct this defect. A renewed outbreak of Sonne dysentery two years later (1943) gave the authors an opportunity to test the value of sulfaguandine for reducing the length of the carrier state. The cases of bacillary dysentery were confined to four cottages housing from 40 to 70 inmates each. A total of 29 cases occurred, representing from 10 to 20 per cent of the inmates of the respective cottages involved. The Sonne organism was isolated in every case of acute dysentery. The 29 cases were divided into two groups, one consisting of 18 cases in which sulfaguandine was administered for seven days, in the remaining 11 cases, the drug was administered for fourteen days. The number of days before the first of the consistently negative cultures was obtained is not significantly different from that in the group in which no specific drug therapy was given. It is felt that the dose used, roughly one fourth of that recommended for therapeutic purposes, might have been inadequate. In two of the cottages it was possible to carry out controlled experiments on the possible prevention of bacillary dysentery by means of sulfaguandine.

**Presence of Poliomyelitis Virus During Winter**—Ward and Sabin report the recovery of poliomyelitis virus in January and February 1942 from the intestinal discharges of 2 poliomyelitis patients, 1 paralytic and the other nonparalytic, and from those of a healthy sibling of each patient who lived on the outskirts of Cincinnati. This isolation of the virus in the winter establishes the occurrence of the disease at that season. This finding has been confirmed by the recovery of virus in February 1942 from the stool of a paralytic patient in Bridgeport, Conn. The epidemiologic implications which suggest themselves are that 1 Poliomyelitis may occur throughout the year, but its greater incidence during the summer and fall months may be related to opportunities for wider dissemination of virus. 2 It would seem possible that poliomyelitis, like typhoid and dysentery, may be transmitted by any of the several methods whereby infective particles derived from human excrement find their way to the susceptible human host. 3 The patient and the healthy carrier may constitute reservoirs of virus during interepidemic months.



## FOREIGN

An asterisk (\*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

### British Medical Journal, London

1 739-136 (June 3) 1944

- Some Problems of Infective Hepatitis L J Witts —p 739
- With Eighth Army in Field C Donald —p 743
- \*Some Dangers of Sulfonamides in Ear Infections A R Dingley —p 747
- Bone Marrow Transfusion in Infants and Children Introducing a Specially Designed Needle Janet D Gimson —p 748
- \*Cellophane for Treatment of Burns J Farr —p 749
- Symptomless Enlargement of Esophagus J L D Silva —p 751

**Dangers of Sulfonamides in Ear Infections**—Dingley advances the following suggestions for guidance in treatment of otitic infections. Sulfonamides will never take the place of necessary surgical drainage. Treatment of acute suppurative otitis media by a sulfonamide should be reserved for the period after incision of the membrane and bacteriologic investigation. If the fever is maintained, the appropriate sulfonamide may be used in full dosage (day and night) but not after the end of the second week. After two, three or four weeks the condition of the ear, if still actively suppurating, is again becoming one that potentially requires surgical drainage, this time of the mastoid, and signs and symptoms justifying intervention must not be masked by the administration of sulfonamides, which at best will rarely reach the local area but will distort the clinical picture as a whole. Wholesale use of sulfonamides in otitic infections is to be deprecated. If a sulfonamide has been given before drainage the most valuable help in assessing the beneficial effect of the drug is gained by examining the drum head frequently. If this continues to bulge, myringotomy should not be delayed, for the condition, which otherwise appears to be improving, is in reality becoming more perilous. Persistence of deafness is also a strong indication that all is not well. Patients taking sulfonamide drugs sometimes do not acquire any resistance of their own to the infection with which they are contending, and it would seem that recurrences are more likely in these cases, which, in addition to developing no immunity to the infection, may find that the micro organism has become sulfonamide resistant. It is needless to emphasize the uselessness and danger of giving inadequate or erratic dosage of sulfonamides.

**"Cellophane" for Treatment of Burns**—Farr directs attention to the "cleansing, rest and compression" treatment of burns advocated by Allen and Koch and by Siler. He describes a modification of this method, which consists in an occlusive dressing medicated with sulfanilamide through which the burned area may be easily inspected. This is achieved by the use of "cellophane" and sulfanilamide ointment. Using general anesthesia, the intact skin surrounding the burned area is thoroughly cleaned with white soap and water, and then the toilet of the burned area is carried out with isotonic solution of sodium chloride. The medicated sheets of cellophane are then applied so that each overlaps the other for about an inch. These sheets adhere to one another and to the intact skin, and the entire burn is embraced in an envelop that permits of easy inspection and prevents contamination. Next, perforated oiled silk is wrapped around the cellophane to prevent the wool from adhering to the dressing. After forty-eight hours the burn is inspected. The cellophane may be blistered by collections of serum. Any such bullae are trimmed away with scissors and the area affected gently cleaned with saline swabs and another sheet of cellophane applied. This transparent dressing adheres lightly to healed burned areas but if carefully removed does not damage the delicate new epithelium. The cellophane does not adhere to the unhealed areas so that damage to the tissue, if the dressing must be changed, is minimal. The cellophane sheets may be medicated, sterilized and stored for immediate use when needed. It is suggested that the application of a powdered sulfonamide to the burn or wound, followed by the immediate application of cellophane sterilized by boiling, offers many advantages as a first aid measure. It permits of easy

and painless inspection of the burn when the ultimate treatment has to be decided and does not prejudice the form of treatment to be adopted. It would prevent contamination and be bacteriostatic to infection already present in the burn.

### Journal of Laryngology and Otology, London

58 465-502 (Dec.) 1943

- Acute Otitic Barotrauma—Clinical Findings Mechanism and Relationship to Pathologic Changes Produced Experimentally in Middle Ear of Cats by Variations of Pressure E D D Dickson J E G McGibbon and A C P Campbell —p 465
- \*Radon Treatment for Otitis Due to Barotrauma (Preliminary Report) E P Fowler Jr —p 489

**Radon Treatment for Otitis Due to Barotrauma**—Fowler says that at a U S Army general hospital in England attempts have been made to treat and prevent otitis due to barotrauma with radon. It was apparent that the men most susceptible to recurrent otitis media were those with large bands of lymphoid hyperplasia in their lateral pharyngeal walls. When these were present in aviators it seemed to predispose particularly to so called aero otitis, with high altitude flying or with dive bombing. Earlier in his practice in New York the author had used two 25 mg capsules of radium to shrink down excessive lymphoid tissue about the eustachian tubes of children using the same dosage recommended by Crowe and his associates who used radon for the same purpose. Radon was obtained in England and 150 millicuries was placed in two capsules and inserted along the floor of the nose and left in place for twenty-six minutes the first day. This gave a dosage of 66 milligram hours to the entire nasopharynx, a dosage equivalent to the 2 Gm minutes recommended by Crowe. If the patient had a cold 33 milligram hours was given and if there was no reaction in two or three days the remaining 33 milligram hours was applied. In the past year 127 men of the air force and the ground force have been given treatment of 66 mg hours, repeated every three to six weeks up to four or more treatments. There is rarely improvement before the third treatment if 66 mg hours has been used. The dramatic effect on fliers was not surprising, for it is well known that lymphoid tissue is highly susceptible to radiation and most of the fliers had only a small amount to shrink away. This small amount apparently is enough to clog their eustachian tubes if they fly high or change altitude rapidly. Once they are unable to clear their tubes while descending, edema develops in the middle ear with more or less fluid and they may be grounded from two days to several weeks with aero-otitis. The radon apparently facilitates the normal function of the tube if lymphoid hyperplasia has interfered with their proper opening and closing. It puts previously grounded airmen back in the air even when they have had repeated severe otitis from barotrauma.

### Medicina, Madrid

12 227-290 (April) 1944 Partial Index

- Primary Cancer of Liver M Valdes Ruiz A Zamamillo and E Salar Luis —p 227

**Primary Cancer of Liver**—According to Valdes Ruiz and his collaborators the frequency of primary cancer of the liver without cirrhosis, as reported in the literature is 1 in 1,000. The symptoms are those of constant epigastric pain which radiates to the right shoulder, loss of appetite, nausea, vomiting, insomnia, headache and acute progressive emaciation. There are progressive uniform enlargement and hardening of the liver, ascites and in rare cases enlargement of the spleen. Primary cancer of the liver without cirrhosis can be differentiated from either primary cancer of a cirrhotic liver or secondary hepatic cancer by the rapid enlargement of the liver, its firmness, a smooth hard border on palpation, moderate ascites and the acute course of the disease which varies between four and five months after the onset of the symptoms. Cancer hepatoma as found at necropsy is either massive or nodular. The histologic preparations of the liver in cases of nodular cancer show infiltration of the liver parenchyma by cords of cancer cells. Morphologic changes of the liver cells, mitosis and a large number of atypical cells and large cancer cells are observed.



## Book Notices

**Hydronephrosis and Pyelitis (Pyelonephritis) of Pregnancy Etiology and Pathogenesis An Historical Review** By H. E. Robertson M.D. Section on Pathologic Anatomy Mayo Clinic Rochester Minnesota Cloth Price \$4.50 Pp 332 with 11 illustrations Philadelphia & London W. B. Saunders Company 1944

This historical review of hydronephrosis and pyelonephritis of pregnancy is a rare book. The author, a pathologist at the Mayo Clinic, became interested in the subject when many years ago he began to observe at postmortem examinations of pregnant women that the ureters and renal pelvis were dilated. As a result of this interest he read and thoroughly analyzed practically every article and book written on the disturbances of the urinary tract in pregnancy. Throughout the text and the numerous pithy footnotes, there is abundant evidence that the author took nothing for granted. He delved into all the original source material published and gives the impression of having read almost every word of the 974 references which are listed in the back of the book. The author points out errors made even by recognized authorities. He shows how often erroneous statements have been reproduced by writer after writer who did not take the trouble to check the original quotations or references.

The only unfavorable criticism offered is that the author should have devoted more space to the subject of treatment. In reality there is only one paragraph, a third of a page long, at the end of the conclusions of the book. Perhaps it is because the author is a pathologist that he refrained from doing this, but he accomplished his task of discussing dilatation and infection of the ureters in pregnancy so admirably that he would have handled the treatment just as satisfactorily.

In the brief but excellent conclusions the author summarizes all the important knowledge we possess about the etiology, anatomy, pathology and bacteriology of hydronephrosis and pyelonephritis of pregnancy.

This is one of the most discerning books, and if any physician, be he obstetrician, urologist, pathologist or general practitioner wants a real treat, he should read it all the way through. The author is to be highly complimented on his achievement, which represents an enormous amount of hard work. The publishers also have done their part beautifully.

**The Dental Treatment of Maxillo Facial Injuries with Supplementary Material on Cases and Techniques** By W. Kelsey Fry M.C. M.R.C.S. L.R.C.P. Consulting Dental Surgeon to the Royal Air Force. P. Rae Shepherd L.D.S. R.C.S. Dental Surgeon East Grinstead Maxillo Facial Unit. Alan C. McLeod D.D.S. B.Sc. L.D.S. Dental Surgeon East Grinstead Maxillo Facial Unit and Gilbert J. Parfitt M.R.C.S. L.R.C.P. L.D.S. Dental Surgeon East Grinstead Maxillo Facial Unit. With foreword by Professor F. R. Fraser M.D. F.R.C.P. Director General Emergency Medical Service and a section on Fractures of the Middle Third of the Face by A. H. McIndoe M.S. F.R.C.S. F.A.C.S. Consulting Plastic Surgeon to the Royal Air Force Surgeon in Charge East Grinstead Maxillo Facial Unit. Fabrikoid. Price \$6.50 Pp 434 with illustrations Philadelphia & Montreal J. B. Lippincott Company 1944

During this war the English have had extensive opportunities for the study and treatment of maxillofacial injuries. The employment of common sense with basic principles is noted throughout the book, together with the fact that a wounded patient is being treated rather than an injury with a patent attached to it. Although the chapter on anatomy is much too brief, the excellent description of the muscle pull and its relation to the type of fracture compensates in some degree. The chapter on radiology fills in some measure the need for roentgenology of the facial bones. It is most practical and replete with plates and diagrams. The section on pathology is a welcome addition in a treatise on maxillofacial injuries. Both students and specialists could well profit by reading and rereading it. The authors belong to the school that advocates removal of teeth in line of fracture. An opposite school holds that such teeth should be removed only when there is an indication of trouble, that the tooth should be retained for better approximation of the bone fragments.

Much emphasis is placed on the cast cap splint for fractures of the mandible. This method seems to find greater favor

among our English colleagues, whereas the Gilmer method of wiring (or one of its modifications) is more extensively used in the United States.

The chapter on technique of impression taking and construction of splints is very detailed and most explicit.

The section on field and preliminary hospital treatment of battle casualties can be read with advantage by all medical men engaged in front line action. It is practical and contains much good common sense.

Physiology is stressed throughout the book in connection with treatment.

The supplement with case studies is explicit and instructive, not only for war injuries, but also for maxillofacial injuries occurring among the civilian population during peacetime. The book is profusely illustrated with excellent diagrams and photographs. The reproductions of the roentgenograms are, however, not as clear as they might be.

**Artificial Pneumothorax in Pulmonary Tuberculosis Including Its Relationship to the Broader Aspects of Collapse Therapy** By T. N. Rafferty M.D. Introduction by Henry Stuart Willis M.A. M.D. Superintendent and Medical Director William H. Maybury Sanatorium Northville Michigan. Cloth Price \$4.15 Pp 192 with 26 illustrations New York Grune & Stratton 1944

This book provides a discussion of collapse therapy of pulmonary tuberculosis, with special reference to artificial pneumothorax. The author believes that the old practice of attempting artificial pneumothorax in every case before considering surgery, particularly thoracoplasty, should be abandoned and that persons whose disease is so extensive as to require permanent collapse, those with serious pleural infections and those with bronchial tuberculosis should have extrapleural thoracoplasty performed as the primary procedure.

The author believes there is general agreement on the indications for artificial pneumothorax under the following conditions: (1) patients with disease which continues to progress in spite of the usual care, (2) those with cavities and tubercle bacilli in the sputum which do not come under control promptly by bed rest, (3) extensive disease with cavity which could not be expected to be brought under control by the so called more conservative methods, (4) those with predominantly exudative disease that does not regress after a liberal period of bed rest or bed rest and phrenic paralysis.

Contraindications to artificial pneumothorax which the author considers permanent are (1) a large apical cavity, (2) extensive destruction, (3) the fibrous or shrunken lung and (4) broncho stenosis. Contraindications which may be temporary or permanent are (1) active bronchial tuberculosis without pronounced stenosis, (2) tuberculous pneumonia and (3) primary tuberculosis. Tuberculous complications such as laryngitis and enteritis, do not contraindicate artificial pneumothorax except when they are terminal manifestations. Compensated heart disease is not a contraindication unless the tuberculosis is extensive and bilateral. The author wisely points out that in cases of complication the decision concerning pneumothorax can be made only at the bedside.

A liberal point of view is taken on the future possibilities of ambulatory artificial pneumothorax. For example, when all the citizens of the nation are examined and those are found who have recently developed minimal or moderately advanced tuberculosis, so many would need treatment that it would be economically unsound to provide sufficient bed capacity for them. Moreover, if this capacity should be provided it would not long be needed if the intensive program of finding cases was continued. Ambulatory pneumothorax would aid substantially in solving this problem.

In this connection one wonders why the author completely omitted the tuberculin test and emphasized the use of mass radiography in case finding. The tuberculin test is a far better criterion of the tuberculosis situation in any community than the x-ray film. Probably this omission is because he assumes that any physician would have definitely established a diagnosis of tuberculosis before instituting collapse therapy in any form. Unfortunately, many persons are having artificial pneumothorax instituted with diagnoses made on the basis of x-ray shadows and in the total absence of our only two specific findings in

tuberculosis, namely the tuberculin reaction and the recovery of tubercle bacilli

The pros and cons of instituting artificial pneumothorax in all cases of minimal tuberculosis are discussed. Various other surgical procedures are discussed, such as external drainage of pulmonary cavities, lobectomy and pneumonectomy.

The book contains 195 references and a good index. The author is to be congratulated on having brought together so much valuable information and treating it so adequately and fairly in such small space. This book should be read by all physicians and studied carefully by those who treat chest diseases.

**Young Offenders. An Enquiry into Juvenile Delinquency.** By A. M. Carr, Saunders Hermann Mannheim and E. C. Rhodes. Cloth. Price \$1.75. Pp. 168. New York: Macmillan Company, Cambridge University Press, 1944.

This short book reports a survey beginning in 1938 and extending for a year, intended to disclose causes of crime in England as elicited by statistical means. There is a survey of previous studies, and the present analysis is made not only in London but in outlying communities, and a control group is added which is an unusual feature in statistical studies of delinquency. While there are many objections to the way the control group was selected, for each delinquent was matched with a boy of the same age who was not a delinquent from the same community, nevertheless the present study is unique and notes more strongly the influence of social factors emphasizing the beliefs that experts on delinquency have had for some years, for example, the importance of broken homes, the meaning of the presence of other delinquents in the family and the significance of leisure-time interests. There is no attempt to make a psychologic breakdown of the cases included, analyzing such factors as motives, mechanisms and diverse therapeutic procedures which in the United States are superseding this statistical approach to a great extent. Nevertheless the work has been soundly done and, while it has no bearing on delinquency in wartime, nevertheless it will probably form one of the statistical bricks in the edifice of delinquency prevention.

**Fertility in Men. A Clinical Study of the Causes, Diagnosis and Treatment of Impaired Fertility in Men.** By Robert Sherman Hotchkiss, B.S., M.D., Lieutenant Commander (MC), U.S.N.R. With a foreword by Nicholson J. Eastman, M.D., Chairman, Editorial Committee, National Committee on Maternal Health. Fabrikoid. Price \$3.50. Pp. 216 with 95 illustrations. Philadelphia, London & Montreal: J. B. Lippincott Company, 1944.

**Fertility in Women. Causes, Diagnosis and Treatment of Impaired Fertility.** By Samuel L. Siegel, M.D., F.A.C.S., Attending Obstetrician and Gynecologist, Brooklyn Women's Hospital. With a foreword by Robert Latou Dickinson, M.D. Fabrikoid. Price \$4.50. Pp. 450 with 194 illustrations. Philadelphia, London & Montreal: J. B. Lippincott Company, 1944.

These companion volumes have been produced under the stimulus of a series of fortunate circumstances centering in the study of the fertility mechanism by a group of medical scientists and clinicians in New York City. The National Committee on Maternal Health and some of its officers share considerable responsibility with the two authors. The latter are men who have devoted much time to investigations in the fields about which they write, and consequently their evaluation of the work of other men is critical and also comprehensive. The books are well written, easy to read, liberally illustrated and thoroughly documented. The history of the subject occupies little space because of the relatively recent intensive and scientific studies of these fields. From the clinician's point of view, these volumes will be helpful because they combine understanding of anatomy, physiology, pathology, bacteriology, endocrinology and clinical skill with therapy. They are not textbooks for beginners but will be unusually valuable handbooks for any clinician who expects to give thoughtful attention to the problems of fertility in either sex. Both authors stress the point that fertility must be considered as a bisexual problem and to a certain extent both partners of every marriage investigated before detailed studies of either one are attempted. Clinical and laboratory techniques described are presented with adequate details, so that any well trained clinician can use them without further laboratory guides or details.

**The Principles and Practice of Ophthalmic Surgery.** By Edmund B. Spaeth, M.D., Professor of Ophthalmology in the Graduate School of Medicine of the University of Pennsylvania, Philadelphia. Third edition. Cloth. Price \$11. Pp. 934 with 562 illustrations. Philadelphia: Lea & Febiger, 1944.

The second edition of this excellent treatise on ophthalmic surgery was reviewed in these columns three years ago, come November. The third edition appearing after such a short time reveals not so much the advances in surgery of the eye as it does the popular demand for a book of this caliber. It contains only 48 more pages than does its predecessor but it has 105 valuable new illustrations. The most pronounced textual changes deal with the physiology of squint and with the development of nonsurgical principles associated with its correction. This is sound common sense writing and the material is presented in a most understandable manner. The subject of ptosis has been revamped and reclassified thus simplifying the principles of its surgical correction. The newest material in this edition is that dealing with gonioscopy, both preoperative and postoperative, with copious quotations from Kronfeld and Barkan. The chapter on the surgical treatment of detachment of the retina should be rewritten eliminating some of the older operations that have been abandoned such as the Guist and elaborating somewhat more on the present day methods. A good working bibliography adds much to the usability of the book, which should be found on the work table of every operating ophthalmologist.

**Hack's Chemical Dictionary [American and British Usage] Containing the Words Generally Used in Chemistry and Many of the Terms Used in the Related Sciences of Physics, Astrophysics, Mineralogy, Pharmacy, Agriculture, Biology, Medicine, Engineering, etc.** Based on Recent Chemical Literature with Numerous Tables, Diagrams, Portraits and Other Illustrations. Third edition by Julius Grant, M.Sc., Ph.D., F.R.I.C. Fabrikoid. Price \$12. Pp. 925 with illustrations. Philadelphia: Blakiston Company, 1944.

This chemical dictionary needs no introduction to chemists and those interested in allied subjects. Now in its third edition the book should continue to serve as a good reference source for explanation of words frequently used in chemistry and other terms often found in physics, astrophysics, mineralogy, pharmacy, agriculture, biology, medicine, engineering and other sciences. More than fifty-seven thousand terms are defined. Theories, laws and rules, elements, compounds, drugs, minerals, apparatus, instruments and names of investigators are only part of the subject matter. In these days it is almost imperative for progressive physicians to be familiar with chemical terms; the present book will provide much help on this score when placed in the medical library. Unfortunately some of the medical definitions, including those for digitalis, penicillin, calgon, pineal gland and phenobarbital, are not so clear or accurate as they might be, although this failing could be corrected in the next edition with the aid of a physician scientist.

**Introduction to Physiological and Pathological Chemistry with Laboratory Experiments.** By L. Earle Arnow, Ph.D., B.S., M.D., Director of Biochemical Research, Medical Research Division, Sharp & Dohme Inc., Glenolden, Pennsylvania. With an introduction by Katharine J. Bensford, B.A., M.A., R.N., Director of the School of Nursing and Professor of Nursing, University of Minnesota, Minneapolis. Second edition. Cloth. Price \$3.75. Pp. 574 with 144 illustrations. St. Louis: C. V. Mosby Company, 1943.

The second edition of this practical and well written book for nurses on physiologic and pathologic chemistry has been carefully revised. Newer data on sulfonamides, vitamins, the rennin mechanism of hypertension, hormones, muscle carbohydrate metabolism and other advances have been included. The first edition of the book was a contribution to nursing education in this field, and this edition ably perpetuates that distinction. Those who are not familiar with this textbook will find it one of the most effectively written volumes of its type. It is simply and authoritatively written and meets the current suggestions for teaching in this field by those interested in nursing education. Not only is the prevailing thought on biochemistry and physiology concisely presented but the author's style is engaging. Those interested in nursing education will find this work authoritative and readable. It is highly recommended for nurses in training and for those who wish to keep abreast of current advances in physiology and chemistry.

## Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT HOWEVER REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

### CLIMATE IN ASTHMA

**To the Editor**—The family of a 5 year old boy who is afflicted with an intractable case of chronic bronchitis and bronchial asthma has consulted me with a view to settling in one of the following localities for purposes of effecting a possible cure. El Paso Texas, Reno Nev., Tucson, Ariz. and southern California. The youngster is allergic to house dust, dog and horse emanations, grass, plantain, ragweed, certain chemical compounds as varnish, paint and lacquers, gasoline, kerosene, mustard, flax seed, furnaces and gas stoves, and damp and musty places. Judging from available graphs relative to comparative climate, humidity and general atmospheric conditions which of the cities mentioned (kindly cite a suitable southern California community of average size population) would prove most beneficial? Which other localities not mentioned might be suggested for maximum end results? Also would the gaseous and chemical fumes generated by the mining smelters in El Paso prove detrimental?

M. D. Connecticut

**ANSWER**—In attempting to evolve a solution for the case in question it is important that one consider by what mechanisms an asthmatic person may expect to benefit as a result of a change in geographic location. The following are some of the explanations for the relief of asthma by a change of climate. 1 The removal of the patient from his allergenic environment may mean simply that a dog or cat or occupational source of allergy has been left behind. Or it may mean that the new general environment does not contain the same pollens, fungi or other atmospheric contaminants which were the cause of the patient's allergy. 2 In bacterial asthma, in asthma due to bronchitis or in cases in which the allergic asthma has become complicated by bronchitis, benefit may be obtained because of the favorable effect of some climates and regions on infectious respiratory processes. 3 Temperature changes, humidity and other physical atmospheric factors are known to affect asthma, both of allergic and intrinsic origin. As a simple illustration one may cite the ragweed sensitive patients who are most prone to precipitate their attacks of asthma after a sudden temperature change, fall in barometer or electrical storm. In certain regions such atmospheric contortions are at a minimum, so that some asthmatic patients are freed from one of the most potent causes precipitating their attacks. 4 An unclean air, due to soot fumes and other chemical or mechanical irritants, may be an important factor. Some suburbanites may leave their home in apparent comfort and experience an attack of asthma when arriving in the city particularly if atmospheric conditions have resulted in a low hanging soot containing fog. Such patients may be benefited in rural districts, whether a few or several thousand miles away. 5 Psychogenic factors may also be at play in a climatic change. Benefit may be derived because of relaxation being away from business or home environments and tensions and because of the general psychic effect of a more pleasant climate. 6 Unexplainable influences may result in benefit to asthmatic patients not falling in the categories mentioned.

In applying these considerations to the case of the 5 year old boy it is quite evident that the information furnished is not entirely sufficient to justify an absolute opinion. It seems probable that three factors are at play in this case: allergy, bronchitis and influences of chemical irritants. If the pollen allergy is of major importance, southern California (Los Angeles, Pasadena, San Diego) should be satisfactory. If bronchitis is actually a prominent feature, Tucson would probably be the most desirable. If gasoline and similar chemical factors are largely to blame, the smaller communities in southern California or, perhaps, Tucson would be best. However, in such instances a home in a rural district in the patient's home state may also suffice. If weather changes seem to play a great part in the attacks, Tucson would be the best possibility. Attention should be called to the fact that, whether one can or cannot classify the patient in any of the groups mentioned, the individual's behavior is not entirely predictable. For a final opinion of the suitability of a chosen location or of even the desirability of any change, actual trial is the only answer.

No immediate information is available regarding the gases and fumes generated by the mining smelters in El Paso. If present in noticeable concentration, they would certainly be detrimental.

The reference of the inquirer to a "cure" is deserving of comment. Generally speaking, asthma due to allergy is not

cured by climatic change, it is only temporarily checked. The allergic irritation returns on the patient's return to his environment. Cure can be expected only in those cases in which the bronchial infection or inflammation has become the most important reason for the continuation of the asthma. In such instances the healing of the inflammatory process may condition the respiratory tract to be less susceptible to infection and perhaps also to allergy.

### PLANTAR WARTS

**To the Editor**—May I request information on the most effective treatment for the removal of plantar warts?

Captain, M. C., A. U. S.

**ANSWER**—Plantar verruca is one of the most difficult dermatologic problems. Probably because of the thickness of the epidermis of the sole and the constant pressure on verrucae in this region, they are much harder to cure than in any other location. They are of the same nature and yield when curable to the same measures but less readily.

After the usual popular remedies, including suggestions have been tried and failed, the preferred treatment, painless, prompt and not apt to cause scars, is irradiation. MacKee (X-Rays and Radium in the Treatment of Disease of the Skin, ed. 3, Philadelphia, Lea & Febiger, 1938, p. 638) recommends small doses compared to those used by others, 300 roentgens for most cases, sometimes 450 to 600 roentgens. He warns against more than two doses, preferring to use electrodeiccation for further treatment. He insists on protection with lead foil to the very edge of the lesion and warns against use of the rays in inflamed warts or those that have had caustics used on them. In these cases wait for the irritative effect to subside before irradiating them. Allow at least a month after the last irradiation before using any irritating treatment.

Radium may be used, a half strength plaque with 1 mm of aluminum, fifteen to thirty minutes or even longer. In thick hyperkeratotic lesions gamma radiation may be employed, using the half strength plaque with 1 mm of brass and 1 mm of aluminum for one to two hours or longer.

The use of electrosurgical modalities is perhaps the most popular of all methods of treating plantar warts and is effective in a good percentage of cases. It is difficult to use in young patients, however. One may use light applications repeated every week or two for a series of treatments.

### CONTAMINATION OF FOOD WITH CIGARET ASH

**To the Editor**—How harmful is cigaret tobacco ash, for example when it is accidentally spilled on food and the food accidentally eaten?

M. D. Massachusetts

**ANSWER**—The ash of cigaret tobacco itself may contain traces of lead or arsenic, as well as carbon and mineral constituents but in itself it is not harmful when ingested in small amounts. However, the incompletely burned cigaret tobacco behind the burning point may contain rather high concentrations of tobacco alkaloids, and so care should be taken to avoid contamination of food with material from the stump, behind the ash. Nicotine poisoning, with fatalities, has been reported from contamination of food with cigaret residues, but it is the unburned material, not the ash, which is here responsible.

#### Reference

Bogen, Emil. The Composition of Cigarets and Cigaret Smoke. *THE JOURNAL*, Oct. 12, 1929, p. 1110.

### LACERATED RECTUM FROM JOHNSON GRASS

**To the Editor**—I want to report a case which to me is most unusual. A patient came in on July 10, 1944 complaining of severe lower abdominal pain. There was a rigidity of both sides of the lower abdomen. The abdomen was tender in this region and there was a rebound tenderness also all over the whole lower part of the abdomen. He gave a history of having gone to a public toilet and finding it occupied. He went into a nearby orchard. He sat down quickly, and a stiff stem of Johnson grass entered the anus without producing visible injury to the anal opening. Because of the findings described and a white blood cell count of 22,000 within two hours after the injury I opened the abdomen by means of a midline incision. On the anterior aspect of the rectum a lacerated longitudinal tear was found in the rectum about 1½ inches long. The lower part of the wound was just above the cul de sac. I closed the laceration with interrupted sutures of chromic catgut. The whole area was liberally sprinkled with 5 Gm. of sulfathiazole crystals. The abdomen was carefully wiped and the abdomen closed without drainage. The patient was put on a nonresidue diet and six days after operation was given a saline laxative. The wound healed by first intention except for the lower third from which there was a small amount of subcutaneous drainage. He has made an uneventful recovery.

Ewald A. Larson, M.D., Kingsburg, Calif.

# The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL 126, No 6

CHICAGO, ILLINOIS  
COPYRIGHT 1944 BY AMERICAN MEDICAL ASSOCIATION

OCTOBER 7 1944

## THE ROLE OF THE GENERAL PRACTITIONER

CHAIRMAN'S ADDRESS

J CRAIG BOWMAN, M.D.

UPPER SANDUSKI, OHIO

Events on the home front in the last three years demonstrate more clearly than ever before that the general practitioner is still the central figure of American medicine

### COLLECTIVISM VS AMERICANISM

We general practitioners, by virtue of our training, diagnostic services and analytical inclinations, are well equipped to help lead this country out of its economic and social maze. To do this best we must enter the lists first as citizens, and as doctors only when we can aid in the interpretation of the origin and the nature of the deteriorating social processes which are now plaguing this earth. We must come to the defense of those principles of government on which our fathers founded this nation. No other principles of government or system of medicine have ever succeeded so well. These principles, in recent years, have been challenged by those who would seek to give security against fear, want and sickness by taking from those who have and giving to those who have not. Those active in this movement fail to realize that these goals, which sound so attractive when they are defined by glittering generalities, can be obtained only through the redemption of man and never by the redistribution of what little real wealth is to be left in our land.

This strange ideology, entirely foreign to our country, is infiltrating itself into the muddled thinking of our people. We must recognize that, however attractive this sounds, social security demands that each citizen give up his individuality, his integrity, his intelligence and his independence in order that he may share in the redistribution of existing wealth. As biologists, we physicians know and must not hesitate to point out that nature has tried this pattern over and over again and has never produced anything more progressive than a colony of social insects—a heap of ants or a hive of bees. In terms of social progress, this biologic pathway has a blind ending. As physicians we must make our own patients see that social progress can come only as we emphasize the dignity of the common man, so that through variation in behavior this independence may here play its proper role in evolution.

### HEALTH

The time has come for both the medical profession and the public to think more clearly about the relationship of the physician to the social order. Furthermore,

it is important that the public begin to have a definite appreciation of both health and sickness.

Health is not negative. Health means more than simply keeping out of a physician's office. It is a positive condition of the body which gives us a long life of zest and buoyancy. Proponents of social insurance confuse purposely no doubt, health with sickness and insist on labeling sickness insurance plans for indemnification in cash or in kind as health insurance which they never are.

You and I, and every physician have dedicated our lives to binding up the wounds and relieving the suffering of mankind. Advances in infant feeding and in immunization have made it possible to add a great many years to life expectancy in our time. These added years have brought upon us the added responsibility for the care of literally millions more who now suffer with degenerative diseases but who would have been dead long ago in another century. Likewise as a result of this increase in life expectancy, we are confronted today with the ever increasing problem of the infirm aged. If society does not find a way to keep its old people healthy, alert and vigorous the problem of their care threatens to break down completely the economic structure.

It is beginning to be appreciated that the chronically ill can only be repaired, never cured even by the best of medical services. They cannot be restored to a truly healthy state. Modern science has done wonders in its attack on acute infectious diseases with serum and "miracle drugs." But those chronically ill with degenerative diseases can be treated only symptomatically and their lot made easier. This role of comforter if it is to function at its best, involves the ideal physician-patient relationship.

### MALNUTRITION THE CAUSE OF DISEASE

Medical research made one of its greatest contributions to human welfare when it began to produce positive evidence that improper or inadequate food and a consequent state of poor nutrition, is the underlying cause of many diseases. Not only were organic diseases so identified, but poor nutrition was found to interfere with the proper working of the bodies of man and his animals.

Sickness produced by deficient foodstuffs was found for the most part, to be chronic and crippling in character to both mind and body. We are coming to realize that chronic sickness due to faulty nutrition is the largest single factor in the lives of literally millions of the people who consult us but who do not, however, exhibit organic disease. They are simply poorly nourished and do not have their natural vitality. They have little or no vigor. They do have, as a consequence, an increased susceptibility to all kinds of infections and degenerative diseases. How to restore these chronically half sick people to robust health before it is too late is a fundamental social problem.

Read before the Section on Miscellaneous Topics Sessions for the General Practitioner at the Ninety Fourth Annual Session of the American Medical Association Chicago June 14 1944

This problem is not one of the redistribution of pills. It makes little difference who gives what colored pill to whom. What I am trying to say is that no plan of voluntary or compulsory sickness insurance will solve this problem. It is purely a matter of prevention through education, and sound nutrition and proper eating must become popular through education.

Let me illustrate what I mean by the studies which have been made on the Cincinnati Negroes. In the slum areas where the food supply, food preservation and food habits are all bad, they die like flies from rheumatic fever, tuberculosis and other diseases brought on by lowered resistance. In a Negro suburban village, under the average suburban standards of living, the relatives of these same Negroes die at the same rate and with the same diseases as do the white people of the neighboring town. Now one is particularly interested in the health problem of an individual colored citizen in these slums. Nutrition remains a personal matter. Once, however, his malnutrition has lowered his resistance and he is attacked by tuberculosis, then he is taken to a magnificent institution with marble halls. Doctors and nurses are provided in abundance to study his "case" and to serve him. Too often it is too late! The farm crops that we didn't raise and the milk that we didn't produce would have prevented him from ever getting tuberculosis in the first place. Prevention is the thing that is needed in meeting these problems, and the best preventive is good nutrition.

Or again—let me illustrate this point that much of the chronic half-sickness and of our disease is the result of malnutrition for which the medical profession cannot be blamed. Furthermore, any attempt to meet this situation on a nationwide scale with so-called adequate medical care will certainly bankrupt our economy. And the sad part of it is that there will be just as much sickness at the conclusion of the experiment as there was at the beginning. You will recall that during the depression the Dental Society of the State of Pennsylvania offered to fill free of charge the cavities in the teeth of all the children whose parents were on relief. This was, indeed, a noble gesture on the part of those dentists, and it cost them an immense amount in time, money, material and energy. The cavities, however, continued to develop faster than the dentists could fill them. This was because the children weren't getting enough foods rich in calcium and vitamin D. They were not getting milk and sunshine. It is therefore to be hoped that public attention will not become fixed on some scheme for getting sick people to a physician, but rather that the public will realize that these undernourished people are sick and always will be sick with one disease or another as long as they live, unless their nutrition can be restored. Prevention, I must insist, is needed, and this is a task for all of Society and not a task for physicians alone.

#### OUR PATIENTS

Those of us who are engaged in general practice realize, as many other people do not, that some of the basic relationships which governed the art of healing, before the separation of medicine from religion, are still needed in the handling of sick patients. At least one half of the patients seen in the office of the general practitioner do not have the typical diseases that are described in our textbooks on the practice of medicine. They are, on the contrary, victims of functional disturbances and frustrations, which have come primarily from bad adjustments to environment, and are increas-

ingly common in these days of perplexing social and economic stress.

These half sick patients demand something more than the right of the individual to select his own physician. They must, however, have this right and exercise it if they are to have confidence in their adviser. Such patients must develop a relationship which will inspire in them confidence in the judgment and advice of their own personal physician.

This is a challenge which we readily accept. In so doing we utilize our art and skill in such a manner as to bring the patient quickly to a realization that the doctor whom he has chosen as his physician and counselor has had intimate experiences in directing the lives of others and in helping them to sublimate their frustrations and to adjust themselves more satisfactorily to all the other problems which arise in life. To meet this challenge the general practitioner must continue to be more than a scientist—he must still be teacher, philosopher, counselor—friend.

#### PERSONAL PREVENTIVE MEDICINE

When one attempts to look into the future, it is difficult to see the end of present social trends. It is certain, however, that the practice of personal preventive medicine will become increasingly important. It will place greater responsibility on the shoulders of the physician in general practice. No health department or any other agency, regardless of how well it is manned or financed, can handle this completely. The host of procedures—immunization, vaccinations, examinations and analyses—that the alert citizen is supposed to have done for him even now is beyond the resources that are conceivable for any public health department. This requires a complete and mutual understanding and cooperation of the family physician and his families and opens a great field in personal preventive medicine. The public will be fully appreciative in every sense of these services if it is allowed to cooperate and understand.

#### SERVICE FOR THE RETURNING SOLDIER

Following the war—even before it ends—the medical profession will be confronted with the vital task of helping the millions of men returning from the service to readjust themselves to civilian life and to help restore them to physical and mental fitness. No one is so well fitted to help these men to make the necessary mental readjustments as the general practitioner.

After the war we shall need to have a knowledge of many strange diseases which the boys will bring back with them from many foreign shores. Many ex-service men will become institutionalized unnecessarily unless each one of us prepares himself to render the kind of service which these men will need and will want. The unusual mental impairments of sickness will make it imperative that these men get counsel and advice from some one on whose judgment they will rely and who is competent to analyze them as whole human beings, not simply as battle casualties—and a beautiful specimen for a case report. Psychosomatic medicine is a new name for this use of sound judgment and intelligent understanding of life that has always characterized the work of a good general practitioner.

#### CONCLUSION

Today we stand on the threshold of a new era in medicine—an era which offers a great challenge to any one in general practice. If the physician will continue to develop his relationship with his families along the



lines that I have tried to suggest in a general way, he will continue to render a distinct service to a large portion of our people. At the same time he will make a definite contribution toward molding the pattern of the future practice of the art and science of healing.

208 South Sandusky Avenue

## STANOCOLA MEDICAL CARE PLAN

JAMES M. ADAMS, M.D.

NEW YORK

The features of the Stanocola Medical and Hospital Association are as follows:

- 1 It was conceived and organized and is owned, supported and operated by employees.
- 2 Membership is entirely voluntary.
- 3 It supplies necessary medical, hospital and nursing services to employee members and to their families.
- 4 There is only one rate of dues, regardless of the number of dependents.
- 5 The medical staff is on salary and mainly on full time.

Although it is employee owned and operated, the company is much interested in its success and lends its support by:

- 1 Making payroll deduction of dues.
- 2 Permitting deduction of dues from the company thrift fund. This fund is supported by regular, voluntary contributions by employees and by the company. Dues collected from this fund, as 85 per cent of them are, represent both employee and company contributions. Through the medium of this fund, members of the association thus receive material help from the company in the payment of their dues.
- 3 The company has aided the association substantially by making a large donation toward the purchase of its clinic building and on other occasions made contributions for special purposes.
- 4 The board of directors of the association has always included two or more of the company's executives, elected by the membership.

The association is entirely distinct from the company's medical department, whose work is limited to industrial medicine—preventive medicine and the care of industrial injuries and diseases. It was organized and the collection of dues begun on April 1, 1924, and services were offered beginning July 1 of that year, so that it has now operated successfully for twenty years.

In the early 1920s the employees of the Standard Oil Company of Louisiana in Baton Rouge had suffered a reduction in income. At a general conference of representatives of the employees and the management, opinions were expressed by employee representatives that the cost of living in the city, which at that time was largely a single industry town, had not been reduced commensurately with that of the country as a whole or with their loss in income. Committees of employees were created to consult with various business and professional groups in the city seeking a reduction in prices and fees. Among these committees was one to consult with the medical society looking toward a return to the schedule of fees customarily charged prior to the war.

This committee was unsuccessful in its mission and after many discussions an association was launched with the object of securing a reduction in medical costs.

This was composed of 1,300 employees who made an agreement with four physicians in the community to pay them a retainer of one dollar a year for each member. The four physicians divided this fund and agreed to treat the members and their families at one half the usual fees.

As was to be expected, this arrangement was unsatisfactory both to the members and to the physicians and the arrangement was not renewed after one year. The experiment served, however, as a basis for the promotion of the Stanocola Medical and Hospital Association.

At that time there were few organizations attempting to supply group medical service and no precedents to guide the founders so that the project had to be inaugurated on a strictly experimental basis. There were then no Blue Cross Hospital plans and in that area about the only group medical care was supplied by lumber companies to their employees usually in isolated camps. Deductions from wages were compulsory and a doctor or doctors were employed by the companies to care for the medical needs of the employees and their families. In many instances the revenues from the collections were much greater than the expenses and the companies were in effect practicing medicine for profit. Only the largest companies supplied hospitalization and then in hospitals of their own. The service was often inadequate and inefficient.

It was decided that 2,000 members would be a minimum for beginning operations and after a thorough canvass of the refinery personnel the experiment was launched with 2,200 employees and their families participating. Arrangements were made with several private practitioners to treat the eligible beneficiaries utilizing their own offices. Included in the panel were a surgeon, who served as medical director and an ear, nose and throat specialist. After about six months of operation a group of offices for a clinic was rented and all physicians except the surgeon were placed on full time. Three years later the surgeon and medical director was employed on full time.

In 1931 the group, having outgrown its quarters purchased a large residence in a convenient location and converted it into a clinic, which is still in use. The staff now consists of eleven doctors on full time and five on part time. Of the physicians on full time two are surgeons, one of them serving as medical director, a pediatrician, an ear, nose and throat specialist, an obstetrician and gynecologist, five general practitioners and one of the older physicians, who confines his work to anesthesia and office practice. One of the general practitioners, who also is one of the older men, is located in a nearby town and cares for the members residing in that immediate community. Of the part time physicians one is a roentgenologist, two are general practitioners in nearby towns and the other two are used for relief work in the pediatric service. Two of the physicians are women.

In addition to the medical staff, six nurses (two graduates and four nongraduates), two laboratory technicians, an x-ray technician, two office girls and a cleaning staff are employed in the clinic, and a couple living in the garage look after telephone calls when the offices are closed. Hours at the clinic are from 8:30 a.m. to 6 p.m.

The character and training of the medical staff are excellent. All physicians are graduates of approved medical schools and most of them have had postgraduate training. All are members of the American Medical



Association and two are fellows of the American College of Surgeons

There are seven suites of offices, most of them used by two physicians at different periods, and their hours are staggered so that there are always several on duty throughout the day. Each doctor has one day off each week. There are clinical and x-ray laboratories, physical therapy treatment rooms, and a pharmacy operated by a drug store chain which fills prescriptions at a 15 to 25 per cent discount. New x-ray equipment has just been installed, which includes in addition to the regular x-ray machine a fluoroscope and a wall dental unit.

Aid provided starts with medical and surgical services limited only by the capacity of the staff. Patients are treated in the clinic, in the hospitals or in their homes within a radius of 7 miles of the clinic, as indicated. Beyond the 7 mile limit a small mileage fee is paid by the patient to the doctor. Hospitalization is at ward rates except that private rooms are provided for contagious diseases and where privacy is a necessary part of the treatment. The general hospitals in Baton Rouge are used and accord special rates to the association. Special nurses are provided where they are considered necessary. Hospitalization and nursing costs are limited to \$250 for each case. For those members who call a physician who is not on the association's staff, hospitalization and special nurses may be supplied up to the maximum at the discretion of the medical director. Hospitalization of normal maternity cases is not provided. However, on the advice of the association's obstetrician, practically all normal obstetric cases go to a hospital for delivery, with hospitalization costs at the patient's expense. Hospitalization and special nursing have recently been authorized outside the Baton Rouge area. Medicines other than those administered in the clinic are not supplied. Services are the same for employees and for their dependent families. Dependents eligible to services are limited to parents, spouse and children. Other dependent relatives may be included by the payment of additional monthly dues.

Dues were set in the beginning at \$2 per month for each member. No distinction is made in dues for members with dependents from those who have none. The board of directors was authorized to make up to one assessment equaling a month's dues in each quarter. As it was found necessary to make a number of assessments regularly, dues were increased and are now set at \$3 a month, with three assessments of \$3 permitted during any one year. On an average two assessments are now being made annually, bringing the cost to \$42 per member year or \$3.50 per member month. It has been suggested that the dues should vary with the number of dependents and possibly with the income of the members. But the organizers wanted a fully cooperative association and considered the single rate to be as equitable as single rate group insurance premiums. It has also been suggested that the dues be increased to \$3.50 per month, as that is the actual present cost. But the board of directors regards the present plan of dues with assessments made only as required as preferable. The x-ray department is supported separately from the other services, and assessments are made as needed for its maintenance. One assessment annually, included in the two mentioned, is usually sufficient. For employees who wish to enroll dependents other than parents, spouse or children, one dollar a month is charged for each such dependent.

In 1930 the association was incorporated as a non-profit organization with capitalization at \$100,000, represented by five thousand shares of stock at \$20 each, every member being required to purchase one share of stock which may be paid for at the rate of \$1 per month. These funds are for use for capital investments, improvements and new equipment. The stock carries no voting power and is of value only in the event of liquidation. All stock has now been subscribed, and an initiation fee of \$20 is substituted and required of each new member.

The business management of the association is vested in a board of directors consisting of eleven members elected by popular vote for overlapping terms of two years. Eight are elected from specified groups of departments and the remaining three from the membership at large. Ever since the organization of the association, two or more members of the board of directors have been executives of the company elected by the membership at large. The professional direction of the staff is in the hands of the medical director and there is no interference from the board in any professional matters. The cooperation between the board as business managers and the chief surgeon as professional director has always been excellent.

#### Disbursement of Revenues

|                                    | Percentage<br>of<br>Revenues | Monthly<br>Cost per<br>Member | Monthly<br>Cost per<br>Beneficiary |
|------------------------------------|------------------------------|-------------------------------|------------------------------------|
| Doctors' salaries                  | 40%                          | \$1.40                        | \$0.36                             |
| Hospitalization                    | 20%                          | 0.70                          | 0.18                               |
| Special nurses                     | 10%                          | 0.35                          | 0.09                               |
| X-ray department                   | 6%                           | 0.21                          | 0.06                               |
| General and administrative expense | 18%                          | 0.63                          | 0.16                               |
| Other expense                      | 5%                           | 0.17                          | 0.04                               |
| To surplus                         | 1%                           | 0.04                          | 0.01                               |
| <b>Total</b>                       | <b>100%</b>                  | <b>\$3.50</b>                 | <b>\$0.90</b>                      |

The expansion of services has been slow and careful. New ventures have been embarked on only after long and serious study. For example, when the x-ray department was inaugurated it was as an extra service and was supported by charges against the patients for x-ray examinations. As this plan was contrary to the strictly cooperative spirit of the association, it was decided by the membership to support it by assessments as required against all members and to make the service available without additional cost to those needing it.

During most of the period of its existence its membership has comprised 80 to 90 per cent of the eligible employees. It now numbers 4,600 members, with 18,000 persons eligible to services. The rapid increase in employment at the plant during the war period has posed a problem. Additions to and replacement of the medical staff have been almost impossible to secure because of the doctor shortage. In order to avoid contracting for more services than their available facilities will permit, new memberships are being restricted to employees with a year or more of service, and the regular staff has been supplemented by the part time employment of local private physicians.

The association now has assets amounting to \$140,000, represented by real estate, equipment, war bonds and cash. It has been suggested that an organization with an annual budget of almost \$200,000 should have a larger reserve for epidemics and catastrophes. Actually the amount of service rendered is strictly limited by the facilities available in the community and little more can be provided, regardless of the needs, than is now

being supplied. While the number of members has increased one third in the past two or three years, the increase in the amount of services rendered has been much smaller. In fact, special nursing services supplied were actually less in 1943 than in preceding years, simply because there were often no nurses available when needed. The flexibility of income resulting from the authority to collect assessments cares for normal fluctuations in costs, so that the financial structure seems adequate.

During the seven years 1936 to 1942 the revenues have been disbursed in average proportions shown in the accompanying table.

#### ADVANTAGES TO MEMBERS

1 The members of the association have adequate medical hospital and nursing care for themselves and for their families at a predetermined cost. The total cost is probably as great as if the group purchased the service individually, but they have probably received more service than they would have purchased as individuals.

2 They have been supplied with services at least the equal in quality of that otherwise available, and superior to that usually received by persons in the same economic group. They have had the advantage of much freer consultation with specialists than they would have had otherwise, and laboratory and x-ray examinations are more freely used.

3 They have escaped a not infrequent cause for strangling debt—large medical and hospital bills.

4 They have the satisfaction of providing this care for themselves and their families by their own efforts rather than having it handed to them.

#### ADVANTAGES TO THE EMPLOYER

1 Adequate medical care for the employee is provided, with return to duty with the minimum loss of time.

2 Close cooperation exists between the company's medical department and the employee's physician.

3 It is easier to persuade employees to have physical defects corrected than it would be otherwise.

4 Fraudulent claims of industrial injury are reduced.

5 The morale of the employees is improved by freedom from worry over costs of illness and by the satisfaction of providing such excellent medical care through their own efforts.

#### ADVANTAGES TO THE MEDICAL STAFF OF THE ASSOCIATION

1 The compensation is probably higher than the average in the community in normal times.

2 The inconvenience of carrying on an individual business is avoided.

3 Each physician has one day off each week and an annual vacation with pay.

4 Postgraduate training at the expense of the association is provided on occasions.

5 The close association and consultation with other physicians stimulates them to better work.

#### CONCLUSION

In 1932 a study of the association was made by Dr. Rufus Rorem of the Blue Cross Hospitalization program of the American Hospital Association, at that time representing the Julius Rosenwald Fund, and Dr. John H. Musser, professor of medicine at Tulane University and past president of the American College

of Physicians. Their report was published in book form under the title "Group Payment for Medical Care" and approved the work of the association. Dr. Musser commented on the maintenance of the personal relationship of the physician and the patient. Free choice among the general practitioners is permitted and the physician stands in the same relation to the patient as the "family doctor."

The association members, the management of the company, the company's medical department and the medical staff of the association are convinced of the value of the organization for this particular group. It is equally recognized that it is not necessarily the ideal plan for all groups.

Standard Oil Company (New Jersey), 30 Rockefeller Plaza

### VARIATIONS IN CURRENT INDUSTRIAL MEDICAL SERVICE PLANS

M. S. BLOOM, M.D.

BINGHAMTON, N. Y.

Industrial medicine is probably more widely practiced in the Binghamton area than in any other part of the country. For a number of years I have been medical adviser for several concerns in Binghamton and surrounding cities. While I have been associated with industrial medicine, I have also continued to maintain a private practice. This has enabled me to understand both sides of a subject which has made significant development in recent years.

At present I am medical director in six industrial organizations with a total of over 5,000 employees and about 2,000 dependents participating in prepayment medical care. I shall try to present a few of the details concerning some of the plans under my direction.

In 1913 a Mutual Benefit Association was organized at the Dunn and McCarthy shoe factory by the employees. Sickness and death benefits were provided. Later a registered nurse was hired and a complete and well equipped first aid room was established. In 1916 I was employed as the company doctor to conduct a clinic every morning and to visit sick employees at their homes. There were 1,200 employees at the time. The company contributed 50 cents for every dollar contributed by the workers. In 1923 the firm started contributing dollar for dollar, and new services were added. This association gradually expanded until we now have a fairly complete coverage of the medical, hospital and dental needs of the members. In 1928 care for dependents was instituted. The benefits for dependents include major and minor operations, hospitalization at ward rates, laboratory and x-ray service and care of fractures. There is a limit of \$250 to be spent per contributor annually for his dependents.

In paying for and drawing sick benefits, members are divided into classes according to their weekly earnings. Dues are 15, 20 and 25 cents a week, and 10 cents additional for care of dependents. We feel that this method of contribution is most satisfactory because those in the lower income groups have an equal opportunity to share benefits with those in the higher income levels. It also affords those paying greater contributions sick benefits in proportion to their dues.

Read in a panel discussion on Variations in Industrial Medical Service Plans before the Section on Preventive and Industrial Medicine and Public Health at the Ninety Fourth Annual Session of the American Medical Association, Chicago, June 12, 1944.

Any employee may join the association, but he must pay dues for two months before he is entitled to benefits, six months to be eligible for hospitalization and operation, eye examinations, x-ray and extraction of teeth, and one year before receiving sick benefits when he is operated on. No member can draw more than ten weeks' sick benefits in a year, and not more than \$350 can be spent on any member in a year. This is a limitation placed by state law.

At Dunn and McCarthy's the twenty-two year average cost per employee was \$18.53 annually, the sixteen year average cost per contributor for his dependents was \$13.43, the cost per dependent was \$5.17 a year. These figures are significant because they furnished a basis for the organization of other mutual benefit associations in other industries. There are many ramifications to the Dunn and McCarthy plan which I have not time to go into here. It is based primarily on the contract method of practice. The workers are allowed to choose their surgeons, specialists and dentists.

In 1930 a benefit association was organized at the Spaulding Bakeries plant in Binghamton. This plan was later extended to the other Spaulding plants in New York State and Pennsylvania. Originally this association was organized on a contract basis. After two years the question arose as to whether it would be possible or feasible to allow the employees the freedom of choice in the selection of their physicians. It was found that, although some of the members paid dues in the association, they continued to go to their own physicians. The officers of the association sensed a tremendous advantage in the personal relationship which exists between a physician and his patient and the desirability of maintaining that relationship through the association. It was decided to try giving the members the right to choose their physicians. We were pioneering and had no assurance what the outcome would be. The reorganization of the association under the new principle succeeded beyond our hopes. It was proved that the principle of freedom of choice was the ideal setup. The doctor himself now had a stake in the success of the plan, and the patient knew the limitations. The doctor knew that he would get paid for the services he rendered and he knew there were limits to what the association could afford to pay. We believe, after considerable research that the Spaulding Employees' Mutual Benefit Association was the first to establish the fact that complete freedom of choice was workable and effective.

The average annual cost per member in the Binghamton plant for eleven years was \$26.77, for nine years in the Elmira plant \$24.73, for eight years in the Oneonta plant \$14.94, for eight years in the Wilkes-Barre plant \$14.93, and for seven years in the Middletown plant \$19.30. The average annual cost per member in the five plants was \$20.13.

In the Binghamton plant we have limited care of dependents. This care includes house and office calls, x-rays and laboratory fees. The average annual cost per contributor was \$19 and \$9.40 per dependent. There is a limit of \$50 a year to be spent in any year per contributor for his dependents. Dues are 25 cents a week per contributor.

The success of the association at Spaulding's led to the organization in other local industries of other associations based on the same general form. In some instances it was the result of employees asking their employers for a plan for prepayment medical care.

Probably the most convincing evidence of the value of medical departments in industry is the fact that where these departments have been established they continue to exist and to increase in usefulness. Employers and employees soon realize the advantages.

In 1929 the Ansco Corporation organized a mutual benefit association, which operated for four years on a contract basis. The success of the Spaulding Plan under freedom of choice led us to adopt the same principle at Ansco in 1933. The company contributed 50 cents for every dollar contributed by the employees.

In February of 1943, because of increased costs of hospitalization, dues had to be raised from \$1 a month to \$1.25. The company agreed to contribute 75 cents a month for each member. With the increase in dues, x-ray and extraction of teeth were added to the benefits and \$4 a day was allowed for hospitalization instead of the \$3 originally allowed. We found that with the added income, expenses were less than anticipated, so on Nov. 1, 1943 we increased the allowance for x-ray and laboratory and gave sick relief when the patient was operated on or hospitalized. The total allowance to be spent per employee annually was increased from \$250 to \$300.

Oxalid Products Division was incorporated into the Ansco Association in 1941. Benefits in these associations now include major operations with an allowance of \$100, minor operations up to \$50, tonsil operations \$40, hospital, with a thirty day limit, \$4 a day, anesthetic \$5 to \$15, operating room fee \$5 to \$20, ambulance \$6, laboratory \$20 a year, electrocardiographs \$30 a year, consultations \$10 a year, x-rays \$40 a year, surgical office calls \$50 a year, refractions \$5 a year, x-ray and extraction of teeth \$25 a year, \$3 allowance for house visits and \$2 for office visits with a limit of \$30 to be spent annually. For oxygen and transfusions there is an unlimited allowance. Benefits of \$10.50 a week or \$1.50 a day are paid after seven days of illness for not more than seventy days a year, after seven days' hospitalization for not more than thirty-five days. There are over 3,000 members participating in the Ansco Mutual Benefit Association. The average annual cost per member for an eleven year period was \$18.25.

In March 1944 we added care for dependents at Ansco. The dues are \$1.50 a month. Wives and dependent children under 18 years of age are entitled to major and minor operations, hospitalization for thirty days a year at \$2 a day, care of fractures and maternity care. We placed a limit of \$40 for doctor's fees for maternity care, plus the allowance for hospitalization. Dependents of members who enter the armed forces will be eligible for benefits, provided the monthly dues are paid.

During 1943 the Ansco Mutual Benefit Association paid 147 doctors in sixty-seven different cities and fifteen different states. This was in addition to the 102 doctors used in the city. Hospitalization was provided in twelve different hospitals and the employees used 33 dentists out of town and 23 in town.

Our policy has always been to extend benefits rather than to reduce contributions as funds accumulated. In all the associations the members are asked whether they wished to contribute additional amounts for additional services. In all cases of extension of benefits and additions to dues the members have voted for it by a large majority.

The smallest mutual benefit association is at the Binghamton Die and Machine Company, where there are less than fifty employees. This association has been

operating successfully since Jan 1, 1937. Coverage is practically the same as in the larger associations. The average annual cost per member for the seven year period was \$17.97.

The newest association is at the H & A Manufacturing Company. This went into effect on May 1. It is different from the other associations in that the employer is paying the entire cost.

The expenditures in each association vary but little. These variations are determined by the length of time the association has been in operation, the number of employees and the size of the contributions of the employer and employee.

The real measure of any plan is not its good intention but its actual achievement. The associations in which freedom of choice is practiced are working with amazing success. We have developed a plan that is equally acceptable to physician and patient. Members can select from the outstanding physicians in the community. We know that individual attention by a skilled and interested physician is the best type of medical care.

Our experience indicates that with proper administration and with cooperation between the associations and the medical societies this type of service to the worker can be provided in industry on the basis of complete freedom of choice of physicians. It is evident that from small beginnings the mutual benefit associations grow rapidly to provide a more varied and more complete medical coverage.

One great advantage in our plan is that it can readily be adapted to every kind of industry, with the costs set at a point where the plan may operate successfully.

It has been thoroughly established that the people are interested in prepaying their medical costs. The costs of medical care should be distributed among groups of people and over periods of time. Americans cherish the right to exercise their free will and judgment. There must always be this right if American medicine is to advance in the future as it has in the past.

Freedom of choice of physicians is to be preferred to the contract or panel method. The patient receives attention without delay because all physicians in the community are available. Illness comes under skilled observation and much sooner than would be the case otherwise. Clinical methods are more widely used, and accurate diagnosis is more readily established. X-ray, laboratory and specialized services are available to those who otherwise could not afford them.

Under freedom of choice, the principles on which the practice of medicine were established have remained intact. There is better relationship between doctor and patient, a greater degree of cooperation in the medical profession and a greater feeling of good will between employer and employee.

Many attempts have been made to give adequate and efficient medical service and to make it easier for those of modest means to pay for this service. We physicians are sympathetic with efforts to improve conditions and deeply concerned with any attempt to change the fundamental basis of our work, but we must realize that with the advances in medical science, other advances are being made. The maintenance of a strong medical profession is in the public interest. We must increase our efforts because the physician has no more important obligation today than to assume a place of leadership in solving the economic and social problems bound up in the practice of medicine. The economic organization of medical care is now undergoing changes of great scope and magnitude. These changes are partly

because of the growth of public sentiment that health is a matter of social concern. Change based on anything but sound practices can result only in eventual detriment to the medical profession and the people.

My close association with industrial workers over a period of years has convinced me that they favor prepayment in order to free themselves of the worry of medical care. While industrialists have been willing to assume their part in the program of medical care, medical societies have been reluctant. These societies can efficiently handle the whole program. The medical profession will gain nothing and make no progress by working at cross purposes with the trend of the times or with the desires of the people. We must take an interest in medical economics and through our medical societies, furnish the leadership necessary to make prepayment available to every one who wishes to participate.

110 Oak Street

## HEALTH PLAN PRINCIPLES IN THE KAISER INDUSTRIES

SIDNEY R. GARFIELD, M.D.  
OAKLAND, CALIF.

We have a fundamental concept. Though there are certain hazards and occupational diseases peculiar to industry, these are rapidly being eliminated and we actually have minor problems superimposed on the general health problem of the worker and his family. Industrial health actually resolves itself to be not an entity but the basic health of the American people.

American medicine surpasses that of the rest of the world in technical excellence. So far a large portion of the American people have been denied this medical care. This lack of distribution has led to numerous experiments to solve the problem. During the last ten years some three hundred medical care plans have developed. This is a significant trend of vital concern to the medical profession. Most of these plans have one common characteristic—"prepayment." From there on they deviate widely in amount of coverage, financial structure, organization and ideals.

Groups of experts have developed—so-called authorities—who are found in government agencies, foundations and labor unions among employers, insurance companies and public health schools. Most groups are trending toward a united front completely bypassing the medical profession—the trend toward government tax supported medicine.

Now there appears to be a definite drive to forestall the threat of government intervention by medical society operated prepayment plans. The facts are that prepayment itself is not enough. The majority of prepaid medical plans to date have failed and proved totally inadequate.

(a) The insurance company indemnity plans provide only a minimum of service.

(b) The Blue Cross plans have only limited hospital care and in addition have a possibility of dominating the medical profession.

(c) The medical society plans have been miserable failures. Starting with comprehensive coverage, they have dropped back to limited benefits, they have not

been supported by the physicians, they have created no facilities, have not raised the quality of medical care and are too expensive and do not provide for preventive medicine.

In short, in addition to prepayment there must be some semblance of organization in methods of providing medical and hospital care so that the prepaid funds will provide the necessary coverage and sufficiently remunerate the physician.

Ten years ago we started providing medical care with no preconceived ideas and no plan. We had industrial work to do in areas where no medical or hospital care existed. We tried the usual method of fee for service and soon discarded it. We could not provide the service on that basis and the people could not pay for it. Out of our necessity evolved a simple plan that works. We have tested it under all sorts of conditions and in many areas with small numbers of men and large numbers—with scattered groups and concentrated groups. I would like to present this plan for your consideration.

The plan embodies three major principles (1) prepayment, (2) group practice and (3) adequate facilities.

Prepayment needs no elaboration and is generally accepted as the only way people of moderate means can pay for increasing costs of modern medical care—the principle of spreading the cost so that the well pay for the sick.

Group practice, the second principle, results in many economies, the most important economy resulting from the highest quality of medical care for each illness. Most highly developed in the very universities that teach us medicine, few will deny the advantages of group practice, its stimulation to the physician, its ready accessibility for consultation, its better supervision and utilization of the younger and inexperienced physician, its productiveness in research and training. In fact, most physicians today have an unofficial association with a group of doctors, but these groups are totally unorganized, inefficient and costly.

Adequate facilities, the third principle, are equally important. By adequate facilities I mean bringing the doctor's offices, the hospital, the laboratory and x-rays together under one roof. Where such facilities are geared to serve one particular group we achieve the utmost in efficiency and economy and the greatest accessibility between doctor, patient and workshop, with a resulting tremendous economy in saving of travel and duplication of equipment and personnel. That in essence is the plan. Consider these facts. Utilizing these principles in just a period of twenty months we have served the medical needs of 80,000 people in the Oakland area. Our income has been prewar income, the same cost to the worker and the employer that we charged five years ago. Contrary to what you may have read, the people we serve are not a selected group, they are the 4F's, the aged and the physically unfit. Many would be considered unemployable in normal times. Incidentally these men have done an outstanding job in shipbuilding. We have no preemployment examinations. The unions will not permit that—a rebound from the old days when such examinations were used to keep men from working rather than for proper placement. As a result we have had a tremendous medical load. We have provided these men with more medical and hospital care than has ever before been provided a similar group of people. Despite these facts, the tremendous medical load and wartime increases in expenses, we have been able to remunerate

our physicians with incomes ranging from \$5,000 to \$15,000 a year net. We have been able to build and pay for close to one million dollars worth of facilities and equipment and in addition have provided about \$50,000 for training and research, all by the utilization of prepayment-group practice and adequate facilities.

You have heard and read many things about our organization. I can honestly say that the only thing wrong with what we are doing is that neither Mr. Kaiser nor I should be doing it. The doctors through their medical organizations should be doing the job. If they would, they could raise American medicine far beyond its present level, superlative as it is, and, what is more important, bring it to the people.

Those three principles prepayment, group practice and adequate facilities are the solution to medical care. There isn't a question or problem in medicine they can't answer. In effect it means organization of medical care, which has been delayed too long. It would preserve individual enterprise in medicine. Medicine has developed to the point of specialization where the individual physician can no longer be a separate enterprise. The individual group, however, can be. The free choice of the future will be the free choice of a group. There is a tendency to be conservative and move slowly in such matters, but it would be wise in this problem to take bold steps. Group practice needs no experimentation. It has proved itself in the clinics and universities of this country.

The job could be done on the basis of the state medical society and could cover all areas of the state, country and city with one statewide service. The doctors of the state could voluntarily align themselves into three groups: (1) those desiring to work in full time group practice on a budgeted yearly income, (2) those desiring to work part time with these groups at a salary and retain some private practice and (3) those desiring to remain in private practice. Those choosing full time group work would probably be the younger men and many of those returning from the armed services. Those choosing part time group work would be the middle of the road physicians who would not want to give up the private practice they had built up and would on the other hand wish to have some contact with the group. Those choosing to remain in private practice solely would probably be the older men with large lucrative practices who chiefly serve the well-to-do classes. These men could serve as consultants and teachers for the full time group on a fee basis.

So all physicians could align themselves in these classes. From those volunteering for full time group work a board of highly trained physicians could select ideal groups or as nearly ideal as possible and back them up with part time physicians. With careful planning the medical centers could be built in strategic areas, city and country, serving 50 to 60 thousand people each, these centers being staffed with the groups selected. Radiating from each medical center would be the diagnostic and treatment centers, bringing readily accessible care, preventive and curative, to the outlying areas.

Such a reorganization of medicine sponsored by the medical societies has unlimited possibilities. Neither government, industry nor anybody else could touch it. Under such an arrangement medical care could easily be paid for and therefore reach all the people. There would be an increase in net income to the physicians, they would live a decent life with time off for vacations and study and home life without worrying about losing



their practices. There would be a redistribution of medical care so that the country areas would be better supplied with facilities and specialties—a new hospital financial structure which would stand on its own feet and be controlled by the physicians. The younger physician coming out of training could be assured of an immediate good income and be utilized to the maximum of his capacity under supervision and there would be a great stimulus to research and training. And very important is the fact that medical care would remain in the hands of the physician, where it belongs.

One last word. Under such an arrangement the physician and hospital are better off if the patient never gets sick. With the modern discoveries in medicine and those yet to come, the medical care of the sick is a diminishing economy. Would it not be wiser to create now a new economy of medicine, remunerating the physician for keeping the patient well?

## ENDICOTT-JOHNSON MEDICAL PLAN

EDWARD M. JONES, M.D.

ENDICOTT, N. Y.

The Endicott-Johnson corporation is engaged in the business of tanning leather and manufacturing shoes. Their factories are located along the southern border of New York State about midway between Buffalo and New York City. The principal factories are located in Johnson City and Endicott, villages of about 25,000 people each. Smaller factories are located in Binghamton and Owego. These communities are all geographically closely related, starting on the east with Binghamton, whose western boundary merges with that of Johnson City, and continuing on to Endicott, which is located about 5 miles west of Johnson City. Owego is about 18 miles west of Endicott.

In 1918 Mr. George F. Johnson, the founder of the company, decided to give to his workers a complete medical service, not only for themselves, but also for the dependent members of their families. He was prompted to do this as a part of a broad program to improve the living conditions of the workers and their families and to help them keep out of debt. He was firmly convinced that debt was a great factor in the unhappiness of the average worker and that, many times, unexpected large medical bills were the cause of this. He felt that relieving the worker of the cost of his own medical care alone was not sufficient and therefore included all those for whom the worker might reasonably be expected to assume financial responsibility in case of sickness. Although, during the years that have followed, the boundaries of this liability have varied somewhat, nevertheless that has been the general principle which has governed the extension of service to the dependents of workers.

There has never been any attempt to make this service a research institution. We have not tried to develop it as a model for other corporations. It has been an attempt to give the workers complete medical care of high quality with reasonable freedom of choice of physician, hospitalization, medicines, laboratory and x-ray examinations without any limitation except for the necessity of the case.

The expense of this service which has varied from around \$700,000 to \$1,000,000 a year has been assumed entirely by the company as an operating cost except for the period from April 1931 to September 1933 when the cost was met by a 5 per cent payroll deduction. When business conditions improved, however, the company not only reassumed the cost of the medical department but in addition, returned to each worker the total amount that had been taken out of the pay checks during the period of the 5 per cent deduction.

The number of workers eligible for service has varied somewhat during the ensuing twenty-six years but has averaged around 17,000. The average number of dependents has been around 32,000 or a little less than 2 dependents for each worker. At first all workers were included in the service from the day of their employment, but because of the abuse of this system whereby individuals could work for the company for a few days and then apply for medical care for some condition which had been in existence for considerable time and which might require prolonged hospitalization and major surgery for its correction, this was changed so that medical service was not extended to a new worker until after a probationary period of six months. In September 1940, when the accelerated defense program began to get under way, the company began to hire a great number of temporary workers. At that time it was felt that these workers would be on the payroll only temporarily, and if there was a falling off in business they would be laid off. This was an entirely new policy for the company, as during the several years of the depression of the early thirties the company had not laid off its workers but had shortened up the working hours somewhat and divided up the work as nearly equally as possible. It was decided that these temporary workers unless already entitled to medical care as a dependent of an old worker would not be eligible for medical care and when they were hired they signed a statement recognizing this fact.

After Pearl Harbor, the loss of so many of our physicians to the armed forces and the difficulty in obtaining any replacements made it necessary to continue the exclusion of these new workers from the medical service. There were not enough suitable replacements available to enlarge the medical department to provide these new workers with adequate medical care. Gradually, however, we have been able to obtain a few additional physicians, some part time and others full time. This, together with the loss of almost 4,000 workers to the armed forces and the migration of many others to industries more closely associated with the war effort, reduced the patient load to a point where the company again decided to return to the policy of furnishing complete medical care to all workers and their dependents if the worker had been in the employ of the company for at least six months on June 1, 1944.

At the present time, then, the following groups are entitled to medical care:

1. All workers who have been in the employ of the company for at least six months.

2. Husbands or wives of workers not otherwise gainfully employed.

3. Children. If the father is an Endicott-Johnson worker, all children regardless of age who are not married or not employed elsewhere are considered dependents. If the mother is a worker and the father works elsewhere, he is considered the head of the family and medical service would be extended to the mother but not to the children.

4 Parents of workers These have always been a problem as to just who is responsible for their care. If they make their home with a worker and are dependent on the worker for their living, they are usually considered eligible for medical care. Many times, however, there are several children in the family, some of whom work for the company and others work outside the company. Who is responsible in such a situation? Each of these cases is considered individually by the relief department, and if it considers that the responsibility is a divided one between those children working for Endicott-Johnson and those working elsewhere, frequently "limited service" will be extended, i. e., they may have the services of any of the physicians, the use of the facilities at the medical centers but not hospitalization or other service where a definite charge is made to the company. I think that you can see that the line of dependency is frequently a difficult one to draw and early in the history of the department there was some abuse of this extension of the service to dependents, so that occasionally parents not living in the Endicott-Johnson city area who were no longer able to work and who were in need of considerable medical care came to the Endicott-Johnson city area where they were classified as dependents of a worker and extended medical services, even though they may have made their home with some other son or daughter before they began to be in need of medical attention. It did not seem as though these cases constituted a legitimate charge against the Endicott-Johnson corporation, and so unless the parents have made their home with the worker for some time and this seems to be their established residence, they are not as a rule extended medical care.

5 Individuals who are employed in the retail stores or the sales division. Such persons who do not live in the Endicott-Johnson city area are eligible for service if they come to the Endicott-Johnson city area, and many of these workers and their dependents do come to the medical centers or hospital for diagnostic study or elective surgical procedures.

During normal times we maintain three distinct medical centers, one in Binghamton, one in Johnson City and one in Endicott. The workers in Owego are cared for by a part time physician and referred to Endicott or Johnson City for any special treatment that may be necessary. In each of the medical centers there are available from four to seven physicians who are considered our general practitioners. Each of these physicians has scheduled office hours of two to three hours each day, and these hours are so arranged that there will be at least one physician in the office for office hours from 8 a. m. to 6 p. m. In addition these physicians make calls at the workers' homes and follow the patients to the hospital whenever their condition warrants hospitalization. Each center has an internist, at least one surgeon, an obstetrician, a pediatrician, an ophthalmologist and an otolaryngologist, who hold regular office hours and see patients as they are referred to them by the general practitioners. Antepartum and postpartum clinics and baby clinics are held by the obstetricians and pediatricians respectively. Practically all deliveries are cared for in the hospital. One syphilologist divides his time between the three centers and not only takes care of the venereal diseases but also performs cystoscopic and other genitourinary procedures. Laboratories approved by the state department

of health perform all the usual blood and body fluid examinations.

In each of the medical centers is a dental department. Here a staff of six dentists and four dental hygienists carry out a program including cleanings, fillings and extractions. Dentures and inlays are not included in this service.

The normal procedure, then, in case of illness would be something like this. The worker calls the medical center and states that his youngster is ill and needs a physician to call at the home. The clerk asks the name of the worker and checks this against a key file which is kept in each of the medical centers. If the name given is listed as a worker and the child as a dependent, the clerk asks which physician is wanted and the call, together with the name of the physician asked for, is listed in the call book. This freedom of choice of physician is given to the worker except when one particular physician has already received enough calls to keep him busy for that particular day. In such case the worker may ask for some other doctor. Many times the patient has not given a preference and then the call is entered in the call book as an open call and one of the physicians who has other calls in that part of the town or one of the physicians who does not happen to be so busy on that day takes that call. From 6 p. m. to 7 a. m. only one physician is on call at each of the centers and takes all the calls received between these hours. This night call rotates each night, so that normally each of the general practitioners is on call one night in six or eight, depending on the center to which he is assigned.

In case the illness is such as to allow the patient to come to the office, he may call the center and ask what time his particular physician has office hours on that day. Each of the physicians has a definite schedule of office hours. They usually are scheduled for two hours at the same time each day except that an attempt is also made to allow each physician to be one hour late in the afternoon so that the workers may see the physician of their choice on at least one afternoon without losing time from their work.

The specialists for the most part spend their mornings seeing patients in the hospitals or in the homes in consultation. Their afternoons are spent in the office seeing patients referred by the general practitioners or other specialists.

On Sunday and holidays one physician is on duty at each of the centers and takes care of all the calls and office work for that particular day. An attempt is made to limit this work to emergencies as far as possible, and the workers cooperate in this fairly well. In the hospital, one man of each of the specialties is likewise on call and attends to all of the hospital work in his particular field.

In addition to the full time men, arrangements have been made with certain specialists for part time duty. In the fields of endocrinology, dermatology and thoracic surgery, specialists from Binghamton hold clinic hours once or twice a week, see patients in consultation as necessary and perform whatever surgery comes within their field.

Most of our specialists started with us in the capacity of general practitioners. Then, as openings in the various specialties have occurred, the general practitioner who is thought to be best qualified is given the opportunity to go away for postgraduate study and then return to limit his practice to that particular field. Rarely the need for men in certain specialties has

been so great that it did not seem advisable to wait for the training of a man, and in those cases men already trained have been employed.

In each of the medical centers there is a complete pharmacy in charge of licensed pharmacists who issue medicines only on prescription. We have no routine procedures, each physician is allowed to treat his patients as he deems proper.

In those cases requiring special care beyond that of our own staff, the patients are sent to medical centers in New York City, Boston, Baltimore, Philadelphia or wherever necessary to obtain the services which we feel are essential for that particular case. All the expenses of such care—physicians' fees, hospital care, railroad expenses and so on—are paid for by the corporation.

Most of the patients who are hospitalized are sent to the C. S. Wilson Memorial Hospital of Johnson City. This hospital was started by Dr. Wilson with the aid of the Endicott-Johnson corporation. On his death, the estate did not feel that it could continue the hospital, so the company purchased Dr. Wilson's interest and then deeded the hospital to a board of managers as a community hospital. Occasionally, in an emergency, patients are admitted to Ideal Hospital, the village owned hospital of the village of Endicott. In such cases the company pays the hospital the usual hospital rates.

When it becomes necessary to send a patient to the hospital, the physician decides what type of accommodation is necessary for the individual patient—ward, semiprivate or private room—and the medical service takes care of the entire hospital bill. If the patient desires more elaborate accommodations than the physician deems necessary, he may ask for such accommodations, and the difference in rate between the two is submitted to him as his hospital bill.

In cases requiring special nursing services, the heads of each department, medical and surgical, rule on the necessity for such services, and if they seem necessary the company pays for such special nursing service.

In addition to the medical department, there is a voluntary sick relief association to which the employee may contribute 25 cents weekly. In case of illness which compels him to remain away from work for more than one week, he is entitled to draw "sick relief" of \$12 weekly for ten weeks. In cases in which the disability lasts more than ten weeks the company frequently extends relief payments for a longer period of time, depending on the individual case need. No definite pension rate has been established but each case is considered individually and the general principle has been for the company to supplement any social security payments which the individual may receive with sufficient funds to enable him to live without drawing on any funds which he may have been able to save.

The average cost of this medical service has been around \$48 a year for each worker. In the past two years, however, because of increased costs, drugs, supplies, hospital rates and salaries, it rose to \$57 in 1942 and to \$63 in 1943. The average cost annually per person eligible for service was around \$17 until 1942, when the rate rose to \$19 and in 1943 to \$21.

#### SUMMARY

An attempt has been made to give to the Endicott-Johnson workers and their dependents a complete medical service without any limitation except for the need of the patient.

The patient-physician relationship has been kept as nearly as possible the same as in private practice. He has a reasonable choice of physicians. He has access to specialists in every field. He is entitled to unlimited hospitalization. He may have unlimited amounts of laboratory, x-ray or other examinations. The entire service is free to the worker, the company assuming the whole expense as an operating cost.

## MEDICAL SOCIETY PREPAYMENT PROGRAMS

### LESSONS LEARNED FROM EXPERIENCE IN MASSACHUSETTS

JAMES C. McCANN, M.D.

WORCESTER, MASS.

America and our profession are caught in the toils of a cyclically recurring world crisis. In the current phase of crisis we must attempt to discern and anticipate future patterns of medical practice. Only thus can we guide inevitable readjustments into channels which will preserve the basic values and achievements of our free profession.

These challenging days confront us with new demands, three of which seem to have crystallized clearly, first, to produce and distribute in cooperation with other properly interested agencies, good medical care across the entire face and into all segments of our nation, second, to accept the intent of the American people to transfer medical care of the indigent from its present base of professional responsibility as a charity to a community responsibility through taxation, third, to devise mechanisms which will provide the wage earning and moderate income segment of the American populace with a mode of easy access to needed medical services on a less costly basis. Voluntary prepayment programs under medical society auspices seem to promise much in this latter problem.

#### 1. APPROACH AND OBJECTIVES

Experience has demonstrated the unwisdom of initiating a medical society prepayment program on a complete coverage basis. Nearly all plans have reverted to a partial coverage surgical-obstetric contract with x-ray allowance. Massachusetts has found such a limited contract to afford an actuarially sound experience in types of service not readily abused by unwarranted overutilization, thus protecting the venture during its infancy from serious adverse selection. Massachusetts hopes soon to extend coverage to include hospitalized medical cases, ultimately we should extend coverage to include as much of home and office care as is feasible.

#### 2. SERVICE VS. CASH INDEMNITY

Massachusetts in common with most states has built around the service type of contract as the nub of the effort. It is available to individuals with incomes below \$2,000 a year and to families below \$2,500. Cash indemnity contracts are available above these levels. This dual approach protects a subscriber's permanent eligibility despite fluctuations of income above or below these levels by automatically transferring him from the service to the cash indemnity category and vice versa. Only a service contract for the entire family in the

Read in a panel discussion on Variations in Industrial Medical Service Plans before the Section on Preventive and Industrial Medicine and Public Health at the Ninety Fourth Annual Session of the American Medical Association, Chicago, June 15, 1944.

lower income brackets under which no extra charge is made beyond the corporation allowance for the service will give needed protection to this group.

Prior to 1942 the American Medical Association had taken no official cognizance of the fact that responsible state societies were building prepayment programs on the cornerstone of a service contract. All statements referred to cash indemnity contracts. To obviate this anomaly, Massachusetts sought and procured acceptance by the House of Delegates of the American Medical Association in 1942 of a resolution which recognized the service contract on a par with cash indemnity contracts. Despite the accomplishment, an editorial appeared in *THE JOURNAL* on Nov. 20, 1943 which disregarded this action and misleadingly stated that "the medical profession has approved prepayment plans on a cash indemnity basis for meeting the costs of medical care."

### 3 ORGANIZATION

There are professional and legal problems in organizing a prepayment program. On the basis of the experience of Massachusetts proper enlightenment of the profession concerning the program wins adequate professional support. Sufficient committee effort, local county presentations, publication of all plans and placement of printed information in the hands of every physician secured nearly 70 per cent participation by practicing Massachusetts physicians on the basis of signed contracts within a few months time.

The Massachusetts program was established on a statewide basis with no county review. Such review leads to professional dissensions, the public mistrusts a program which disrupts local professional unity, sales forces cannot cope with the handicap of sectional non-participation, public relations are disturbed when subscribers find that services rendered will not be paid for in "forbidden areas", unlimited patient access to specialists' services may be interfered with by arbitrary limitations at county lines.

Another problem relates to participating and non-participating physicians. Dealing only with participating physicians constitutes the morale basis of the service contract. This practice must be initiated as basic policy and rigidly adhered to from the beginning. In dealing with 35,000 subscribers over a year and a half, Massachusetts thus far has rarely paid for services by a nonparticipating physician. This decision appears to have made our service contract secure to date.

Legal aspects of organization relate to the specific form of corporate structure erected. Some states seeking professional jurisdiction over purely medical problems have gone to the extreme of creating boards of directors with physicians constituting a majority, up to three fourths or more, of the board. This deprives the board of valuable nonprofessional points of view and maximal public confidence. Massachusetts, weighing the corporate powers of voting members versus boards of directors, created a directorate composed one third of physicians, one third of subscriber representatives and one third of eminent business leaders. The executive committee of the medical society was given the voting membership of the corporation, empowered under the by-laws to elect the board of directors and change the by-laws. This voting membership of doctors has a guaranteed position as an advisory committee on strictly medical matters, since action in the medical

sphere contemplated by the directorate is reportable to the voting members thirty days prior to definitive action.

### 4 RELATIONS WITH BLUE CROSS

Massachusetts Medical Service established the closest contractual relations with the Blue Cross. The executive director of Blue Cross is also director of our corporation and provides administrative and sales services. This interrelationship seems reasonable on several counts: administrative costs should be significantly reduced, public acceptance of Blue Cross should be an effective entree for a medical service corporation, business organizations prefer single sales approach and single payroll deduction for the joint services, sales to established Blue Cross groups should be most effectively accomplished by Blue Cross salesmen. The "should" in these statements relates to the unsettled problem of whether or not Blue Cross, even with the best of intentions, can give adequate sales time and effort to medical service contracts while seeking the highest sales volume of Blue Cross contracts.

Effective contractual coordination of medical service corporations with Blue Cross must be made in the face of divergent philosophies. Blue Cross executives favor an intimate interlocking of the directorates of the two corporations, even to the point of creating a single corporation to sell both hospital and medical service contracts. Physicians are well advised to create separate and distinct medical service corporations until the evolution of an experiment, so portentous in its bearing on our future professional destiny, is complete. Blue Cross executives do not sympathize with the profession's belief in the need of income limits for the service type of medical contract. Some Blue Cross plans are selling a cash indemnity surgical-obstetric contract of their own to supplement their hospitalization contract with local medical approval. A comprehensive hospitalization contract which includes payment for hospital-medical services, which appear as items on the hospital bill—pathology, anesthesia and x-ray—is contemplated by Blue Cross.

In resolving these controversial matters there should be thorough exploration of the wide area of common interests between us before we fall out over restricted areas of technical disagreement to our ultimate mutual confusion. Solutions may possibly be arrived at if discussion is based on the following premises:

- 1 Hospital billed medical services are delivered by practicing physicians who themselves have freely arranged their varying contractual relations with the institutions.

- 2 The Blue Cross and medical service corporations are strictly financial agencies entirely devoid of facilities, so that they do not distribute hospital or medical service directly per se. Therefore they should not be involved in the controversy relative to hospitals encroaching on the field of medical practice.

- 3 The two types of corporations seek by contracts with hospitals and physicians to take up the total cost of services rendered within restricted categories, with the understanding that no further charges will be made, thus giving the subscriber the so-called "service" coverage. Secondary financial contracts of this character by which Blue Cross seeks to take up any cost item on a hospital bill which is partly a hospital and partly a medical responsibility does not per se constitute encroachment on medical practice, provided such a secondary contract does not infringe on the terms of

the prior existing contract executed between the hospital and the physician. Since it relates to a pure financial transaction after the fact of delivery of a service, it cannot properly be construed as introducing a third party between the patient and his doctor or hospital.

4 Medical service corporations can never take up completely the entire cost of all the special medical-hospital services because this would divert a disproportionate part of the subscriber's premium contribution intended for medical services to direct subsidy of elaborate hospital equipment, space and personnel.

5 There is a dual responsibility resident between the Blue Cross and medical service corporation to make these medical-hospital items available to the public on a service basis through a prepaid contract in the same way in which strictly hospital and strictly medical services are being made available.

6 These problems might be resolved if Blue Cross allowances for such items in hospital bills were made on three bases:

(a) Contracts should specify that allowances are for the cost of services (not for the provision or sale of the services per se).

(b) Descriptive circulars should explain that allowances paid the hospitals are to be allocated by the institutions according to existing contractual arrangements between the hospital and the physician who delivers the professional service.

(c) Safeguards should be erected against insurance stimulus to hospitalization of properly ambulatory patients who would normally be examined (say by x-ray) in the physician's office. Otherwise there will be costly and unwarranted hospitalization for ambulatory illness, with consequent aggravation of hospital crowding at the expense of private medical practice. This might well prove disastrous in the long run because in well authenticated instances the establishment of a private laboratory by the physician has been his only means of escape from an inadequate unilaterally established contract, imposed on him by institutional shortsightedness. To jeopardize this professional "safety valve" might threaten the survival of a basic specialty in medical practice.

#### ACCOMPLISHMENTS

Medical society prepayment programs constitute a young movement not yet sufficiently seasoned for appraisal. There are statewide plans in sixteen states, with seven local plans in three other states. Total membership is about 1,000,000, with Michigan's 600,000 constituting over a half. Massachusetts has enrolled 34,000 persons since January 1943 based on about 15,000 contracts. Whereas Michigan's huge enrolment is 90 per cent in eighteen large industrial groups, ours is distributed through three hundred and ninety-six groups. Our largest group enrolment is 150. The average number of contracts per group is 37.6, and the average number of subscribers per group is 85. In 1944 our enrolment has averaged 68 per cent of the enrolled groups.

Massachusetts Medical Service has operated during this period entirely in the black. Selling our surgical-obstetric contract at the monthly rates of \$0.85 for the individual, \$1.65 for man and wife and \$2 for the family, we have retired our organizational expense of approximately \$5,000 and created a reserve and surplus of nearly \$35,000. Our position seems sufficiently strong, so that recently the directors deleted all exclusions relative to preexisting conditions from the subscriber's contract. We hope in the near future to make some provision for hospitalized medical care.

From our experience the financial soundness of any state society program will be related in general to

several items: first the adequacy of the premium structure as related to the services offered and the compensation to the physician, second the utilization rate by the subscriber, which will be determined by (a) the seasoning or diminution of preexisting surgical needs by prior Blue Cross or other insurance coverage and (b) the level of professional-public health-hospital services which determine the degree of medical liabilities confronting the new corporation, third the proper discharge of responsibility by the directors in adequately balancing the premium rates, administrative costs and contract benefits, and, fourth adherence to a fixed schedule of allowances to physicians for standard services so that a solid actuarial experience may be evolved.

This short experience in Massachusetts suggests the promising value of a medical society prepayment program for the following reasons:

1 Because it is based on acceptance of a responsibility by the producers of medical service who are guided by a code of high ideals and ethics and who usually exhibit an adequate sense of social and community responsibility.

2 Because it provides a pattern which can be made universally applicable in urban and rural areas over short or wide distances, in large and small communities, in larger or smaller business units in upper or lower income groups, the indigent and special governmental groups.

3 Because it creates a mechanism whereby medical care on a service basis can be provided for that income segment of the population in need of such protection without disrupting medical freedom, relations and establishments.

4 Because it encompasses such controversial medical modes as group practice versus individual practice and fee for service versus salary compensation, neutralizing this potent principle of prepayment with reference to each until these problems are resolved in the normal competitive evolution of medical practice.

5 Because it best safeguards the freedoms inherent in our American system of medical practice during this tragic interlude in which our republic must resolve its epic dilemma—whether to continue as a free enterprise, individualist society or to shift to a preponderantly socialistic, authoritarian type of state.

6 Because, if the former choice is happily made, medicine can adapt itself to current evolutionary change in democracy. A change by which community or governmental responsibility and enterprise on a federal-local basis shift from laissez-faire inactivity to that of umpire in cooperative efforts between the community and those free enterprise groups which exhibit the following three marks: (1) self-imposed discipline by the individuals who compose economic groups as far as group social responsibility is concerned, (2) acceptance in full measure by the group of its entire social responsibility as determined by community needs and welfare, and on a basis acceptable to the community, and (3) group cooperation with all rightfully interested agencies, whether governmental or private, in adequately meeting community needs. Selfish, indifferent or irresponsible groups will lose all right to free enterprise by default, and complete governmental action will supervene. To this current phase of our evolutionary democracy, medicine must pay heed!

St. Vincent Hospital



## VARIATIONS IN CURRENT INDUSTRIAL MEDICAL SERVICE PLANS

JOHN J. WITTMER, M.D.

NEW YORK

None of us are afraid of ghosts. Our scientific training and intellect does not permit us to give credence to tales of preternatural caterwauling or mistlike apparitions. As children we all listened to or read ghost stories with the usual glandular reactions, but have long since learned that all such evidences of abnormal psychology can be "laid by the heels" by the application of a little practical logic.

I am going to present a practical method by which we of the medical profession can banish the ghost which has haunted American medicine for so many years—earn in the traditional manner, drive a stake through the heart of government controlled medicine and silence forever its oft repeated threat to the traditional control of medical practice by the profession itself.

This specter of government control has not suddenly appeared on the horizon but has been gradually materializing, disguised as a panacea for many years. In the past opposition has been able to force it to retire into the background, but on each occasion of its resurgence it has been able to loom a little higher, until now not only has its head appeared but also most of its body. How much longer will it take for the legs to appear and for the apparition to materialize into a living Frankenstein, able to walk among us and become the potent, dominating factor in our work and our lives? I myself can already see the embryonic legs taking form.

We will not get rid of this specter by calling it base names, by proclaiming that it is unworthy and debasing or by hacking at it at random. It would seem that the more it is hacked the faster and stronger its limbs grow back again.

I think most of us must realize that the only way that we can stifle the growth of this being is to create an acceptable entity of its own kind having its own weapons—one which will not only take its place but will so far outshine it that the apparition will vanish in the brilliance of the plan of our creation. In terms of military strategy our best defense is a vigorous offense!

I honestly and implicitly believe that the present trend toward socialized medicine can be completely "outshone" by a properly and strategically worked out plan of voluntary health insurance. Not health insurance that covers only part of sickness but an all out plan which completely and comprehensively covers all phases of illness and health—a plan which will have a budgetary basis that will insure an income commensurate with the doctor's education, qualifications, maintenance of social level and the vast expenditure of time and energy and yet not be so costly that it will be beyond the average subscriber's financial reach, health insurance that includes the medical fraternity as administrators. I believe a plan can be worked out along these lines which would nullify any inherent paradox which some may claim exists in the situation, would be attractive to the layman and would benefit our profession immeasurably by comparison with government control.

I need not point out that the poor receive excellent medical help from our profession at little or no cost and that the rich can afford to obtain any medical aid which they desire. The middle class individual, with his constant current economic demands, is neither so poor that he can obtain free aid nor wealthy enough to stand the rich man's prices. However, we have all noticed a trend toward an ever expanding group of so called "indigent people" which includes many middle class people who, we know but cannot readily prove, can really afford to pay moderate medical fees. There is no doubt in my mind that many people admitted to charitable institutions and municipal hospitals could probably afford to pay all and could certainly pay part of their medical costs. We, as doctors, are aiding the expansion of this group of "tailor made mendicants" by continuing to donate of our services to those "indigents" who are undeserving.

My opinion is that no one who has any income whatever should be allowed to obtain free medical aid. He should pay in proportion to his income, no matter how small the income may be. However, medical catastrophes do not come in 98 cent bits. Reasonable charges sometimes amount to hundreds of dollars. The \$25 a week man never has a hundred dollars—at least for this purpose. He does, however, have 50 cents a week that he could contribute as his share—a share that in time cannot help but make up the hundred dollars.

Generally speaking, the "great" middle class deserve a break when they are faced with illness or injury. If they are allowed to work out prepayment medical plans, each will contribute his share and, for a change, the medical profession will be paid for all services rendered except to the genuinely poor.

Many years ago in the Consolidated Edison Company we realized that we had a very large group of employees who did not have the wherewithal to finance expensive operations or protracted treatments but who could afford to contribute something regularly each week toward their medical care. Many times we advised employees to have tonsils removed because we felt that they were the focus of infection for generalized arthritis to have abscessed teeth extracted for the same reason, to obtain x-rays or other laboratory data required for proper diagnosis—only to hear them say, truthfully, "That's fine but where am I going to get the money?" At that time the average income of our workers was as high as and probably higher than the income of workers in most industries, but about the only thing we could do was to try to arrange with some semicharitable or city institution to have the work done with no, or at least very little, expense to the employee. You know that this condition exists in all communities. Who has been doing this free work? You doctors sitting here before me today!

We of the Consolidated Edison Company of New York, Inc., saw a solution of the problem when the rank and file workers—those earning less than \$3,000 a year, asked permission to form a mutual aid association. The entire arrangement was voluntary. A worker had absolute free choice of joining the organization. As a member he paid five ninths of 1 per cent of his weekly salary which averages about 22 cents a week. The company felt that it would gain enough from the experiment to match the weekly contribution of the employee. For this contribution the employee was eligible to obtain a total medical and a basic dental service. The doctors and dentists were provided on

a restricted basis, which is to say that a group of doctors was selected to work on such a part time basis as was felt to be adequate to take care of the illnesses of all the subscribers. By "part time" I mean that enough potential work is available to occupy the doctor for about a third to a half of his working hours. Members are allowed to select any one of the doctors on the group whom they choose. The same system applies to the dentists.

Of course it follows that within a short time one doctor has more work to do than another. This naturally occurs according to the interest and sincerity which the doctor puts into his work, and, because the doctors are paid on a fee basis competition is keen. When necessary, members are free to choose specialists who cover all phases of consultant medical work and who also are in the group.

Our entire medical service is under the absolute authority of a medical director and his assistants, all physicians and surgeons in good standing. The medical staff includes physicians, surgeons, dentists, nurses, pharmacists and a masseuse, besides the clerical staff needed, all except the last being on a fee or retainer basis. In addition, physicians attached to various hospitals treat our employees and receive payment on a fee basis for their services.

The medical services available are

- 1 Physical examinations before transfer, retirement or for special reasons
- 2 Periodic examinations including those for certain types of workers, such as men engaged in hazardous occupations
- 3 Examinations requested by employees
- 4 Examinations prior to return to duty, including routine fluoroscopy
- 5 First aid for injuries or illness on the job
- 6 Treatment for illness, either in one of the medical bureau offices, at a physician's private office, or at home
- 7 The furnishing of prescribed drugs
- 8 Diagnosis and treatments by specialists
- 9 Extensive x-ray and laboratory facilities
- 10 Cooperation with employees' personal physicians in cases in which the employee still chooses to have his personal physician, and advice on home medical problems
- 11 Physical therapy service under the direction of a physician
- 12 Dental diagnosis, treatments and restoration work
- 13 Operations, medical treatments and other services in hospitals
- 14 The facilities of a convalescent home under medical supervision

During the time that our medical service has been in operation, our observations and personnel statistics have indicated a decided improvement in health conditions in a working force that now approximates 25,000 employees. Serious chronic illnesses, such as tuberculosis, cardiovascular disease and those due to toxic poisoning, have been reduced greatly. Our doctors rarely find the deplorable cases of neglect of teeth, mouth, throat, alimentary canal and the degenerative conditions due to tonsils or other foci of infection. Our absentee rate is well below the national average.

Our medical services are extensive and the employees use them freely but, consisting as they do of essentials only, the services are not a tremendous burden financially either to the employees or to the company. All the services outlined can be obtained at a total cost

for each employee of approximately \$22 annually. Since employees contribute to the cost of the medical service they feel that it is theirs to use and both the management and the employees benefit by a sounder healthier body of workers.

The question naturally arises: What are the advantages of such a program?

Let me list them:

I Every employee in the middle and lower income brackets is paying his way when he is ill. We do not have employees who are being treated in charitable or other free institutions. I really believe that a third to a half of present medical mendicants can be changed to paying clients by a prepayment medical plan.

II The doctor's income is higher. He is receiving an actual income for the actual work he does. There are no debtors on his books. In addition he is receiving pay for work that he formerly performed for nothing.

III In all these plans there is money available for research and prevention. This money is available as part of current expense and can be used in ways that are deemed most feasible by the medical fraternity.

IV As all aids of x-ray laboratory and other diagnostic facilities are available without monetary restraint an immediate and reasonably certain diagnosis can be made. Not only is this a gratifying reward in the practice of medicine, but the patient is that much sooner available for efficient productivity in industry.

V Patients will seek medical help earlier in the disease and in some cases more often. Early diagnosis, concentrated treatment, unlimited facilities and freedom of action allow the doctor to get more patients well much more rapidly.

VI By exercising all methods of prevention, immediate and comprehensive diagnosis and concentrated treatment, we feel that our absence rate is about one half of that of the average industrial worker. This, of course, helps industry, but what helps industry helps the community and cannot but be an asset to the country as a whole. In addition the employees are perfectly satisfied with this program and, I firmly believe, would vigorously oppose any other plan. The only dissatisfaction that exists is that we have not included the members of the family.

VII Constant check-up of employees reveals many hidden conditions which, while not totally incapacitating, do retard their efficiency. Correcting these conditions in their infancy is prophylaxis against present loss of ability to produce and future lost time.

In conclusion let me leave this thought with you. If voluntary health insurance in the form I have described is worth while, and I sincerely believe it is, it should be adopted wholeheartedly by the profession. I do not believe that we shall get anywhere by watching small experiments proceeding in a few isolated areas. The present problem calls for prompt action: to proceed with these plans in an extensive, organized manner, large plans that cover many people in many places. Let us beware that while we are too carefully and slowly scrutinizing what seems to be a real answer to our problem we might have saddled on us this "specter" this more radical substitute which has taken hold and which, as legislation, would have to be accepted "whole hog."

Let us, as the caretakers and guardians of the health of the American people, work out a "modern way" of

medical care for all our people with due consideration for their financial resources, with adequate provision for their proper care, with provision for an adequate income for the doctor and last but not least, with a view toward preserving the dignity of our profession. This is our precept, our prerogative and our duty.

4 Irving Place

## QUESTION AND ANSWER PERIOD

### ON PANEL DISCUSSION ON VARIATIONS IN INDUSTRIAL MEDICAL SERVICE PLANS

*Question*—What is the attitude of the local profession to the association?

DR JAMES M. ADAMS, New York. At the time the association was organized there was passive resistance on the part of the local medical profession which a few years later became active, however, I am pleased to say this has entirely vanished now and the association is recognized as a part of the medical life of that community.

DR M. S. BLOOM, Binghamton, N. Y. The plans have been set up with complete freedom of choice. They have never been set up in any community without first taking it up with the economics committee of the county medical society. The doctors have welcomed the plans. Recently, before care for dependents was added to the AnSCO plan, I had meetings with the surgeons and the eye, ear, nose and throat specialists saying that if they were willing to cooperate as they had with the employees, we would put it to a vote of the employees. The doctors agreed the vote was taken and care for dependents was added to the benefits of the AnSCO plan.

*Question*—How did the unions feel toward the prepayment medical plans?

DR BLOOM. Very well. Some of the plans were in operation before the union was established, and the unions insisted in their contract that the plans be continued as before.

*Question*—Will the long term instability of industrial units and of employment restrict the value of industrial units as a base on which to build medical care?

DR JAMES C. MCCANN, Worcester, Mass. My reaction is based on living in the oldest industrial section in the nation, New England. I live in Massachusetts, which was once the heart of the shoe industry and the cotton industry but is so no longer. I came from Maine, which was the heart of shipbuilding but Maine has lost out to the Pacific coast. So there is a tremendous instability in industry, if we look at it from the point of view of constructing the medical care of the American people around that base. Mr. Henry Kaiser became interested in this problem, and he did establish a prepaid medical group on the West Coast. As president of Brewster he didn't. Since Brewster has just lost its contract for the construction of the Corsair airplane, since it is estimated that if the airplane industry will continue at 20 per cent of its present productive capacity in peacetime it will be fortunate, I wonder how stable that is as a long term base for revising the distribution of medical care. I know that key figures in major industries in New England are totally unwilling to become involved in this problem. Most do not want to become involved in any step encroaching on the tremendous problem of local medical care.

*Question*—Would the long term instability of industrial units and of employment restrict the value of industrial units as a base on which to build medical care?

DR JOHN J. WITTMER, New York. Industry isn't in the mood to take over this medical plan. Industry wants the community to do it and I myself feel that it is a community problem and that the community itself should organize to do it. The only reason industry has gone ahead on the present basis is that the community and other sources have not solved the problem and industry was forced to do it.

DR SIDNEY R. GARFIELD, Oakland, Calif. Mr. Kaiser and I both feel that medical care should be on a community basis. The plan we propose that the medical societies should operate, utilizing the principles we think are sound in operation, should

supply not only industry but the community—the Lions Club, the Women's Club, the farmers' cooperatives—every organization possible that can arrange for collections of dues.

*Question*—Why do you use a three thousand dollar limit for employees who join your plan?

*Question*—Is a \$2,000 to \$3,000 income ceiling necessary?

*Question*—You mentioned five ninths of 1 per cent by employer and employee as a contribution to support the service. Is there any top limit of earning beyond which the percentage does not apply?

DR WITTMER. We decided on the \$3,000 limit as a method of expediency backed by practical experience. The reason we said \$3,000 in the beginning of our plan is that we have two methods of payroll payment. Those who receive less than \$3,000 a year are on a weekly payroll, those who receive \$3,000 or more are on a monthly payroll and it was much easier to draw the line and say those on one side should be members of the plan and those on the other side would not. In addition is the fact that the average man who gets to \$3,000 in the non wartime period is usually an older man—45, 50, 55, and usually he has reached the height of his family experience. He already has his two, three, four, five and six children. The man of the lower income bracket in quite a few instances doesn't have quite as many children. In interviewing these various individuals we found from the level of their living that they needed more money than the laborer would who is earning \$2,000 a year. We found that our loan ratio was much higher in the \$2,500 to \$4,000 group, that those were the people who really were borrowing money. We think \$3,000 is certainly the lowest level of payroll that should be used as a ceiling. The question on five ninths of 1 per cent—that sounds rather ambiguous—but if a man is earning \$27 a week he pays about 15 cents a week; if he was earning \$18 a week he would pay something like 10 cents a week. When he gets into the \$40 to \$45 group he still pays his five ninths of 1 per cent which, of course, is actually more in that it is the same percentage of a higher amount of money.

DR MCCANN. We established \$2,500 in Massachusetts. We found out afterward from union men on our board that \$3,000 roughly, draws the line of demarcation between the working group and management and that if one has an income limit below that one would be asking the union by supporting it to introduce a factor of apparent discrimination in approaching the workmen.

*Question*—Is there a tendency on the part of attending physicians to charge in addition to the amount allowed by the plan?

DR BLOOM. Only occasionally do physicians outside the direct localities charge fees higher than those allowed. We are paying bills to physicians throughout the United States. We pay the allowance and the patient pays the difference. The executives in the various companies are included in the plans. We don't expect the doctors to charge consistently the fees outlined for the workers.

DR ADAMS. We have a number of plans in our company that were based on the plan outlined by Dr. Bloom. Most of those have a maximum for surgical operations of around \$150 and the surgeon's fee is usually paid up to that amount, also set fees for house visits and office calls, and in most of the communities where these organizations operate we find that the charges of the physicians are seldom greater than those allowed by the association.

*Question*—Is absence or sickness rate lowered as a result of the plan?

DR ADAMS. I don't have the figures, but I can say in a general way that my close association with the Stranocola plan was in its early stages and at that time we did notice a definite drop in the sickness rate after the inauguration of the plan. Whether this was a direct result of the operation of the plan I am unable to say.

DR BLOOM. Yes. Under the AnSCO plan we had a gradual drop over a period of eight years. Less sick relief was drawn each year. We have no way of determining from the Mutual Benefit Association's data absenteeism for less than seven days. I should like to give the exact figures on sick benefits from

1934 when the average amount drawn annually per member was \$375. This amount gradually decreased until 1940 when the amount drawn was \$141 annually per member.

DR WILLIAM A. SAWYER, Rochester, N. Y. Per employee.

DR BLOOM: Yes.

DR WITTMER: I can say definitely that it is lowered in our plan to about half of the national average in spite of the fact that we have a liberal sickness payment plan. A man is entitled in any current year to one week's full time pay for each year that he has worked and after that period has expired receives twenty-six weeks in any current year from his mutual aid society at 80 per cent, in other words if a man has been working for the company for twenty-six years he is allowed when ill twenty-six weeks' full pay, twenty-six weeks' mutual aid at 80 per cent.

DR EDWARD M. JONES, Johnson City, N. Y.: Such figures are difficult to interpret because of the many factors involved. Although I have no statistics on our plan, I doubt whether it makes any difference in the absence rate from work. One important factor, particularly when women workers are involved, is the approximation of the sick relief rate to their weekly wage. During the years mentioned by Dr. Bloom this is a factor to consider.

DR BLOOM: Our experience in the shoe industry shows that absence or sickness was reduced during the depression because people were afraid of losing their jobs. Our sick benefits were much lower then than during other times.

Question—How are the doctors paid under the Consolidated Edison plan?

DR WITTMER: The doctors are paid on a fee basis for each call they make. They make a report on each call and a record is kept for monthly payments.

Question—How can one give complete care to needy people without taxation carrying the load?

DR GARFIELD: A certain proportion of the weekly fee can be set aside for the particular purpose, in other words, we have been able to do a certain amount of work for the needy. Right now, when there is full employment, one could have 5 cents a week set aside for medical care if they are later unemployed. The other way of handling it would be through the Social Security system, where the Social Security setup would pay the fee per week of the person who is unemployed.

Question—What difficulty has been encountered in a fee basis plan of too much medical care, needless surgery, and the like?

Question—What limitations as to length of disability should be imposed on disability based on psychosomatic disturbances?

DR BLOOM: There is always a certain small percentage of employees who will do a lot of shopping around and who will go to doctors whether they belong to prepayment organizations or not. We have found that where there are certain limitations to what the employee is entitled to (and I think the plans I have suggested are rather comprehensive) we do not find that the employees exceed the limitations imposed very often. As Dr. Garfield said on the question of diminishing returns, with the new methods of treatment the number of days' hospitalization will be reduced. Where we have a limitation of hospitalization and of calls the patients exercise judgment in order to maintain a reserve just as anybody with a certain amount of money in the savings bank exercises judgment and caution.

DR GARFIELD: We have no particular problem on this point, since all our physicians are on a budgeted income. There is no possibility of overtreatment. They just treat a patient as much as necessary. We have quite a lot of psychosomatic disturbances, which we handle in the usual manner, with psychiatrists, and it isn't a major problem. We have found that hospitalization under our plan really increases, however, it is for minor conditions rather than major ones. It is for a shorter period of time and as a result ends up in being less costly to the organization.

Question—In actual experience many acute illnesses rarely last two weeks unless complications ensue. It would seem that diminution of the seven to ten days is an element of weakness from the point of view of prevention. Why not have full coverage under the prepayment plan?

DR WITTMER: I think this question has been misdirected because we have full coverage. I believe in total coverage not only of the medical service but for the absence. A man who is sick can't get well quickly if he realizes that he is getting \$12 a week rather than his usual \$40 a week. I think paying him his regular salary from the day he is absent keeps his morale high. I don't believe there should be any limitation on medical service. I don't know what these people would do if you should say you would take care of them for twenty-one days or for \$150 worth. At the end of that period if they really were still ill, they would be up against it just as much as in the beginning. I think that most of the limitations on coverage are in the line of policing and restriction on service is the poorest kind of policing I know of.

THE CHAIRMAN: I think this question has to do with the rather general policy of a waiting period. One of the speakers mentioned a waiting period of several months. I think or that the patient had to be employed several months before he became a beneficiary of the plan. The questioner probably had that rather general principle in mind.

DR BLOOM: It has been the policy for years to pay sick relief only after the first seven days' illness. It must be remembered that the employees themselves draw up these rules and regulations. They feel that it would not be fair otherwise. The purpose of the mutual benefit associations is primarily to provide medical care and to relieve the worker of worry. Medical care is provided whenever the employee desires it.

DR ADAMS: Our company has preemployment examination and in the prewar time any person who applied for membership in the Stanocola Association immediately when he was employed by the company had a waiting period of sixty days. He had to pay dues for two months in other words before he could receive the benefits. Since there has been the shortage of doctors in the war period and so many transient workers coming and going, every one is made to wait a year now before he can apply for membership.

Question—Should any distinction in fees be made to provide incentive for good medical care?

DR GARFIELD: I don't think I am the proper one to discuss that. We don't work on a fee-for-service basis.

THE CHAIRMAN: In other words you don't think it necessary?

DR GARFIELD: I think the fee-for-service basis is definitely wrong in caring for medical needs of the people.

DR BLOOM: If the fees are high enough and untimely to the leading physicians in the community there should not be any trouble getting the outstanding men in the community to do the work.

Question—Do employees object to percentage premium payment, that is, the higher brackets pay more than the smaller?

DR BLOOM: I think I am the only one who has that system. Our members pay 15, 20 and 25 cents a week. Dues are determined by wage scale. This includes cash benefits also. Members cannot join a group higher than their wage level. If there are members who belong to other organizations that pay sick benefits it has a tendency to encourage malingering. We seldom have difficulty on the question of sick benefits for male workers.

DR WITTMER: We have the percentage, five months of 1 per cent, deduction plan. We have 99 and a fraction per cent of our employees eligible in the plan. This is an absolutely voluntary plan. In the last fifteen years I have never heard any reaction against the variation of deductions.

DR DEAN A. CLARK, U. S. P. H. S., Washington, D. C.: There is no question in any of our minds that the executive and participants in these successful plans deserve not only our respect but our heartiest congratulations. Nevertheless there are some problems raised by our chairman's address yesterday and by some of the problems implicit in what was said today that are not answered or perhaps cannot be answered by such plans as these. For instance all the speakers, I believe, spoke in general terms implying that this type of plan might solve the medical care problem for the United States. Then various groups were discussed separately, such as the indigent, the chronically sick, the aged, psychiatric cases. We heard from

our chairman yesterday of the problems of the rural areas, poor states and the regions that under almost no conceivable circumstances could finance their own medical care. And yet all the speakers favor a community type of plan. How could it be conceivable that on a community plan basis, and by "community" it might mean a city, a county, a state or the nation, such medical service plans could care for all our medical problems without taxation and necessarily federal tax aid?

DR GARFIELD. The Kaiser plan would not solve the problem of medical care completely, however it would so nearly do so that the problems not taken care of such as indigent medical care could be handled easily through community support. In California if there was a statewide plan operated on the same basis as ours there would be sufficient funds developed within the plan itself to take care of indigents in this state. There may be some states where there is not a sufficient concentration of people to build up funds through such a plan to take care of the indigent and unemployed. In these exceptional instances government help through tax contributed funds may be thoroughly justified. I don't think government intervention is justified or desired if we can do the job ourselves.

DR FRANCIS M. PORTNER, Monrovia, Calif. The industrial service plans described in this panel are attempting to solve medical problems which affect the efficiency of industrial workers in individual organizations. However, the medical profession today is confronted not by a limited but by a general situation which calls for a complete medical service providing both prevention and treatment for all the people. The experience of limited groups is valuable, but the Massachusetts plan is an attack on the problem which is interesting the medical profession as a whole. Any satisfactory plan must be applicable to conditions of both full and limited employment and also to those of unemployment. It must be suited to the income which the people may receive under all working conditions. It must furnish services not only to workers in large industrial organizations but to all others with small incomes. An important though insufficiently recognized factor in precipitating the medical problem in the last decade is the rapid industrialization which has taken place during the twentieth century requiring the moving of the workers from the country to the city. In 1900 30 per cent of the people lived in the cities. By 1930 this had been increased to 50 per cent. In the country the worker could raise much of his own food, but the city dweller loses his independence by the transfer and is obliged to spend far more for his maintenance than the rural worker, and when he loses employment he is unable to maintain himself and his family. In times of full employment unpredictable illness is hard for the workers to meet and in times of unemployment it is all but impossible. The medical profession has long assumed what is rightly the government's obligation: the care for those of low income and no income. It is an injustice that it should carry this burden, for the preparation for the practice of medicine today requires a large outlay for which the physician deserves adequate return. Furthermore, today's practice, with its laboratories and technicians, is carried out at a cost which the physician cannot absorb in a fee that the average family can pay. In solving this problem the medical profession fears governmental control of medical practice. At the same time there is no way in which it can furnish adequate care to low income families except as charity or through taxation. The objection to governmental control might be overcome by the adoption of a three point program: (1) private practice, (2) voluntary insurance, (3) care for the remaining portion of the population through general taxation. In this plan the medical association could enter into contract with the state to supply the needed care and so would control medical practice and become a more efficient force in the prevention of disease. The government would meet the bills, being held responsible as it should be, for the solution of society's problem. The two together could provide adequate working arrangements and would be responsible for their efficacy.

DR KINGSLEY ROBERTS, New York. I believe that we have heard many things that emphasize the importance of bringing community administration into closer contact with the employer sponsored plans because, by the mutuality of interests, the problems raised about the care of the lower income groups become

community problems, and since the management is also on the administration it becomes something that the community and management can learn to try to work out. I think we can realize from what has been said the great need for more data, more statistics to show just what an active health conservation and preventive medical program, in conjunction with these industrial plans, can mean in terms of dollars and cents. When I go to some one like Dr. Garfield and say that I believe one should spend more time in lessening the incidence and severity of disease I would like to be able to pull out of my pocket a ledger which will show Dr. Garfield and Mr. Kaiser and Endicott Johnson and anybody else that by spending money we are lessening the incidence and severity of disease and that by so doing they will ultimately save money for their plans.

DR CHARLES V. CRASFER, Newark, N. J. In Newark for a number of years we had a plan whereby the indigent poor and the near poor were taken care of by a group of physicians who were paid an annual salary. There was so much abuse and so much discontent and various other difficulties in connection with such work that we decided to change, and by arrangement with the state medical society we now have a plan whereby the indigent poor and the medically indigent, as they are called, the lower salary groups, will be taken care of by the city on a payment plan which is much the same as that received by the doctors in their private practice. The indigent poor and the medically poor are allowed to make their own free choice of physicians and the city will pay the fee of these physicians. Of course, the indigent poor are given the service entirely free but the medically poor are investigated by the welfare department and where they are found to be able to pay some part of the fees they are billed for that amount. The plan has been in operation only for the last six months, but so far we feel that it is giving us the answer to a condition which has been troublesome for a number of years.

DR DAVID A. MCCOY, Boston. I was disappointed in the role of preventive medicine in these particular plans. Organized medical control measures are necessary in any industrial plant not only to serve as a stopgap against occupational disease but also to offer a formidable barrier against the nonoccupational diseases which cause so much absenteeism. I don't think any program either locally or nationally will be successful unless this particular branch of the program is developed.

DR C. RUFUS RORER, Chicago. I am director of the Blue Cross Hospital Service Plan Commission. The commission, which is part of the American Hospital Association, has been collecting data on the administration and particularly the administrative operation of the medical plans. It was done with some reluctance, because we felt it was not particularly the province of the Hospital Association to explore this field but the plans were looking for groups which had facilities and some experience to do this. Dr. Wittmer did not say so but I think we can take it for granted that although people pay different sums into the operation of the mutual benefit association the amounts paid on their behalf to doctors are identical. As far as the medical profession is concerned, the payments received on behalf of the low income subscribers are the same as for others. The practice of establishing an income level of \$3,000 in Social Security legislation has been based on the theory that the balance will be made up from some sort of general taxes. There could be a uniform percentage applied to all income groups, even up to \$10,000 (which is, for statistical purposes, the top limit of earnings in the United States) and down to zero. But such a procedure would need to be universal.

DR McCANN. We must not allow the unchallenged assumption that all the problems of medicine are related to reorganizing the profession on a group basis to pass as valid. That is begging the whole question. I was trained at the Mayo Clinic. I know its values. I practiced group medicine for several years after I left. I am now practicing on my own. I have equal devotion to the individual physician practicing by himself. There are fields for both modes of practice. The men who have been long in the practice of group medicine do not say that the whole profession should be reorganized on a group basis. Some say that the base of medical practice is the general practitioner. I think there will be major important diagnostic centers for reference work through the nation, but I think the



backbone of American practice will continue to be the individual practitioner in the community and in the segment of the community where he is immediately available to the family. With regard to preventive medical service if early diagnosis and early treatment will be stimulated by these methods we are contributing to preventive medicine.

DR ADAMS: The discussion this morning has been limited to industrial and state plans but there are several other types of plans which may have more universal application than any of these. First probably would come the plans organized and sponsored by physicians themselves some of which are operating successfully throughout the country, and then other state-wide medical association plans such as in the state of New Jersey. Third are the commercial insurance plans of which there are many one of which is operating satisfactorily in our company. Their rates are considerably higher than in our employee organizations but they are an answer in some states where employee organizations are not permitted.

## THE THERAPEUTIC EFFECT OF PARA-AMINOBENZOIC ACID IN LOUSE BORNE TYPHUS FEVER

LIEUTENANT COMMANDER ANDREW LEOMANS  
(MC), USNR

LIEUTENANT COLONEL J C SNYDER  
MEDICAL CORPS ARMY OF THE UNITED STATES

MAJOR E S MURRAY  
MEDICAL CORPS ARMY OF THE UNITED STATES

CAPTAIN C J D ZARAFONETIS  
MEDICAL CORPS, ARMY OF THE UNITED STATES

AND  
MAJOR R S ECKE  
MEDICAL CORPS ARMY OF THE UNITED STATES

Many efforts have been made to find a substance of therapeutic value in typhus fever. The papers in the literature which cite the effects of various agents have been discussed in a recent editorial.<sup>1</sup> It is our purpose in this report to present the results of the treatment of classic epidemic louse borne typhus fever with para-aminobenzoic acid.

The possible therapeutic value of para-aminobenzoic acid was suggested by Snyder, Maier and Anderson<sup>2</sup> who reported that the mortality of experimental murine typhus in white mice was reduced by the oral administration of the drug. In their experiments approximately 80 per cent of the untreated control mice died of murine typhus after intraperitoneal inoculation of infected yolk sac suspensions (Wilmington strain),<sup>3</sup> whereas more than four fifths of the mice which were

fed on a ration containing para-aminobenzoic acid survived the same infecting dose of yolk sac. Even when the oral administration of para-aminobenzoic acid was started one or two days after the inoculation of rickettsias there was a difference between the treated and the control groups.<sup>4</sup> Although large amounts of para-aminobenzoic acid were required to demonstrate this effect the results were sufficiently encouraging to stimulate the clinical trial of the drug which has been undertaken in the United States of America Typhus Commission ward at the Fever Hospital Cairo Egypt. After the clinical study was in progress we received other reports which extended the observations of the effect of para-aminobenzoic acid in experimental typhus. Andrewes, King and van den Ende,<sup>5</sup> in testing a large number of compounds observed a slight effect when maximal doses of para-aminobenzoic acid were given to mice infected by the intranasal route. Hamilton, Plotz and Smadel<sup>6</sup> noted a definite inhibitory effect of high concentrations of para-aminobenzoic acid on the growth of typhus rickettsias in the yolk sac membrane of developing chick embryos. The results of the experimental work cited are in agreement with the clinical observations which form the basis of this report.

### CLINICAL STUDY OF TYPHUS FEVER IN EGYPT

Through the courtesy of the Egyptian officials the United States of America Typhus Commission established an experimental ward in the Cairo Fever Hospital early in 1943, at the beginning of one of the most severe epidemics of typhus which Egypt has experienced. More than 2000 cases were admitted to the Fever Hospital in May 1943 at the peak of the outbreak. Although the epidemic was less extensive in 1944, there was an excellent opportunity throughout both seasons to study the clinical aspects of the disease.

In order to provide a background for the evaluation of para-aminobenzoic acid therapy, the experience with louse borne typhus cases in 1943 and 1944 is reviewed briefly. All the cases discussed in this report were considered to be certain cases of typhus fever on the basis of clinical evidence. The diagnosis in nearly every instance was supported by definite laboratory results (rise in titer of Weil-Felix and complement fixation tests). In some cases the direct isolation of rickettsias was successful either from blood or from lice fed on the patients during the febrile period. All the strains which have been isolated from patients in the Commission ward have exhibited the characteristics of typical louse borne typhus both in 1943<sup>8</sup> and in 1944.<sup>9</sup>

During the two seasons 159 patients with typhus were admitted to the Commission ward. Of this number there were 44 patients who may be compared with the cases in the treated series, in that they were unvaccinated Egyptian males between the ages of 18 and 48, who entered the ward before the end of the seventh day of illness. They received no therapy other than nursing

From the United States of America Typhus Commission Unit at the Fever Hospital Cairo Egypt.

Lieutenant Colonel Snyder is a member of the staff of the International Health Division of the Rockefeller Foundation on leave.

The supplies of para-aminobenzoic acid were made available by the International Health Division of the Rockefeller Foundation and Dr. Herald R. Cox (Lederle Laboratories).

The authors received generous cooperation from the officials of the Egyptian Ministry of Public Health who facilitated the studies of the United States of America Typhus Commission in Egypt.

The director of the Cairo Fever Hospital Dr. M. A. B. Demerdash Bey made possible the establishment of the United States of America Typhus Commission ward and laboratory in his institution. His extensive experience with typhus his continued interest in the work and his helpful advice and cooperation were of the greatest value.

In 1943 numerous chemical determinations for the causes in this study were performed by the 38th General Hospital laboratory staff.

In 1943 most of the serologic tests for the commission ward were performed by Col. Harry Plotz, M. C. A. U. S. and Capt. B. L. Bennett, M. C. A. U. S. with the technical assistance of Sergeant Gunn.

Technical assistance was given by Sergeants Stephens and Dworkowitz and Corporals Stearnman, Hogan, Cassell and Friedberg in the laboratory work of the commission ward.

<sup>1</sup> Chemotherapy of Murine Typhus editorial J. A. M. A. 125: 633 (July 1) 1944.

<sup>2</sup> Snyder, J. C., Maier, J. and Anderson, C. R. Report to the Division of Medical Sciences, National Research Council, Dec. 26, 1942.

<sup>3</sup> Cox, H. R. Use of Yolk Sac of Developing Chick Embryo as Medium for Growing Rickettsiae of Rocky Mountain Spotted Fever and Typhus Groups. Pub. Health Rep. 53: 2241-2247, 1938.

<sup>4</sup> These experiments were performed in the Laboratories of the International Health Division of the Rockefeller Foundation, New York.

<sup>5</sup> Bayne-Jones, Stanhope. The United States of America Typhus Commission. Army M. Bull. No. 68, pp. 415, July 1943.

<sup>6</sup> Andrewes, C. H., King, H. and van den Ende, M. A. Chemotherapeutic Agent Active Against the Rickettsiae of Typhus. British report from the National Institute for Medical Research, Hampstead, London, 1943, quoted from Hamilton, Plotz and Smadel.

<sup>7</sup> Hamilton, H. L., Plotz, H. and Smadel, J. E. Effect of p-Aminobenzoic Acid on the Growth of Typhus Rickettsiae in the Yolk Sac of the Infected Chick Embryo. report to the Director of the United States of America Typhus Commission, Dec. 16, 1943, to be published.

<sup>8</sup> Letter of Dr. V. H. Topping to the Director of the United States of America Typhus Commission dated Nov. 6, 1943. Plotz, H., Wertman, K. and Bennett, B. L. The Serological Pattern in Epidemic Typhus-Fever. I. The Development of Complement Fixing Antibodies. From the Division of Virus and Rickettsial Diseases, Army Medical School, Army Medical Center, Washington, D. C., December 1943, to be published.

<sup>9</sup> Unpublished observations of the authors.

care, fluids and appropriate measures to combat specific complications which occurred during the course of hospitalization. This group of patients is designated as the "untreated" group.

#### ESTIMATION OF THE SEVERITY OF ILLNESS

After discharge from the hospital each patient was classified on the basis of his clinical course. The principal factors which influenced the estimation of severity were the intensity of subjective symptoms (headache, generalized bodily aches and pains, tinnitus, deafness), the degree of prostration, the extent of central nervous system involvement (mental dullness, stupor, coma, incontinence of urine and feces, abnormal neurologic signs), the severity of cardiovascular system involvement (hypotension, tachycardia, peripheral vascular failure, myocardial damage) and finally occurrence of urinary retention, oliguria, nitrogen retention, bronchopneumonia, otitis media, parotitis, furunculosis and gangrene. With these factors in mind the following classification was made:

B Cases with minimal symptoms and signs, not definitely diagnosed as typhus on clinical evidence.

C Cases of moderate severity, showing slight prostration, central nervous system involvement, cardiovascular changes or mild complications.

TABLE 1—Forty Four Untreated Cases of Typhus Classified According to Clinical Severity\*

| Number and Percentage of Cases in Each Classification |       |       |       |       |
|---|-------|-------|-------|-------|
| B   | C     | D     | E     | F     |
| 1   | 12    | 18    | 5     | 8     |
| (2%)  | (27%) | (41%) | (11%) | (18%) |

\* Unvaccinated Egyptian males aged 18-48 inclusive admitted to the ward in the first week of illness. The criteria of classification are described in the text. This footnote applies also to tables 2, 3, 4 and 6.

D Severe typhus cases with pronounced prostration, central nervous system involvement, cardiovascular changes or serious complications.

E Cases of such severe illness that a fatal outcome was expected at some point in the clinical course.

F Fatal cases.

#### SEVERITY OF "UNTREATED" TYPHUS ILLNESS

The classification of the 44 "untreated" cases is shown in table 1. One case was B, 12 were C, 18 were D, 5 were E and 8 were F. This distribution of severity in the 44 "untreated" cases was parallel with that encountered in the entire experience of our ward as regards unvaccinated "untreated" patients in the same age group, irrespective of the day of illness at the time of admission to the ward. The rarity of mild cases is noteworthy.

#### TREATMENT WITH PARA-AMINOBENZOIC ACID

Twenty cases of typhus were treated with sufficiently large amounts of para-aminobenzoic acid to produce a measurable concentration of the substance in the blood. Before arrangements were made to determine blood levels of para-aminobenzoic acid, 3 patients were given small doses which are considered as entirely inadequate in the light of subsequent studies. Those cases are not included in this report. The treated cases are considered in three groups:

Group 1 Controlled series. 10 patients received para-aminobenzoic acid while the alternate patients were given routine ward care only.

Group 2 Consecutive series. 7 patients were treated with para-aminobenzoic acid, no alternate control cases were included.

Group 3 Miscellaneous cases. a group composed of 2 patients who had been ill with typhus longer than seven days at the time treatment was begun and 1 patient, aged 70, who received para-aminobenzoic acid in the third twenty-four hours of his illness.

*Selection of Patients*—The patients selected for the controlled series and the consecutive series (groups 1 and 2) were unvaccinated males between 18 and 48 years of age, who had no obvious complicating conditions at the time of admission, whose date of onset of illness was clear and who were not later in their disease than the seventh twenty-four hours.<sup>10</sup>

Fifth and sixth day cases were accepted in the study group only if it was possible to make a clinical diagnosis of typhus at the time of inclusion in the series. Earlier cases were accepted without a positive clinical diagnosis at the time of admission if relatives or close personal contacts were known to have had typhus recently. Four cases were obtained from a group of family contacts who reported to the ward daily, their onset of illness actually occurred while they were under observation.

In the controlled series the decision as to which patients would receive para-aminobenzoic acid was made automatically. Alternate patients were treated in the order in which they entered the hospital. Two exceptions to this rule occurred. The series was interrupted by error when 2 patients were treated consecutively and by arbitrary decision when a man whose wife and father both died of typhus was treated with para-aminobenzoic acid although the series required a control (case 6921).

*Plan of Treatment*—In all instances para-aminobenzoic acid was administered by mouth. The initial dose varied from 4 to 8 Gm. In the majority of cases the initial dose was followed by 2 Gm. every two hours unless the concentration in the blood attained excessive values. Adjustments in dosage were made in relation to fluid intake and urinary output. The fluid intake in nearly all instances was adequate to maintain the output of urine between 1,500 and 3,000 cc. in twenty-four hours.

The effort was made to keep the concentration of para-aminobenzoic acid in the blood between 10 and 20 mg. per hundred cubic centimeters. Para-aminobenzoic acid is absorbed and excreted very rapidly, so that a two hourly schedule of administration was decided on as that most likely to produce a relatively constant blood level. Determinations made at various times during treatment indicated that the two hourly schedule was effective in maintaining a satisfactory concentration of para-aminobenzoic acid throughout the period of therapy.

Para-aminobenzoic acid was continued for varying lengths of time in the first cases. Subsequently it was decided that treatment should be continued until the patient's rectal temperature was 37.5 C (99.5 F) or less for twenty-four hours. The average amount of

10 The study was restricted to cases in the first week of illness for two principal reasons. The response to para-aminobenzoic acid in the first few cases was not apparent for several days. There was no abrupt dramatic change such as that produced by sulfonamide drugs in pneumococcal pneumonia, for example. It seemed unlikely that late cases could be treated with any prospect of evaluation of results unless a very much larger group of cases could be observed than the commission would accommodate. Furthermore, the great majority of cases in an epidemic can be diagnosed by the end of the seventh day. This time was arbitrarily chosen therefore as the basis of selection of cases.

para-aminobenzoic acid for each case (groups 1 and 2) was approximately 127 Gm. The patients who are the subject of discussion in this study received para-aminobenzoic acid for at least three days.

Nausea and vomiting attributable to para-aminobenzoic acid occurred in the first few cases. Thereafter in order to lessen gastric irritation, sufficient sodium bicarbonate was given to neutralize the para-aminobenzoic acid. The acidity of the urine was determined at least once daily during para-aminobenzoic acid therapy. The amount of sodium bicarbonate was varied as required to keep the urine approximately neutral in reaction. After this plan was adopted, vomiting was encountered very infrequently.

Para-aminobenzoic acid was available in tablets of 0.5 Gm each and in capsules of 0.3 Gm each. Neither form was suitable for administration to typhus patients who could not be persuaded to swallow the large number of tablets or capsules required for each dose, but they took powdered para-aminobenzoic acid readily if it was suspended in water or partially dissolved in a sufficient volume of 5 per cent sodium bicarbonate solution to render the mixture slightly alkaline. The usual amount was 2 Gm of powdered para-aminobenzoic acid with 25 cc of sodium bicarbonate solution. After swallowing the mixture, the patient was quickly

TABLE 2—Comparison of the Clinical Severity of Nine "Untreated" Control Cases and Ten Cases Treated with Para-Aminobenzoic Acid in Group 1

|   | Number and Percentage of Patients in Each Classification |            |            |            |            |
|---|--|------------|------------|------------|------------|
|   | B  | C          | D          | E          | F          |
| Untreated control cases                   | 0  | 1<br>(11%) | 3<br>(33%) | 1<br>(11%) | 4<br>(44%) |
| Cases treated with para-aminobenzoic acid | 5<br>(50%)   | 1<br>(10%) | 1<br>(10%) | 0          | 0          |

given water to take away the slightly unpleasant taste of the drug. This method of administration was entirely satisfactory in most instances. Two patients, however, took their initial doses with difficulty, and no further attempt was made to treat them because of their uncooperative attitude. They have not been included in this report.

**Method of Determination of Para-Aminobenzoic Acid in the Blood.**—The blood levels refer to free para-aminobenzoic acid as determined by Marshall's and Litchfield's procedure for sulfanilamide.<sup>11</sup> The standard solution of sulfanilamide was replaced by a standard of para-aminobenzoic acid. For some of the tests a Dubosq colorimeter was used, for the majority, however, a Coleman spectrophotometer was employed.

**The Results of Treatment with Para-Aminobenzoic Acid.**—In group 1, of the 10 patients who received para-aminobenzoic acid, 8 were classified as B cases, 1 was C and 1 was D. Of the 9 alternate control cases, 1 was C, 3 were D, 1 was E and 4 were F (table 2). The temperature charts of the patients in group 1 are shown in charts 1 and 2. All temperatures were taken rectally, with a single exception, patient 5768, chart 2, the values for the nineteenth day to the twenty-fourth day indicating oral temperatures. The solid line beneath the temperature curve shows the period of administration of para-aminobenzoic acid.

**Group 2.** The results of this consecutive series are similar to those in group 1. Of 7 cases, 3 were B, 3 were C and 1 was D. Temperature curves are shown in chart 3. The temperature curve of a typical untreated case (12412) appears at the top of chart 2 for comparison with the para-aminobenzoic acid cases.

The 17 cases in groups 1 and 2 are contrasted with the 44 "untreated" cases in table 3, which shows the incidence of clinical severity in the two groups.

**Group 3.** Two patients in this group were treated for the purpose of extending the experience with para-aminobenzoic acid to patients admitted in the eighth and ninth day of illness. One patient (6546) was started

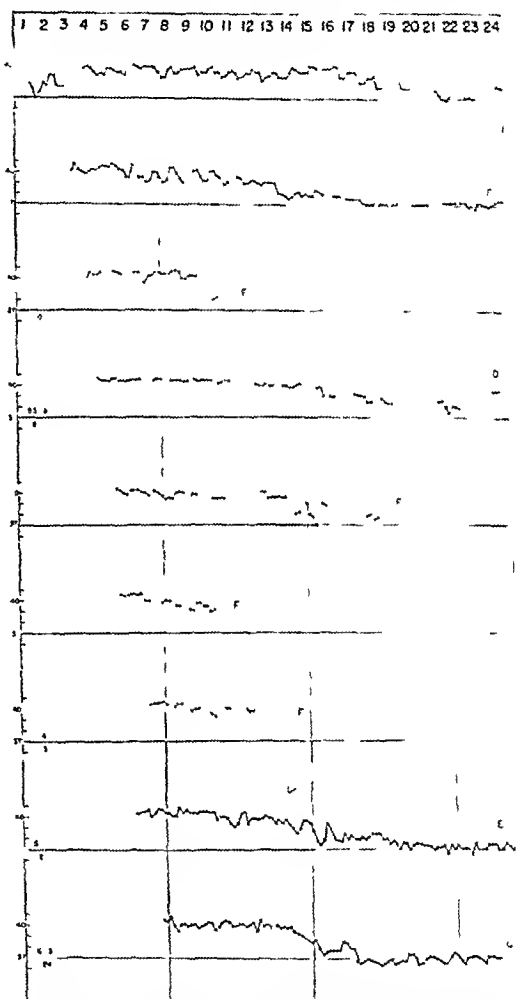


Chart 1—Group 1 controls. Temperature charts of 9 untreated control typhus patients arranged according to the day of illness at the time of admission to the hospital. The clinical classification of severity appears at the end of the fever curve. Values indicate rectal temperature in degrees centigrade. The numbers across the top of the chart refer to the day of illness. The hospital number and age of the patient appear at the beginning of each temperature curve.

on para-aminobenzoic acid in his ninth day. He became progressively worse and died on the thirteenth day.

Patient 7100, admitted at the end of his eighth day of illness, was severely dehydrated. His urine contained many red cells on admission but these disappeared in the next two days. The clinical course was complicated by a secondary rise in temperature associated with pain in the right flank, which may have been related to previous renal or ureteral disease.

Finally, patient 6811, a man aged 70, was given para-aminobenzoic acid in the third twenty-four hours of

<sup>11</sup> Marshall and Litchfield, quoted from technical manual *Methods for Laboratory Technicians*, War Department, Oct. 17, 1941, p. 134.

his illness to ascertain whether para-aminobenzoic acid would affect the outcome. The patient died on the eleventh day, aspiration of para-aminobenzoic acid and sodium bicarbonate may have contributed to the death of this patient. His case is discussed later. Temperature curves are shown in chart 4.

The pathology of the 2 fatal cases in this group will be described in a later United States of America Typhus Commission report by Lieut Comdr W B McAllister Jr (MC), USNR.

The experience with para-aminobenzoic acid is summarized in tables 4 and 5, which show the clinical

15080) No rash was seen at any time in 2 of the treated patients whose skins were very dark (5247 and 15000).

It was interesting to note that 2 patients who were treated in the second and third day of illness nevertheless developed a rash which was distinctive of louse borne typhus in every particular except that the lesions were relatively few in number and tended to disappear quickly.

*Effect of Para-Aminobenzoic Acid on the White Blood Cells*—One patient, not tabulated in the series, developed a low white blood cell count (2,900) after twenty-four hours of treatment, and para-aminobenzoic acid therapy was discontinued. One other patient, 6540, likewise developed a low white blood cell count (2,950) but in his case the low count did not occur.

TABLE 3—Comparison of the Clinical Severity of Forty Four Untreated Cases and Seventeen Cases Treated with Para Aminobenzoic Acid in Groups 1 and 2 Combined

|   | Number and Percentage of Patients in Each Classification |             |             |            |            |
|---|--|-------------|-------------|------------|------------|
|   | B  | C           | D           | E          | F          |
| 44 untreated cases                            | 1<br>(2%)  | 17<br>(39%) | 18<br>(41%) | 5<br>(11%) | 8<br>(18%) |
| 17 cases treated with para amino benzoic acid | 11<br>(65%)  | 4<br>(24%)  | 2<br>(12%)  | 0          | 0          |

TABLE 4—Comparison of the Average Duration of Fever\* and Clinical Severity of Forty Four 'Untreated' Cases and Seventeen Cases Treated with Para-Aminobenzoic Acid (Groups 1 and 2)

| Classification of Severity     | Average Duration of Fever Days |   |  |
|--------------------------------|--------------------------------|---|--|
|                                | Forty Four Untreated Cases     | Seventeen Cases Treated with Para Aminobenzoic Acid |  |
|                                |                                | Primary Continuous Febrile Period Only              | Primary and Secondary Febrile Periods Combined |
| B                              | 18                             | 11  | 11   |
| C                              | 13                             | 11  | 13   |
| D                              | 19                             | 10  | 14   |
| E                              | 23.5<br>(13)                   |   |  |
| Average for all cases except F | 18.5                           | 11  | 13.5   |

\* A rectal temperature above 38.5 C (101.5 F) is considered as evidence of fever.

until he had been afebrile for two days. Para-aminobenzoic acid had been discontinued twenty-four hours before the low value was obtained. The count fell further to 1,850 and rose thereafter to 3,500 at the time of discharge. The return of the white blood cell count toward normal values was slow in both patients, but neither one showed any other evidence of untoward drug reaction, and both had a mild, uncomplicated course. The differential count did not reveal any significant alteration in the relative percentages of polymorphonuclear leukocytes and lymphocytes. In the other para-aminobenzoic acid cases a tendency for the white blood cell count to drop to values between 5,000 and 3,500 was observed.

*Effect of Para-Aminobenzoic Acid on Red Blood Cells and Hemoglobin*—No changes in red cell count or hemoglobin estimation were encountered in the para-aminobenzoic acid cases that were not consistent with typhus.

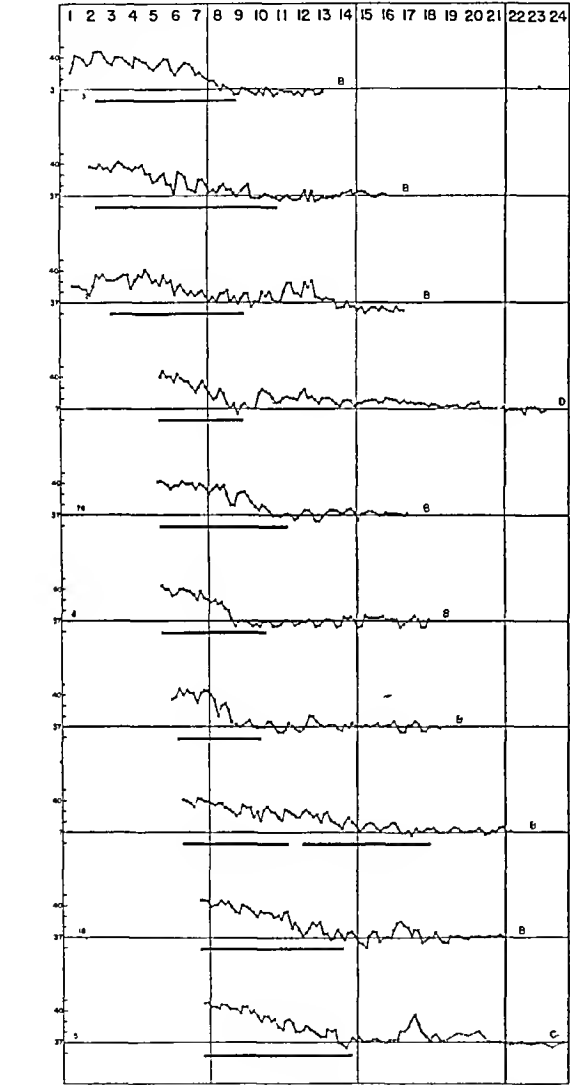


Chart 2—Group 1 para aminobenzoic acid cases. Temperature charts of 10 typhus patients who received para aminobenzoic acid arranged according to day of illness at the time para aminobenzoic acid was started. The period of administration of para aminobenzoic acid is indicated by the heavy line beneath the temperature curve. The clinical classification of severity appears at the end of the fever curve. Values indicate rectal temperature in degrees centigrade. The numbers across the top of the chart refer to the day of illness. The hospital number and age of the patient appear at the beginning of each temperature curve.

severity, duration of fever, total amount of para-amino-benzoic acid, complications and laboratory data.

*Effect of Para-Aminobenzoic Acid on the Rash of Typhus*—Fifteen patients who received para-amino-benzoic acid had a definite rash, which was not as extensive, however, as that seen in the majority of "untreated" patients. The rash was considered to be questionable in 3 treated patients (4622, 14868 and

**Effect of Para-Aminobenzoic Acid on Kidney Function**—There was no evidence in any of the para-aminobenzoic acid cases that the drug had produced renal complications. Indeed the low incidence of nitrogen retention<sup>12</sup> (12 per cent) in the treated cases (groups 1 and 2) as contrasted to that in the "untreated" cases (44 per cent) suggests that para-aminobenzoic acid may prevent renal damage in typhus. This subject receives further consideration in the comment.

**Secondary Rise in Temperature**—In 9 cases, after the temperature had declined either to normal or at least to a point definitely below the expected value for typhus cases, para-aminobenzoic acid was discontinued.

A secondary rise in temperature was then observed, varying from minimal brief elevations above normal to moderately high fever of several days' duration. When this phenomenon was first encountered, several explanations were considered: (a) that it represented a recurrence of typhus, that is to say, a release phenomenon related to the premature withdrawal of the inhibitory effect of para-aminobenzoic acid on the typhus rickettsias, (b) that there might be complicating infections, (c) that the fever was attributable to para-aminobenzoic acid alone. After careful survey of all

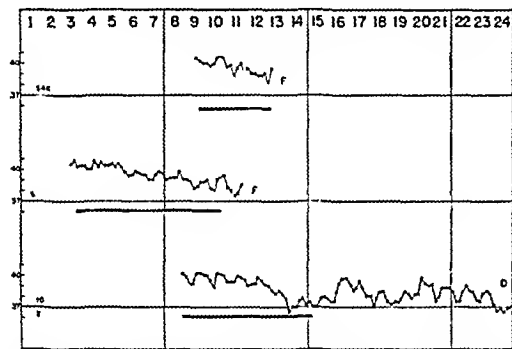


Chart 3—Group 3 para aminobenzoic acid cases. Temperature charts of 3 typhus patients who received para aminobenzoic acid. Other details are explained in the description of chart 2.

the information available, it seems likely that the secondary rise was a manifestation of typhus, as postulated in *a*. Unfortunately this point was not investigated by inoculation of animals with blood taken during the secondary febrile period. One patient, 5768, had an exacerbation of chronic amebic dysentery, which offers a possible explanation of the secondary fever, although the latter did not closely coincide with the onset of diarrhea.

The high incidence of secondary febrile periods raises the question whether therapy was adequate in amount and duration. The patients who developed the secondary fever might have had such a widespread dissemination of rickettsias that they would have been D, E or F cases if untreated and might have required longer, more intensive treatment with para-aminobenzoic acid for elimination of the secondary rise in temperature.

A striking feature of the secondary febrile period was the paucity of symptoms and signs of typhus of a degree comparable to the height of the temperature. Mild headache and slight anorexia were the only constant complaints.

<sup>12</sup> Blood nonprotein nitrogen values of 45 mg per hundred cubic centimeters or higher are interpreted as evidence of nitrogen retention. Among the 44 untreated cases blood nonprotein nitrogen determinations were made in 12 cases. Of these 14 or 44 per cent were greater than 45 mg per hundred cubic centimeters at some period in the course of the illness.

**Importance of Early Treatment**—The best results were obtained when para-aminobenzoic acid was started on the second and third days of illness. Some effect was noted when treatment was begun as late as the seventh day. In this study the only ninth day patient who was treated 6546 died on the thirteenth day despite large doses of para-aminobenzoic acid. It is clear that a very much more extensive experience with para-aminobenzoic acid would be required to define the limits within which beneficial results might be expected. The importance of early treatment is quite obvious, however.

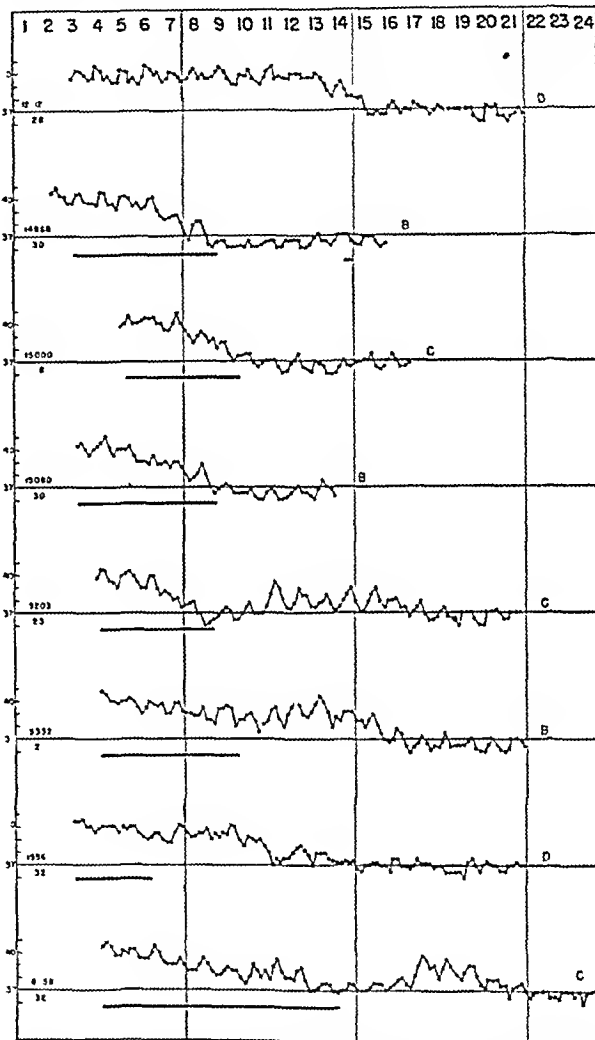


Chart 4—Group 2 para aminobenzoic acid cases. Temperature charts of 7 cases of typhus treated with para aminobenzoic acid consecutively without alternate control cases. A typical fever chart of an untreated patient 12412 appears at the top of the chart for comparison with the treated cases. Other details are explained in the description of chart 2.

**Influence of Age on Results Obtained with Para-Aminobenzoic Acid**—Only 1 patient was given para-aminobenzoic acid who was outside the 18 to 48 age group. This patient was 70 years old, and treatment was started on the third day of illness. Although he received a large amount of para-aminobenzoic acid, the patient died. His case is discussed later.

Within the 18 to 48 age group, among the cases treated before the end of the seventh day of illness, the increase in age is not associated with increase in severity of illness. In the treated series the average age in the B cases is 29 years, C cases 27 years and



D cases 26 years In the "untreated" series the average age in C and D cases is 25 years, in E cases 26 years and in F cases 33 years Table 6 shows the relation of average age to clinical severity for both groups

**Contraindications to Para-Aminobenzoic Acid Therapy**—A white blood cell count below 3,000 has been regarded as a definite contraindication to further para-aminobenzoic acid therapy Since there was a general tendency toward leukopenia, and since 2 patients had counts below 3,000, it is important to obtain daily white blood cell counts during the administration of para-aminobenzoic acid

In the presence of severe dehydration and oliguria the usual plan of treatment (initial dose of 4 to 8 Gm

In 3 instances very high concentrations of para-aminobenzoic acid in the blood were encountered The maximum value in the series was 49 mg per hundred cubic centimeters One patient became very drowsy and disoriented when his blood level was approximately 40 mg per hundred cubic centimeters Another patient became delirious when his blood level was 35 mg per hundred cubic centimeters Although these findings could be ascribed solely to typhus, nevertheless they were regarded as toxic manifestations of para-aminobenzoic acid because they promptly disappeared when the blood level fell to a low value

If a patient is too weak or stuporous to swallow properly, the administration of para-aminobenzoic acid

TABLE 5—Summary of the Data from Twenty Cases Treated with Para-Aminobenzoic Acid<sup>1</sup>

| Case No | Age Years | Body Weight Lb | Duration of Illness When Treatment Began Days | Duration of Treatment Days | Total Amount Para-Amino benzoic Acid Given Gm | Duration of Convalescence Days | Duration of Secondary Fever Days | Lowest W B C per Cu Mm | Maximum N P N, % | Maximum Titer |                     |                | Complications  | Severity |
|---------|-----------|----------------|---|----------------------------|---|--------------------------------|----------------------------------|------------------------|------------------|---------------|---------------------|----------------|--|----------|
|         |           |                |   |                            |   |                                |                                  |                        |                  | Well Cells    | Complement Fixation |                |  |          |
|         |           |                |   |                            |   |                                |                                  |                        |                  |               | 1 pick mfe          | Murine         |  |          |
| 4672    | 23        | 135            | 2   | 6½                         | 163   | 8                              | 0                                | 7,800                  | 30               | 640           | 10 <sup>24</sup>    | 1 <sup>c</sup> | None   | B        |
| 6921    | 32        | 119            | 2   | 3½                         | 182   | 0                              | 0                                | 3,800                  | 31               | 640           | 31 <sup>a</sup>     | Neg            | None   | B        |
| 5862    | 30        | 132            | 3   | 6                          | 154   | 1 <sup>a</sup>                 | 0                                | 1,900                  | 21               | 1,280         | 1 <sup>a</sup>      | Neg            | None   | B        |
| 14808   | 30        | 109            | 3   | 6                          | 79  | 8                              | 0                                | 3,800                  | 35               | 1,280         | 24                  | Neg            | None   | B        |
| 15061   | 2         | 123            | 3   | 3                          | 0   | 1                              | 0                                | 4,700                  | 63               | 640           | 10 <sup>24</sup>    | 2 <sup>a</sup> | Nitrogen retention + ophthalmitis  | D        |
| 15090   | 30        | 108            | 3   | 5½                         | 92  | 8                              | 0                                | 1,200                  | 30               | 640           | 10 <sup>24</sup>    | Neg            | None   | B        |
| 1532    | 21        | 109            | 4   | 6                          | 81  | 10                             | 0                                | 600                    | 39               | 1,280         | 10 <sup>24</sup>    | 1 <sup>c</sup> | Otitis media dental abscess  | B        |
| 15703   | 23        | 114            | 4   | 4½                         | 87  | 8                              | 8                                | 6,000                  | 6                | 640           | 10 <sup>24</sup>    | Neg            | None   | C        |
| 1678    | 2         | 135            | 1   | 9½                         | 210   | 1                              | 6                                | 1,000                  | 16               | 2,000         | 10 <sup>24</sup>    | Neg            | None   | C        |
| 15000   | 15        | 100            | 5   | 4½                         | 70  | 9                              | 0                                | 6,000                  | 19               | 10,240        | 21                  | Neg            | None   | C        |
| 6927    | 20        | 13             | 5   | 4                          | 91  | 8                              | 8                                | 6,600                  | 29               | 1,280         | 10 <sup>24</sup>    | Neg            | Bronehopneumonia + transient heart failure + para amino benzoic acid intoxication    | D        |
| 5787    | 22        | 137            | 5   | 6                          | 146   | 10                             | 0                                | 5,000                  | 17               | 1,280         | 10 <sup>24</sup>    | Neg            | None   | B        |
| 6640    | 30        | 128            | 5   | 5                          | 115   | 8                              | 0                                | 1,800                  | 3                | 5,120         | 10 <sup>24</sup>    | 5              | None   | B        |
| 5247    | 28        | 125            | 6   | 4                          | 100   | 0                              | 1                                | 6,100                  | 4                | 2,000         | 10 <sup>24</sup>    | 2 <sup>a</sup> | None   | B        |
| 5980    | 30        | 117            | 6   | 11                         | 105   | 16                             | 0                                | 4,900                  | 31               | 1,280         | 10 <sup>24</sup> *  | Neg            | ? Para aminobenzoic acid intoxication  | B        |
| 6183    | 48        | 137            | 7   | 6½                         | 148   | 17                             | 2                                | 7,200                  | 9                | 80            | 10 <sup>24</sup>    | Neg            | Mild renal insufficiency   | B        |
| 6168    | 35        | 110            | 7   | 7                          | 101   | 13                             | 4                                | 400                    | 46               | 160           | 10 <sup>24</sup> *  | 2 <sup>a</sup> | Nitrogen retention + exacerbation of chronic anemic dysentery                        | C        |
| 6546    | 5         | 122            | 9   | 16                         | 71  | 13                             |                                  | 1,100                  | 74               | 1,280*        | Neg                 | Neg            | Nitrogen retention +   | F        |
| 6811    | 70        | 190            | 5   | 7                          | 103   | 11                             |                                  | 4,000                  | 6                | Neg           | 1 <sup>a</sup>      | Neg            | Nitrogen retention + broncho pneumonia peripheral vascular fullness acute tracheitis | F        |
| 7100    | 21        | 91             | 8   | 6½                         | 104   | 23                             | 0                                | 5,500                  | 45               | 1,900*        | 10 <sup>24</sup>    | Neg            | Nitrogen retention + ? chronic renal or ureteral disease                             | D        |

1 Groups 1 and 2 are arranged together according to the day of disease when treatment was started Group 3 cases appear separately at the end of the table  
2 The serologic results indicate the maximum titers obtained from a series of serum samples taken at frequent intervals throughout the period of hospitalization However, a complete series was not available for test in cases 14808 15000 15090 15703 and 15707 It is probable that somewhat higher titers would have been obtained if more samples had been tested in these cases  
3 When high blood levels of para aminobenzoic acid were encountered the total nonprotein value has been corrected for the nonprotein nitrogen contributed by the presence of para aminobenzoic acid  
4 Blood nonprotein nitrogen values of 45 mg per hundred cubic centimeters or higher are interpreted as evidence of nitrogen retention in this report  
5 This symbol indicates that the end point was not reached the value being the highest dilution tested

of para-aminobenzoic acid followed by 2 Gm every two hours) is likely to produce excessively high blood levels Until the output of urine has been brought at

TABLE 6—Comparison of the Average Age and Clinical Severity of Forty-Four Untreated Cases and Seventeen Cases Treated with Para-Aminobenzoic Acid (Groups 1 and 2)

| Classification of Severity | Average Age        |  |
|----------------------------|--------------------|--|
|                            | 44 Untreated Cases | 17 Cases Treated with Para Aminobenzoic Acid |
| B                          | 18                 | 29   |
| C                          | 25                 | 27   |
| D                          | 34                 | 26   |
| E                          | 26                 |  |
| F                          | 33                 |  |

least to 1,500 cc in twenty-four hours, the schedule of dosage should be modified according to the values obtained by frequent determinations of the blood level

by mouth should not be attempted since there is the possible danger of severe tracheitis from aspiration of the drug One patient 6811, aged 70, became so prostrated that he was unable to swallow rapidly As a consequence of overzealous nursing he probably aspirated a fairly large amount of para-aminobenzoic acid and sodium bicarbonate Oral therapy was discontinued as soon as this was discovered and penicillin was administered, but the patient died twenty-four hours later At autopsy there was a minimal amount of pneumonitis, the principal finding was intense tracheitis and bronchitis, which was attributed largely to the aspiration of para-aminobenzoic acid and sodium bicarbonate Although a stomach tube was not employed for the administration of para-aminobenzoic acid in the cases in this series, it is possible that the severe tracheitis of patient 6811 might have been avoided if a tube had been passed when difficulty in swallowing first developed

Early in the experience with para-aminobenzoic acid it was considered that the presence or the development of a bacterial infection might constitute a contraindication to para-aminobenzoic acid therapy. For example treatment with para-aminobenzoic acid was terminated in patient 15564 when he developed suppurative ophthalmia as a complication of late stage trachoma. It is not possible, however to conclude that bacterial infections actually constitute a contraindication to para-aminobenzoic acid on the basis of the experience gained from the observation of the 20 cases in this study. At the present time the view is held that para-aminobenzoic acid probably should be continued in cases of typhus despite the occurrence of secondary bacterial infections.

*The Use of Penicillin for the Treatment of Typhus Complicated by Bacterial Infections*—If organisms susceptible to the action of penicillin are encountered in secondary bacterial infections which may complicate typhus the use of penicillin to supplement but not to replace para-aminobenzoic acid therapy is recommended rather than sulfonamide drugs for several reasons. (a) Sulfonamide drugs in experimental typhus seem to have a deleterious effect,<sup>2</sup> (b) para-aminobenzoic acid inhibits the action of sulfonamide drugs on bacteria in vitro, a fact which prompts the prediction that sulfonamide drugs would be ineffective against secondary bacterial infections when administered in the presence of a high blood concentration of para-aminobenzoic acid, (c) penicillin has been found to exert a beneficial effect in experimental typhus by Pinkerton and his co-workers, both in mice and in the infected yolk sacs of developing chick embryos.<sup>12</sup> Clinical trial of penicillin primarily for the treatment of louse borne typhus in the Commission ward has been attempted in 4 cases. It is not possible to decide on the basis of such a limited experience whether penicillin, given early and in large amounts, does or does not affect the course of typhus itself. Nevertheless, by reducing or eliminating bacterial infections penicillin may offer considerable help to a seriously ill patient who would not otherwise survive the extra burden of a bacterial infection superimposed on that of typhus.

*Optimum Dosage of Para-Aminobenzoic Acid*—At this time it is not possible to draw any conclusions as to the optimum dosage of para-aminobenzoic acid. It can be stated on the basis of this study that the patients who received the arbitrarily chosen dosage had relatively mild typhus. Whether the amount of para-aminobenzoic acid was excessive or minimal is not known.

#### COMMENT

The experience through two seasons in Egypt has clearly shown the very low incidence of mild cases of typhus in the "untreated" Egyptian patients in the 18 to 48 age group who were admitted to the Fever Hospital. Only 1 such case was encountered among 44 'untreated' patients in the Commission ward, whereas fatal cases were 18 per cent of the total. By contrast, it was very striking to find 11 mild or B cases in the same group when para-aminobenzoic acid was given before the end of the seventh day of illness among 17

patients none of whom died. At the time the patients in group 1 were being studied, the mortality from typhus among the unvaccinated male patients aged 18 to 48 inclusive in the general wards of the Fever Hospital was 30 per cent. Furthermore there were four deaths among 9 "untreated" cases of group 1 in the Commission ward. There can be no question that the typhus which prevailed during the period covered by this study was very severe. The high incidence of mild cases in the treated groups was therefore all the more impressive.

The length of time between the onset of illness and discharge from the hospital provides another demonstration of the difference in severity of illness between untreated cases and para-aminobenzoic acid cases (groups 1 and 2). For the untreated group the average was thirty-two days, for the para-aminobenzoic acid cases only twenty-one days. The figures do not include fatal cases.

Close daily observation of the patients convinced us more than scrutiny of fever curves or tabulations of frequency of complications that para-aminobenzoic acid lessened the severity of typhus. The treated patients developed few of the troublesome complications which make typhus cases so difficult for the nursing staff. The low incidence of prostration stupor, convulsions, blood pressure urinary retention, oliguria, nitrogen retention and incontinence of urine and feces which are so prominent in the untreated cases was particularly impressive from the clinical point of view.

The drug appears to be quite safe for human administration. High blood levels (up to 49 mg per hundred cubic centimeters) were accompanied by minimal constitutional effects. No detectable impairment of kidney function attributable to para-aminobenzoic acid was encountered in any of the cases. That typhus frequently produced severe impairment of renal function was a characteristic observation in the experience of the Commission ward. Therefore, any agent which might augment the tendency of typhus to produce oliguria and nitrogen retention is to be regarded with great suspicion. The absence of any undesirable effect of para-aminobenzoic acid on kidney function in this series is a very reassuring finding.

We wish to emphasize our conviction that a careful daily record of the fluid intake and urinary output is necessary in the care of the typhus patient. In our experience nitrogen retention, with or without oliguria is the most serious development which may occur in typhus from the prognostic point of view. Without exception the fatal cases of typhus in which the blood chemistry was studied by the Commission, whether in the Commission ward or in the general wards of the Fever Hospital, showed a pronounced elevation of non-protein nitrogen. Forty-four per cent of the 'untreated' cases in the Commission study despite the vigorous administration of fluids (4 to 5 liters daily), exhibited some elevation of nonprotein nitrogen in the blood. Daily examination of the urine, continuous observation of the fluid intake, the output and specific gravity of the urine, as well as determinations of the blood non-protein nitrogen, plasma proteins, hematocrit and urea clearance, aid in the evaluation of renal insufficiency in typhus. This subject will be treated in greater detail in a later report of the United States of America Typhus Commission.

<sup>12</sup> Greiff, D. and Pinkerton, H. Inhibition of Growth of Typhus Rickettsiae in the Yolk Sac by Penicillin. *Proc. Soc. Exper. Biol. & Med.* 55: 116-119, 1944. Moragues, A., Pinkerton, H. and Greiff, D. Therapeutic Effectiveness of Penicillin in Experimental Murine Typhus Infection in *Alba Mice*. *J. Exper. Med.* 70: 431-437, 1944.

*Speculations on the Mode of Action of Para-Aminobenzoic Acid*—The rickettsias of typhus are known to multiply inside the endothelial cells of small blood vessels. It is in these cells that they have been demonstrated in tissues from human autopsies.<sup>14</sup> Multiplication of rickettsias outside living cells has not been proved. In one experiment the direct exposure of rickettsias to a concentration of 50 mg of para-aminobenzoic acid per hundred cubic centimeters for one hour at 38 C (100.4 F) had no effect on their virulence for animals.<sup>15</sup> This suggests that para-aminobenzoic acid does not act directly on rickettsias. The clinical data are consistent with this observation. The treated cases did not show a rapid improvement following the administration of para-aminobenzoic acid. The usual finding was that the progress of the disease was arrested and that the patients did not become appreciably sicker than they were at the time treatment was instituted. In the course of four to six days the temperature fell and considerable improvement in condition was apparent, as though the natural defenses of the body had finally disposed of the rickettsias. The hypothesis which best fits this sequence of events is that para-aminobenzoic acid inhibits the multiplication of rickettsias inside the cells, thereby permitting the immunity mechanisms of the body to dispose of them, whereupon the vascular lesions begin to heal. If para-aminobenzoic acid is withdrawn before the immunity mechanisms have finally disposed of the rickettsias, these latent, previously inhibited organisms may then resume their growth and cause an increase in size of the lesions or even the formation of new lesions. The secondary febrile periods which occurred in half the para-aminobenzoic acid treated cases may be explained on the basis of this hypothesis. The usual finding, that the rash of treated cases was less extensive, likewise supports the "inhibition hypothesis." However, it should be noted that in 2 cases a definite rash appeared despite the fact that para-aminobenzoic acid was given very early in the course of the disease. This is regarded as evidence that para-aminobenzoic acid did not completely inhibit the progression of lesions which had already been established.

Para-aminobenzoic acid plays a most important role in the metabolism of many micro-organisms which ordinarily multiply outside the cells of the body. The inhibitory effect of para-aminobenzoic acid on the growth of rickettsias, which are obligate intracellular organisms, opens a wide field for speculation on the metabolism not only of rickettsias but of other intracellular micro-organisms as well. Perhaps para-aminobenzoic acid alters an intracellular enzyme system in such a way as to render the cytoplasm unsuitable for multiplication, possibly by blocking the formation of an essential metabolite which rickettsias are unable to synthesize for themselves.

It is also possible that the action of para-aminobenzoic acid is related to the mechanisms by which rickettsial toxic substances are combated. In this regard it may be pointed out that the patients who received para-aminobenzoic acid did not have the usual degree of prostration and "toxicity" which are part of the picture of typhus. Moreover, such a hypothesis may offer an explanation of the very low incidence, in the treated

cases, of impairment of renal function, the importance of which is stressed elsewhere in this communication. For the purpose of our speculations we may postulate a hypothetical effect of rickettsial toxic substances on the kidney, resulting in impairment of renal function. If para-aminobenzoic acid plays a role in the detoxification mechanisms, this may explain the low incidence of nitrogen retention in the treated cases as contrasted to the high incidence in the "untreated" cases. However, there are other obvious considerations which are probably important in the development of the renal insufficiency in typhus, for example actual lesions in the kidney, severe hypotension and dehydration.

The material which is available for analysis does not permit the selection of a single hypothesis to explain our observations on the effect of para-aminobenzoic acid in typhus. Obviously a great deal of work is indicated on the problem of the mode of action of para-aminobenzoic acid.

The results of this study provide other subjects for speculation. Can compounds closely related to para-aminobenzoic acid be found which are even more effective? What is the scope of usefulness of para-aminobenzoic acid therapy in the face of an outbreak of typhus? What is the optimum dosage and plan of administration? What untoward reactions and complications may be expected? Will the course of other rickettsial diseases of man be favorably affected by para-aminobenzoic acid or closely related substances?

#### SUMMARY AND CONCLUSIONS

Twenty cases of louse borne typhus have been treated with para-aminobenzoic acid. Their clinical course has been compared with that of 44 "untreated" cases. The data from this study show that

- 1 Large amounts of para-aminobenzoic acid were administered with ease to patients suffering from typhus.

- 2 There were no unfavorable effects when para-aminobenzoic acid was properly administered with the exception of a tendency to develop a low white blood cell count.

- 3 When treatment was started in the first week of illness, the clinical course of the patients who received para-aminobenzoic acid was much less severe than that of the "untreated" patients. The average duration of fever was considerably shorter in the treated group.

It is concluded that large doses of para-aminobenzoic acid exert a definite beneficial effect on the course of louse borne typhus if treatment is started in the first week of illness.

---

**Cosmic Doctrine of Aristotle**—The cosmic doctrine of Aristotle holds that the world is a living being having a soul. Since everything created is for some particular purpose, the body of man is evolved as the habitat of the soul. Matter is composed of five elements: earth, air, water, fire and ether. Every element must be looked on as living, since it is pervaded by the soul of the universe, there is an unbroken chain from the simple elements through plant and animal up to man, the different groups merging by insensible shades into one another. Plants are inferior to animals inasmuch as they do not possess a single principle of life or soul but many subordinate ones as is shown by the circumstance that when they are cut to pieces each piece is capable of independent growth or life.—Gordon Benjamin Lee. *The Romance of Medicine*, Philadelphia, F. A. Davis Company, 1944.

14 Wollbach, S. B., Todd, J. L. and Palfrey, T. W. *The Etiology and Pathology of Typhus*. Cambridge, Mass. Harvard University Press, 1922.

15 Snyder, J. C. Unpublished observation.

THE BIOSYNTHESIS OF RIBOFLAVIN  
IN MANVICTOR A. NAJJAR, MD  
GEORGE A. JOHNS, MD  
GEORGE C. MEDAIRD, MD  
GERTRUDE FLEISCHMAN, MD  
AND  
L. EMMETT HOLT, JR., MD  
BALTIMORE

It is clearly established that micro-organisms present in the rumen of ruminant animals will synthesize riboflavin in quantities sufficient to supply the requirements for this factor<sup>1</sup>. Biosynthesis of riboflavin has also been demonstrated in the cecum of the rat<sup>2</sup> but in this omnivorous animal the phenomenon is conditioned by the diet, and only under particular conditions is it sufficient to furnish the requirements. Although it seems reasonably clear that riboflavin deficiency does occur in man, it is by no means clear that it always develops whenever the diet is deficient in riboflavin. The possibility that under given dietary conditions the intestinal bacteria of man might synthesize riboflavin, providing protection against deficiency, has never been evaluated. It is our purpose in the present report to describe experiments which demonstrate clearly the biosynthesis of riboflavin in the human intestinal tract—and in considerable quantities.

## EXPERIMENTAL

Observations were made on 12 experimental subjects. These individuals were male adolescent youths between 10 and 16 years of age. After a control period on the institutional diet the subjects were placed on an experimental diet consisting of vitamin free casein, crisco, dextrimaltose, a mineral mixture<sup>3</sup> and a vitamin mixture<sup>4</sup> which contained no riboflavin. This diet provided 40 calories per kilogram distributed approximately as follows: protein 15 per cent, fat 35 per cent and carbohydrate 50 per cent. The food, except for the vitamin mixture, was mixed together and given in equal portions at each meal. The vitamin mixture given separately was also supplied in equal quantities at each meal. Each of the food constituents was carefully assayed for riboflavin but appreciable quantities of this factor were found to be present only in the vitamin free casein, which was found to contain 0.75–1.0 microgram per gram, providing an intake between 70 and 90 micrograms per day in the different subjects. The subjects pursued a sedentary life throughout the experiment. Complete fecal collections were made which were analyzed for riboflavin in weekly periods. The urinary excretion of riboflavin was followed daily

in the fasting hour specimen<sup>5</sup> and complete twenty-four hour excretions were studied periodically. Analyses of riboflavin were made by the fluorometric method of Najjar<sup>6</sup> which was modified slightly for the assay of feces.

## RESULTS

The subjects remained in excellent health throughout the period of study (three months) with the exception of 1 individual who developed a Vincent's stomatitis during the second week. This intercurrent infection can hardly be related to the experimental diet since it cleared without the administration of riboflavin.

The urinary excretion of riboflavin fell during the first two weeks of the study but remained constant

TABLE 1—Average Excretion of Riboflavin in Feces of Subjects on a Riboflavin Deficient Diet

(Results expressed in micrograms per day based on weekly collection periods)

| Sub-<br>ject | Con-<br>trol<br>Period | Week on Riboflavin Deficient Diet |      |     |     |     |                                 |      |      |      |    |
|--------------|------------------------|-----------------------------------|------|-----|-----|-----|---------------------------------|------|------|------|----|
|              |                        | Diet Alone                        |      |     |     |     | Succinyl sulfathiazole<br>Added |      |      |      |    |
|              |                        | 1                                 | 2    | 3   | 4   | 5   | 6                               | 7    | 8    | 9    | 10 |
| Ca           | 600                    | 155                               | 620  | 770 | 300 | 450 | 67                              | 100  | 117  |      |    |
| Fi           | 430                    | 189                               | 904  | 282 | 8   | 128 | 79                              | 58   | 88   |      |    |
| Fl           | 110                    | 460                               | 712  | 564 | 170 | 177 | 9                               | 71   | 81   |      |    |
| Hi           | 272                    | No                                | 337  | 619 | 309 | 417 | 28                              | 61   | 47   |      |    |
| Jo           | 89                     | Col                               | 345  | 590 | 660 | 76  | 636                             | 1048 | 711  |      |    |
| Kl           | 885                    | lee                               | 1112 | 470 | 512 | 270 | 500                             | 59   | 83   |      |    |
| Mi           | 420                    | tion                              | 655  | 307 | 157 | 70  | 746                             | 87   | 67   |      |    |
| Mo           | 450                    | for                               |      | 495 | 562 | 470 | 440                             | 6    | 82   | 100  |    |
| Mu           | 267                    | 9 days                            |      | 355 | 170 | 84  | 761                             | 83   | 871  | 1023 |    |
| My           | 1400                   |                                   | 80   | 465 | 675 | 660 | 670                             | 88   | 1000 | 11   |    |
| Se           | 133                    |                                   | 232  | 55  | 27  | 140 | 405                             | 77   | 80   | 77   |    |
| Wl           | 120                    |                                   | 258  | 572 | 470 | 350 | 314                             | 68   | 70   | 85   |    |

TABLE 2—Average Excretion of Riboflavin in Overnight Fasting Hour Specimen of Urine in Subjects on a Riboflavin Deficient Diet

(Results expressed in micrograms per hour)

| Subject | Control<br>Period | Week on Riboflavin Deficient Diet |    |    |    |    |                                 |    |    |    |    |
|---------|-------------------|-----------------------------------|----|----|----|----|---------------------------------|----|----|----|----|
|         |                   | Diet Alone                        |    |    |    |    | Succinyl sulfathiazole<br>Added |    |    |    |    |
|         |                   | 1                                 | 2  | 3  | 4  | 5  | 6                               | 7  | 8  | 9  | 10 |
| Ca      | 2                 | 11                                | 10 | 9  | 11 | 14 | 10                              | 8  | 6  | 8  | 8  |
| Fi      | 2                 | 7                                 | 6  | 6  | 8  | 11 | 1                               | 6  | 6  | 5  |    |
| Fl      |                   | 7                                 | 6  | 6  | 8  | 8  | 6                               | 8  |    | 8  |    |
| Hi      | 0                 | 9                                 | 1  | 10 | 12 | 11 | 17                              | 10 | 7  | 1  | 9  |
| Jo      | 0                 | 11                                | 12 | 12 | 10 | 11 | 12                              | 10 | 7  | 7  | 11 |
| Kl      | 19                | 12                                | 8  | 10 | 10 | 12 | 11                              | 1  | 11 | 7  | 1  |
| Mi      | 5                 | 8                                 | 12 | 9  | 8  | 9  | 6                               | 10 | 6  |    |    |
| Mo      | 0                 | 16                                | 1  | 15 | 1  | 17 | 1                               | 11 | 10 | 10 |    |
| Mu      | 2                 | 25                                | 9  | 51 | 40 | 38 | 2                               | 10 | 5  | 7  |    |
| My      | 4                 | 10                                | 8  | 9  | 9  | 9  | 10                              | 10 | 5  | 7  |    |
| Se      | 7                 | 5                                 | 7  | 7  | 6  | 7  | 10                              | 8  | 11 | 8  |    |
| Wl      | 20                | 10                                | 7  | 7  | 6  | 7  | 10                              | 8  | 6  | 9  |    |

thereafter its level being of the order of magnitude of 6 to 10 micrograms in the fasting hour and 150 and 250 micrograms per day. The excretion of riboflavin in the feces showed no tendency to fall as a result of the riboflavin deficient diet remaining at levels similar to those observed in the control period (200 to 600 micrograms per day). It was thus apparent that the combined excreta contained five to six times as much

From the Department of Pediatrics, Johns Hopkins University School of Medicine, and the Department of Mental Hygiene, State of Maryland.

This study was supported by grants received from Mead Johnson and Company, the Milbank Memorial Fund and the Williams Waterman Fund for the Study of Nutritional Deficiencies.

1. Bechdel, S. I., Honeywell, H. E., Dutcher, R. A., and Knutsen, M. H. *J. Biol. Chem.* **80**: 231, 1928. Nickerson, I. W., and Goss, H. *ibid.* **130**: 437, 1939. Hunt, C. H., Kick, C. H., Burroughs, E. W., Bethke, R. M., Schalk, A. F., and Cerlough, P. *J. Nutrition* **21**: 88, 1941. Wegner, M. I., Booth, A. N., Flakjem, C. A., and Hart, E. B. *Proc. Soc. Exper. Biol. & Med.* **45**: 769, 1940.

2. Guarrant, N. B., and Dutcher, R. A. *J. Biol. Chem.* **98**: 225, 1932. *Proc. Soc. Exper. Biol. & Med.* **31**: 76, 1934.

3. The Cox Imboden mineral mixture was employed. *Proc. Soc. Exper. Biol. & Med.* **34**: 443, 1936.

4. The vitamin mixture which supplied the following water-soluble factors was divided into three equal doses which yielded the following daily quantities: ascorbic acid 25 mg., nicotinamide 25 mg., calcium pantothenate 1 mg., pyridoxine 1 mg., choline chloride 5 mg., inositol 1 mg., para-aminobenzoic acid 1 mg., and thiamine 1 mg. In addition, 5 drops of Mead Johnson cod liver oil concentrate were given daily. The water-soluble vitamins were supplied through the courtesy of Merck & Co., Inc.

5. Holt, I. F., Jr., and Najjar, V. A. The Clinical Diagnosis of Deficiencies of Thiamine, Riboflavin, and Niacin. *Journal Lancet* **63**: 366 (Nov.) 1943.

6. Najjar, V. A. *J. Biol. Chem.* **141**: 355, 1941.

Fresh stools mixed with glacial acetic acid (10 cc. for each hundred grams) were collected in glass jars. The feces were protected from light by black paper wrapping and kept in a refrigerator before analysis. Two grams of wet stool was mixed with 20 cc. of fifth molar acetate buffer (pH 4.5) and allowed to stand over a team bath with frequent stirring for twenty minutes. The resulting mixture was then centrifuged and the sediment extracted with 10 cc. of buffer for ten minutes and likewise centrifuged. The two supernatant fluids were pooled and a 5 cc. aliquot taken for the determination of the riboflavin in the same manner described for urine.

riboflavin as was ingested in the food a phenomenon which could be explained only by the production of riboflavin by the intestinal bacteria. The remote possibility that the stool riboflavin might represent excretion of body stores rather than intestinal synthesis was excluded by experiments on normal subjects in whom intravenous injections of 5 to 20 mg. caused no increase in fecal riboflavin. The fact that riboflavin could be absorbed from the large intestine was demonstrated by means of enemas containing 20 mg. of riboflavin which brought about a prompt rise in the excretion of riboflavin in the urine.

Because of our observation that the administration of succinylsulfathiazole would inhibit the bacterial synthesis of thiamine in the human intestinal tract,<sup>8</sup> the attempt was made to decrease the riboflavin synthesis by the administration of this drug. Succinylsulfathiazole was commenced during the seventh week of the study in doses of 1.5 Gm. every four hours. After the ninth week the dose was increased to 3 Gm. every four hours, which was continued until the termination of the study.

Although the administration of succinylsulfathiazole caused a virtually complete disappearance of thiamine from the stools in the course of a few days, very much to our surprise it produced relatively little effect on the output of riboflavin.<sup>9</sup> None of the twelve subjects showed a reduced riboflavin output in the stools, in fact the daily excretion was, if anything, somewhat higher after the administration of the drug (table 1). Of the 12 subjects, 9 showed no reduction in the urine output, 2 showed a very temporary reduction and only 1 a subject who had previously been excreting quantities of riboflavin considerably greater than the rest, showed a reduction to levels comparable with the other subjects (table 2).

#### COMMENT

The great excess of riboflavin in the excretion of our subjects as compared with the intake, the fact that it continued without appreciable decrease for twelve weeks and that the subjects remained in excellent health all this time without any loss of weight, all support the view that under these conditions the intestinal bacteria can synthesize enough of this factor to supply the requirements of the individual for this period of time. Disregarding the quantity utilized or otherwise destroyed in the body, it appears that the riboflavin produced in the body was five or six times the intake and in some instances more than ten times the intake. The fact that succinylsulfathiazole failed to inhibit the synthesis of riboflavin to any significant degree suggests that this factor is produced by organisms which are not susceptible to the drug, although it may also be produced by those which are susceptible. Smears of the feces after the administration of the sulfonamide drug still showed an abundance of bacteria to be present, although detailed bacteriologic studies of the stools were not made.

Further studies are needed to find out whether a minute amount of riboflavin such as was present in our experimental diet is needed for the bacterial synthesis of this factor or whether such synthesis would occur in

any case. The conditions under which biosynthesis of riboflavin occurs in man likewise remain to be defined. We have no reason to doubt that under certain conditions riboflavin deficiency does occur in man, but the observations we have presented certainly cast doubt on the high and the universal requirement for this factor that has hitherto been accepted.

#### SUMMARY

1 Twelve experimental subjects, placed on an experimental diet of purified vitamin free foods, in which only supplements of pure vitamins were given, subsisted for a period of twelve weeks on a diet containing between 60 and 90 micrograms of riboflavin per day.

2 The excretion of riboflavin in the urine, after a preliminary drop, tended to remain constant at a value roughly twice that of riboflavin intake. The fecal excretion remained unaffected at a level of five to six times the intake, a phenomenon which can be attributed to synthesis of riboflavin by the intestinal bacteria.

3 An attempt to inhibit the biosynthesis of riboflavin by the intestinal bacteria by the administration of succinylsulfathiazole for a period of four weeks met with no success.

4 The conclusion is drawn that riboflavin may not be a dietary essential under all conditions. The conditions in which it may be effectively synthesized in the intestine remain to be defined.

### Clinical Notes, Suggestions and New Instruments

#### FATAL AGRANULOCYTOSIS RESULTING FROM THIOURACIL

JULIUS KAHN, M.D. AND ROBERT P. STOCK, M.D.,  
LOS ANGELES

Leukopenia and granulocytopenia have been reported as potential dangers in the use of thiouracil when given to thyrotoxic human beings. Similar observations have been made on adult rats which were fed thiouracil.<sup>1</sup> Only 1 of the 72 patients in the group reported by Williams and Clute<sup>2</sup> developed agranulocytosis following the use of thiouracil, but this was not fatal. Astwood<sup>3</sup> also discussed 1 nonfatal case in a man whose toxic diffuse goiter similarly was treated with thiouracil. The following, as far as can be determined, is the first death that can be attributed to thiouracil as an agranulocytogenic agent.

#### REPORT OF CASE

**History**—M. M., a white woman aged 62, entered the Cedars of Lebanon Clinic Hospital on March 3, 1944 because of nausea, vomiting and drowsiness of six hours' duration. She had been known to have diabetes for six years and had been negligent both in taking insulin and in adhering to a prescribed diet. Diffuse goiter of relatively mild toxicity had been present for about ten years. In 1940 a course of therapy with Lugol's solution had resolved the thyrotoxic symptoms almost entirely. On this admission to the hospital the patient was in impending diabetic coma with a blood sugar of 450 mg. per hundred cubic centimeters. Her urine showed a strongly positive reaction to tests for acetone and diacetic acid and a 4 plus qualitative Benedict's reaction. Her blood pressure was 200 mm. of

From the Thyroid Committee of the Cedars of Lebanon Hospital. Dr. Kahn is chief of the medical service and Dr. Stock is resident in internal medicine.

1 Goldsmith E. D., Gordon A. S., Finkelstein G. and Charipper H. A. A Suggested Therapy for the Prevention of Granulocytopenia Induced by Thiourea. *J. A. M. A.* **125**: 847 (July 22) 1944.

2 Williams R. H. and Clute H. M. Thiouracil in the Treatment of Thyrotoxicosis. *New-England J. Med.* **230**: 657-667 (June 1) 1944.

3 Astwood E. B. Treatment of Hyperthyroidism with Thiourea and Thiouracil. *J. A. M. A.* **122**: 77-81 (May 8) 1943.

8 Nijjar V. A. and Holt L. E. Jr. Biosynthesis of Thiamine in Man and Its Implications in Human Nutrition. *J. A. M. A.* **123**: 683 (Nov. 13) 1943.

9 The possibility that succinylsulfathiazole may interfere with the determination of riboflavin in the stools was ruled out. The drug is not fluorescent under the same optical conditions. Incubation of sterilized stools with added succinylsulfathiazole for two hours at 37 C. showed no change in the riboflavin content.



mercury systolic and 0 diastolic. The response to therapy directed against acidosis was prompt. However, because of the unstable nature of her diabetes, wholly satisfactory control never was possible. During the next two months the patient had a few insulin reactions of minor degree.

As soon as possible after the diabetic acidosis had been corrected evaluation of the patient's thyrotoxicosis was undertaken and the patient then was placed under the supervision of the thyroid committee of the hospital. The thyroid gland was diffusely enlarged to a slight degree. Exophthalmos was slight, and a fine tremor of the hands was present. A labile pulse varied between 100 and 120 per minute. The basal metabolic rate on the eleventh hospital day was plus 65 per cent on two determinations. Blood cholesterol was 164 mg per hundred cubic centimeters. A blood iodine test by the Chaney method was 13 (normal, 5 to 7) micrograms per hundred cubic centimeters of plasma. The body weight at that time was 77 pounds (35 Kg). Blood studies showed the hemoglobin to be 13.7 Gm per hundred cubic centimeters with an erythrocyte count of 3,970,000 per cubic millimeter. There were 5,100 leukocytes per cubic millimeter with 66 per cent neutrophils, 3 per cent eosinophils, 27 per cent lymphocytes and 4 per cent monocytes.

During this period the patient was feeling well and was consuming 2,500 calories (carbohydrate 200, protein 110, fat 140) daily. Each morning 26 units of crystalline zinc insulin and 34 units of protamine zinc insulin were administered. Because of the age of the patient and the instability of her diabetes, thiouracil was regarded as a desirable agent for managing her thyrotoxicosis.

Beginning April 18, thiouracil was started with an initial dose of 0.8 Gm per day (in four divided doses) for two days. Thereafter the amount was decreased to 0.6 Gm per day (in three divided doses). A complete blood count, determination of the basal metabolic rate, routine urinalysis and recordings of body weight were ordered every five days.

Favorable response to the thiouracil was prompt. The basal metabolic rate had dropped in fourteen days to plus 42 per cent, the patient had gained 4 pounds (1.8 Kg) and the pulse was 80 per minute. Slight enlargement of the thyroid gland was noticed. The response to thiouracil continued to be favorable with a gradual rise in body weight and progressive lowering of the basal metabolic rate.

On the forty-fourth day of medication with thiouracil the basal metabolic rate was plus 10 per cent, the weight 90 pounds (41 Kg) and the pulse stable at 80 per minute. At this time the dosage of thiouracil was reduced to 0.4 Gm per day.

Seven days later the patient suddenly complained of a "swollen, dry throat," and within twelve hours her temperature rose to 101.4 F. Except for moderate congestion of the pharynx, physical findings were unchanged. Next morning the temperature was 98.0 F. The throat was still reddened and tender submaxillary nodes were palpable. Within twenty-four hours the temperature rose to 105 F (rectally). Pronounced congestion and edema of the soft palate was present.

The erythrocyte count at this time was 3,650,000, but the leukocyte count had fallen to 1,100 per cubic millimeter, with 2 per cent neutrophils, 1 per cent eosinophils and 97 per cent lymphocytes. Thiouracil was stopped immediately. A throat culture showed a few colonies of *Streptococcus viridans* and a moderate number of colonies of *Staphylococcus aureus*. A transfusion of 500 cc of whole blood was given promptly. On the next day the leukocyte count was 300 per cubic millimeter with 1 per cent neutrophils and 99 per cent lymphocytes. The pharyngeal mucosa became more reddened and numerous blebs were present. Erythematous macules were seen to be scattered widely over the body. Within the next twenty-four hours 1,500 cc of whole blood was given by transfusion. Other attempts at combating the agranulocytosis included injections of crude liver extract (15 units twice daily), pentose nucleotide (10 cc injected intramuscularly every four hours) and oral administration of extract of yellow bone marrow. As an added effort against the rapidly progressive infection penicillin was

administered intramuscularly in doses of 20,000 units every two hours for four doses and then the same amount every three hours.

During the final two days of life the patient presented a profoundly stuporous picture somewhat similar to that caused by diabetes. The carbon dioxide combining power was 18 volumes per cent and moderate glyco-uria persisted. However, there was no acetoneuria, and the blood sugar varied between 56 and 142 mg per hundred cubic centimeters.

Despite all therapy the coma persisted, the temperature remained high, the buccal and pharyngeal lesions grew worse, jaundice appeared and the agranulocytosis persisted. The patient died June 14, five days after the appearance of agranulocytic anemia.

A total of 30.8 Gm of thiouracil had been given over a period of fifty-four days preceding the clinical development of agranulocytosis.

**Autopsy.**—The autopsy was performed by Dr. Rubin Strass, pathologist of the Cedars of Lebanon Hospital, ten hours and thirty-five minutes after death. The significant findings were as follows:

There was extensive generalized jaundice and a number of scattered red areas 2 to 7 mm in diameter resembling petechiae were seen on the torso and extremities. Microscopically these showed hemorrhage and some bacterial masses but no appreciable leukocytic reaction. The buccal mucosa was covered with sordes. The soft palate and pharynx were hyperemic, moderately edematous and in places covered with sordes. No ulcerations were seen. Microscopically no polymorphonuclears were noted, but there was moderate infiltration by small round cells. The bone marrow of several ribs and bodies of vertebrae was abundant and dark red. Microscopically the cells of the granulopoietic series appeared to be greatly reduced in number.

Except for moderate fibrosis of the mitral leaflets and regional chordae tendineae the cardiovascular system presented no appreciable abnormality. The lungs were heavier than average chiefly because of congestion and edema. There were scattered areas of hemorrhage but no pneumonia. The spleen was slightly heavier than usual and showed nothing but moderate congestion. Lymph follicles were small but active. The lymph nodes were moderately enlarged but exhibited nothing remarkable microscopically.

There was no evidence of obstruction in the extrinsic bile ducts. The liver was slightly smaller and softer than average; the parenchyma was dark brown and the lobules were indistinct. Microscopically there was considerable distention of the sinusoids, otherwise nothing remarkable was seen. An anatomic basis for the jaundice was not demonstrable. The pancreas was much smaller than average and appeared atrophic both grossly and microscopically. Diffuse fibrosis was readily seen microscopically, as was a striking distortion of the islands of Langerhans. Many of the cells were pyknotic and widely separated. The total number of cells in each islet seemed reduced.

The kidneys were of average size and presented no significant findings grossly or microscopically other than moderate congestion. The adrenal glands showed moderate atrophy of the cortical tissue and pronounced vascular engorgement. The thyroid gland was diffusely hyperplastic, was considerably infiltrated by lymphocytes and contained a few small areas of fibrosis. The pituitary gland and brain presented no abnormality to either gross or microscopic examination.

#### CONCLUSIONS

Both the clinical diagnosis diabetes mellitus and toxic diffuse goiter are supported by the anatomic alterations. Death in this case doubtless was due to the agranulocytosis with its subsequent agranulocytic anemia. The terminal jaundice appears to be explainable only on a basis of toxic hepatitis. It seems quite possible that if polymorphonuclear leukocytes had been available there would have been anatomic evidence of a toxic hepatitis. In view of the ability of thiouracil to produce leukopenia and agranulocytosis it is assumed that thiouracil was the basis for the agranulocytosis and toxic hepatitis in this case.

The severe diabetes mellitus is believed to have been a contributory factor in the death of this patient.

## Council on Physical Medicine

The Council on Physical Medicine has authorized publication of the following article

HOWARD A. CARTER, Secretary

### OCCUPATIONAL THERAPY IN A PRIVATE GENERAL HOSPITAL

JOHN S. COULTER, M.D.

CHICAGO

Occupational therapy is an objective treatment prescribed by a physician to hasten a patient's recovery from disease or injury or to contribute to his adjustment to hospitalization.<sup>1</sup> The activities used as treatment must be sufficiently interesting to the patient to motivate his active participation. The occupational therapist must be trained professionally to carry out the physician's prescription to select and adapt activities which meet the patient's physical and psychologic needs. The occupational therapist should be a graduate of a school approved by the Council on Medical Education and Hospitals and registered by the American Occupational Association.

Occupational therapy is divided roughly into the following groups

1 *Preventive or Diversional Therapy*—This type of occupational therapy comprises simple prescribed activities, including recreation, which serves to induce rest, to control general exercise, to prevent neuroses and to sustain morale.

2 *Functional Therapy*—This type comprises prescribed activities planned to assist in the restoration of articular and muscular function, to improve the general condition, to build physical endurance and to aid in mental rehabilitation and in the treatment of mental disorders. Aitken<sup>2</sup> has shown the value of functional occupational and physical therapy in the rehabilitation of the industrial casualty.

3 *Prevocational Therapy*—This type comprises work processes planned and prescribed to prepare a patient for his return to his former employment or for vocational education.

Most large general hospitals maintained by county, state or federal funds have an occupational therapy department. A statement concerning the coordination of the physical and occupational therapy departments by Watkins<sup>3</sup> emphasizes that the combined departments should be directed by a physician specializing in physical medicine. The technical personnel in his department consist of a supervisor of physical therapy with six assistants and a supervisor of occupational therapy assisted by two full time and one half time occupational therapists.

It is believed that every general hospital regardless of size should have an occupational therapy department, because it is as necessary as a physical therapy department and any other therapy. The occupational therapy department should be in the department of physical medicine and under the supervision of a physician specializing in physical medicine. Most private general

hospitals will soon require a department of physical medicine (physical and occupational therapy) in order to carry out the federal-state programs for crippled children, the federal-state programs of physical and vocational rehabilitation and to enable them to care properly for many casualties of civilian industry.

Some insurance companies have begun to establish physical and occupational therapy departments as curative workshops or rehabilitation centers, as units separated entirely from hospitals. The advantage of this plan is that the patient does not feel that he is returning to the hospital for treatment, but the one disadvantage of the plan is that the doctor who originally treated the patient does not see him often. Lieut. Col. Raymond Hussey, M.C., U.S. Army, formerly chairman of the Board of Occupational Diseases, Department of Labor, and chairman of the committee on Workmen's Compensation, Council on Industrial Health of the American Medical Association, states "It is unfortunate, I think, that physical and occupational therapy clinics are organized separately from hospitals, since we all realize that physical and vocational rehabilitation procedures should be given simultaneously with medical and surgical treatment."

Recently an insurance company writing workmen's compensation insurance established a rehabilitation center for cases requiring physical and occupational therapy. The president of the company stated that in some instances of extended convalescence his experience showed that there was a considerable amount of difficulty in the achievement of complete recovery and a working status. In order to determine a solution, the company established the Rehabilitation Center. After a year of operation this insurance company was convinced that efficient physical and occupational therapy, under medical guidance, supplies a satisfactory solution to this problem and that rehabilitation should be instituted as soon after injury as possible. This indicates that rehabilitation should be started in the hospital.

In the last three editions of the Handbook of Physical Therapy some activities of the occupational therapy department at St. Luke's Hospital in Chicago were described. St. Luke's is a general hospital containing 485 beds and supported by private endowments and contributions. In order to illustrate the financial arrangements of an occupational therapy department, St. Luke's Hospital can be cited as an example.

For twenty-five years no charge was made for occupational therapy, because it was classed as a necessary adjunct of hospital service. Two years ago the chief of the medical staff thought that, as occupational therapy was a method of treatment a charge should be made. These charges are now \$1 per treatment for occupational therapy alone. When occupational therapy is combined with physical therapy, a minimum charge for the first hour or major fraction thereof is 50 cents and each additional hour or major fraction thereof is 25 cents plus the charges for physical therapy treatments. It was as difficult to introduce this added fee for occupational therapy as it would have been to launch a new department. Nevertheless, almost \$900 was received during the first year.

General hospitals should maintain capable occupational therapy departments that can practice preventive or diversional therapy. Without occupational therapy many patients are unable to make the necessary social and institutional adjustments so essential to their recovery. The majority of hospitals provide libraries and radios, and occupational therapy is as important

1 Manual of Occupational Therapy. Chicago: American Medical Association, 1943.

2 Aitken, A. P. The Rehabilitation Center, Rhode Island. *M. J.* 26: 286 (Dec.) 1943. Rehabilitation of the Industrial Casualty. *Virginia M. Month.* 71: 177 (April) 1944.

3 Watkins, A. Occupational Therapy and Rehabilitation. 22: 115 (June) 1943.

The physical therapy and occupational therapy departments at St Luke's Hospital are under the direction of a physician specializing in physical medicine. In the occupational therapy department are two registered occupational therapists, and usually there is one occupational therapy student who is receiving instruction in the practical phase of this work.

When occupational therapy is being carried out the posture assumed by the patient is most important, whether the patient is in bed or sitting in a chair. Wherever possible, the occupational therapists should see that the following instructions are observed:

**I Regulate Positions in Bed**—*Recumbent Position* This position serves to prevent deformity and to improve general circulation.

**A Flatten the mattress** It is preferable to eliminate the pillow from under the head. A flattened chest and a slowing up of the circulation will result if a pillow is used.

**B Place a small pillow or roll under the knee joint** Subluxation of the knee frequently results if this procedure is neglected.

**C Train the patient to lie with his elbows and wrists extended** to prevent flexion deformities. The arthritic patient frequently assumes a position in which he flexes the elbows and wrists and rests them on his chest for comfort and body warmth. The pressure of the arm on the chest retards full inspiration and slows up circulation.

**D Prevent deformity of outward or inward rotation of the hips** by propping the legs in a correct position with pillows or sandbags.

**E Maintain a 90 degree angle of the ankles** and prevent foot drop by using a heavy box or bricks at the foot of the bed to hold the feet at right angles and prevent pressure of the bedclothes.

**F Arrange the equipment** so that the patient lying flat on his back may maintain a good functional position.

## II *Sitting Position*

**A If possible use a flat canvas or board back rest**. If a pillow is used it should be firm and extend from the hips to the shoulders. The chin should be in the head back and the chest high. A firm pillow or roll under the head of the tibia to flex the hip and knee will prevent the patient from slipping down in bed and assuming a poor position.

**B The patient who is allowed to sit up** for his occupational therapy should be in a good functional position.

**III Position in a Chair**—Whether a wheel chair or a regular chair is employed, it should have a straight back. While the patient is sitting up he should be erect with his chin in and chest high. If a pillow is used it should be placed below the shoulders so that the head is not pushed forward and the chest not flattened. The occupational therapist should see that the patient is seated correctly while at work.<sup>1</sup>

## MENTAL DISEASES

Although St Luke's Hospital is a general hospital, it has one floor for mental diseases. Here the occupational therapy department has one room (locked when not in use) devoted to these cases. Occupational therapy treatment is given in accordance with the principles of McGraw and Conrad.<sup>4</sup>

In the handling of neuroses the department utilizes occupational therapy as an aid in overcoming the tendency to avoid responsibility in increasing the feeling of potency in directing the desire for approval that is characteristic of the hysterical into more useful channels and in the allaying of the restlessness of anxiety.

If the occupational therapist is tactful manic patients with agitated depressions may be persuaded to work

quietly and to confess later that they have begun to feel more normal when thus occupied. The warning that cannot be too often stressed is that suicidal attempts come not at the period of greatest merit but just at the time when the patient is starting into or coming out of a depression so that many patients who are just beginning to take an interest in occupational therapy may also be interested in using dangerous tools with great cunning and consequent menace to themselves. The same caution about tools is necessary when dealing with paranoid patients but those institutions in which paranoids create a minimum of disturbance and are most contented are the institutions that have promptly provided a suitable occupation for each individual. If furnished with an outlet the drive of these patients is much less violent, but the physician should be aware of an increase in tension among those who have long been permitted to use dangerous tools.

A helpful concept is to grasp the patient's interest at the emotional age level at which we find him living.

The problem in the acute phase of schizophrenia is not so much that of catching the attention of the patient as in maintaining his interest. We cannot be positive as to whether novelty or old habits should be relied on at this point. One patient with acute schizophrenia will be confused by unaccustomed procedures; another will block when old habits call up old conflicts. Not infrequently a woman having a paranoid precox will want to do carpentry or other work that she considers to be a man's occupation.

Generally a patient's expressed wishes to attempt any specific work is gratifying and well worth trying. Some occupational therapists may permit the patient to work out unconscious conflicts with symbolic objects similar to the method which child psychologists use when they employ toys. This application is truly an analysis and requires all the safeguards of that technique. Dr Conrad believes that in other than an exceptional case the major aim should be the progressive return of the individual to satisfaction and self confidence in participation in normal living. It is the responsibility of the physician to see that the procedure is adapted to the patient's individual problem.

A most delicate and often treacherous part of the treatment is in prescribing the work. It is rarely advisable for the physician to do this alone and there are dangers in leaving it all to the therapist. Experience teaches us that correspondence to and fro is time consuming and frequently unsatisfactory; nevertheless there should be some sort of joint action and records should be kept.

In group treatment it is inevitable that various persons often compete for the credit of the cure and for the loyalty of the patient. We hear from nurses from recreational aids and from occupational therapists. If I had more of a chance I'm sure I could have accomplished so much more. Sometimes this is pure rationalization. Occasionally it is valid and might well be heeded at the risk of upsetting the routine a bit. The danger of presenting projects too simple for the highly intelligent cultured and gifted patient should be borne in mind. This requires fine discrimination on the part of the technician and also in understanding of the background and personality of the patient. This information should be available in adequate record form for the therapist.

We are living in an age of specialization. Occupational therapy is a specialty and as such must bear the

<sup>4</sup> McGraw, R. B. and Conrad, A. quoted by Backmeyer, A. C. and Hartman, C. *The Hospital in Modern Society*. New York: Commonwealth Fund, 1943.

criticism as well as the praise due it. Some say that society, industry and medicine have all been overspecialized, and it is therefore somewhat of a paradox that the cry of "back to the patient" has been raised in the past decade. In opposition to the overspecialization is the precept "Treat the whole patient, not just his disease." Occupational therapy is much involved at this point.

Occupational therapy can help people find a better use of their leisure time. Illness and convalescence, even mental illness such as neuroses and psychoses, provide a convenient opportunity to introduce this principle. Interest will develop in the creative arts and crafts and in craftsmanship, and perhaps also in cooperation with others.

The "joint action" mentioned in this article is accomplished at St. Luke's Hospital by using requisitions which state diagnosis and occupational therapeutic precautions for each patient. These requisitions are made out and signed by the physician in charge of the case. They are supplemented by frequent visits of the psychiatrist to the occupational therapy department and by notes on the clinical record made by the occupational therapist.

The occupational therapist uses a great deal of recreational therapy through the monthly parties and dances for the patients, through games and through social activities.

Functional occupational therapy is usually given in a workshop which in a general hospital should have large enough floor space to assist in the restoration of articular and muscular function in order to build up physical endurance and to aid in the whole physical and mental rehabilitation of physically handicapped patients. In these cases the coordination of the physical and occupational therapy departments is most important. St. Luke's Hospital is planning to enlarge the floor space of the occupational therapy department.

Rehabilitation is the planned attempt through the use of all recognized measures under skilled direction to restore those persons who because of disabilities do not assume to the greatest possible extent and at the earliest possible time that place in the productive stream of society of which they are potentially capable. Rehabilitation of the injured must therefore start at the patient's bedside and must be continued during and after the patient's stay in the hospital.

Rehabilitation of the injured requires the cooperation of many services, such as surgery and psychiatry.

Often patients have a psychologic protracted convalescence, and it is therefore necessary to use psychotherapy. The Physical Medicine Department of St. Luke's Hospital employs Solomon's<sup>6</sup> method in these cases. It has four major divisions:

1. Psychologic understanding of the patient's character in order to avoid emotional trauma to his personality during all his professional and industrial contacts.

2. Psychiatric evaluation of the patient's emotional problems both related and collateral to his accident, in order to clarify the dynamic meaning of his attitudes and make him understand his own behavior.

3. Careful supervision of all the psychologic aspects of his return to employment so as to avoid maladjustment and if possible, improve his previous work adjustment.

4. Institute at the first evidence of psychologic protracted convalescence a recreational and exercise program.

Griffiths<sup>7</sup> calls attention to several principles which should be observed in giving functional occupation therapy. He writes:

The injured man must be divided into two categories. The cripple must have work to do from the outset so that he shall see that he still retains the ability to work. The recoverable must not have any treatment that remotely resembles his daily work, lest his pain or temporary clumsiness should instil in his mind fear for his ultimate recovery.

Prolonged exercise is often better obtained by exercises designed to interest the patient and to divert his attention from the particular group of muscles which we want to exercise. Griffiths suggests:

A choice of exercise is easily made which will achieve the desired movement in each patient without his being conscious that this exercise is deliberately designed to produce that movement. For example, if a group of patients contain one man in whom it is desired to strengthen the vastus internus muscle of the leg by repeatedly bracing the knee, a second in whom it is desired to hyperextend the spine, a third to flex the hip joint, a fourth to raise the arm at the shoulder, these men may be given the simple exercise of bouncing a rather soft football on the floor of a gymnasium hard enough to reach the ceiling. It will be found that, in spite of themselves, the desired movements will be attained time after time during the short period this exercise may be continued.

Functional occupational therapy in St. Luke's Hospital is used in orthopedic and surgical cases in such conditions as fractures, dislocations, strains, sprains, contractures due to burns, lacerations of tendons and peripheral nerve injuries and chronic arthritis and in other injuries. In these cases the prescribing of occupational therapy is based on the fact that the best type of remedial exercise is that which requires a series of specific voluntary movements which form an integral part of a more complex series of coordinated movements for the purpose of securing the end products and thus furnishes direct incentive for sustained effort.

In cases caused by injury it is believed that the occupational therapist would do well in following Kennedy's<sup>8</sup> suggestions that active exercise should be prescribed as soon as the fracture has been reduced when the method of fixation has been decided on and when the fixation has been effected. A fracture patient enters the hospital as a healthy man with a fracture and not as a man physically or mentally sick. The less he is placed in the category with the sick patient, and the more he is treated as one who was well before the accident and who expects to remain well the shorter will be his convalescence period. Because a leg is injured is no excuse for allowing the muscles of the neck, back and the three other extremities to deteriorate and to prolong greatly the convalescence.

The fracture patient needs work therapy—not a vacation but a hardening process. Ways and means should be devised to keep his mind and body occupied from the very beginning.

Occupational therapy needs to be introduced much more widely in general hospitals because, according to Kennedy, occupational therapy is many times more valuable than the usual types of physical therapy for these patients. As an occupant of a general hospital the fracture patient is too often conditioned to become

<sup>5</sup> Minutes of Conference on Rehabilitation Council on Rehabilitation Philip D. Wilson, M.D., chairman, 321 West 42d Street, New York.  
<sup>6</sup> Solomon, A. P. Rehabilitation of Patients with Psychologically Protracted Convalescence. *Arch. Phys. Therapy* 24: 270 (May) 1943.

<sup>7</sup> Griffiths, H. E. Rehabilitation After Fractures in Rolleston and Moncrief. *After Care and Rehabilitation London the Practitioner* 1943.  
<sup>8</sup> Kennedy, R. H. Active Exercise in Fracture Treatment. *Arch. Phys. Therapy* 22: 720 (Dec.) 1941.

ing an invalid. Frequently he requires prolonged care to recover from his hospitalization rather than from his injury.

A fracture patient should be taught how to use all joints and muscles in the region of immobilization commencing on the first day. He should be given general exercises immediately in order to preserve his musculature. While he is in bed he should be given a job that will occupy both his body and his mind and make him feel that he is still part of the moving world. As soon as the fracture patient leaves his bed he should be taught by some form of occupational therapy and if possible, something similar to the type of work he performed before his accident.

In the curative workshop power reduction factors such as psychologic inhibitions, pain, fear and fatigue are eliminated as much as possible.

It is believed that the psychologic inhibitions of the workshop require that the environmental conditions there be superior to those of the man's normal environment. If one can surround the patient in the workshop with a feeling of well being beyond that to which he is accustomed, one will have accomplished a great deal. This sense of well being can be accomplished by interior decoration, orderliness and absolute cleanliness. To motivate a convalescent patient to leave the ease and lazy life of his personal environment requires that he make considerable mental effort and this effort can be stimulated through the patient's desire to be in a workshop.

Pain can be lessened by cooperation between the hospital staff and the physical therapy department. The physical advantages of the curative workshop situated close to the physical therapy department are obvious. By heat, diathermy, whirlpool bath, massage and muscle stimulation, pain is diminished and exercise is facilitated.

The patient's fear should be eliminated by cooperation between the occupational therapist and the patient's employer. The physician in charge of a department of physical medicine and the occupational therapist should not give testimony about the patient's condition for the insurance company or for the employers before a court or a workman's compensation board. If this is done the news is spread that the occupational therapy department is trying to get the patient back to work, not for his benefit, but for the insurance company. This causes fear in all the patients and a consequent loss of confidence in the workshop.

The patient's fatigue can be guarded against by cautioning him that no form of work or play should be continued for more than a relatively short time. Fatigue can be measured in the arm by a hand grasp strength test and in the leg by a pull test for the quadriceps muscle. Fatigue may be mental as well as physical and for this reason a curative workshop should have both recreational therapy and exercise classes.

Recreational therapy through competitive games can often supply the desired exercises that the patient requires. The devices used may be a checkerboard on the floor or wall, darts, pingpong, horseshoes and pool tables.

Recreation gives mental relaxation after the workshop. Games are played with the technician and are manipulated in such a way that the patient is encouraged to strive against and to excel the technician. During rehabilitation of an injured man one may spend a long period of time training him vocationally, but if he is

unable to achieve his proper position under social conditions he will never become really rehabilitated. A man must be helped to adjust himself to a group and to be at ease in conversation with his companions so that he can join in the games of the group and become a part of it. Citing one example, a man came to the department with an artificial hand. Although we were successful in encouraging him to use both his hand and his arm to saw wood to hammer nails and to do a pretty good job in the wood working shop, he did not feel at ease socially and kept his artificial hand in his pocket when not in actual use. It was not until he found he excelled at the pool table that he realized that although he had an artificial hand he was on a par with others. Thus social accomplishment played an important role in his future life.

Classes in remedial exercises not only give therapeutic exercises but may eliminate mental fatigue. Dr. Storms in his Workmen's Compensation Clinic in Toronto, Canada, makes excellent use of these classes. He conducts classes for leg exercises from 9 to 9:30 a.m. and 1:30 to 2 p.m., foot classes from 9:30 to 10 a.m. and 2 to 2:30 p.m., hand classes from 10:45 to 11 a.m. and 3 to 3:15 p.m., and arm exercise classes from 11:30 to 12 m. and 4 to 4:30 p.m. In the leg classes the patients (1) walk over a floorlike apparatus built to simulate uneven ground, (2) walk over a McKenzie inversion tread, (3) walk over steps of various heights, (4) along a bench 18 inches high and 10 feet long to preserve balance and induce good posture, (5) climb up and down a platform with ladders on both sides 5 feet high, five ladder rungs to climb to the top where there is a platform 3 feet long protected on the sides by 30 inch high hand rails with another ladder on the end so that it necessitates climbing up five rungs and down five rungs (fig. 1) and (6) work on a treadmill with hand rails. These classes are organized into groups, and every man with a leg disability attends the leg exercise classes as soon as he is able to do so. The hand and arm groups complete hand and arm exercises with the patients sitting in chairs.

In the treatment of the injured workman Griffiths' observations on the conditioned reflex of industry should always be observed. He says in part:

The conditioned reflex adds the power producing factor of repetition and this in the deliberately acquired reflex was originally the result of conscious effort. Impulsive action although not a truly acquired conditioned reflex is produced by the cortical memory of deliberate action freed by practice from psychological inhibitions associated with conscious deliberation. Deliberate action becomes an effort of will power or thought but for deliberate muscle action to be developed into a state of skilled muscle action a period of training is necessary requiring concentrated mental effort and practice and this can only lead to the desired skilled action as experience is obtained. Finally, something more is needed before the skill becomes expert. This extra something is not only experience but represents a definite advance in pure psychological effort.

The inhibition of the conditioned reflex may be either external or internal. The external inhibition is produced by some excitatory processes other than the conditioned stimulus in the central nervous system, and of these pain, anticipation of pain or other fear are of greatest importance.

The conditioned reflex of industry is a very complex affair. Take, for example, the skilled carpenter using a saw. The action is one of pushing and pulling the saw, but long practice has produced a conditioned reflex in which each stroke of the saw corresponds almost exactly with the previous or succeeding strokes. The reflex developed is a nice example of negative



successive induction, but it is not the simple affair of alternate contraction and relaxation of the biceps and triceps or of the serratus magnus and latissimus dorsi muscles. The beautifully balanced muscle action involved depends on many different conditioned stimuli:

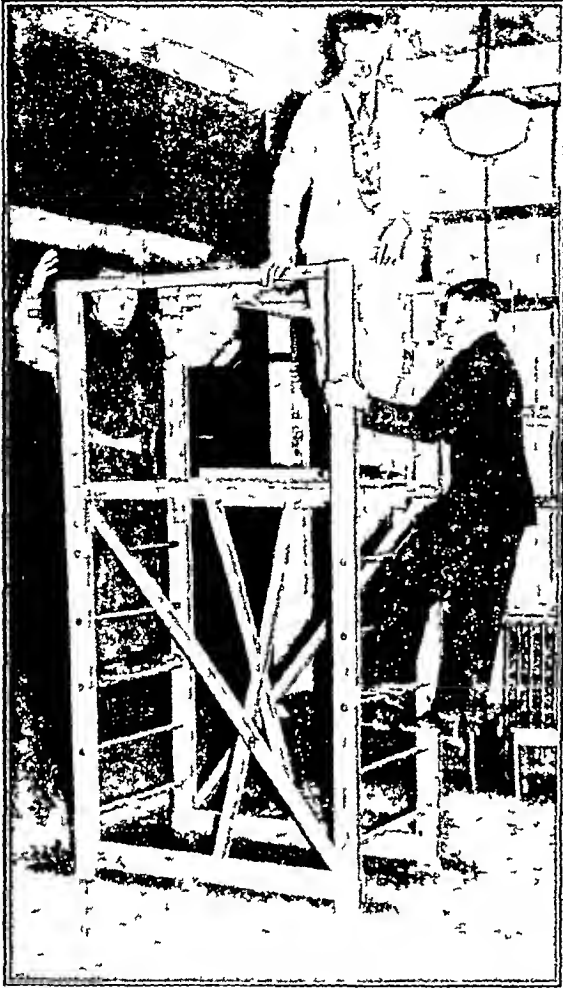


Fig 1—Apparatus for leg exercises at Workmen's Compensation Clinic, Toronto

To mention only a few of these. There are the touch stimuli from both hands. In the saw hand a definite tactile discrimination is associated with the man's own saw (as every tradesman uses his own tools). Thus the same part of the skin of his hand is stimulated every time he grips this particular saw. There is the stimulus of bone vibration set up by the wavelength of the saw being used, so that the farther the saw is thrust the shorter the vibration wave, ultimately suggesting the point at which the reflex action of the thrust shall be reversed. There is in addition the sound reflex, the rasp of the saw, and here again the note alters with the progress of the saw through the wood. When the conditioned reflex is first established a knot in the wood will cause a temporary interruption in the reflex path and tend to throw the muscles out of proper coordination so that there must be a period of conscious action before reflex action is reestablished. But as time goes on the extra resistance of a knot in the wood itself produces a superimposed conditioning stimulus and sets forth a bigger muscular effort without interfering with coordination.

In considering all these industrial conditioned reflexes the law of summation of conditioned reflexes must be borne in mind. This states that when different conditioned stimuli will each call forth a similar reflex, the stimuli acting together will produce a greater effect than they do when acting alone. A conditioned reflex may be reduced but not lost by interference

with one of the conditioned stimuli, provided the other conditioned stimuli are sufficiently strong to overcome the inhibiting effect of the lost stimuli.

With the injured workman, bed treatment is only a minor problem. Over 99 per cent of the injured can and should receive ambulatory treatment, and this must be designed to ensure that they use their conditioned reflexes and so secure the maximum amount of exercise with the minimum amount of fatigue. Man's ordinary walking gait is a combination of postural reflexes with the stepping reflex and various conditioned reflexes, not the least of which is produced by the sensation of the impact of the ground transmitted through the sole of a shoe or boot. Treatment therefore must be aimed at restoring normal walking conditions at the earliest possible moment.

Finally we come to the question of vocational exercise associated with the patient's work. This aspect of treatment must be attempted only when its practice will not produce any of those factors which inhibit the conditioned reflexes which are the foundation of his skill.

As an example take the carpenter who has an injured wrist and is asked to use a screwdriver. The normal action of driving a screw is for him a conditioned reflex, but pain inhibits this reflex action and it does so in this way. In the first turn made, perhaps the normal conditioned reflex was obtained, but with it pain, the movement now becomes conscious movement and the anticipation of the pain produces a state



Fig 2—Apparatus for arm and shoulder muscles. A sign painter exercising his grip and shoulder muscles at Rehabilitation Center, Boston

contraction of muscle to resist the anticipated movement. This inhibits the conditioned reflex with resultant incoordination of muscle action and loss of power. But the effect does not end there. With pain and work linked in the man's mind fear is born—the fear of incapacity for work—and this fear still further inhibits the conditioned reflex. It has been a mistake therefore, to attempt to restore the conditioned reflex of the

man until the arm has become relatively free from those factors of pain and stiffness which would inevitably inhibit the desired action.

What has been said of vocational therapy applies equally to so-called light work. The man has been given work of a



Fig 3—Gravel box and adjustable fence apparatus for reconditioning an industrial conditioned reflex at Rehabilitation Clinic Boston

lighter character in his own trade before he is sufficiently free from pain and while still liable to early fatigue. As a result he develops inhibition of his previously work conditioned reflexes, leading to increased clumsiness and to despondency. If he has not been employed at the lighter forms of his old job all too often he has been given work which involves industrial degrading—a bricklayer becomes a tea boy—and one of his worst fears is realized. His mind now becomes so concentrated on the injured part that subconscious movement becomes almost impossible and the most rapid road to recovery—restoration through exercise—is barred to him.

We are enlarging the floor space of St Luke's Hospital Curative Workshop to give our patients the necessary work to take advantage of the industrial conditioned reflexes. Dr Storms in the Workmen's Compensation Clinic at Toronto, Canada, gives his patients occupational therapy that eventually works into industrial conditioned reflexes.

Following are some examples of Dr Storms's occupational therapy workshop. A bricklayer with a disabled hand was given a thousand bricks and told to arrange a part of them in a design on the floor first. Later the bricklayer was handling all the bricks without mortar, to build walls. He knew how many bricks he needed to handle at his job each day and from the number he was able to handle each succeeding day in the workshop he saw how he was improving and how close was the time of his return to work. A sign painter was ready for work, except that his grip and shoulder muscle were not strong enough for him to pull on the ropes that raised and lowered his swinging

scaffold. Dr Storms rigged overhead a compound pulley and had the patient pull on a rope and lift weighted bags of sand attached to the other end of the rope just as was done at his occupation. When he was able to lift a certain weight the painter was confident that he was ready to return to work.

A brake is also arranged for switchmen in this workshop and there is a platform built waist high for freight workers. Ordinarily boxes are filled with weighted loads. The disabled patient loads the boxes onto a wheelbarrow and wheels them to another place where he then unloads. A large tree trunk to saw with cross cut saws is provided for lumberjacks. Wood is split by blacksmiths or other workmen who employ mallets or hammers. A gravel box is provided with a fence that can be varied in height. Laborers who use shovels at their work can shovel gravel over this fence (fig 3). Dr Storms has rigged hand and foot levers which are weight regulated by cans or bags of sand attached to the beams for steam shovel operators (fig 4). Painters are given work with paints and brushes in this workshop.

This principle of occupational therapy sometimes results in rather humorous situations. A tombstone engraver was injured in the arm. In the workshop he was provided with a cutting stone and other tools of his trade. During the course of his treatment he engraved "In loving memory of" and the names of the physical and occupational therapy technicians on a tombstone.

Occupational therapists are required to visit the industries, railroads or other places where the patients had been employed prior to their admittance to the hospital in order to observe men at work in these industries and therefore to be better equipped to devise occupational therapeutic apparatus and to prescribe methods to fit the disability of the patient with due consideration of his future employment. Therapists should know how hard the men must work in a given trade and what the trade names are for each occupation. If a patient states that he is a 'holder-up,' the occupational therapist should know that he 'holds



Fig 4—Apparatus for reconditioning industrial conditioned reflexes at Workmen's Compensation Clinic Toronto. A steam shovel operator pulling hand lever where resistant force is regulated by positions of weight attached to beam.

a dolly for the rivet" and should also know what a "dolly" is and weighs, what muscles are affected in this operation, what the joint movements are and what the patient requires in the methods of occupational therapy in order to get him back to his work.



relieve the circulation of much of the load which the heart must carry. It is the relief from this burden which allows the heart muscle previously unable to carry on its work of keeping up an efficient circulation to regain much of its reserve so that if it is not again asked to carry too heavy a load it may do its work efficiently for many years. Proper occupational therapy by lightening the burden placed on the circulation by mental and physical activity may, in children with active infections damaging their heart muscle and heart valves, allow circulation to slow down and thus help these children to call on their reserve to overcome the active infection and minimize the ultimate damage to their hearts. These are the two large groups which come under the class of patients with organic heart disease who are unable to carry on any physical activity, those with active infections damaging the heart and those with already damaged hearts which have been required to carry too heavy a circulatory burden through physical and mental effort and whose hearts have temporarily failed. These authors further state that, when such patients progress so that they are able to carry on diminished physical activity or their habitual physical activity vocational training with the ultimate object of a definite vocation, and finally placement through a bureau for the handicapped are as important as is the occupational therapy itself.

## Council on Pharmacy and Chemistry

### NEW AND NONOFFICIAL REMEDIES

*The following additional articles have been accepted as conforming to the rules of the Council on Pharmacy and Chemistry of the American Medical Association for admission to New and Nonofficial Remedies. A copy of the rules on which the Council bases its action will be sent on application.*

AUSTIN T. SMITH, M.D., Secretary

**PENICILLIN**—A solid extract of organic nature obtained from certain molds which possesses the property of being able to inhibit the growth of and even occasionally actually destroy certain bacteria. It may be prepared as several salts, including sodium, calcium and ammonium salts.

**Actions and Uses**—Penicillin belongs to a class of agents frequently referred to as antibiotics and antimicrobial agents of biologic origin. At present penicillin is prepared by culture methods and not synthetically. In finished form the powder usually has a brown or yellow appearance and is marketed in air tight ampuls. The material is unstable in air, hygroscopic and subject to rapid reduction in potency on exposure to heat and acids. Thus the ampuls are stored in the refrigerator and the contents put into solution only as needed. Penicillin is very soluble in water and in saline and dextrose solutions. At present the potency of penicillin preparations is determined by biologic assays, a method which essentially is concerned with the inhibition of the growth of a certain strain of *Staphylococcus aureus* in special medium, this is compared with a standard and the result is expressed in Oxford units. All specimens also are examined for moisture content, freedom from pyrogens, sterility and toxicity.

Penicillin is indicated in staphylococcal infections with and without bacteremia, clostridial infections, hemolytic and anaerobic streptococcal infections, pneumococcal, gonococcal and meningococcal infections and the complications caused by such infections. It may prove valuable in syphilis, actinomycosis and bacterial endocarditis but such use is yet in the experimental stage. Subsequent uses depend on current and forthcoming research.

**Dosage**—Penicillin may be administered intravenously, intramuscularly, intracranially and topically. Subcutaneous injections may be painful. Treatment may consist of repeated intramuscular or constant intravenous injections. The contents

of an ampul or ampuls are dissolved in sterile pyrogen free distilled water or isotonic solution of sodium chloride. For intravenous injection concentrations of 1000 to 5000 units per cubic centimeter are prepared for direct injection or 25 to 50 units per cubic centimeter for constant intravenous therapy. For intramuscular injection 5000 units per cubic centimeter of isotonic saline solution for topical application (not the sodium salt in powder form as it may be irritating when applied locally) 250 units or more if infection is severe per cubic centimeter of isotonic saline solution for subarachnoid space 10,000 units in isotonic saline solution in a concentration of 10,000 units per cubic centimeter injected once or twice daily for empyema 50,000 to 40,000 units injected after the pus has been aspirated. Penicillin solutions should not be used for irrigation.

The dosage of penicillin will vary according to patient and severity of infection but the objective is to bring the infection under control as quickly as possible. Inadequate dosage may create penicillin resistance in the invading organisms. Penicillin is excreted rapidly and injections should be repeated every three or four hours unless continuous infusion is employed. In serious infections with or without bacteremia an initial dose of 15,000 to 20,000 units followed by constant infusion to supply 2000 to 5000 units every hour or in the absence of constant injection 10,000 to 20,000 units injected intramuscularly every three or four hours may be employed. After the temperature has returned to normal the penicillin may be stopped but the course of the disease must be watched carefully.

In chronically infected injuries the dosage may be 5000 to 10,000 units or more if indicated every two to four hours with local treatment as indicated. In no instance should proper surgical intervention be omitted. For sulfonamide resistant gonorrhea 10,000 units every three hours intramuscularly or intravenously for ten doses may be administered. Treatment depends on findings of culture of exudate.

WINTHROP CHEMICAL CO. INC. NEW YORK

Ampuls Penicillin Sodium. Each ampul contains 100,000 Oxford units.

**PERCOMORPH LIVER OIL** (See New and Nonofficial Remedies, 1944 p. 636)

The following dosage form has been accepted:

AMERICAN PHARMACEUTICAL CO. INC., NEW YORK

**Codanol Brand Percomorph Liver Oil 50% with Vio-terol** 10 cc and 50 cc. A source of vitamin A and D in which not less than 50 per cent of the vitamin content is derived from the liver oils of percomorph fishes with viosterol added. Each gram contains not less than 60,000 U. S. P. units of vitamin A and 8,500 U. S. P. units of vitamin D.

**THIAMINE HYDROCHLORIDE** (See New and Nonofficial Remedies 1944 p. 608)

The following dosage forms have been accepted:

CARROLL DUNHAM SMITH PHARMACEUTICAL COMPANY  
ORANGE, N. J.

Tablets Thiamine Hydrochloride 1 mg., 5 mg. and 10 mg.

**Solution Thiamine Hydrochloride** 10 mg. per cc. 1 cc. ampul and 30 cc. vials. Each cubic centimeter contains thiamine hydrochloride 10 mg. in isotonic solution of sodium chloride preserved with 0.5 per cent chlorobutanol.

**TETANUS TOXOID, ALUM PRECIPITATED** (See New and Nonofficial Remedies 1944 p. 565)

The following additional dosage form has been accepted:

GUTHRIE LABORATORIES, INC., MARTIN, PA.

**Tetanus Toxoid, Alum Precipitated (Refined)** 50 cc. vials (25 immunizations) and 50 cc. vials (50 immunization). Preserved with merthiolate 0.01 per cent.

**SULFAMERAZINE** (See THE JOURNAL May 6, 1944 p. 31)

The following dosage form has been accepted:

F. R. SQUIBB & SONS, NEW YORK

Tablets Sulfamerazine 0.5 Gm. and 0.25 Gm.

**SULFATHIAZOLE** (See New and Nonofficial Remedies 1944 p. 191)

The following dosage form has been accepted:

PURDUE PHARMACEUTICAL CO. INC., NEW YORK

Tablets Sulfathiazole 0.5 Gm.

**METAMUCIL** (See THE JOURNAL April 15, 1944 p. 1133)  
The following additional dosage forms have been accepted:

G. D. SERRI & CO., CHICAGO

Metamucil 4 ounce and 16 ounce containers.

Occupational therapy is one of the best forms of treatment for injuries. It diverts the patient's mind from his injury and improves his morale. Mock<sup>10</sup> stated in a previous edition of the Handbook of Physical Therapy

One of the commonest causes for traumatic neuroses is failure of continuous active treatment until the surgeon is assured that his patient is well on the way to an economic end result, that is able to carry on once more. The diagnosis of a broken back, a skull fracture or a fractured pelvis often strikes fear and dread into the heart of the patient, yet the treatment of these conditions in a large majority of cases is comparatively simple and the end results are extremely good. Many times treatment consists in simply putting the patient to bed and keeping him as quiet as possible from six weeks to three months or, in some cases, in addition to rest, of traction applied to the lower extremities. The surgeon makes his daily rounds satisfied with the treatment of the physical condition and the progress being made and never recognizes or even dreams of the fear and anxiety that are gnawing at the patient's mind. When the day comes for the patient to leave his bed and begin to move about, the surgeon is disgusted with the lack of cooperation on the part of the patient, the unwillingness to try to help himself and the absurdity of his complaints.

All such patients, in addition to the actual surgical treatment need properly directed physical therapy and occupational therapy, which are the logical adjuncts to the usual surgical procedures.

Occupational therapy keeps a patient's mind and hands employed for a large part of the day, filling in the gaps between the surgeon's visits and the physical therapy and leaving little time for the fears and germs of traumatic neuroses to develop.

#### CARDIAC CONDITIONS

One of the big workmen's compensation insurance companies recently stated that the patient with heart disease but with good compensation may do well in special placements which do not require physical effort sufficient to aggravate the crippled part. In the average stable industry there are about 8 per cent of the entire personnel who are cardiac patients. This group of trained artisans need not and should not be discarded. With proper medical supervision with shifting of placement and general oversight, they can continue in active service for many years without shortening or jeopardizing their lives. This group does not include the many persons who die suddenly of a heart attack and who had previously shown no symptoms referable to the heart. Dr W. D. Stroud, a member of the Council on Industrial Health of the American Medical Association published a detailed discussion of this subject.<sup>11</sup>

#### FUNCTIONAL CLASSIFICATION OF PATIENTS WITH HEART DISEASE

**CLASS I—Patients with Heart Disease and No Limitation to Physical Activity**—Ordinary physical activity does not cause discomfort. Patients in this class do not have symptoms of cardiac insufficiency nor do they experience anginal pain.

**CLASS II—Patients with Heart Disease and Slight Limitation to Physical Activity**—Patients in this class are comfortable at rest. If ordinary physical activity is undertaken, discomfort results in the form of undue fatigue, palpitation, dyspnea or anginal pain. Competition in athletics and other strenuous activity, even hurrying are to be avoided. Activity should be graded according to cardiac tolerance. A vocational plan

should be made according to the permanent mechanical involvement of the heart.

**CLASS III—Patients with Heart Disease and Prolonged Limitation of Physical Activity**—Patients in this class are comfortable at rest. Discomfort in the form of undue fatigue, palpitation, dyspnea or anginal pain is caused by more than ordinary activity. Occupational therapy is first used to induce rest from the cardiovascular standpoint, allowing the circulation to slow down and the reserve power to overcome infections. By this means ultimate damage is minimized. Light activities and a program of graded exercise may later be indicated.

**CLASS IV—Patients with Heart Disease and Inability to Carry on Any Physical Activity Without Discomfort**—Symptoms of cardiac insufficiency or of the anginal syndrome are present in patients in this class even at rest. If any physical activity is undertaken, discomfort is increased. In this class as in class III occupational therapy is used to induce rest as well as to decrease anxiety and fear. The program is limited to mental activity and may prove of distinct value as a palliative measure.<sup>12</sup>

In a large general hospital, such as St. Luke's Hospital, the occupational therapy department is frequently ordered to give preventive or diversional occupational therapy to persons with heart disease. It is believed that these patients should be given functional occupational therapy in the curative workshop to improve their general condition to aid in their mental rehabilitation and to aid their attending physician to prescribe the amount of exercise that his cardiac patient can take. Too often such a patient is sent home from the hospital with such inadequate instructions concerning exercises as "Do not overdo." Although exercise cannot be definitely prescribed, it should not be left entirely to the discretion of the patient. Mackenzie<sup>13</sup> maintains that the object of exercises—the strengthening of the heart muscle—is too often forgotten. He states that by summarily laying down that so many yards should be walked one day and so many another day, the physician shows that he has failed to take into account the peculiar nature of the heart functions. The power of response of the heart to effort varies greatly in the same individual from time to time—one day a patient with an impaired heart can undertake a great deal of effort with comparative comfort whereas on other days the same amount of effort causes him distress. This is because the heart may be disturbed by a variety of conditions such as gastric or intestinal disturbances, lack of sleep and the state of the weather. The patient's sensations are therefore a valuable guide and may indicate the amount of effort which can be undertaken by him with safety in all circumstances.

Stroud and Comstock<sup>14</sup> state that patients with organic heart disease who are unable to carry on any physical activity need occupational therapy which gives practically absolute rest from a cardiovascular standpoint. Here, remuneration for articles sold, future vocation and so on should be minor considerations. If practical they should certainly be taken into account but not at the expense of the main object of such therapy, that is, mental and physical rest in order to

<sup>10</sup> Mock, H. E. and Abbe, M. L. Occupational Therapy in Handbook of Physical Therapy, ed. 3. Chicago: American Medical Association, 1939.

<sup>11</sup> Stroud, W. D. The Rehabilitation and Placement in Industry of Those Handicapped with Cardiovascular Disease. J. A. M. A. 105: 1401 (Nov. 2) 1935.

<sup>12</sup> Manual of Physical Therapy. War Medicine 2: 295-329 (March) 1942.

<sup>13</sup> Mackenzie, M. and Orr, J. Principles of Diagnosis and Treatment in Heart Affections, ed. 2. London: Hodder & Stoughton, 1923.

<sup>14</sup> Stroud, W. D. and Comstock, C. R. Physical Therapy in Cardiovascular Disease. Principles and Practice of Physical Therapy. Hagerstown, Md.: W. F. Prior Company.



relieve the circulation of much of the load which the heart must carry. It is the relief from this burden which allows the heart muscle previously unable to carry on its work of keeping up an efficient circulation to regain much of its reserve so that if it is not again asked to carry too heavy a load it may do its work efficiently for many years. Proper occupational therapy by lightening the burden placed on the circulation by mental and physical activity may, in children with active infections damaging their heart muscle and heart valves, allow circulation to slow down and thus help these children to call on their reserve to overcome the active infection and minimize the ultimate damage to their hearts. These are the two large groups which come under the class of patients with organic heart disease who are unable to carry on any physical activity, those with active infections damaging the heart and those with already damaged hearts which have been required to carry too heavy a circulatory burden through physical and mental effort and whose hearts have temporarily failed. These authors further state that when such patients progress so that they are able to carry on diminished physical activity or their habitual physical activity, vocational training with the ultimate object of a definite vocation and final placement through a bureau for the handicapped are as important as is the occupational therapy itself.

## Council on Pharmacy and Chemistry

### NEW AND NONOFFICIAL REMEDIES

*The following additional articles have been accepted as conforming to the rules of the Council on Pharmacy and Chemistry of the American Medical Association for admission to New and Nonofficial Remedies. A copy of the rules on which the Council bases its action will be sent on application.*

AUSTIN F. SMITH, M.D., Secretary

**PENICILLIN**—A solid extract of organic nature obtained from certain molds which possesses the property of being able to inhibit the growth of and even occasionally actually destroy certain bacteria. It may be prepared as several salts including sodium, calcium and ammonium salts.

**Actions and Uses**—Penicillin belongs to a class of agents frequently referred to as antibiotics and antimicrobial agents of biologic origin. At present penicillin is prepared by culture methods and not synthetically. In finished form the powder usually has a brown or yellow appearance and is marketed in air-tight ampuls. The material is unstable in air, hygroscopic and subject to rapid reduction in potency on exposure to heat and acids. Thus the ampuls are stored in the refrigerator and the contents put into solution only as needed. Penicillin is very soluble in water and in saline and dextrose solutions. At present the potency of penicillin preparations is determined by biologic assays, a method which essentially is concerned with the inhibition of the growth of a certain strain of *Staphylococcus aureus* in special medium; this is compared with a standard and the result is expressed in Oxford units. All specimens also are examined for moisture content, freedom from pyrogens, sterility and toxicity.

Penicillin is indicated in staphylococcal infections with and without bacteremia, clostridial infections, hemolytic and aneurobic streptococcal infections, pneumococcal, gonococcal and meningococcal infections and the complications caused by such infections. It may prove valuable in syphilis, actinomycosis and bacterial endocarditis but such use is yet in the experimental stage. Subsequent uses depend on current and forthcoming research.

**Dosage**—Penicillin may be administered intravenously, intramuscularly, intracutaneously and topically. Subcutaneous injections may be painful. Treatment may consist of repeated intramuscular or constant intravenous injections. The contents

of an ampul or ampuls are dissolved in sterile pyrogen-free distilled water or isotonic solution of sodium chloride. For intravenous injection concentrations of 1,000 to 5,000 units per cubic centimeter are prepared for direct injection or 25 to 50 units per cubic centimeter for constant intravenous therapy. For intramuscular injection 5,000 units per cubic centimeter of isotonic saline solution for topical application (not the sodium salt in powder form as it may be irritating when applied locally). 250 units or more if infection is severe per cubic centimeter of isotonic saline solution for subarachnoid space. 10,000 units in isotonic saline solution in a concentration of 1,000 units per cubic centimeter injected once or twice daily for empyema. 50,000 to 400,000 units injected after the pus has been aspirated. Penicillin solutions should not be used for irrigation.

The dosage of penicillin will vary according to patient and severity of infection but the objective is to bring the infection under control as quickly as possible. Inadequate dosage may create penicillin resistance in the invading organisms. Penicillin is excreted rapidly and injections should be repeated every three or four hours unless continuous infusion is employed. In serious infections with or without bacteremia an initial dose of 15,000 to 20,000 units followed by constant infusion to supply 2,000 to 5,000 units every hour or in the absence of constant injection 10,000 to 20,000 units injected intramuscularly every three or four hours may be employed. After the temperature has returned to normal the penicillin may be stopped but the course of the disease must be watched carefully.

In chronically infected injuries the dosage may be 5,000 to 10,000 units or more if indicated every two to four hours with local treatment as indicated. In no instance should proper surgical intervention be omitted. For sulfonamide-resistant gonorrhea 10,000 units every three hours intramuscularly or intravenously for ten doses may be administered. Treatment depends on findings of culture of exudate.

WINTHROP CHEMICAL CO. INC., NEW YORK

Ampuls Penicillin Sodium. Each ampul contains 100,000 Oxford units.

**PERCOMORPH LIVER OIL** (See New and Nonofficial Remedies 1944 p 636)

The following dosage form has been accepted.

AMERICAN PHARMACEUTICAL CO., INC., NEW YORK

**Codanol Brand Percomorph Liver Oil 50% with Vio-sterol** 10 cc and 50 cc. A source of vitamin A and D in which not less than 50 per cent of the vitamin content is derived from the liver oils of percomorph fishes with viosterol added. Each gram contains not less than 60,000 U. S. P. units of vitamin A and 8,500 U. S. P. units of vitamin D.

**THIAMINE HYDROCHLORIDE** (See New and Nonofficial Remedies 1944 p 608)

The following dosage forms have been accepted.

CARROLL DUNHAM SMITH PHARMACEUTICAL COMPANY  
ORANGE, N. J.

Tablets Thiamine Hydrochloride 1 mg., 5 mg. and 10 mg.

**Solution Thiamine Hydrochloride, 10 mg. per cc.** 1 cc. ampul and 30 cc. vials. Each cubic centimeter contains thiamine hydrochloride 10 mg. in isotonic solution of sodium chloride preserved with 0.5 per cent chlorobutanol.

**TETANUS TOXOID, ALUM PRECIPITATED** (See New and Nonofficial Remedies 1944 p 565)

The following additional dosage form has been accepted.

GUTHRIE LABORATORIES, INC., MAHITTA, PA.

**Tetanus Toxoid, Alum Precipitated (Refined)** 50 cc. vials (25 immunizations) and 50 cc. vials (50 immunizations). Preserved with merthiolate 0.01 per cent.

**SULFAMERAZINE** (See THE JOURNAL May 6, 1944 p 31)

The following dosage form has been accepted.

E. R. SQUIBB & SONS, NEW YORK

Tablets Sulfamerazine 0.5 Gm. and 0.25 Gm.

**SULFATHIAZOLE** (See New and Nonofficial Remedies 1944 p 191)

The following dosage form has been accepted.

PHARMACIA PHARMACEUTICAL CO. INC., NEW YORK

Tablets Sulfathiazole 0.5 Gm.

**METAMUCIL** (See THE JOURNAL April 15, 1944 p 1133)

The following additional dosage forms have been accepted.

G. D. SERRA & CO., CHICAGO

Metamucil 4 ounce and 16 ounce containers.

# THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

535 NORTH DEARBORN STREET - CHICAGO 10, ILL

Cable Address

\*Medic Chicago

Subscription price

Eight dollars per annum in advance

*Please send in promptly notice of change of address giving both old and new always state whether the change is temporary or permanent. Such notice should mention all journals received from this office. Important information regarding contributions will be found on second advertising page following reading matter.*

SATURDAY, OCTOBER 7, 1944

## HUMAN TOXOPLASMOSIS

The protozoan parasite *Toxoplasma* was discovered in the gondi, a North African rodent, by Nicolle and Manceaux in 1909. Protozoologists have found that *Toxoplasma* is pathogenic for a wide variety of mammals and possibly birds and has an extensive geographic distribution. Although the existence of a large potential reservoir of natural hosts, including dogs, rabbits, squirrels and voles, was known the first verified human case of toxoplasmosis was reported by Wolf, Cowen and Paige<sup>1</sup> in 1939, just thirty years after the discovery of *Toxoplasma*.

Once the pathogenicity of the parasite for man had been proved, reports of cases of human toxoplasmosis rapidly began to appear in the literature. Wolf and his associates<sup>2</sup> alone reported 9 more cases in the surprisingly short period of three years. Their pioneer studies established the basic features of infantile toxoplasmosis. They were dealing with a disease of young infants, in several instances proved to be acquired in utero and characterized by convulsions, changes in the cerebrospinal fluid, hydrocephalus, multiple calcifications in the brain and involvement of the retina by focal destructive lesions. In patients who survived the acute stage they found persisting or increasing hydrocephalus, nystagmus and permanent impairment of vision and usually some degree of mental retardation. They were much impressed with the destructive and granulomatous lesions in the central nervous system and retina but occasionally found lesions or parasites in extraneural tissues.

Meanwhile in 1940 and 1941 Pinkerton and his associates<sup>3</sup> had reported 3 cases of fatal toxoplasmosis in adults with a different clinical picture resembling

typhus and Rocky Mountain spotted fever. But little involvement of the brain appeared in these cases. The main pathologic changes were diffuse interstitial pneumonia and necrotic and inflammatory lesions in many organs. Wolf and his associates encountered similar lesions only once, in a 3 day old infant, and speculated on the possibility of aspiration of *Toxoplasma* infected amniotic fluid to account for the severe pulmonary lesions.

While there is on the surface little similarity between the acute typhus-like disease of adults and the encephalomyelitis of infants, the extraneural lesions occasionally found in infants indicate a pathogenic mechanism common to the two. Sabin<sup>4</sup> had studied the pathogenesis of experimental toxoplasmosis and had shown that following multiplication at the site of entry the parasites are disseminated through the blood stream to every tissue, invading the vessel walls and ultimately the tissues themselves. The involvement of different tissues depends mainly on their susceptibility, regardless of the point of entry of the infection. In human fetuses and infants the central nervous system is especially susceptible. In a recent study based on 3 new cases of infantile toxoplasmosis, Zuelzer<sup>5</sup> points out, however, that extensive changes in the visceral organs of infants may be more common than was formerly assumed. He found widespread lesions, including a severe myocarditis and interstitial pneumonia, besides encephalomyelitis, in an infant which died in the acute stage of the disease, and he was able to demonstrate minute residual lesions in the cardiac and skeletal muscles of a second patient with advanced cerebral and retinal damage. Zuelzer explains the pneumonia by the fact that all parasites must pass through the lungs during the stage of invasion. He states that the extent of the lesions found in the visceral organs depends largely on the stage of the disease. In most of the infantile cases the dissemination of the parasites occurs in utero some time before birth and thus the acute stage of invasion remains hidden. The lesions caused by *Toxoplasma* tend to heal and may largely have disappeared by the time of birth except for the changes in the brain and retina, where the inability of nerve cells to regenerate allows conspicuous permanent lesions to develop. When the infection occurs shortly before delivery or after birth and the stage of invasion can be observed, the clinical manifestations may be expected to be more variegated and the disease more closely resembles adult toxoplasmosis. Further observations are needed before the complete picture of the disease can be drawn.

Early observations indicated that the mothers of infants with congenital toxoplasmosis fail to show evidence of the disease themselves. This was explained

1 Wolf Abner Cowen David and Paige Beryl H. Toxoplasmic Encephalomyelitis. *Am J Path* 15: 657 (Nov.) 1939.

2 Paige Beryl H. Cowen David and Wolf Abner. Toxoplasmic Encephalomyelitis. *Am J Dis Child* 63: 474 (March) 1942. Cowen David Wolf Abner and Paige Beryl H. Toxoplasmic Encephalomyelitis. *Arch Neurol & Psychiat* 48: 689 (Nov.) 1942.

3 Pinkerton Henry and Weinman David. Toxoplasma Infection in Man. *Arch Path* 30: 374 (July) 1940. Pinkerton Henry and Henderson R G. Adult Toxoplasmosis. *J A M A* 116: 807 (March) 1941.

4 Sabin A B. Toxoplasmosis in De Sanctis A G. *Advances in Pediatrics*. New York: Interscience Publishers, Inc. 1942.

5 Zuelzer W W. Infantile Toxoplasmosis. *Arch Path* 38: 1 (July) 1944.

after Sabin<sup>4</sup> had perfected a serologic method permitting the demonstration of specific serum antibodies against toxoplasma not only in the patients but several times in their mothers and sometimes in other members of the family. Now it is clear that older persons may have subclinical toxoplasma infections. These findings at once widened the scope of future investigations. In the last five years 27 cases of human toxoplasmosis were reported in the continental United States. The presence of specific antibodies in apparently healthy persons means that the true incidence of human toxoplasmosis may be far greater than the number of clinically or pathologically recognizable cases indicates. This problem must await the development of a simplified method for the serologic diagnosis of the infection. The present method of Sabin seems reliable but not suited to general use.

Toxoplasmosis is rapidly becoming a disease of general interest. Search among the inmates of institutions for the mentally deficient has already yielded a number of previously unrecognized cases. The disease constitutes a known cause of mental retardation and of chorioretinitis. It concerns the neurologist, the ophthalmologist, the pediatrician, the pathologist and the general practitioner.

Much work remains to be done. The life cycle of *Toxoplasma* is as yet incompletely understood. Its exact classification is uncertain and the natural mode of transmission is obscure. Adequate epidemiologic studies are lacking. The question of vectors has not been investigated. Future studies will show the extent of the problem of toxoplasmosis. Any attack on the disease will have to be along the lines of prevention, since therapy will have little to offer once the irrevocable destruction of brain and retina has taken place.

#### PENICILLIN EXCRETORY BLOCKADE

Florey,<sup>1</sup> Rammelkamp<sup>2</sup> and others have shown that within an hour after penicillin administration by the intravenous route fully 60 per cent of the injected dose is excreted in the urine. By the end of this time the penicillin concentration of the blood stream falls to zero. Frequent reinjections are therefore necessary to maintain an adequate therapeutic concentration in the blood stream. Diodrast, hippuran and other substances that are known to be excreted mainly by the renal tubules exhibit a similar rapidity of elimination, suggesting the probability that, in addition to being filtered through the glomeruli, penicillin is also excreted in large measure by the renal tubules. If so the rapid urinary loss could be prevented by therapeutic blockade of the tubular excretory function.

A theoretical basis for such blockade is furnished by the well known mutual depression of tubular excretion by competing chemical agents.<sup>3</sup> When such substances as diodrast, hippuran, phenol red and other similar derivatives are given simultaneously a manifest reduction in the rate of excretion of all injected substances occurs, presumably because of their competition for elimination through a common mechanism. Rammelkamp and Bradley,<sup>4</sup> of Boston University School of Medicine, therefore tested the effects of simultaneous injection of penicillin and diodrast on clinical patients. The rate of renal elimination was first measured after a single control intravenous injection of 5,000 Oxford units of penicillin. Twenty-four hours later the same patients were given a simultaneous intravenous injection of 5,000 Oxford units and 30 cc of diodrast. The control 60 per cent excretion of penicillin by the end of one hour was reduced to 20 per cent as a result of the simultaneous injection of diodrast. In the control test the initial penicillin titer of the blood serum fell from 0.312 unit per cubic centimeter to practically zero by the end of forty minutes. As a result of diodrast blockade the forty minute reading was 0.039 unit per cubic centimeter. The average control penicillin excretion of all patients was 57.2 per cent of the injected dose by the end of four hours, which was reduced to 32 per cent as a result of diodrast blockade.

Beyer and his associates<sup>5</sup> of the Department of Pharmacology and Bacteriology, Medical Research Division, Sharp and Dohme, Inc., Glenolden, Pa., have recently tested a second blocking substance, p-aminohippuric acid. This substance was selected because it has remarkably low toxicity. In a typical control test 10,000 Oxford units of penicillin was injected intravenously as a single dose into a nonanesthetized trained dog. In the blockade test p-aminohippuric acid was infused simultaneously with the penicillin. Recovery of penicillin in the urine when p-aminohippuric acid was not administered averaged 78 per cent of the injected dose, falling to a 33 per cent recovery as a result of p-aminohippuric acid blockade. With blockade the plasma concentration does not fall below 0.2 unit per cubic centimeter by the end of two hours, with a two hour zero plasma concentration in the control nonblockade test.

Forty-eight hour experiments were performed on anesthetized dogs, during which both penicillin and p-aminohippuric acid were infused continuously, the infusion rate of the penicillin being 15 units per minute. In the nonblockade control test the plasma titer did not rise above 0.02 unit of penicillin per cubic centimeter during the forty-eight hours. In the blockade test the

1 Florey H W, Abraham E P, Chain E, Fletcher C M, Gardner A D, Heatley N G and Jennings M A. *Lancet* 2: 177 1941.

2 Rammelkamp C H and Keefer C S. *J Clin Investigation* 22: 425 1943.

3 Smith H W, Celdring W and Chasis H. *J Clin Investigation* 18: 263 1938. Finkelstein N, Almira L and Smith H W. *Am J Physiol* 133: 276 1941.

4 Rammelkamp C H, and Bradley S E. *Proc Soc Exper Biol & Med* 53: 30 1943.

5 Beyer H H, Woodward R, Peters L, Verwey W F, and Mattis P A. *Science* 100: 107 (Aug. 4) 1944.

titer rarely fell below 0.1 unit per cubic centimeter, a fiftyfold increase in average plasma titer. There appeared to be no pathologic effects attributable to the forty-eight hour combined penicillin blockade therapy. In the opinion of Beyer and his associates the combined intravenous administration of penicillin and p-aminohippuric acid is of sufficient therapeutic promise to warrant clinical trial.

#### SIMPLIFIED THERAPY OF MENINGITIS

Rammelkamp and Keefer<sup>1</sup> found that penicillin injected intravenously is not excreted into the normal cerebrospinal fluid. From this it has been quite generally concluded that it is necessary to treat cases of meningitis by combined intravenous and intrathecal injections of penicillin. According to Rosenberg and his colleagues<sup>2</sup> of the U. S. Navy Medical Corps Great Lakes, Ill., this combined treatment has given prompt and effective clinical results. Nevertheless, in their opinion the necessity for such combined therapy has not been established. It has not yet been shown that intravenously injected penicillin is not extravasated in adequate amounts by inflamed cerebrospinal tissues.

Rosenberg and his associates<sup>3</sup> therefore injected 20,000 to 40,000 Oxford units of penicillin intravenously or intramuscularly into each of 8 meningitis patients. From 60 to 140 minutes later they withdrew a sample of spinal fluid from each patient for penicillin assay. They found that, contrary to previous expectation, a considerable amount of penicillin is excreted into the spinal fluid of each meningitis patient. The amounts varied with different patients. The lowest titer was 0.03 Oxford unit per cubic centimeter of spinal fluid and the highest titer 0.35 unit (average titer 0.19 unit).

Rammelkamp and Keefer<sup>4</sup> found that penicillin in human serum in concentrations as low as 0.019 unit per cubic centimeter produces maximum bactericidal effects against *Streptococcus hemolyticus* and that 0.156 unit per cubic centimeter produces maximum bacteriostasis with *Staphylococcus aureus*. From these data Rosenberg concludes that the excretion (or extravasation) of penicillin into the spinal fluid of meningitis patients after intramuscular or intravenous injection of sufficiently large doses is adequate for the control of meningitis due to susceptible organisms, without the necessity of a supplementary intrathecal injection.

Hac<sup>5</sup> has recently described a similarly increased extravasation or excretion of subcutaneously injected penicillin into experimentally infected skeletal muscles (*Clostridium welchii*).

#### THE PUBLIC RELATIONS SURVEY OF CALIFORNIA

In *California and Western Medicine* for July appears the report of a public relations survey made for the California Medical Association by the firm of Foote, Cone & Belding. After several pages in which Mr. John R. Little justifies the survey and commends the association for having expended the necessary \$8,000 to secure it, he turns to the recommendations which result from the survey. This investigation yielded an opinion like that of a similar survey conducted previously by the Opinion Research Corporation for the National Physicians' Committee: the public does not object to prepayment plans. In California it did apparently object to the prepayment plan then being conducted by the California Physicians' Service. Mr. Little stated that a plan must be developed which will cover between 3,000,000 and 5,000,000 people in California and that it must be built on the finest standards of American business. For this purpose he indicated two necessities: (1) a splendid business executive administrator who must be from business and not from medicine or an allied profession and (2) the creation of a new public relations department to deal with the members of the California Medical Association and county medical societies throughout the state; this also to be headed by a layman. Finally, Mr. Little recommended that all councils in the California Medical Association and in the several county societies be divided into three groups responsible respectively for (1) progress of scientific medicine, (2) medical economics and (3) public relations.

The maintenance of medical standards in medical education and medical practice, the observation of medical ethics in medical practice and the maintenance of the personal relationship between doctor and patient, which have long been considered fundamental to the quality of medical care, are ideals understood by physicians. Economists, sociologists, business executives and insurance agencies seem to have had but little sympathy with these ideals in the past. Mr. Little, in his recommendations to the California Medical Association, follows the line long emphasized by Michael Davis, Isadore Falk and others that the profession of physicians demands merely that he practice medicine and that the terms of his practice, the nature of the distribution of medical service and the conditions of the relationship of the doctor to the hospitals, the clinics, the health centers and similar agencies may well be left to economists and business administrators. Exactly what the California Medical Association will do to make Mr. Little's report effective is not yet apparent.

Mr. Little has apparently been endeavoring to define trends, with the point of view that doctors ought to observe trends and go along with them. There are however both favorable and unfavorable trends from the point of view of medical practice. Long ago

<sup>1</sup> Rammelkamp, C. H., and Keefer, C. S. *Am. J. M. Sc.* **205**: 343

<sup>2</sup> Rosenberg, D. H., and Arling, P. A. to be published

<sup>3</sup> Rosenberg, D. H., and Sylvester, J. C. *Science* **100**: 132 (Aug 11) 1944

<sup>4</sup> Rammelkamp, C. H., and Keefer, C. S. *J. Clin. Investigation* **22**: 425 1943

<sup>5</sup> Hac, L. R. *J. Infect. Dis.* **74**: 164 1944

medical philosopher urged physicians to observe well the trend of the disease, and if it be upward and toward health, then to aid the trend and go with it toward recovery, but if the trend be downward and toward death, then the physician should interfere so that he may, if possible, reverse the trend. If there were but one way in which the people could secure a high quality of medical service at a low cost, the problem of the medical profession at this time would be exceedingly simple. There are, however, many different approaches to this problem. There is the former technic of the California Physicians' Service and the changed plan. There are similar but in some respects different plans already in effect in other states. There are the techniques now being developed by a variety of private insurance agencies in cooperation with large industries. There is the plan of Mr. Henry Kruser. There is the possibility of compulsory sickness insurance on a county, a state or a national basis. The most important fact that comes out of Mr. Little's survey is that people in California were not satisfied with the California Physicians' Service up to the time of his survey and that changes seemed to be necessary to satisfy the people. Whether these changes which made will be satisfactory will remain, of course, for time and the California Medical Association to determine.

### Current Comment

#### THE RED CROSS MEDICAL COMMITTEE

This week the American Red Cross announced through its new chairman Mr. Basil O'Connor, the appointment of a special Medical and Health Committee to survey current Red Cross operations of a medical and health character and to recommend plans for the postwar period. The membership of the committee includes

Dr. Lewis H. Weed, chairman, Washington, D. C., Division of Medical Sciences, National Research Council.

Dr. Felix J. Underwood, vice chairman, Jackson, Miss., president, American Public Health Association.

Dr. George Bachr, New York, director of clinical research, Mount Sinai Hospital.

Dr. Wilburt C. Davison, Durham, N. C., dean and professor of pediatrics, Duke University School of Medicine.

Dr. Morris Fishbein, Chicago, Editor, *THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION*.

Dr. Alan Gregg, New York, director of the medical sciences, Rockefeller Foundation.

Major Gen. Norman T. Kirk, Washington, D. C., Surgeon General of the U. S. Army.

Dr. Frank H. Lathrop, Boston, national chairman of the directing board, Procurement and Assignment Service for Physicians, Dentists, Veterinarians, Nurses and Sanitary Engineers, I. L. H. Clinic.

Dr. Roger I. Lee, Boston, President Elect, American Medical Association.

Vice Admiral Ross T. McIntire, Washington, D. C., Surgeon General of the U. S. Navy.

Dr. Thomas Parran, Washington, D. C., Surgeon General of the U. S. Public Health Service.

Dr. Henry R. Viets, Boston, will act as secretary of the committee. In making his announcement Mr. O'Connor said:

Medical and health problems touch virtually every aspect of Red Cross activities whether in terms of disaster relief, nursing, accident prevention, nutrition or blood donations. Because of this vital relationship to the general Red Cross program I have asked eleven prominent medical and health experts to serve as a special committee to survey what we are doing currently, analyze the results achieved and give me a blueprint of possible Red Cross activities in these fields in the postwar period. The group appointed was chosen because of their familiarity with operations of the American Red Cross in the medical and health fields.

The medical profession may await with interest the reports of this group. The blood donor service, the nursing services, the nutrition, first aid and disaster relief activities, the home services and those functions dealing with medical supplies all come closely to problems that affect the medical profession. Chairman Basil O'Connor merits commendation for having enlisted medical interest and sought competent advice in developing the innumerable medical activities of the American Red Cross.

#### WILLIAM GILBERT—PHYSICIAN TO QUEEN ELIZABETH

William Gilbert, who was physician to Queen Elizabeth and James I of England, was born about four hundred years ago. The place of Gilbert in the medical world has been described recently by Sir Walter Langdon-Brown.<sup>1</sup> Gilbert's influence on the medical profession of his day was profound. He insisted on observation and experiment, and he scorned reliance on mere authority; he demonstrated hatred for sham and quackery and was far in advance of his times in condemning some of the extraordinary prescriptions of the day. He recognized the value of iron as a fine powder steeped in the sharpest vinegar and dried for the treatment of anemia. While remaining prominent in medicine, Gilbert demonstrated a notable versatility. His masterpiece, "De magnete," has become recognized as a great pioneer work on magnetic and electrical experiment; he has been called the father of the sciences of geomagnetism and electricity.

#### INTRANASAL VACCINATION FOR COLDS

Studies on the possible value of bacterial vaccines for the prophylaxis of the common cold continue. Now Cowan and Diehl<sup>2</sup> report observations on three groups of students given different types of cold vaccine administered intranasally by atomizer and one comparable control group similarly receiving a sterile isotonic solution of sodium chloride containing merthiolate 1:20,000 and just enough fluorescence to render the solution faintly colored and turbid. Significant differences in severity or duration of colds or in frequency of complications between the groups were not observed. Thus this carefully controlled study of intranasal vaccination fails to furnish any evidence of the value of intranasal vaccination for colds.

<sup>1</sup> Langdon-Brown, Sir Walter. *Nature* 151:136 (July 29) 1944.

<sup>2</sup> Chapman, Sydney. *Nature* 154:132 (July 29) 1944.

<sup>3</sup> Cowan, D. W., and Diehl, H. S. *Ann. Otol. Rhin. & Laryng.* 53:28 (June) 1944.



# MEDICINE AND THE WAR

## ARMY

### AVIATION MEDICAL EXAMINERS

Graduating exercises were held at the School of Aviation Medicine, Randolph Field Texas, on July 26, following completion of the course for aviation medical examiners. The list of medical corps students graduating follows:

#### ALABAMA

John R. Chapman, Captain, Good Water

#### CALIFORNIA

Albert N. Anton, Captain, Los Angeles  
George E. Beckerman, Captain, Santa Monica  
Lewis T. Bullock, Major, Los Angeles  
Rex N. Carr, 1st Lieut, San Mateo  
Lee D. Fulton, Captain, San Francisco  
Alfred E. Gardner, 1st Lieut, Ignacio  
Robert W. King, Captain, San Jose  
Charles I. Morris, Captain, San Francisco  
Seymour A. Spungin, Captain, Los Angeles  
Ernest M. Stanton, 1st Lieut, Santa Monica  
Orville O. Witherbee, Captain, Los Angeles

#### COLORADO

Orin M. Stout, Major, Denver

#### DISTRICT OF COLUMBIA

Francis T. Coleman, Major, Washington  
Abraham B. Mincosky, 1st Lieut, Washington

#### FLORIDA

Francis T. Holland, Captain, Tallahassee  
John L. Jennings Jr., Captain, Boca Grande  
James E. Kendrick, 1st Lieut, Homestead

#### GEORGIA

Ottis E. Hanes, Captain, Atlanta  
James M. Sutton Jr., Major, Sylvester

#### ILLINOIS

John I. Brewer, Lieut. Col., Chicago  
George J. Cooper, Captain, Chicago  
Philip Lerner, Captain, Chicago  
Clifford H. Peters, Captain, River Forest  
William G. Scott, Captain, Elkhart  
Carel van der Heide, Captain, Chicago

#### INDIANA

John W. Humphreys, Major, Vincennes  
Edward C. Lidikay Jr., Captain, Lodoga  
Thomas O. Middleton, 1st Lieut, Vincennes  
Robert H. Williams, Captain, Anderson

#### IOWA

Edward E. Anderson, Captain, Dubuque  
Walford D. Maris, Captain, Taabor

#### KANSAS

Shirley E. Clark, 1st Lieut, Rush Center  
Arnold H. Janzen, Captain, Butler  
Darwin C. Reed, Captain, Wichita  
Eldee L. Schneider, 1st Lieut, Dodge City

#### KENTUCKY

Robert C. Bateman, Captain, Springfield  
William C. Buschemeyer, Captain, Louisville

#### LOUISIANA

William H. Byrne, Captain, New Orleans  
Joseph D. Kuhn, Captain, New Orleans  
William T. Yates, 1st Lieut, Baton Rouge

#### MAINE

Paul V. Davis, Major, Bridgton

#### MASSACHUSETTS

Donald V. Baker Jr., 1st Lieut, Uxbridge  
John K. Brines, Captain, Wellesley  
Henry C. Thachier, Captain, Yarmouth Port

#### MICHIGAN

Thomas E. Gibson, Major, Ithaca  
Warren V. Hinshaw, Captain, Adrian  
Alfred E. Thomas Jr., Captain, Detroit

#### MINNESOTA

Carl L. Lundell, 1st Lieut, Cloquet

#### MISSISSIPPI

Robert G. Herd, Captain, Meridenhall

#### MISSOURI

Francis O. Trotter Jr., 1st Lieut, Kansas City

#### NEBRASKA

Verne H. Alder, Captain, Omaha  
Robert J. Morgan, 1st Lieut, Alliance  
Claude W. Otto, 1st Lieut, Aurora  
Ward A. Peterson, Captain, Omaha  
Alvin F. Sonnenberg, Captain, Lincoln  
Lavern D. Sprague, 1st Lieut, Omaha

#### NEW HAMPSHIRE

Frank D. Elkavich, Major, Troy

#### NEW JERSEY

Joseph A. Buchignani, Captain, Newark  
Maurice P. Charnock, Major, Trenton  
Charles Kliegerman, 1st Lieut, Atlantic City

#### NEW MEXICO

Daniel H. Cahoon, Captain, Roswell

#### NEW YORK

Louis F. Bishop Jr., Lieut. Col., New York  
Homer T. R. Bull, Captain, Genesco  
Alvin M. Cahm, Captain, New York  
Ward V. Ceilly, Major, Brooklyn  
Clyde K. Conrad, Major, Chapman  
Cornelius J. Dwyer Jr., Captain, Brooklyn  
Samuel Feinberg, Captain, Port Jefferson  
Allan L. Friedrich Jr., 1st Lieut, New York  
Jack H. Grlen, 1st Lieut, Brooklyn  
Roger H. George, Captain, Verona  
Bernard C. Clueck Jr., Ossining  
George Goldstein, Captain, Brooklyn  
Basil C. Gray, Captain, New Berlin  
Max S. Kongsberg, Captain, New York  
Sidney Kremin, Major, Brooklyn  
Irving L. Leff, Captain, New Gardens  
William W. Pierce, Major, Casport  
Bradley W. Prior, 1st Lieut, Buffalo  
Shepard Quimby, Major, Hamburg  
John R. Roche, Major, Laurelton  
Irving M. Rollins, 1st Lieut, Forest Hills  
Robert S. Siffert, 1st Lieut, Brooklyn  
Willard L. Smith, 1st Lieut, White Plains  
John M. Tortora, Captain, Brooklyn

#### NORTH CAROLINA

Thomas E. Andes, Captain, Leaksville  
Henry Lihn, Captain, Furmont  
William C. Parks, 1st Lieut, High Point

#### OHIO

Alfred W. Erb, Captain, Piqua  
William M. Garrett, Captain, Frankfort  
Gordon H. Hammill, Captain, Euclid  
John A. Kramer, Captain, Columbus  
Thomas E. Miller, Captain, Iron ton  
Frank D. Novy, Captain, Euclid  
Samuel M. Schall, 1st Lieut, Toledo  
Carl F. Schilling, 1st Lieut, Cincinnati  
Frederick S. Spiegel, Captain, Cincinnati  
Ralph W. Tapper, 1st Lieut, Dayton  
Robert E. Tschantz, Captain, Hartsville

The following officers are in the Colombian army:

Rafael Arturo Botero, Captain  
Luis A. Gomez, Major

In addition there was one member of the Medical Corps of the Chilean Air Force: Lieut. Col. Luis C. Vivanco

#### OKLAHOMA

Hillard E. Denyer, Major, Chandler  
James W. Downey, 1st Lieut, Chickasha  
Ralph W. Morton, Captain, Sulphur  
Leonard W. Payne, Major, Pauls Valley  
Harold B. Witten, Captain, Haral

#### OREGON

Richard W. Leong, 1st Lieut, Portland

#### PENNSYLVANIA

Edward R. Deverson, Captain, Pittsburgh  
Milton H. Graditor, Captain, Conansburg  
Newton W. Hershner Jr., Captain, Mechanicsburg  
John M. Hickey, 1st Lieut, Glensport  
Farle C. Jameson Jr., Captain, Philadelphia  
Thaddeus A. Nigborowicz, 1st Lieut, Galitzen  
Frank T. O'Brien, 1st Lieut, Scranton  
John J. O'Keefe, Major, Bala Cynwyd  
Lmle E. Reiss Jr., Captain, Pittsburgh  
Henry Rothkopf, Captain, Philadelphia  
William L. Schaefer Jr., 1st Lieut, Middletown  
William I. Westcott, Captain, Dovieltown

#### TEXAS

George W. Berry, 1st Lieut, San Antonio  
Richard E. Nicholson, 1st Lieut, Dallas  
Fred P. Robbins, Captain, Randolph Field  
Gus C. Yelderman, Major, Rosenberg

#### VIRGINIA

Charles R. Mills, Captain, Bristol  
Hugo A. Sacchet, 1st Lieut, Clifton Forge

#### WASHINGTON

Ralph M. deBit, Captain, Kennewick

#### WEST VIRGINIA

James R. Goodson, 1st Lieut, Davis

#### WISCONSIN

Richard D. Champney, Captain, Milwaukee  
William B. Cheeseman, 1st Lieut, Madison  
Edward Zamil, Captain, Milwaukee

## ARMY AWARDS AND COMMENDATIONS

### Colonel Clifford V Morgan

The Legion of Merit award was recently presented to Col Clifford V Morgan of Washington, D C for services in the Office of the Undersecretary of War from September 1940 to March 1942. As chief of the Commodities Division, Resources Branch, and its representative in the Army and Navy Munitions Board, he was charged with the responsibility of determining the needs of the armed services and of essential industries for strategic, critical and essential materials required for the vastly expanded production program, and according to the degree of their scarcity, to initiate measures designed to insure their proper and most efficient allocation. As the emergency became more acute he, because of his comprehensive grasp of the entire munitions problem, his executive ability, powers of perception and analysis, and his great tact in securing adjustments with the numerous boards and committees of other agencies of the government and with authorized representatives of industry, contributed materially to insuring supplies of the vitally needed materials without which the expanded war production program could not have been accomplished. Dr Morgan graduated from the University of Nebraska College of Medicine Omaha, in 1927 and has been in the service since August 1928.

### Major Edward A Kelly

The Silver Star was recently awarded to Major Edward A Kelly, formerly of Washington D C. The citation states that Major Kelly, who was assigned to the ship's hospital, distinguished himself when, after the ship had received a direct hit by an aerial bomb, he administered medical aid to wounded personnel under risk to his own life. The bomb had smashed the ship's dispensary, and he engaged in giving aid to the wounded on the decks despite confusion and pandemonium caused by the explosion and the resulting fire, smoke and escaping steam. As the ship began to list he carried many wounded men from the starboard to the port side, inflated their life belts and lowered them into the water by means of ropes.

He continued to work until practically all living personnel were evacuated. Major Kelly was taken into a lifeboat after four hours in the water and in the lifeboat rendered medical aid to wounded there and helped load them aboard a rescue ship. When he was taken on the rescue ship he resumed the task of giving medical aid and worked steadily until all the wounded were cared for eleven hours after the troopship had been hit. His absolute devotion to duty in the face of danger and under extremely difficult conditions are consonant with the fine traditions of the American military service. Dr Kelly graduated from Georgetown University School of Medicine Washington D C in 1934 and entered the service June 20 1942.

## BRUNS GENERAL HOSPITAL BECOMES TUBERCULOSIS CENTER

The Bruns General Hospital Santa Fe N M under the command of Brig Gen Larry B McAfee has been designated as an army center for the treatment of tuberculosis. The hospital is specially staffed with tuberculosis experts and utilizes the most modern equipment and methods of treatment. Bruns General Hospital was named in honor of Col Earl Harvey Bruns who was one of the most distinguished phthisiologists in the history of the Army. As chief of medical service at Fitzsimons General Hospital Denver which is also an army tuberculosis center, he introduced much of the therapeutic practice now in effect there and trained many officers in the principles of tuberculosis control.

## APPOINTED POST SURGEON

Major Nicholas R Locascio formerly of New York City has been appointed post surgeon and commanding officer of the Army Station Hospital at Pine Camp New York, succeeding Col Dunlap P Penhallow. In active service in the Reserve Officers Corps since 1931 Dr Locascio reported for active duty June 2 1941. He entered the service with the rank of captain in 1935 and was promoted to major in 1942.

## MISCELLANEOUS

### NEUROPSYCHIATRY IN THE JAPANESE ARMY

Interview at the Japanese Prison Camp, Blue Beach, Cape Gloucester, New Britain, with Dr Otsuko Hideo

Lieutenant Commander T E Newell (MC), USNR  
(Interpreter 2d Lieut Harry T Foote USMCR Japanese Interpreter Section Division Intelligence Section First Marine Division)

Dr Otsuko is 31 years of age, intelligent cooperative and congenial. His home is in Tokyo Japan where he graduated from medical school at the Imperial University in 1940. Following his four year course in medicine he interned one year in a civilian hospital. He then practiced general medicine in civil life for one and one half years in Tokyo. I explained that I wished to get information about methods used in psychiatry in the Japanese military forces. He was cooperative in every way.

He has been in military service three years in the army, the first nine months in Japan then in the Philippines and Rabaul. He spent one year in a military base hospital. He went to Rabaul during January 1943 and for six months was assigned to duty in a field hospital. In the Philippines and Rabaul he was attached to the 1st battalion 141st Infantry Regiment but since then he has been in smaller field hospitals. His recent duty has been at Borgan Bay. During battles he has always worked in field hospitals and not on the front lines.

His knowledge of military medicine seemed good and he has apparently had first hand knowledge of subjects on which he was interrogated. His answers were usually prompt but at times he would think a moment or two before answering to be sure he was right. Very few of the Japanese prisoners with him have seemed reluctant to give us any information desired. They have careful screening of mentally unstable men in Japan

before they are sent to foreign duty. This is carried out by trained psychiatrists. They may not be specialists in psychiatry but they usually have at least the rank of major.

Three to 7 per cent of military men are eliminated in Japan because of mental instability. They have very few neurotics almost none. He admits some maybe 1 in 100 or less. As the interview progressed it was clear that it was a problem with the Japanese as it is with other people.

Disposition of war neurosis cases in the Japanese army is quite similar to that in the German armies in the last war. They are segregated immediately to protect and help the patients themselves and also to prevent a bad influence on their comrades. They try to keep them on their duty but if they are too nervous they are sent back to field hospitals in the immediate vicinity. They are treated by sedatives sufficient to give them rest and sleep. They are held here for three weeks to one month, at least ten days and at most two or three months before being sent back to duty or evacuated. From places like Borgan Bay or Cape Gloucester patients needing further care were sent to a hospital at Rabaul. Dr Otsuko said these measures are taken to prevent the patients from getting serious or "very ill." The treatment and the results vary greatly. When good recovery occurs the men are returned as soon as possible but not usually in less than ten days. Others are retained at field and battalion hospitals and are given sedatives as needed and occupational treatment which consists of light duty, police hospital areas and such entertainment as can be had. They are given very considerate attention and "no work of the brain." In foreign duty if they do not recover in about three months they are returned to Tokyo military hospitals and put in what are similar to our "N P" wards.

The doctor wrote in my note book in English the term they use for war neurosis krieg neurosis and I assumed it to be named for them by the Germans. This diagnosis is not considered a very complimentary label for a soldier returning as

unfit for further duty, it probably being similar to the term 'fear state' advocated by the Australian medical authorities. These men are treated as all war casualties in Japan as "unfortunate individuals" and the patients feel likewise whether their disability is mental or physical. In rural and suburban areas the attitude is the same as in large cities. The psychoneurotics in Japan are considered as honorably ill as those with malaria or other such diseases. He said "We are good to our war casualties at home."

All military units are taught and lectured to in regard to defending themselves against mental difficulties as they are against physical diseases. Dr Otsuko says it is a military policy for the commanding officers to note any unusual acts of the men and try to direct their thinking and conduct on the spot. His impression is that there is usually good cooperation in this regard, and results are said to be good. Dr Otsuko would not admit at any time that these patients are dealt with in a harsh manner. These methods of observation and early treatment of crises are followed out in field hospitals also.

Thirty per cent of these casualties are returned to duty in the field or from field hospitals. This includes those returning to duty from field hospitals and probably from advanced base hospitals at places like Rabaul. Five to 7 per cent go back to Tokyo, the remainder are held for noncombat duty. This non-combat group comprises about 64 per cent of the total. These figures indicate that the average soldier can hope very little for a gain to be derived from developing a neurosis.

Diseased and run down men succumb to psychoneurosis more readily than healthy men. Dr Otsuko thinks that the greater the hazards of war, the greater the incidence of mental diseases. Men who have long been in combat operations are more often affected than well-seasoned troops with less severe war experiences.

They have trained psychiatrists who go from front to front and from hospital to hospital to take into consideration mental problems of personnel in every phase of warfare from front lines back to the advanced base hospitals.

Men discharged from military service because of war neurosis are put back into civil life at farms or other home jobs available and suitable. Special efforts are being made to rehabilitate these men and get them into suitable occupations.

After the interview the doctor asked that he be given some real nice biscuits and some real butter. He has been allowed special privileges over the other prisoners and to eat apart also. He was given some special foods the boys had on hand but unfortunately the boys had no biscuits.

### NEW MEDICAL MEMBERS OF STAFF FOR OFFICE OF VOCATIONAL REHABILITATION

The appointments of Dr Victor H Vogel, Surgeon, U S Public Health Service as consultant in psychiatry and Dr Mark E Gann, Surgeon (R), U S Public Health Service as assistant regional representative are announced by Michael J Shortley, director, Office of Vocational Rehabilitation, Federal Security Agency, effective September 1.

As a member of the staff of the physical restoration section of the federal office, Dr Vogel's activities as consultant in psychiatry will include the organization of programs for the rehabilitation of persons with psychiatric disabilities and mental hygiene programs for all handicapped persons who are clients of state rehabilitation agencies. The federal-state grant-in-aid program for the vocational rehabilitation of civilian disabled persons provides for the inclusion of psychiatric diagnosis and treatment and Dr Vogel's consultative services will be available to vocational rehabilitation agencies and agencies for the blind in all states, the District of Columbia, Puerto Rico and Hawaii.

Dr Vogel is a graduate of the University of Colorado Medical School 1929. He was granted the degree of master of public health at the Johns Hopkins University in 1940 and received postgraduate training in psychiatry at the Colorado Psychopathic Hospital in 1937-1938, and at the Johns Hopkins Medical School in 1939-1940. He is a certified specialist of the National Board of Neurology and Psychiatry and a fellow of the American Psychiatric Association. Dr Vogel served as

assistant chief, Mental Hygiene Division, and mental hygiene consultant to the states, U S Public Health Service, 1940-1942.

Dr Gann has been assigned to the San Francisco office to assist the state rehabilitation agencies in the inauguration of physical restoration services and to aid in the interpretation of the vocational rehabilitation program to cooperating organizations and professional groups. His services as a consulting medical officer will be available to all states in the western area. Dr Gann is a graduate of the Johns Hopkins School of Medicine, 1933. He received training in surgery at the Sinai Hospital, Baltimore, in 1933-1938 and engaged in the private practice of general surgery in Baltimore from 1938 to 1943. Prior to his assignment to the Office of Vocational Rehabilitation Dr Gann's period of active duty with the U S Public Health Service included industrial surgery and participation in the medical care project in the Mobile, Ala., war housing clinics.

### PATHOLOGISTS PRESENT MILITARY PROGRAM

It is planned to devote a considerable portion of the 1945 meeting of the American Society of Clinical Pathologists to subjects of primary interest to laboratory officers in the armed forces of the United States, i. e., to military pathology. While the date and place of the meetings are not yet definitely decided, it will most likely be in Chicago about the first week of June.

It is the desire of the program committee that laboratory officers working in military hospitals participate actively in this program. The committee therefore requests that materials which would be of interest for such a program be kept in mind.

If within the course of the next months such materials or data of interest in military laboratory work come to the attention of these laboratory officers and they desire to present them at the 1945 A S C P meeting, they should communicate directly with Dr A S Giordano, chairman of the Program Committee, American Society of Clinical Pathologists, 531 North Main Street, South Bend, Ind.

### HOSPITALS NEEDING INTERNS AND RESIDENTS

The following hospitals have indicated to the Council on Medical Education and Hospitals that they have not completed their house staff quota allotted by the Procurement and Assignment Service.

(Continuation of list in THE JOURNAL September 30 page 307)

#### CALIFORNIA

Stanford University Hospitals, San Francisco. Capacity 372 admissions, 9,588. Dr Anthony J J Rourke, Superintendent (residents—surgery, obstetrics and gynecology, anesthesiology, psychiatry, medicine and throat).

#### MICHIGAN

Eloise Hospital and Infirmary, Eloise. Capacity 6,432, admissions 7,095. Dr Charles J Smith, Medical Director (3 residents—medicine, November 1).

#### NEW YORK

Bronx Hospital, New York City. Capacity 389 admissions, 8,070. Mr William B Selzer, Superintendent (resident—surgery). Mother Cabrini Memorial Hospital, New York City. Capacity 205 admissions, 2,976. Mother Corinny, Superior (interns).

#### WASHINGTON

St Luke's Hospital, Spokane. Capacity 236 admissions, 4,699. Mr Gordon W Gilbert, Administrator (intern).

#### WEST VIRGINIA

Kanawha Valley Hospital, Charleston. Capacity 165 admissions, 4,414. Dr G B Capitol, President (1 intern, 1 resident—mixed service). St Mary's Hospital, Clarksburg. Capacity 192 admissions, 4,201. Sister M de Sales, Administrator (2 residents—mixed service).

### WARTIME GRADUATE MEDICAL MEETINGS

The following subjects and speakers for Wartime Graduate Medical Meetings have just been announced.

Mayo General Hospital, Galesburg, Ill. High Blood Pressure, Drs Adrien H P E Verbruggen and Louis N Katz, October 18.

Camp Ellis, Camp Ellis, Ill. Diseases of the Intestinal Tract, Drs Warren H Cole and Michael H Streicher, October 18.

Chinute Field, Rantoul, Ill. Thrombosis, Thrombophlebitis and Anticoagulants, Col Irving S Wright, October 18.

# ORGANIZATION SECTION

## WASHINGTON LETTER

(From a Special Correspondent)

Oct 2, 1944

### Intensified Venereal Disease Control During Demobilization Discussed

Action of the War Advertising Council in withdrawing its support from the Antivenereal Disease Campaign of the U S Public Health Service, because of its 'highly controversial nature' and evidence that the drive was 'repugnant to many Catholic organizations, received no direct comment from the National Venereal Disease Committee today. The Federal Security Agency, however, has revealed that the campaign has just been explored again fully, with a Catholic committeeman in attendance. Indications were that efforts against the disease are to be intensified in spite of this negative step by one of the important supporting organizations. At the second meeting of the National Venereal Disease Committee, just completed plans were further explored to keep the disease in check during the demobilization period. The meeting dealt primarily with steps to be taken to reduce the estimated 5,000,000 civilian venereal disease cases and to cut infection rates among military personnel.

The meeting dealt comprehensively with the problem, Lieut Col Thomas H Sternberg discussing the Army aspect, Commander S H Schwartz that of the Navy. Dr J R Heller Bethesda, Md, assistant surgeon of the Division of Venereal Diseases of the U S Public Health Service, medical developments, A E Kimberling, Louisville Ky, chief of police, law enforcement techniques, Chief of Police Fred Roff of Morristown N Y, views of the International Association of Chiefs of Police, Rt Rev Howard J Carroll, assistant general secretary of the National Catholic Welfare Conference, outlining religious aspects of the venereal disease problem, and Dr William F Snow, New York, of the American Social Hygiene Association stressing the need of public education.

### La Guardia Describes New York City Health Problems

Mayor Fiorella La Guardia was to describe health problems of New York City when he appeared as a witness this week before the Kelley Committee investigating Aid to the Physically Handicapped, slated to continue through October 2, 3 and 4 at the Federal Court House in New York. The hearing promised many notable developments according to the chairman, Congressman Augustus B Kelley of Pennsylvania, who announced that other witnesses include Miss Helen Keller, Arde Bulova, who has endowed a school to train disabled veterans in watch making, Dr Ernest Stebbins, New York City commissioner of health, Mrs Anna Rosenberg of the War Manpower Commission and Dr Peter Irving, secretary of the Medical Society of the State of New York. The committee moves on to Pittsburgh on October 17 and 18, when industrial health will be investigated. Also called are Robert Lansdale, commissioner New York State Department of Social Welfare, G Samuel Bohlin, chief Bureau of Vocational Rehabilitation Holland Hudson, secretary National Council on Rehabilitation, Robert P Lane, director, Welfare Council of New York City, Charles E Hoppin New York State Veterans Commission, Clarence D O'Connor, superintendent Lexington School for the Deaf, Michael J Murphy, New York State Department of Labor, Dr Herbert J Stack, director, Center of Safety Education New York University, Edward Hochhauser, executive director Committee for the Care of Jewish Tuberculous, Inc, Dr Haven Emerson, DeLamar Institute College of Physicians and Surgeons, Columbia University, Miss Ann Lehman, consultant on the handicapped, United States Employment Service, Col John Smith Jr, director, Institute for Crippled and Disabled, Miss Frances E Moscrip, inspector, Classes for the Blind Board of Education, Brooklyn.

### Need of Safeguarding War Workers' Health Emphasized

The War Manpower Commission proposes to continue all possible efforts to safeguard the health of war workers as a means of cutting down absenteeism and increasing labor productivity, War Manpower Commission Chairman Paul A McNutt emphasizes. He declared that there will be no letdown in War Manpower Commission cooperation in the United States Public Health Service program for war workers. Health standards must be maintained in all war plants engaged in producing equipment urgently needed by the Army and Navy, he said.

Evaluating accomplishments in the joint program up to date, he said that investigations had been conducted at 11,000 war plants in twenty eight states. These had resulted in many recommendations for correction of poor health conditions affecting war workers. On March 1 he reported 162 projects for new hospitals, 409 for hospital additions and 377 for nurses homes and training facilities. 254 projects for health centers had been investigated and recommended to the Federal Works Agency. Manpower utilization consultants in the field he said would be held responsible for reporting to the U S P H S on safety and health programs in all war plants, particularly those of "must" plants. A simplified guide helps consultants to spot health problems. A thumb rule approach is given to such safety and health matters as accident and illness prevention through programs of industrial hygiene, hospital and health center assistance, implant medical and dental services, promotion of sanitary services, mosquito control and anti venereal disease campaigns.

## MEDICAL ECONOMIC ABSTRACTS

### INDIANA PREPARES PREPAYMENT PLAN

The 1943 meeting of the house of delegates of the Indiana State Medical Association appointed a permanent study committee on health insurance, which submits its first report for the 1944 meeting of the house of delegates.

The committee has arrived at the conclusion that the best present solution is the adoption of a state medical association sponsored plan for prepayment for medical service.

Owing to deficiencies in the nonprofit statutes of Indiana and the lack of a special enabling act, it will undoubtedly be necessary to organize under the insurance statutes of the state either a mutual or stock insurance company or association in order to carry out the recommended proposed program.

'The plan proposed by your committee would provide:

1 For all professional medical, surgical and obstetric services while the patient occupies a ward or semiprivate hospital bed including anesthesia, x-ray, laboratory and electrocardiographic services.

2 Emergency surgical services in connection with nonhospitalized injuries for the first twenty-four hours.

These services will be subjected to the following limitations:

- 1 'Ten month waiting period for obstetric cases
- 2 "No obstetric benefits unless family is enrolled
- 3 X-ray service limited to \$15 in any one year
- 4 Twenty-one days of medical care in any one year'

Joint arrangements are contemplated with the Blue Cross Hospital service of Indiana for a joint enrollment and subscriber relations.

## Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES NEW HOSPITALS EDUCATION AND PUBLIC HEALTH)

### CALIFORNIA

**Annual Meeting to Be Held in May**—The annual session of the California Medical Association will be held in Los Angeles, May 6-7, 1945. Tentatively the Hotel Biltmore has been selected as the hotel headquarters.

**Two Cases of Leprosy**—*California's Health* recently reported that 2 persons suffering from leprosy were investigated during June. It was determined that both persons, who had at some time been patients in the U S Marine Hospital (National Leprosarium) at Carville, La., are suffering from the disease in an inactive form.

**Fund for Needy Physicians**—The Los Angeles County Physicians' Aid Association, which has been conducting a campaign to raise \$250,000 to assist unfortunate physicians, announced recently that the \$50,000 mark had been reached. The association is a nonprofit corporation and is intended to aid needy physicians of the Los Angeles County Medical Association.

**Memorial Plans for Founders of Moore-White Clinic**—When six members of the Moore-White Clinic, Los Angeles, return from military service, plans will be launched to establish a foundation for research and to perpetuate the activities of the clinic. The plans include the construction of a new building in memory of the founders, Drs. Melvin L. Moore, Edward C. Moore, and Percival G. White. The last survivor of the founders' group, Dr. Edward Moore, died July 10.

**Practical Psychotherapy**—A course of eight lectures in practical psychotherapy was opened on Monday, October 2, at Mount Zion Hospital, San Francisco. The course, which will deal primarily with the treatment of neuroses and mild personality problems, will be conducted by Dr. Jacob S. Kasanin, director of the department of psychiatry at the Mount Zion Hospital. The course will be open to senior medical students of the University of California Medical School and Stanford University School of Medicine, the interns and residents in various San Francisco hospitals and public health service and medical officers of the Army and Navy.

### ILLINOIS

#### Chicago

**Commander Coggeshall to Address Joint Meeting**—Comdr. Lowell T. Coggeshall (MC) will address a joint meeting of the Institute of Medicine of Chicago and the Chicago Society of Internal Medicine, October 23, at the Palmer House. His subject will be "Current and Postwar Aspects of Tropical Disease Problems."

**Memorial to Dr. Gifford**—On October 12 a memorial convocation for Dr. Sanford R. Gifford, professor and chairman of the department of ophthalmology at Northwestern University Medical School, will be held at Thorne Hall on the downtown campus of Northwestern University at 4:30. Dr. Irving S. Cutter will preside at the convocation and Anan Raymond, LL.B., will speak.

**Dr. Marrazzi Goes to Wayne University**—Dr. Amedeo S. Marrazzi has resigned as professor and head of the department of pharmacology, Loyola University School of Medicine, effective November 15, to accept a similar position at Wayne University College of Medicine, Detroit. Dr. Marrazzi graduated at the Bellevue Hospital Medical College in 1928 and has been identified with Loyola University since Sept. 1, 1943.

**Personal**—Dr. Orlen J. Johnson, since August 1941 assistant secretary, Council on Industrial Health of the American Medical Association, has resigned to enter a residency in surgery at St. Luke's Hospital, effective September 30. Dr. Johnson, who graduated at the University of Michigan Medical School, Ann Arbor, in 1930, came to the American Medical Association from a position as plant physician of the Chrysler Corporation, Detroit.

### MAINE

**1945 Session of Maine Association**—The ninety-second annual session of the Maine Medical Association will be held at the Poland Spring House, Poland Spring, June 24-26, 1945.

### MASSACHUSETTS

**Women Eligible for Harvard Medical School**—On September 25 the board of overseers of Harvard College, Cambridge, approved a recommendation of the faculty of Harvard Medical School, Boston, that women students be hereafter eligible for admission. The recommendation had been previously approved by the Harvard Corporation and will become effective for students entering the school in the fall of 1945. The Harvard Medical School was opened in 1782. The average enrollment is slightly over 500 students.

### MICHIGAN

**Special Society Election**—Dr. Frank R. Menagh, Henry Ford Hospital, Detroit, is president of the Detroit Dermatological Society and Dr. Clarence E. Reynier, also of the Ford Hospital, is secretary-treasurer.

**Personal**—Dr. Warren Bartlett Crane, Kalamazoo, has returned to private practice after almost three years in military service. John F. Norton, Ph.D., was elected president of the Kalamazoo Tuberculosis Association August 17 to succeed Dr. Benjamin A. Shepard, who resigned because of ill health. Dr. Earl F. Lutz, Detroit, has been promoted to associate medical consultant of General Motors. Dr. Lutz, who has served as chief plant physician at the Detroit Diesel Engine Division of General Motors since 1938, will work with Dr. Clarence D. Selby, Detroit, the corporation's medical consultant, and will direct his special attention to the medical aspects of the employment of war veterans.

### MISSOURI

**Personal**—Dr. Charles A. Brasher, assistant superintendent of the Missouri State Sanatorium at Mount Vernon, has been named superintendent, succeeding Dr. Jesse A. Stocker. Dr. Lloyd L. Tate has been named health and hygiene director of the St. Louis public schools.

**Medical Forum**—On September 20 the 1944-1945 Jackson County Health Forum opened its regular session with a talk by Dr. Arnold S. Jackson, Madison, Wis., on "Worry and Nervous Tension." Other speakers in the series will include:

Dr. Walter C. Alvarez, Rochester, Minn., "What Makes Your Stomach Ache?" October 18.  
Dr. Karl A. Menninger, Topeka, Kan., "Psychiatry in the War and After the War," November 15.  
Dr. Elliott P. Joslin, Boston, "New Discoveries and Management of Diabetes," January 17.  
Dr. Alton Ochsner, New Orleans, "Varicose Veins—Something Can Be Done About Them," February 21.  
Lieut. Col. Philip Lewin, M.C., "Backache, Injuries and Sprains," March 21.  
Dr. Morris Fishbein, Editor of THE JOURNAL, Chicago, "Infantile Paralysis," April 18.

### NEW YORK

**Medical Broadcasting**—The 1944-1945 broadcasting program of the Medical Society of the County of Monroe opened September 9 over the facilities of broadcasting station WHAM. This is the society's fourteenth season of broadcasting, and the opening broadcast was number 552 in the series. The society claims that its broadcast is among the oldest continuously produced medical broadcasts and is identified on the air as "Rochester's Medical Broadcast."

**Changes in State Health Department**—Dr. Elizabeth M. Gardner, Albany, director of the division of maternity, infancy and child hygiene, retired from state service effective August 31. Dr. Gardner was director of the division of child welfare in the Rhode Island Department of Health from 1919 until 1923 when she joined the New York State Department of Health staff, serving first as associate director of the division of maternity, infancy and child hygiene and after 1926 as director. Jane E. Dale, Ph.D., has been appointed provisionally to the position of senior nutritionist in the state department of health, serving as supervising head of the nutrition bureau within the division of maternity, infancy and child hygiene.

#### New York City

**The Gross Memorial Lecture**—Dr. Leo Loewe, New York, will deliver the seventh annual Louis Gross Memorial Lecture at the Jewish General Hospital, Montreal, October 25, on "Further Observations on the Combined Use of Penicillin and Heparin in the Treatment of Subacute Bacterial Endocarditis."

**Meeting of Anesthetists**—The principal speaker at the meeting of the American Society of Anesthetists at the New York Academy of Medicine, October 12, will be Dr. Carl F.

Schmidt professor of pharmacology, University of Pennsylvania School of Medicine, Philadelphia. Dr Schmidt's subject will be "The Newer Concepts of Respiratory Control."

**Hospital Flooded**—Three substreet floors of the Reconstruction Hospital were flooded September 10, causing damage estimated at \$100,000 to medical supplies and irreplaceable therapeutic equipment. The flood was caused by a break in the main storm drain shortly before midnight, September 9, but the valve controlling the flow of water was not located until sixteen hours later. The *New York Times* stated that at the height of the flood 40 feet of water inundated the three floors.

**Course for Professional Workers**—"Child Health and the Classroom Teacher" is the theme of a course for teachers and professional workers which opened October 4 and will continue weekly until January 24. Dr Michael Antell, health officer of the Washington Heights-Riverside Health District, is in charge of the course and the sessions are being held at the Washington Heights-Riverside Health Center of the city department of health. It is sponsored by the New York Tuberculosis and Health Association.

**Louis Livingston Seaman Fund**—The New York Academy of Medicine announces the availability of the Louis Livingston Seaman Fund to further research in bacteriology and sanitary science. One thousand dollars is available for assignment in 1944. This fund has been made possible by the terms of the will of the late Dr Louis Livingston Seaman and is administered by the committee of the academy. The fund will be expended only in grants in aid for investigation or scholarships for research in bacteriology or sanitary science and may be made for the securing of technical help, aid in publishing original work and the purchase of necessary books or apparatus. Applications will be received either from institutions or from individuals up to November 1. Communications should be addressed to Dr Wilson G. Smilie, chairman of the fund, 1300 York Avenue, New York 21.

**Mayor's Health Plan Incorporated**—Incorporation papers for the Health Insurance Plan of Greater New York (*THE JOURNAL*, May 13, p. 161), presented by Mayor Fiorello H. La Guardia, were filed August 31 with the state board of social welfare and the superintendent of insurance. If approved by these two agencies and by a justice of the state supreme court, the papers will establish a nonprofit membership corporation to pay insurance as the Health Insurance Plan of Greater New York. The papers will be filed with the secretary of state when the necessary approvals are obtained, and the plan will then be ready to function. The roster of incorporators includes many prominent names in medicine; it was stated but does not include the names of representatives of five county medical societies. The United Medical Service, Inc., organized under the guidance of the medical profession and approved by the Medical Society of the State of New York, is circularizing physicians with a letter asking them to participate in this plan which was also set up this year (*THE JOURNAL*, May 27, p. 296). In its letter to the physicians the United Medical Service reported that it would pay all bills on the basis of physicians' fees comparable with those in workmen's compensation schedules for subscribers whose incomes are less than an amount to be determined by your board of directors and approved by the council of the Medical Society of the State of New York. When the subscribers' incomes exceed this amount, physicians will be privileged to make a further charge to their patients in addition to the fees which they will receive from the company. The mayor's tentative proposal has envisioned coverage "to every one who earns up to \$5,000 a year," it was stated.

## OHIO

**Dr Markwith Ends Term as Health Commissioner**—Dr Roll H. Markwith, Columbus, retired as director of the Ohio Department of Health on August 21, when his five year term expired, to become assistant medical director of the clinical laboratory owned and operated by Dr Anson L. Brown, Columbus. Dr Markwith had been health commissioner since January 1939 when a law enacted by the legislature in that year, reorganizing the state department of health and providing for a five year term for the director, became effective. In August 1939 Dr Markwith was reappointed. Before becoming state health commissioner he had been health officer of Summit County. Until a new director is appointed by the governor the department will be in charge of Mr.

James E. Bauman, LL.B., assistant director and chief of the legal division. In Ohio the law requires the governor to appoint a director of health from a list of five nominees submitted by the Ohio Public Health Council.

## VIRGINIA

**Dr Porterfield Named Health Officer of Richmond**—Dr Jack B. Porterfield has resigned as director of the bureau of industrial hygiene of the Virginia Department of Health, Richmond, to become director of the Richmond city health department effective September 16. Dr Porterfield graduated at University of Virginia Department of Medicine, Charlottesville, in 1933 and has been with the state department of health since 1939.

**State Medical Meeting**—The ninety-sixth annual meeting of the Medical Society of Virginia will be held at the John Marshall Hotel, Richmond, October 23-25, under the presidency of Dr Claude B. Bowyer, Stonegap. Included among the speakers will be:

Drs Frank S. Johns and James B. Stone, Richmond: Congenital Pyloric Stenosis with Series of Cases.  
Dr James Q. Gant, Jr., Bethesda, Md.: Dermatitis in the Munitions Industry.  
Dr Paul Hogg, Newport News: Erythroblastosis and the Rh Factor.  
Dr Alex F. Hartmann, St. Louis: Further Clinical Studies in Disturbances of Acid-Base Balance.  
Drs Challis H. Dawson, Suffolk, and Hubert D. Crow, Courtland: Report of Five Cases of Meningitis Treated Empirically with Sulfanilamide Under Rural and Low Economic Conditions.  
Drs Hugh P. Newbill and Randolph Leigh, Jr., Richmond: Nonsurgical Therapy of Epilepsy.  
Dr Frederick E. Hamlin, Roanoke: An Investigation of Allergy in Routine Nose and Throat Practice.  
Drs George Cooper, Jr., and Vincent W. Archer, University: Radiation and Neurosurgery in Advanced Painful Malignancy.  
Dr Herbert C. Lee, Richmond: Partial Duodenopancreatectomy: Its Use in the Treatment of Pancreatic Malignancy.  
Dr Wallace E. Herrell, Rochester, Minn.: Penicillin.  
Dr Paul D. Camp, Richmond: Congenital Heart Disease.

On Tuesday, October 24, clinics will be conducted under the auspices of the Medical College of Virginia. On Wednesday the Virginia Society of Chest Physicians will hold a luncheon meeting at Pine Camp. Various specialty societies plan luncheon sessions. The Woman's Auxiliary to the Medical Society of Virginia will hold its twenty-second annual meeting in Richmond at the John Marshall Hotel, October 23-24.

**Special Examining Board in Basic Science Created**—Members of a three man special board of examiners in basic science, created by the 1944 general assembly to conduct examinations of applicants for licenses to practice the healing arts in Virginia, are Dr Frank L. Apperly, professor of pathology, Medical College of Virginia, Richmond; Carl C. Speidel, Sc.D., professor of anatomy, University of Virginia, Department of Medicine, Charlottesville; and Lucius J. Desha, Ph.D., professor of chemistry, Washington and Lee University, Lexington. The appointments were made by Governor Darden according to the *Richmond Times-Dispatch*. The tenure of the board is five years. It was set up by the general assembly in the amendment to the healing arts statutes to permit the licensing of chiropractors and naturopaths in Virginia. The newspaper report stated that the purpose of the special board was to meet the objections that the state medical examining board, as now constituted, should not pass on the qualifications of chiropractors and naturopaths. The act specifies that the members of the special board shall be members of faculties of the accredited colleges of the state and shall not be medical practitioners. Examinations by the board will be limited to the basic sciences and shall include only the subjects of anatomy, bacteriology, elementary chemistry, pathology and physiology. The examinations are to be given in November of each year during the five year tenure of the board, with the first planned for November of this year. Under the act creating it the board may give examinations to all applicants for licenses to practice chiropractic or naturopathy who elect to take the special tests in basic science in preference to the more detailed examination in these subjects which is provided under the state board of medical examiners for applicants for licenses to practice medicine. A special provision in the act preserves the right of applicants in the military or naval service who although otherwise eligible to take the special examinations, are prevented from doing so because of their absence from the state. Except for this exemption the special examinations are available only to those practitioners of chiropractic and naturopathy who were engaged in such practice for a period of one year prior to the effective date of the act which was July 1. Applicants not in the armed services are required



to apply for the special examination prior to November 1 and to supply the board with satisfactory evidence of eligibility. The exempted servicemen may certify their eligibility at any time within six months after their discharge from the service.

### WASHINGTON

**Arthur Anderson Dies**—Mr Arthur Anderson, executive secretary of the Washington State Medical Association for the past five years, died August 7 of coronary thrombosis, aged 47.

**Stith Memorial Library**—The Dr Robert M Stith Memorial Association has been incorporated for the purpose of establishing a memorial library at Firland Sanatorium, Seattle. The nucleus will be the personal medical library of the late Dr Stith, who was medical director of the sanatorium during the greater period of its existence, according to *Northwest Medicine*.

### WEST VIRGINIA

**Changes in Health Officers**—Dr Ward L. Oliver, Point Pleasant, health officer for district number 3, has been transferred to Morgantown as health officer of Monongalia County. He succeeds Dr William B. Bailey, who has been transferred to Norfolk, Va.

**Dr Angstadt Named Acting Director of Maternal and Child Hygiene Division**—Dr Norman G. Angstadt, director of the bureau of county health work of the state department of health, has been appointed acting director of the division of maternal and child hygiene since the recent resignation of Dr Lenore V. L. Patrick Chipman (*THE JOURNAL*, June 24, p. 589).

**Health Conference**—On October 16 the annual Northern District Health Conference will be held at the new West Virginia Training Center, Morgantown. Dr James A. Dolce, Fairmont, director of the Marion County Health Department, will deliver the principal address, on "Public Health in the Schools." A feature of the conference will be the dedication of the training center.

**New Clinics to Discover Cancer**—On August 31 Drs Paul R. Gerhardt, director of the state division of cancer control and J. Ross Hunter, Charleston chairman of the cancer committee of the state medical association conducted "case finding clinics at Madison and Whitesville. The Boone County Medical Society cooperated in the clinics, arrangements for which were made by Dr Robert L. Hunter, county health officer. Nursing service was provided by the public health service and the Boone-Raleigh Clinic. Of 11 patients examined, 4 were found to have cancer. The clinics were conducted as an experiment. Regular tumor clinics have been established at the Laird Memorial Hospital, Montgomery Mountain State Memorial Hospital, Charleston, St. Mary's Hospital, Huntington, Bluefield Sanitarium, Bluefield, and St. Mary's Hospital, Clarksburg. A tumor diagnostic clinic is now being organized in Morgantown under the auspices of the Monongalia County Medical Society, and the local medical societies are considering the establishment of similar clinics in Parkersburg and Fairmont. On September 15 64 active cases of cancer were under the care of the recently organized division of cancer control. Provision has been made for handling additional referrals without delay while applications for care through the new division are filed with the local departments of public assistance, and persons need not be receiving aid from this department to be eligible for cancer care. The department of public assistance furnishes information concerning the financial circumstances of the applicant and the division determines whether the aid should be given. The possibility of developing additional channels through which applications may be made is now being given consideration with a view to speeding up the work of the division.

### GENERAL

**Call to Hunter College Graduates**—All women physicians who are graduates of Hunter College, New York, are asked to communicate with Ruth Lewinson, 18 East 41st Street, New York 17, president of the Associate Alumnae of Hunter College. The college is making preparations to observe its seventy-fifth anniversary and wishes to reach as many of its graduates as possible.

**Funds for Infantile Paralysis During Epidemic**—The National Foundation for Infantile Paralysis on September 3 announced that up to September 1, \$397,639 had been sent to twelve states to assist in defraying expenses incidental to the

prevailing epidemic of poliomyelitis. Of the total, North Carolina has received \$230,974. A total of \$51,311 has been sent to aid foundation chapters in New York State whose funds have been depleted in aiding victims, and another \$50,000 has been sent for a similar purpose to Kentucky. Other states which have received financial aid are Virginia, Ohio, Florida, Illinois, Iowa, Kansas, Mississippi, California and Oregon. In other states 50 per cent of funds retained by the foundation's chapters from the March of Dimes has been sufficient to provide proper medical care for all victims regardless of age, race, creed or color. Specially trained physicians were sent into North Carolina, Kentucky and New York, and thirty-five physical therapists were dispatched to fill the needs in fourteen states. A total of 6 tons of wool for hot packs has been shipped into thirteen states and the District of Columbia.

**Association of Medical Colleges**—The fifty-fifth annual meeting of the Association of American Medical Colleges will be held at the Hotel Statler, Detroit, October 23-25, under the presidency of Dr Ewen M. MacEwen, Iowa City. Among the speakers will be:

Dr. George S. Eadie and Wilburt C. Davison, Durham, N. C., Postwar Medical Education.  
Dr. C. Sidney Birrell, Boston, Graduate Medical Education in the Postwar Period.  
Dr. Donald B. Tresidder, Stanford University, Calif., Co-Car-penter, Winston-Salem, N. C., J. Rosecoe Miller and George H. Gardner, Chicago, Deceleration of the Teaching Program.  
Dr. Gordon B. Myers, Detroit, The Teaching of Physical Diagnosis.  
Dr. Loren R. Chandler, San Francisco, William Pepper, Philadelphia, Charles D. Crecy, Minneapolis, Requirement of Internship for Graduation.  
Dr. Joseph Turner, New York, and Everett S. Woodworth, Detroit, The Internship: When to Contact Students, Time of Appointment.  
Dr. Daniel E. Huxley, Detroit, The Teaching of Parasitology and Tropical Medicine.  
Dr. William Dock, New York, Mixed Task Forces in Medical Education.  
Dr. James A. Greene, Houston, George T. Harrell Jr. and Herbert M. Vann, Winston-Salem, Integration of the Curriculum, Overdepartmentalization.  
Carlos I. Reed, Ph.D., Chicago, A Study and Analysis of Faculty and Student Opinions of Training in Preparation for the Study of Medicine.

**Young Mothers and Rapid Wartime Increase in Birth Rate**—Young mothers between the ages of 20 and 30 having their first child were the principal contributors to the rapid wartime rise in the American birth rate, according to the statisticians of the Metropolitan Life Insurance Company. The chief factor in the rise at the younger ages has undoubtedly been the recent upswing in the marriage rate. A good part of the increase, however, is accounted for by women who had been married for some time but delayed having children until economic conditions became more favorable. Although the general birth rate has increased with unequal rapidity during the war period, the trend toward small American families as well is still in evidence. Families with five or more children have continued their long term prewar downward trend. Similarly the general trends of reproductivity in relation to the age of the mother have continued essentially along the lines prevailing just prior to the beginning of the war but in more accentuated form it was stated. It was pointed out that from 1933 when the birth rate in this country reached its lowest point to 1939, the increase in births was almost entirely concentrated among women under 30. Likewise between 1939 and 1942 white women at ages 20 to 24 "recorded the largest increase in the birth rate 29 per cent at ages 25 to 29 the rise was 26 per cent." The rate among women in their early thirties increased by 17 per cent during the war years since 1939, but in the group at the age of 40 or over the birth rate decreased between 1939 and 1942. First births showed a considerably larger wartime increase than any of the later orders of birth. The largest rise occurred among women in their twenties among whom it amounted to 40 per cent, among women in their thirties the gain was 33 per cent. Families having their second or third child also showed considerable gains during the war period, while the data also indicate a small increase between 1939 and 1942 in the birth rate of fourth children. For children of fifth and higher orders of birth the long term prewar downward trend has persisted, giving every indication that the tendency toward small American families will continue, it was stated.

**International Medical Assembly**—The Inter-State Postgraduate Medical Association of North America will hold its twenty-ninth annual International Medical Assembly at the Palmer House, Chicago, October 17-20. Among the speakers will be:

Dr. Bert I. Beverly, Chicago, Spoiled Children.  
Dr. James L. Poppen, Boston, Intracranial Aneurysms: Diagnosis and Management.  
Dr. Frank H. Krusen, Rochester, Minn., The Abuse of Rest as a Therapeutic Agent.  
Dr. W. James Gardner, Cleveland Heights, Ohio, Subdural Hematomas.  
Dr. Charles G. Johnston, Detroit, Intestinal Obstruction.

Dr. Harry I. Alexander St. Louis Primary Atypical Pneumonia  
Dr. Eliott I. Joslin Boston Diabetes Today  
Dr. J. Arnold Barger Rochester Management of Ulcerative Colitis  
Major Gen. David N. W. Grant The Air Surgeon Five Wartime Achievements of the Army Air Forces Medical Services  
Dr. Karl A. Menninger Topeka Kan. Diagnosis and Treatment of Schizophrenia  
Dr. Frederick A. Davis Madison Wis. What the General Practitioner Should Know About Ophthalmologic Examinations (the Schneider Foundation eye presentation)  
Lieut. Col. Donald McEachern R. C. A. M. C. Diagnosis and Treatment of Epilepsy  
Dr. Edward J. Stieglitz Washington D. C. Geriatrics in Wartime  
Dr. Donald C. Balfour Rochester Diagnosis and Treatment of Duodenal Ulcer  
Dr. Julian Deryl Hart Durham N. C. Air Borne Infections in Clean Operative Wounds  
Dr. Robert S. Berghoff Chicago The Senile Heart  
Brig. Gen. Fred W. Rankin M. C. Comments on Surgical Methods Used in World War II  
Dr. Edward Weiss Philadelphia Psychosomatic Aspects of Problem Cases in the Practice of Medicine  
Dr. Richard B. Cattell Boston Colectomy for Ulcerative Colitis  
Col. Byrl R. Kirklin M. C. Some Common Errors in X-Ray Interpretation  
Dr. Arthur Steindler Iowa City Disabilities Resulting from Compression Fractures of the Spine  
Dr. John W. Harris Madison The Use and Abuse of Forceps  
Norman T. Kirk Surgeon General of the Army Surgical Care of the Battle Casualty  
Dr. Oscar T. Clagett Rochester Surgical Treatment of Bronchiectasis  
Dr. Arliss R. Barnes Rochester Diagnosis and Treatment of Coronary Sclerosis  
Dr. Frank S. Dolley Los Angeles Chest Injuries

In addition to these presentations a number of diagnostic clinics will be conducted. At the assembly dinner Dr. Josiah J. Moore Chicago, Treasurer of the American Medical Association, will, as general chairman of the assembly give the welcoming address and introduce General Rankin president of the association who will speak on 'Medical Activities in the Normandy Beachhead Landing'. Other speakers will include Dr. Walter H. Judd, congressman from Minnesota on 'Our Prospects for the War and the Peace'.

## LATIN AMERICA

**Health Activities in Latin America—Traveling Health Requirements in Canal Zone.**—On September 14 the Panama Canal Health Department issued a statement outlining vaccination and health requirements for traveling in the Canal Zone, emphasizing the need of a smallpox vaccination and freedom from contagious diseases. The quarantine division requires that every one coming into the Canal Zone present a certificate showing that successful vaccination has been performed within the preceding five years. If one does not have a certificate he must be vaccinated by a quarantine physician before he is allowed to enter the zone. The U. S. Foreign Quarantine requires that every person entering the United States must present a smallpox vaccination certificate. If a traveler does not possess one, quarantine officials insist that he be vaccinated before he is permitted to enter the United States. Because most Central and South American countries require smallpox vaccination certificates of incoming travelers the consuls of these countries will not issue visas permitting entry unless shown a certificate. In 1940 the health department carried out a zone-wide smallpox vaccination campaign. Copies of certificates based on this campaign may be obtained from the chief health officer. Record of preemployment vaccination is included in the personnel files of many Canal Zone employees who have come to the Zone during the past two years. Copies based on these records may be obtained from the chief health officer, as may copies based on records sent in the past to the chief health officer from the outpatient clinics of Panama Canal hospitals. The school physician has on file the records of vaccinations he has done on school children and the district physicians have the records of vaccinations done in their dispensaries. Copies may be obtained from either of these sources. Many Central and South American countries also require a statement signed by a recognized physician certifying that the incoming traveler has been examined and found free of contagious disease. Since these countries will turn back travelers unless they have this statement the Canal Zone Quarantine will not let a person leave the Zone without such statement if he plans to visit in one of them. For direct travel to the United States or for return to the Zone from the states or from these countries this statement is not necessary. Statements certifying health may be obtained from any district physician from the medical clinic of any Panama Canal hospital or from the chief health officer. Each person for whom such a certificate is issued must appear personally before the physician who is to sign the certificate. No other vaccination or health requirements must be met in order for Panama Canal employees or their families to travel

Typhoid-paratyphoid inoculations are recommended for every one and especially for travel in Central or South America but are not required. Typhus vaccination is recommended for travel in certain Central and South American countries but is not required. Should there be epidemics or great health risks in these countries in the future further recommendation will be made by the chief health officer.

**Personal.**—Dr. Carlos Estevez, formerly director general of sanitation of Guatemala has joined the Pan American Sanitary Bureau with headquarters in Mexico for the study of malaria.

**Penicillin in San Juan.**—Twenty million units of penicillin has been given to the San Juan Health Department for use in its campaign against gonorrhea.

## Government Services

### Name Aides on Rehabilitation

Brig. Gen. Frank T. Hines Veterans Administrator Washington D. C. announced September 3 the appointment of four educators. The names of the appointees are Robert G. Sproul LL.D. president of the University of California Berkeley, Rufus C. Harris LL.D. president of Tulane University New Orleans, Robert B. Stewart LL.D. controller of Purdue University West Lafayette Ind. and Horace S. Lord bursar of the Massachusetts Institute of Technology Cambridge Mass.

### Dr. Doyle Appointed to Industrial Hygiene Division

Dr. Walter E. Doyle in charge of the bureau of industrial hygiene Kentucky State Department of Health Louisville has been appointed chief of the medical unit industrial hygiene division Bureau of State Services U. S. Public Health Service. Dr. Doyle's appointment was effective October 1. He graduated at the University of Buffalo School of Medicine N. Y., in 1921.

### Funds for School and Child Care Allocated

Federal contributions amounting to \$713,707 to help twenty-three communities meet operating costs of school child care and recreation facilities were announced September 12. Thirteen of the communities were given a total of \$554,337 to help maintain school facilities for the year ending June 1945. The Roane County Board of Education at Kingston Tenn. was allotted \$219,131 and five communities in Oklahoma were awarded contributions totaling \$227,007 with Tulsa receiving \$171,868. Child care programs in Lackawanna and Kenmore N. Y. near Buffalo Ecorse Mich. in the Detroit area and Fort Belvoir, Virginia, were among the projects assisted.

### Funds for Public Works

The President has approved sixty-two new Federal Works Agency projects for financial assistance to war impacted communities to provide hospital school recreation and child care facilities. Federal funds allotted total \$2,017,050. Fifteen of the projects are for war public works construction. Federal allotments totaling \$945,943 were made for this construction. The total cost of the work is estimated at \$1,242,349. The applicants are to furnish \$296,406. The remaining forty-seven projects represent federal contributions to help defray operation and maintenance costs of hospitals both general and venereal disease control public schools facilities for the care of children of mothers employed in essential work and recreation programs. The federal contributions for these service projects aggregate \$1,071,107. Baltimore was allowed \$30,850 to assist in the operation of venereal disease hospital facilities. An allotment of \$563,500 to the St. Monica's Hospital and Health Center at Phoenix Ariz. was increased to \$648,500 to expand the project to include a 40 bed contagious disease ward together with a 130 bed hospital building, 30 beds to be reserved for venereal disease patients, and a 78 bed nurses home.

## CORRECTION

**Error in Location.**—The location of Dr. Bertalan Hdeh whose obituary was reported in THE JOURNAL, September 16 page 187 should have been New York and not Jersey City N. J.

## Foreign Letters

### LONDON

(From Our Regular Correspondent)

Sept 2, 1944

#### Trial of the Russian Serum for Rheumatism with Unsatisfactory Results

The Empire Rheumatism Council reports that tests with the scanty supply of the A C B serum of Professor Bogomoletz from Russia have not given favorable results. The best that can be said is "not proven." Nevertheless, in view of the high reputation of Soviet medical research, it is possible that with a more detailed statement of the best methods of use and some lead as to the type of rheumatic disease to which the serum is best adapted, it may be found that the claim advanced can be substantiated. As soon as war conditions allow the Empire Rheumatism Council proposes either to invite a representative of Professor Bogomoletz to visit England or to send a research scientist to Russia to make further investigations.

#### Death of Sir Arthur Hurst

Sir Arthur Hurst, the great clinician, has died suddenly at the age of 65 from an attack of asthma, a disease from which he was a lifelong sufferer, and British medicine has lost a most original mind. Much of his work was performed despite a continuous state of asthma. At Guy's Hospital he would arrive at 2 o'clock and give himself an injection of epinephrine, break away from his ward round at 3 for another injection and finally have one at 4 before leaving for home, white and tired but indomitable. He was educated at Oxford, where he took a first in the final honors school of physiology. He then went to the medical school of Guy's Hospital, where he had a distinguished career. After qualifying he studied in Munich, Paris and America. At the early age of 27 he was appointed assistant physician to Guy's Hospital with charge of the neurologic department. As a physiologist he had studied at Harvard the work of Cannon on the use of the opaque meal to record the shape of the stomach in casts and he had seen something of the kind attempted on the human stomach in Germany. At Guy's he was a pioneer in the study of the movements of the alimentary canal and the mechanism of pain. He was the first to distinguish two types of constipation—colonic, in which passage through the colon is delayed, and dyschezia (difficult defecation, a word coined for him). In dyschezia the feces reach the rectum in normal time but their evacuation is delayed by insufficient defecation. Neglect to respond to the call to defecation may end in loss of the conditioned reflex in which the rectum contracts and the anal sphincter relaxes. The rectum is found packed with feces at whatever hour it is examined. The patient takes aperients to produce fluid feces which require no effort for evacuation. This work is regarded as a noteworthy contribution to the understanding and treatment of constipation.

His thorough and extensive investigations made him the leading authority on diseases of the esophagus, stomach and intestine. He wrote on these subjects in the textbooks, where he combined knowledge of the latest views on physiology and pathology with minute and original clinical observation. His work on achalasia of the cardia, gastritis, peptic ulcer and ulcerative colitis marked a great advance. He lived to see his views on the medical treatment of gastric ulcer generally accepted. He was a trenchant critic of current errors and debunked many mythical maladies, such as "mucous colitis." He pointed out that the presence of mucus with solid feces was a normal event and that it was a gross error to regard it as evidence of disease. He denounced the "colon laundries" which have become popular in recent years in this country. The colonic douche was an unnatural irritant, and the mucus which

came away with the last 20 or 30 pints often administered was not the accumulation of months, as the patient was assured, but a protective reaction against the irritation of the douche. Other mythical maladies exposed by him were movable kidney, gas troptosis and abdominal adhesions. He pointed out that when appendectomy failed to cure chronic pain in the right iliac fossa a second error was made and adhesions were diagnosed. But the majority of abdominal adhesions were harmless. Another mythical malady was intestinal intoxication due to intestinal stasis.

It was characteristic of his work that it always seemed to touch fundamentals and have a message for the general man or the expert in quite another branch of medicine. Thus he not long ago held the rapt attention of the Section of Proctology of the Royal Society of Medicine when he discoursed on Functional Diseases of the Colon and Rectum. His teaching that the so-called pernicious vomiting of pregnancy is hysterical has been adopted by leading obstetricians (*THE JOURNAL*, May 20 p. 223). Though a kindly man, his zeal for what he conceived to be the truth sometimes made his criticisms at medical meetings devastating.

In spite of his frail health his literary output was large. Some of his numerous articles in medical journals were collected in a book entitled "Essays and Addresses on Digestion and Nervous Disorders." His book "Constipation and Allied Disorders" (second edition, 1919) was translated into French (1912). "Medical Diseases of the War" was published in 1918 and the third edition appeared in 1942. Other books were "The Constitutional Factor in Disease" (1927) and "Functional Disorders" (1920). With a surgeon, M. J. Stewart, he cooperated in writing "Gastric and Duodenal Ulcer" (1929). He enjoyed an international reputation, as was shown by his presidency of the International Society of Gastro-Enterology and an honorary membership in the American Medical Association, the American and Mexican Gastro-Enterological associations, the Belgian Gastro-Enterological and the French Gastro-Enterological Association. From 1927 to 1929 he was president of the Section of Medicine of the Royal Society of Medicine.

#### Research on Pneumoconiosis

Though it has long been known that dust was injurious to the miners' health, only in 1918, twenty-one years after the first workmen's compensation act was passed, was silicosis made a "scheduled" disease for compensation, and only in 1934 was the plan extended to include any operation underground in any coal mine. Not until 1943 was it officially recognized that miners, especially in certain parts of the Welsh coal field, might contract disease of the lungs which was not due only to dust containing silica. In February of last year an act was passed to bring into the scope of workmen's compensation all cases of pneumoconiosis. The way for this legislation was prepared by six years of scientific investigation in the pits of South Wales by a special committee of the Medical Research Council. Its reports resulted in an order compelling the adoption in any mine in South Wales or Monmouthshire of a variety of measures to reduce exposure of the men to dust and the appointment by the minister of fuel and power of an advisory committee on the treatment and rehabilitation of Welsh miners suffering from pneumoconiosis.

Already measures are being taken to suppress harmful dusts at working places in mines but the committee considers that further attention is needed to the treatment of affected persons and their restoration to health. Present knowledge is insufficient to enable the committee to advise the introduction of large scale measures, further research into the cause, progress and treatment of the disease is felt to be necessary. Accordingly, the establishment of a research unit with accommodations for about 30 patients is recommended. The work is to be linked, though a central authority with that pro-

ceeding on other phases of the problem it is planned to acquire more precise knowledge of the causes and diagnosis of the disease to develop and apply better methods of suppressing dangerous dust and to resettle and retrain disabled miners to take up more suitable employment. The committee also recommends initial and periodic clinical and x-ray examination of miners. Correlation of the findings with the results of pathologic research into early changes in the lung condition, the progression of those changes and the part played by tuberculosis and other infections will also be studied.

#### Radical Reforms of Medical Education

In spite of the war reforms which embrace every aspect of social security are being worked out. As the proposed National Health Service will depend largely on the work of physicians the government appointed a committee to inquire into the organization of medical schools, particularly as to clinical teaching and organization for research. The result of an exhaustive inquiry is an elaborate report recommending many radical reforms: (1) financial assistance to medical students so that children of ability are not deterred from entering the medical profession, (2) coeducation and filling of all hospital appointments by open competition without any sex bar, (3) whole time professors of medicine, surgery and obstetrics and gynecology in every school, (4) more emphasis on measures that make and preserve a healthy nation, (5) in clinical instruction, more emphasis on fundamental principles rather than on imparting a mass of factual knowledge, (6) after a student has passed the final examination, a junior appointment in a recognized hospital for twelve months before admission to the medical register, (7) postgraduate study a regular feature of general practice.

#### BRAZIL

(From Our Regular Correspondent)

RIO DE JANEIRO, Aug. 25 1944

#### Vital Statistics of Rio de Janeiro for the First Half of 1944

Provisional data of vital statistics for the city of Rio de Janeiro for the first half of the present year are now available. During this period (mostly summer and autumn in the Southern Hemisphere) the total number of deaths from all causes was 16,989, corresponding to the crude annual death rate of 17.63 per thousand, as the city population computed for July 1 was 1,927,000. From the mean annual death rate of 26.00 per thousand of population for the five year period 1899-1903 this rate has declined to 23.55 for 1909-1913, to 21.95 for 1919-1923 and finally to 16.73 for 1929-1933. During this whole period yellow fever, plague and smallpox have been eradicated and malaria substantially reduced under the leadership of Dr. Oswaldo Cruz and afterward of Dr. Carlos Chagas, thus ending the first phase of the public health work in the capital city of the country. Now a second phase has been opened the main features of which should be the conquest of tuberculosis, syphilis, typhoid, dysentery, diphtheria and measles and the lowering of infant mortality, the latter mostly of a nutritional and digestive origin. The success of the whole campaign is still waiting for the use of the modern weapons of public health work, especially in adequate intensity and quantity or with the indispensable continuity. The number of live births registered during the period was 2,865, corresponding to an annual birth rate of 22.69.

The leading cause of death was tuberculosis with a total of 2,977 deaths in the six months which would correspond to an annual death rate of 309 per hundred thousand of population (325 in 1943, 312 in 1942 and 316 in 1941). The rest of the infectious and parasitic diseases has caused 2,096 deaths in the period which together with those from tuberculosis makes a total of 5,073 deaths (29.86 per cent of the

deaths from all causes) or an annual death rate of 527 per hundred thousand of population as against about 95 per hundred thousand for the aggregate of the largest cities of the United States.

Cancer which has caused 709 deaths or 73.59 per hundred thousand (72.06 in 1943, 67.34 in 1942 and 66.44 in 1941) has been on a continuous increase as a cause of death since 1903, 1907 when the mean annual death rate was 34.75. The second most important single group of causes of death is that of the diseases of the digestive system represented by 2,600 deaths in the period covered which would correspond to the annual death rate of 279 per hundred thousand. Diseases of the circulatory system accounted for 2,678 deaths, or the annual death rate of 278 per hundred thousand.

The diseases of the nervous system have caused 651 deaths or the annual death rate of 67.57 per hundred thousand (65.40 in 1943, 65.94 in 1942 and 71.17 in 1941), the largest contribution being from intracranial lesions of vascular origin, 461 deaths, or the annual death rate of 47.85 per hundred thousand. Violent deaths were 562 which would correspond to 58.33 per hundred thousand (56.67 in 1943, 65.51 in 1942 and 66.46 in 1941).

#### Retirement of Professor Austregesilo

Dr. Antonio Austregesilo, one of the leading figures of modern medicine in Brazil, has reached the retirement age after thirty-five years of active duty as professor at the University of Rio de Janeiro. He was the brightest pupil in the school of psychiatrists founded in Brazil by Dr. Juliano Moreira. Beginning as a psychiatrist in a small ward at the modest *Praia Vermelha* Hospital for the Insane, Dr. Austregesilo shifted little by little to neurology which was then nonexistent in Brazil and which he established in the country as a new branch of clinical medicine. Thereafter he became a professor of neurology, teaching every morning in the famous twentieth ward of the old Santa Casa Hospital, where this specialty was taught in connection with the university. He made several trips to Europe where he met the leading neurologists of London, Paris, Berlin and Vienna, as well as to Buenos Aires, where he was rated as the greatest neurologist of Latin America. In recent years the teaching of Professor Austregesilo was centered at the Institute of Neurology, a department of the old Psychiatric Hospital of *Praia Vermelha*. He has written many papers and monographs and several books, all dealing with neurology and among his pupils are Mauricio França, Esposel, Teixeira Mendes, Studart Galotti, Deolindo Couto, Aloysio Marques and Borges Fortes.

#### Brief Items

Two wards of the Gaffree-Guinle Foundation Hospital of Rio de Janeiro have recently been set aside for the rapid treatment of syphilis. This is the first hospital service fully equipped in Brazil for this kind of work and the foundation has decided to develop the service as the need requires.

The Sanitation Division of the Health Department of the state of Rio Grande do Sul has completed an extensive plan to provide water supply services and sewerage systems for several small cities of the state. An important sum has been appropriated to enable the state administration to cooperate with those small cities in the execution of the plan.

---

## Marriages

JOHN SINCLAIR CAMPBELL, Manistec Mich., to Miss Martha Anderson of Birmingham, Ala., in Evanston Ill., August 12.

BEN THOMAS GALBRAITH, Henderson Tenn., to Miss Mai Catherine Herron of Trenton August 15.

ROBERT B. COFIELD, Cincinnati, to Miss Clara Hofferberth of Dayton, Ohio, recently.

## Deaths

**Frederick Clark Holden** \* New York University of the City of New York Medical Department, New York 1892 professor emeritus of obstetrics and gynecology at the New York University College of Medicine, specialist certified by the American Board of Obstetrics and Gynecology, Inc., member and past president of the American Gynecological Society, member of the American Society for the Control of Cancer, fellow of the American College of Surgeons, obstetrician and gynecologist, French Hospital, consulting gynecologist, Harlem Hospital and the Bronx Maternity and Woman's Hospital, director of gynecology, Jersey City Medical Center, Jersey City, N. J., consulting obstetrician, Methodist Hospital, Brooklyn, Mount Vernon Hospital, Mount Vernon N. Y., and the Margaret Hague Maternity Hospital Jersey City, N. J., consulting obstetrician and gynecologist at the Bellevue Hospital, where he had been director of the gynecologic service for many years, in 1941 received the doctorate of public health from New York University, died in Prouts Neck, Maine August 27 aged 75, of acute pulmonary edema

**Eben Homer Bennett** \* Lubec Maine Jefferson Medical College of Philadelphia 1875 an Affiliate Fellow of and in 1912-1913 delegate to the American Medical Association, past president of the Maine Medical Association and the Washington County Medical Society, acting assistant surgeon in the U. S. Public Health Service school superintendent for fifty years in 1894 one of the first public high schools to be established in Maine was opened in Lubec largely through his interest in public education, for many years physician to the Roosevelt family when it summered in Campobello officiating at the birth of Franklin Jr. in 1914 and assisting with Franklin Sr. when he first became ill with poliomyelitis, in 1935 at the suggestion of Mrs. Roosevelt, awarded the golden emblem of the Beacon Circle of Honor, an honor paid by the Beacon School, Boston, to an individual 'who is an outstanding example for youth', in 1937 received the annual award of the Maine Medical Association for 'outstanding service as a doctor' died August 31, aged 96, of cerebral thrombosis

**Edwin Manson Neher** \* Laguna Beach, Calif., Rush Medical College Chicago, 1906 member of the House of Delegates of the American Medical Association in 1922, 1924



LIEUT. WALTER E. BROWN  
(MC), U.S.N. 1913-1943



LIEUT. GILBERT C. CAMPBELL  
(MC), U.S.N. 1914-1943

1926 and 1928, member, past president and vice president of the Utah State Medical Association member and past president of the Western Ophthalmological Society, member of the American Academy of Ophthalmology and Otolaryngology, Pacific Coast Oto-Ophthalmological Society and the American Ophthalmological Society, fellow of the American College of Surgeons, specialist certified by the American Board of Ophthalmology, formerly ophthalmologist on the staff of St. Mark's Hospital, Salt Lake City, where he was also ophthalmologist for the Utah Fuel Company, died July 8, aged 69, of cerebral hemorrhage

**Thomas Harris Cherry** \* New York, Columbia University College of Physicians and Surgeons, New York, 1904, specialist certified by the American Board of Obstetrics and Gynecology Inc. clinical professor of gynecology at the New York Post-Graduate Medical School, Columbia University, fellow of the American College of Surgeons and the New York Academy of Medicine, attending gynecologist at the New York Post-Graduate Hospital, consulting gynecologist Suffolk County Sanatorium, Holtsville, Flushing Hospital and Dispensary Flushing and the All Souls Hospital Morristown N. J. author of "Surgical and Medical Gynecologic Technique

died in the Manhattan General Hospital August 30, aged 64, of coronary thrombosis

**Katherine Pritchard Hoyt**, Wenham Mass. Woman's Medical College of the New York Infirmary for Women and Children, New York, 1887 died June 1, aged 79 of coronary thrombosis

**Charles Calvin Hubbard**, Farmer, N. C. Jefferson Medical College of Philadelphia 1888 honorary member of the Medical Society of the State of North Carolina, member of the Randolph County Board of Health died July 20, aged 76 of angina pectoris

**William Merritt Jones**, Greensboro N. C., University of Maryland School of Medicine, Baltimore

1903 honorary member of the Medical Society of the State of North Carolina, formerly a member of the state board of medical examiners, served as health officer of Guilford County, examining physician for the county draft board during World War I and II medical director of the Jefferson Standard Life Insurance Company died July 29, aged 63 of carcinoma of the lung

**Benjamin Baker Kelly**, Purdy, Mo. University of Tennessee Medical Department, Nashville, 1890, served during World War I, served as president of the school board died

## KILLED IN ACTION

**Walter Earl Brown** \* Lieutenant (MC), U. S. Navy, Wilson N. C., Duke University School of Medicine, Durham 1938, served an internship at the Park View Hospital Rocky Mount, and the Baker Sanatorium in Lumberton commissioned a lieutenant (jg) in the medical corps of the United States Navy on Oct. 2, 1940 and later promoted to lieutenant aged 30 was killed in action in the Pacific area the presumptive date of death was Nov. 14, 1943 according to the Navy Department

**Gilbert Carmon Campbell** \* Lieutenant (MC) U. S. Navy McCracken Kan., Creighton University School of Medicine, Omaha, 1940, served an internship at the Creighton Memorial St. Joseph's Hospital, Omaha, commissioned a lieutenant (jg) in the medical corps of the U. S. Naval Reserve on July 7, 1941, became a lieutenant (jg) in the medical corps of the regular U. S. Navy on March 26, 1942 promoted to lieutenant on June 15, 1942, aged 29 killed in action in the Pacific area presumptive date of death Nov. 16, 1943 according to the Navy Department



in the Barry County Hospital Cassville July 13 aged 74 of uremia and chronic myocarditis

**Pierre Ulric Laberge**, Ambrose N D, School of Medicine and Surgery of Montreal Que Canada, 1886 died July 4 aged 83 of cerebral hemorrhage

**Eldorus De Motte Lyon**, Hastings-on-Hudson, N Y University of the City of New York Medical Department New York 1877 formerly health officer of the village of Peekskill and the town of Cortland at one time on the staff of the Peekskill Hospital Peekskill died August 11, aged 88

**Will Hale Malone** Atlanta Ga Atlanta College of Physicians and Surgeons 1912 served during World War I for many years on the staff of the Veterans Administration Facility where he died July 9 aged 53 of cerebral hemorrhage

**Harry Knox Mansfield** Philadelphia Hahnemann Medical College and Hospital, Philadelphia 1885 served on the staffs of the Hahnemann and St Luke's hospitals died in Philadelphia General Hospital July 22 aged 82, of hypertensive cardiovascular disease

**William Clawson Martin** @ Detroit, Detroit College of Medicine 1890 an Affiliate Fellow of the American Medical Association member of the American Urological Association

**Fred Ephraim Miller** Grand Rapids Mich Chicago College of Medicine and Surgery 1910 served during World War I formerly a member of the medical staff of the city public schools served as medical examiner for the state boxing commission and had been on the Michigan committee for the 1932 Olympiad at one time connected with the police department and the contagious disease bureau of the Chicago department of health died in the Veterans Administration Facility Hines Ill July 30 aged 56 of chronic pulmonary tuberculosis

**Marc Monroe Mouton** Lafayette La Tulane University of Louisiana School of Medicine New Orleans 1913 served during World War I formerly lieutenant governor of Louisiana coroner of the Lafayette Parish and health officer of the city of Lafayette on the visiting staffs of the Lafayette Charity Hospital and the Lafayette Sanitarium died August 21 aged 53 of pulmonary tuberculosis

**Willis Bent Morse** @ Salem Ore Willamette University Medical Department Salem 1891 fellow of the American College of Surgeons for many years a member and at one time president of the state board of health past president of the Oregon State Medical Society chairman of the state medical advisory board during World War I visiting surgeon Salem



CAPT JOHN P KEEFE  
M C A U S 1916-1944



MAJOR LUCIUS G McLAUCHLIN  
M C A U S 1898-1944



CAPT THOMAS J ROBBINS  
M C A U S 1917-1944

emeritus professor of urology at his alma mater formerly on the staff of the Childrens Free Hospital, died in the Henry Ford Hospital August 21 aged 75 of carcinoma of the esophagus and hemorrhage

**Arnold B. McCarty**, Owensboro Ky Louisville Medical College, 1900 died in the Owensboro Daviess County Hospital July 27, aged 67 of heart disease

Deaconess Hospital and the Salem General Hospital, where he died July 20, aged 78 of cerebrovascular accident

**George Earl Paulius Sr** @ Memphis Tenn Barnes Medical College St Louis 1908 served during World War I on the staff of St Joseph's Hospital, where he died July 29 aged 62 of chronic cholecystitis acute pancreatitis acute hepatitis and rupture of the retroperitoneal artery

## KILLED IN ACTION

**John Patrick Keefe**, Detroit, Wayne University College of Medicine Detroit 1943 served an internship at the City of Detroit Receiving Hospital commissioned a first lieutenant in the medical corps, Army of the United States July 28 1942 began active duty on July 15 1943 attached to the 137th Ordnance Maintenance Battalion Armored Division Camp Chaffee Ark, later promoted to captain died in France June 24, aged 28 as the result of wounds received in action on D day, June 6

**Lucius Gould McLauchlin** @ Ashland Pa McGill University Faculty of Medicine Montreal Que Canada 1924 served an internship at the Montreal General Hospital Montreal Que Canada and the Ashland State Hospital where he was a resident physician and a member

of the board of governors served in France during World War I compensation surgeon for the Philadelphia and Reading Coal and Iron Company commissioned a captain in the medical corps Army of the United States on Oct 21 1942 later promoted to major died in the European area June 20, aged 45 of wounds received in action

**Thomas James Robbins**, Heber Springs Ark University of Arkansas School of Medicine Little Rock 1941 commissioned a first lieutenant in the medical corps Army of the United States on May 11 1942 began active duty on July 1 1942 later promoted to captain died in the European area June 23 aged 26 of wounds received in action



## Bureau of Investigation

### "GILJAN" TESTIMONIAL OUTLIVES WRITER

#### "Wonderful Medicine" Fails to Save Him

On one page of the Cleveland News for July 20, 1944 appeared the testimonial of Alexander Kellough for "Giljan," reproduced here (reduced), and his death notice

In his testimonial Mr Kellough said, in part, "Giljan is a wonderful medicine Any person having trouble such as mine

## BACKACHE TORTURED HIM; WEAK FROM LOSS OF SLEEP

Mr Alexander Kellough of 2508 F Morris Block Place, Cleveland Was Also in Misery From Indigestion, Gas Pains—Recommends Giljan as Wonderful Medicine



Mr Alexander Kellough

Mr Kellough's statement should bring comfort to thousands of suffering men and women who have sought in vain for relief from the same torturing miseries which plagued this great Cleveland man. His testimony explains the amazement even of druggists at the wonderful relief which Giljan is giving to so many who have agonized for years from stomach, liver, kidney ailments, bodily aches and pains. Mr Kellough says

#### "Constipation Slowed Me Up

I had backache and back weakness so bad that often it was hard to get out of bed mornings. I lost much sleep. My stomach was sour too and gas pains were so terrible I didn't care to eat. Constipation slowed me up too and kept me miserable. I have now taken all most 3 bottles of Giljan and feel

greatly improved. Back pains have disappeared and I sleep and eat much better. Giljan is a wonderful medicine. Any person having trouble such as mine should lose no time in taking it.

#### Made From Nature's Herbs

Giljan is an advanced medical compound containing 18 juices from 18 health giving herbs, roots and barks. It is taken before meals and mixes with the food in one's stomach thus helping to eliminate the poisons that foster stomach troubles and to permit the kidneys and liver to function properly. It usually acts within 10 minutes to stop gas pains, sourness, bloating and belching. Users say it will not gripe or nauseate you like ordinary liver medicines. It tends to make your liver more active and to clear away the old bile from your system. At the same time Giljan helps relieve sluggish kidneys and backache caused by poor elimination.

Giljan is recommended and sold by all Marshall Drug Stores. Help yourself to health. Start today by buying a bottle of Giljan. One bottle will convince you. Get the family size and save the price of a bottle. The Giljan Medicine Company Keith Bldg., Cincinnati, O.

## MARSHALL DRUG STORES

Mr Kellough's testimonial

should lose no time in taking it." Perhaps Mr Kellough did lose time, the results indicate that he might better have advised, "Any person having trouble such as mine should waste no time or money on Giljan."

What is Giljan, which Mr Kellough praised so fulsomely? What is the remedy which allegedly cleared up his backache, constipation, sour stomach and gas pains but failed to save his life? According to the cartoon front reproduced (in reduction) on this page, it is a "laxative herbal compound," though at least three of the ingredients listed—sodium benzoate, glycerin and saccharin—are hardly to be classified as herbal. Some of the other components named are outmoded in modern therapy, and altogether the combination of twenty declared substances recalls the old time "shot-gun" mixtures. Yet the cartoon declares it to be "compounded by Registered Pharmacists for Giljan Medicine Company, Cincinnati, Ohio."

That at least one government agency has objected to some of the Giljan publicity is seen in the complaint issued Sept 16,

1944 by the Federal Trade Commission against the Giljan Medicine Company, Inc., its officers and their advertising agency on the charge that their newspaper and radio promotion contained false representations. Among these were that Giljan is a natural medicine and made from a new scientific formula, the ingredients of which substantially aid in giving health to the user, that the product is a cure for stomach trouble in its various forms: constipation, rheumatism, neuritis and liver and kidney ailments in general and also effective in relieving headaches and lack of energy, that it aids proper functioning of the kidneys and liver, clears old bile out of the system, strengthens the nerves, improves the appetite, relieves digestive disorders and has brought relief to 87 per cent of those who have used it. The complaint further charged that the preparation is an irritant laxative with no therapeutic value beyond that which a laxative offers, and that the advertisements are false for the further reason that they fail to reveal that Giljan is potentially dangerous when taken in the presence of abdominal pain, nausea or other symptoms of appendicitis.

Here a glance at the Giljan concerns antecedents is worth while, since they have some bearing on this latest endeavor of one Gilbert H Mosby in the nostrum field. On May 26, 1942, according to official records, he and two others incorporated the Mosby Medicine Company in Ohio and on June 5, 1943 the name was changed to Giljan Medicine Company, Inc. The incorporators were reported as Gilbert H Mosby, Samuel Stulbarg and Benjamin S Schwartz, the latter designated also as the statutory agent.

Friday, June 21 at 3 p.m.  
ATTEST Alexander—Beloved husband of Gertrude (nee Randolph) father of Mrs Muriel Geoffrey Mrs Eleanor Joan Mrs Gladys Bogardus and grandchild passed away at his residence 2508 F Morris Block Place Wednesday morning. Friends may call at Paul T Long Funeral Home 12610 Woodland ave where services will be held Saturday July 22 at 4:30 p.m.  
LEAHY Private Thomas S. — Arr 1

Mr Kellough's death notice

When the Mosby concern was incorporated, Mosby himself was said to be 'broke' and to have been backed financially by Stulbarg and a George B Remus. It was further reported that Mosby called himself general manager of the company but refused to divulge the name of the president, who apparently turned out to be a Henry S Dunlap. It appears that the "Gil"

**Giljan**

**LAXATIVE  
HERBAL  
COMPOUND**

**ACTIVE INGREDIENTS:**  
Cascara Bark, Senna Leaves, Aloe, Mandrake, Cayenne Pepper. **ALSO CONTAINS:** Barberry, Gentian, Wild Cherry Bark, Sassafras, Burdock, Licorice, Poke Root, Juniper Berries, Sodium Benzoate, Glycerine, Saccharin, Methyl Salicylate, Oil of Camphor, Sassafras Caramel.

Net Contents 8 Fl. Ounces  
**PRICE \$1.35**  
COMPOUNDED BY  
REGISTERED PHARMACISTS  
FOR  
**GILJAN MEDICINE COMPANY**  
CINCINNATI, OHIO

Cartoon front of Giljan

in the title "Giljan" was taken from Mosby's first name (Gilbert) and the "Jan" for Janice said to have been the first name of one of his successors of wives. Further, it appears that Mosby was ousted by his partners some time in 1943 and died in June 1944 from the effects of a fall in the street.

But Mosby's record in the "patent medicine" field far antedated Giljan. Around 1927 he began to tell the world about the wonderful benefits to be gained by taking his "Konjola" advertised as the "surprising new medical preparation." It was claimed to contain no fewer than thirty-two ingredients, thus putting to shame the later Giljan, with its mere twenty some of which were in Konjola. The advertising of Konjola abounded in testimonials, and one, published in the *Meadville (Pa.) Tribune-Republican* on Aug. 20, 1929 and enhanced by the Konjola concern's boast "Another victory for Konjola in a seemingly hopeless case after all the others failed," came from a man who had died three weeks before the testimonial appeared!

When Konjola had about run its course, Mosby appears to have shelved it for another nostrum, "Indo-Vin," which likewise was represented to be a mixture of thirty-two ingredients—perhaps the same thirty-two which comprised Konjola. Indo-Vin, however, seems to have been short lived, and ere long Mosby was introducing "Van-Tage," another "tonic." This time he was in the Far West and advertising "At Hollywood capital of the motion picture world, Van-Tage is a sensation. This medicine is made there. The Immense Van Tage Laboratories are located at Hollywood. So the stars of the screen are intimately acquainted with this Great Compound." These claims appeared in an advertisement which featured the testimonial of the stage and screen comedian Robert Woolsey. But within two years Woolsey died and his testimonial lost its kick. Another pean of praise for Van-Tage came from a Tom Nick and was featured in an advertisement in the *Butte (Mont.) Standard* Nov. 25, 1936, four days after another Butte paper had published an account of his funeral!

Thus the sordid procession passes in review—Konjola, Indo-Vin, Van-Tage, Giljan. Doubtless the sequence would have added a few new names had Mosby survived—and a few more death notices appearing with or prior to the corresponding testimonials. Funny, isn't it? But the reality is tragic!

## STIPULATIONS

### Agreements Between Federal Trade Commission and Promoters of Various Products

Following are abstracts of stipulations in which promoters of "patent medicines," medical devices and cosmetics have agreed, following action by the Federal Trade Commission, to discontinue certain misrepresentations in their advertising. These stipulations differ from the "Cease and Desist Orders" of the Commission in that such orders definitely direct the discontinuance of misrepresentations. The abstracts that follow are presented primarily to illustrate the effects of the provisions of the Wheeler-Lea Amendment to the Federal Trade Commission Act on the promotion of such products.

**Bel Din**—This is a product of the Montrose Sales Company, Inc. trading as Montrose Products Company, Montrose, Calif. In January 1944 the concern and Guenther Bradford & Company, Chicago, an advertising agency, stipulated with the Federal Trade Commission to cease representing that the product will have any effect on the symptoms of asthma unless cardiac asthma is specifically excluded or that it will relieve the symptoms of bronchial asthma beyond easing the difficulty in coughing and breathing. Also to be discontinued was any advertisement which did not reveal that the preparation is potentially harmful and should not be used by those having tuberculosis or gonorrhea provided however that such advertisement need contain only the statement "Caution: Use Only as Directed" when the same warning appears in the labeling.

**Benaris**—G. Bernardi of Cleveland who puts out this product stipulated with the Federal Trade Commission in January 1944 that he would discontinue any advertisement which did not clearly reveal that the too frequent or continued use of Benaris may cause nervousness, restlessness or sleeplessness; that its excessive use may cause injury to the lungs; that persons suffering from high blood pressure, heart disease, diabetes or thyroid trouble or having a high fever should not use it except on the advice of a physician; also that without such advice the

product should not be used when heartiness or a cough has persisted for ten days. The stipulation provided however that all advertisements need only contain the statement "Caution: Use Only as Directed" if the labeling directions bear a similar warning.

**Bondcase**—That this product will stop ringworm and athlete's foot or relieve swollen feet, itching or burning skin or tired or sore feet (unless limited to such conditions when due to fungus infection) are misrepresentations which the Bond Pharmacy Company, Little Rock, Ark., which puts out the product, agreed to discontinue in a stipulation that it entered into with the Federal Trade Commission in February 1944.

**Dioptreen**—This preparation for promotion of personal hygiene is put out by Rosemore Toiletries, Inc. trading as Shy Products Company, Chicago. In December 1943 the concern stipulated with the Federal Trade Commission that it would cease representing that Dioptreen contains 7 grams of oxiquinoline sulfate per tablet or that the amount of this or any other ingredient of the preparation is in excess of that actually contained therein; that oxiquinoline sulfate is recognized by or described in the United States Pharmacopoeia; or that the company manufactures any preparation or article of merchandise unless it owns and operates or directly controls the plant in which the products it sells are made.

**Godefroy's L'arieuse Hair Coloring**—That this product ends gray hair, puts an end to dingy off-color hair or will correct dull gray streaked hair were claims which the Godefroy Manufacturing Company of St. Louis agreed to discontinue in a stipulation that it entered into with the Federal Trade Commission in January 1944. The stipulation recognized that such claims would tend to give the impression that the product will do more than dye the exposed hair to which it is applied or that its use will cause the hair shaft as it grows from the scalp to be similar in color, type or condition to that part of the shaft to which the product has been applied.

**Gotu Kola**—A stipulation regarding this was entered into in January 1944 with the Federal Trade Commission by George W. Moody of Pensacola, Fla. In this Moody agreed to cease representing that this herbal product has therapeutic properties in excess of what it actually possesses or that the medical profession generally has knowledge of and uses or praises it; that it will increase the vitality of a person 70 or 80 years old to that of a 40-year-old individual; that it will bring about perpetual youth; exercise an energizing effect on the brain cells; revitalize worn out bodies; prevent nervous breakdown or be an effective treatment for mental troubles, blood pressure, rheumatism, elephantiasis, bruises, fever, ulcers, leprosy, skin diseases, jaundice, neuritis or heart trouble; increase the span of human life or pep up the glands.

**Granaya with Cascara**—This is a product of E. R. Squibb & Sons, New York, who in January 1944 stipulated with the Federal Trade Commission that they would discontinue any advertisement which did not reveal that the product should not be used when abdominal pain, nausea or other symptoms of appendicitis are present; provided however that the advertisement need only contain the statement "Caution: Use Only as Directed" when the labeling instructions for use carry a warning to the same effect.

**HQZ Hair and Scalp Oil, HQZ Shampoo and HQZ Lustre**—These products were the subjects of a stipulation entered into with the Federal Trade Commission in January 1944 by HQZ Laboratories, Inc. and Rufus Rhoades and Robert Davis trading as Rufus Rhoades & Company and Rhoades & Davis advertising agency, all of San Francisco. In the stipulation the respondents agreed to cease representing that the Hair and Scalp Oil penetrates into the scalp pores or hair follicles; loosens dirt, grease and dandruff imbedded there and opens clogged pores; that the Hair and Scalp Oil and the Shampoo used singly or in combination will rejuvenate the hair; bring to the surface any grease or other foreign substance lodged in the scalp pores; solve the dandruff or other hair trouble problems; prevent dandruff or falling hair or impart any therapeutic benefit to the hair or scalp; that the presence of alcohol, alkaline soap or heavy oil in competitive product causes them to be harmful or that HQZ Laboratories, Inc. owns, operates or controls a laboratory.

**Laxatrate**—In March 1944 E. A. Billy, Hamburg, trading as Vex Laboratories Company, Los Angeles, stipulated with the Federal Trade Commission that he would discontinue any advertisements of this product which did not reveal that it should not be used when abdominal pain, nausea or other symptoms of appendicitis are present. The stipulation however permitted the statement in the advertisement "Caution: Use Only as Directed" if the directions on the label should contain a warning to the same effect.

**Milky Way Permanent Wave Solution**—This product is put out by Edwin K. Latz, Israel A. Latz and Sidney Seligman trading as Seligman & Latz, New York City. A stipulation which they entered into with the Federal Trade Commission in January 1944 provided that they would cease representing that their product nourishes the hair and cannot injure it; and that the method of applying it is new or revolutionary. Further they agreed to discontinue using the word "certified" which would give the impression that the product has been endorsed as to quality or fitness by any governmental, scientific or other recognized agency or the words "Milky Way" or "milky bath" as part of the designation of the product or representing through the use of pictorializations or otherwise that the preparation is milk or contains milk.

**Shasta Armenian Culture**—That this is nature's own balanced food, a life-prolonging item of diet has destructive action on putrefactive bacteria in the intestinal tract and will rebuild the blood, nerves and glands were representations which S. Leila Hoover, Redwood City, Calif., agreed to discontinue in a stipulation that she entered into with the Federal Trade Commission in March 1944.

## Correspondence

### "MOBILE X-RAY UNITS IN INVASION"

*To the Editor*—In THE JOURNAL, July 8, there appears on page 711, under the heading "Mobile X-Ray Units for Invasion," the following statement "Hospitals in the field are unable to carry enough x-ray equipment to handle peak loads of patients"

I commanded an evacuation hospital in Italy throughout the Salerno-Cassino phase of the campaign. While in the combat zone, supporting the Fifth Army offensive closely, we had several peak loads of casualties during December 1943 and January 1944. On one occasion over 200 patients were admitted daily on three successive days.

Rain, gumbo mud, cold and litter carry in blackout were incidental problems encountered in this hospital, functioning entirely under tentage in the field. Thanks to the excellent prior planning, departmental organization and previous improvisation of equipment by Capt Alfred A J Den, M C, chief of the x-ray department, this department not alone kept abreast with the shock tents but was at all times one to one and a half hours ahead of the surgery for cases requiring operation.

At least one hospital in the field, therefore, was able to carry enough x-ray equipment to handle peak loads. It is not my purpose to belittle the work of Colonel Allen or the mobile x-ray units he has planned but to show that by anticipating a possible situation and organizing to meet it, a hospital in the field can efficiently carry out its mission even during peak loads in the x-ray department.

JOHN W McKOAN JR, Colonel, M C, A U S

### DIRECTORY OF MEDICAL SPECIALISTS

*To the Editor*—The biographic data of the first two editions of the Directory of Medical Specialists include only positions (internships, residencies or assistantships) held during the course of training of men up to the time of their certification by the American boards, and hospital and medical school staff positions then currently held.

It is desired to extend these data in the third edition to include all formal hospital and medical school appointments, with dates held, even though now resigned, as well as records of all military service including commissions and dates, either in World War I, peacetime in the Reserve forces or in the present war.

Thus a chronologically complete sketch of a certified specialist's entire career is to be included in this third edition of the directory.

Membership or fellowship in national or sectional (not local) special societies and national general societies with offices held, and dates in any of these, should be reported.

Membership in recognized international medical societies may be included, but honorary or other membership in foreign medical societies should not be reported.

Reference to the second edition (1942) of the directory may be made for lists of medical societies to be included in one's biographic sketch.

Families or secretaries of men absent in military service are asked to complete or correct previous listings or new forms now being mailed to those eligible for inclusion in the directory. Only those certified by an official American board can be included, and there is no charge for this listing.

Communications should be addressed to the Directory of Medical Specialists, 919 North Michigan Avenue, Chicago 11, Illinois.

PAUL TITUS, M D

Editor, Directory of Medical Specialists

## Medical Examinations and Licensure

### COMING EXAMINATIONS AND MEETINGS

#### NATIONAL BOARD OF MEDICAL EXAMINERS EXAMINING BOARDS IN SPECIALTIES

Examinations of the National Board of Medical Examiners and of Licensing Boards in Specialties were published in THE JOURNAL Sept 30 page 318.

#### BOARDS OF MEDICAL EXAMINERS

ALABAMA Montgomery Oct 24 26 Sec Dr B F Austin 519 Dexter Ave Montgomery

ARKANSAS \* Little Rock Nov 9 10 Sec, Dr D L Owens Harrison

CALIFORNIA Written Sacramento Oct 17 19 Oral San Francisco Nov 15 Sec Dr Frederick N Scaten 1020 N St Sacramento 14

CONNECTICUT \* Medical Written Hartford Nov 14 15 Endorsement Hartford Nov 28 Sec to the Board Dr Creighton Barker 256 Church St New Haven Homeopathic Derby Nov 14 15 Sec Dr J H Evans Hartford 6

DELAWARE Dover Oct 10 12 Sec Medical Council of Delaware Dr J S McDermid, 229 S State St Dover

DISTRICT OF COLUMBIA \* Washington November Sec Commission on Licensure Dr G C Ruhland 6150 E Municipal Bldg Washington

FLORIDA \* Jacksonville Nov 20 21 Sec Dr Harold D Van Schaick 2736 S W Seventh Ave Miami 36

IDAHO Boise Jan 8 11 Dir, Bureau of Occupational Licenses Mrs Lela D Painter, 355 State Capitol Bldg Boise

ILLINOIS Chicago Oct 10 12 Supt of Registration Department of Registration and Education Mr Philip Harnman Springfield

INDIANA Indianapolis Jan 3 5 Exce Sec Board of Medical Registration and Examination Miss Ruth V Kirk 301 State House Indianapolis 4

KANSAS Nov 23 Sec Board of Medical Registration and Examination Dr J I Hassig 905 N Seventh St Kansas City

MAINE Portland Nov 14 15 Sec Board of Registration of Medicine Dr A P Leighton 192 State St Portland

MARYLAND Homeopathic Baltimore Dec 13 Sec Dr John A Evans 612 W 40th St Baltimore

MASSACHUSETTS Boston Nov 14 17 Sec Board of Registration in Medicine Dr H Q Grille 413 F State House Boston

MINNESOTA \* Minneapolis Oct 17 19 Sec Dr J F Du Bois 230 Lowry Medical Arts Bldg St Paul 2

MISSISSIPPI Jackson Oct 16 17 Asst Sec Dr R N Whitfield Jackson

NEVADA Carson City Nov 6 Sec Dr C H Ross 215 N Carson St Carson City

NEW JERSEY Trenton Oct 17 18 Sec Dr F S Hallinger 28 W State St Trenton

NEW MEXICO \* Santa Fe Oct 9 10 Sec Dr LeGrand Ward 141 Palace Ave Santa Fe

NEW YORK Albany Buffalo New York and Syracuse Oct 16 19 Sec Dr R R Hannon Education Bldg Albany

NORTH DAKOTA Grand Forks Jan 2 5 Sec Dr G M Williamson 41 S 3rd St Grand Forks

OREGON Portland Oct 20 21 Exec Sec Miss L M Conlee 608 Fuling Bldg Portland 4

SOUTH DAKOTA \* Pierre Jan 16 17 Sec Medical Licensure State Board of Health Dr G Cottam Pierre

TEXAS Dallas Nov 15 17 and Dec 19 21 Sec Dr T J Crowe 919 20 Texas Bank Bldg Dallas 2

\* Basic Science Certificate required

#### BOARDS OF EXAMINERS IN THE BASIC SCIENCES

CONNECTICUT New Haven Oct 14 Address State Board of Healing Arts 250 Church Street New Haven 10

DISTRICT OF COLUMBIA Washington Oct 23 24 Sec Commission on Licensure Dr G C Ruhland 6150 E Municipal Bldg Washington

FLORIDA Gainesville Nov 4 Final date for filing application is Oct 20 Sec Dr J F Conn John B Stetson University DeLand

IOWA Des Moines Oct 10 Dir Division of Licensure and Registration Mr H W Grefe Capitol Bldg Des Moines

MICHIGAN Ann Arbor and Detroit Oct 13 14 Sec Miss Eloise LeBeau 101 N Walnut St Lansing

NEW MEXICO Santa Fe Feb 12 Sec Miss Marion M Rhea State Capitol Santa Fe

OREGON Portland Nov 4 Sec Mr C D Byrne University of Oregon Eugene

RHODE ISLAND Providence Nov 15 Chief Division of Examiners Mr Thomas B Casey 366 State Office Bldg Providence

SOUTH DAKOTA Aberdeen Dec 12 Sec Dr G M Evans Yankton

## Bureau of Legal Medicine and Legislation

### MEDICOLEGAL ABSTRACTS

**Workmen's Compensation Acts Gonorrheal Infection in Eyes Weakened by Industrial Injury Compensable**—In the course of his employment on April 30 1942 some fluid used for a wood preservative splashed up into Graham's face and eyes. He was treated immediately at a first aid station maintained by his employer and again the next day by an eye specialist who discharged him May 3 as being able to work. Two days later Graham returned to the physician and his right eye was found to be infected with gonorrheal germs. It is undisputed that Graham did not have any venereal disease and that the infection came from some source other than the workman. The infection spread to the left eye on May 8. As a result of the infection Graham eventually lost the sight of his left eye. He instituted proceedings under the workmen's compensation act of Arkansas and was awarded compensation by the workmen's compensation commission which among other things found that

It is recognized that gonorrheal infection unless checked will produce blindness and it is reasonable to assume that the infection found a ready portal of entry in the already inflamed and irritated eye of this claimant. In the opinion of the commission the chain of causation has been established by this claimant the liquid which was being used in his employment produced the irritation that offered a ready harbor for the gonorrheal infection that spread to the left eye and produced the blindness in the claimant's left eye.

The employer and his insurance carrier appealed to the circuit court Phillips County Ark. which affirmed the award of compensation. An appeal to the Supreme Court of Arkansas followed.

The employer and his insurance carrier contended that the award in favor of the workman should be reversed for two reasons. (1) It is speculation and conjecture for the commission to say that the irritated condition of the eyes due to the industrial accident, made them more susceptible to the infection and that blindness would not have occurred except for the irritation and (2) even assuming the commission was justified in so finding the germ infection was an intervening efficient cause for which the employer would not be liable. With respect to the contention that it was speculation and conjecture for the commission to hold that except for the irritated condition of the eyes blindness would not have occurred the court pointed out that while no witness testified that the irritation to the eyes made them more susceptible to gonorrheal infection it thought the commission had the right in the exercise of sound judgment and discretion to make the finding in this regard that it did make. It seems to us, said the court a reasonable assumption that an inflamed and irritated eye a conjunctivitis would be a ready portal of entry for the germ that did attack the workman, or some other germ that he might have acquired. To support their contention that the germ infection which caused the blindness in the left eye was an intervening efficient cause which excused them from liability under the workmen's compensation act the employer and his insurance carrier cited a number of cases including *Bunge Bros Coal Co v Industrial Commission* 306 Ill 582 138 N E 189 to the effect that an employee can only recover for a disability that is caused entirely by the accident which he received in his employment and that the employer is not responsible for any part of the disability that has been occasioned by another independent agency that has intervened after the accident occurred. In the *Bunge* case said the court the claimant was injured on March 8 1920 in a

collision between a coal wagon he was driving and a street car. On the following July 15 his physician found him infected with acute gonorrhea of recent origin and on August 12 found the workman suffering with acute gonorrheal arthritis. In this connection the Illinois court said

The proof is also to the effect that he (claimant) has suffered greatly from gonorrheal arthritis and that the inflammation and swelling of the joints was occasioned by a new and independent cause which occurred weeks after he received his injury.

So continued the Supreme Court of Arkansas it will be seen that the intervening efficient cause in the Illinois case occurred more than five months after the original compensable injury and had no connection with it. It was on these facts that the Supreme Court of Illinois used the language quoted. In a recent case decided by this court *Garrison Furniture Co v Butler* 177 S W 2d 738 Butler received superficial wound on his hands while at work on April 16 1942. On April 20 he consulted a physician and was sent to a hospital on April 21 where he died April 29 from lockjaw as a result of tetanus infection which entered the blood stream through the so called superficial wounds. This court affirmed an award of compensation. It seems to have been assumed by counsel and the court in that case that if the tetanus bacilli gained entrance into the blood stream through the wounds on Butler's hands and caused his death and that if the wounds were received by him in the course of employment compensation was properly awarded. The question there was Did Butler receive his wounds to his hands from an accident injury arising out of and in the course of his employment? There was no question as to an intervening efficient cause. The injuries to Butler's hands were slight and superficial but they formed a ready portal of entry for the tetanus bacilli just as the inflamed and irritated eyes of Graham rendered them more susceptible to the entry of the gonorrheal germ.

The court believing that the commission was justified in finding that there was a causal connection between the original injury and the resulting blindness in the left eye and that compensation was properly awarded accordingly affirmed the judgment in favor of the workman.—*Palm Hood Products Co v Graham* 181 S W (2d) 811 (Ark 1944)

## Society Proceedings

### COMING MEETINGS

- American Academy of Ophthalmology and Otolaryngology Chicago Oct 8-12 Dr W L Benedict 102 Second Ave SW Rochester Minn Secretary
- American Academy of Pediatrics St Louis Nov 9-11 Dr Clifford C Grulee 636 Church St Evanston Ill Secretary
- Annual Conference of State Secretaries and Editors Chicago Nov 17-18 Dr Olin West 535 N Dearborn St Chicago Secretary
- Association of American Medical Colleges Detroit Oct 21-25 Dr Fred C Zapffe 5 S Wabash Ave Chicago Secretary
- Association of Military Surgeons of the United States New York Nov 24 Col James M Phalen Army Medical Museum Washington 25 D C Secretary
- Inter State Postgraduate Medical Association of North America Chicago Oct 17-20 Dr Arthur G Sullivan 16 N Carroll St Madison Wis Managing Director
- Midwestern Section of American Federation for Clinical Research Chicago Nov 2 Dr Richard H Lyons University Hospital Ann Arbor Mich Secretary
- Oklahoma City Clinical Society Oklahoma City Oct 23-26 Dr I C Wellenry 512 Medical Arts Bldg Oklahoma City Secretary
- Omaha Mid West Clinical Society Omaha Nebraska Oct 23-27 Dr J D McCarthy 1036 Medical Arts Bldg Omaha 2 Secretary
- Southern Medical Association St Louis Mo Nov 13-16 Mr C P Loran Empire Building Birmingham 3 Ala Secretary
- Virginia Medical Society of Richmond Oct 23-25 Miss Agnes A Edwards 1200 E Clay St Richmond 19 Secretary
- Western Surgical Association Chicago Dec 1-2 Dr Arthur R Metz 10 East Superior St Chicago Secretary

## Current Medical Literature

### AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1934 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (\*) are abstracted below.

### American Journal of Medical Sciences, Philadelphia 208 1-140 (July) 1944

- Preventive Medicine in Britain A S MacNalty—p 1  
Capillary Permeability in Myxedema K Lange—p 5  
Factors Influencing Return of Tolerance for Glucose in Middle Aged Obese Diabetics M B Handelsman with technical assistance of D Schultz—p 15  
Relationship Between Hormonal Abnormalities and Accidents of Late Pregnancy in Diabetic Women O W Smith G V S Smith and D Hurwitz—p 25  
Diabetes Mellitus Associated with Albright's Syndrome (Osteitis Fibrosa Disseminata Areas of Skin Pigmentation and Endocrine Dysfunction with Precocious Puberty in Females) Report of Case F B Peck and C V Sage—p 35  
Note on Irradiation Sickness W B Bean T D Spies and R W Vilter—p 46  
New Practical Method for Subcutaneous Administration of Heparin Preliminary Report L Loew and P Rosenblatt—p 54  
Meningococcus Infections with Articular Complications M J Fox and J Gilbert—p 63  
\*Primary and Symptomatic Amyotrophic Lateral Sclerosis Clinical Study of 81 Cases I S Wechsler, M R Sapirstein and A Stein—p 70  
\*Electrocardiographic Changes Following Artificial Hyperpyrexia A H Clagett Jr—p 81  
\*Concentrated Red Cell Transfusions M L Binder and A Klein—p 95

**Amyotrophic Lateral Sclerosis**—Wechsler and his associates studied 81 patients with amyotrophic lateral sclerosis personally observed between 1939 and 1942. Of this group they designate 68 as primary, the rest, although also fairly typical clinically, are regarded as symptomatic. They rigidly excluded cases of progressive spinal muscular atrophy and lateral sclerosis. They arrived at the conclusion that amyotrophic lateral sclerosis is not one disease entity dependent on one etiologic factor but a syndrome of varying etiology. The largest group consists of so called degenerative cases, some of which may possibly be the result of selective deficiency. Smaller groups may be the result of inflammatory processes or vascular changes. An even smaller group may possibly be toxic in nature. Amyotrophic lateral sclerosis, progressive muscular atrophy and uncomplicated lateral sclerosis are three different entities. The first is comparatively rapidly progressive and invariably fatal, the other two are chronic and last many years. While the intensity and extent of fibrillations often reflect the gravity of the disease, there is no constant parallelism between them and one cannot prognosticate on the basis of fibrillations alone. In many cases pseudobulbar manifestations may signalize the onset of amyotrophic lateral sclerosis. These studies confirm the want of parallelism between presence of active deep reflexes, absence of abdominal reflexes and a Babinski sign, despite involvement of the pyramidal tracts. The first always is present, the second two may or may not be.

**Electrocardiographic Changes Following Artificial Hyperpyrexia**—Clagett describes electrocardiographic studies in 86 patients who received 118 sessions of fever. Electrocardiograms were taken routinely on all patients before and after fever therapy. Tracings also were taken following conditioning fevers, since these offered an opportunity to study the effect of fevers differing in duration and intensity. Of 80 tracings taken following therapeutic fever, 64 showed insignificant changes, 7 showed significant changes and 9 showed no change whatever from the prefever tracing. The results of previous workers who claimed that the ST segment was almost always depressed following fever were not confirmed. It was found that there was a slight increase or decrease in the amplitude of the P waves and the QRS complexes and that the ST segment was depressed in a few cases. The most constant change

observed was an increase in the value of Bazett's K, an index of the duration of electrical systole. The authors discuss the effects of jaundice, acid-base balance and cardiac rate on the postfever electrocardiograms. Three cases with myocardial damage following fever therapy are presented. In 2 of these 3 almost complete recovery had apparently occurred when a relapse occurred in each, thirty-nine and fifty-six days respectively after fever. In cases of myocardial damage due to fever a good prognosis should not be given merely because the patient is young and the causative agent (fever) has been removed. The treatment of these cases should be the same as that given myocardial infarction due to any other cause. The authors also present 6 cases that showed transient and significant electrocardiographic changes following fever. They consider it highly probable that these transient changes were not on the basis of myocardial damage but rather due to temporary myocardial anoxia, possibly of a relative nature due to the tachycardia.

**Concentrated Red Cell Transfusions**—Concentrated red cell preparations used by Binder and Klein were obtained from regular hospital donors. The Fenwal apparatus, a semiclosed system, was used to collect 500 cc of blood in 50 cc of 5 per cent sodium citrate solution. The blood was typed by the open slide microscopic method and then stored at 4 to 6 C. The blood selected was from 2 to 7 days old. Before preparation the donor's blood was cross matched with that of the recipient. The plasma was aspirated off under sterile precautions into a pooling flask, the pipet was then inserted to the bottom of the bottle and the red cells were aspirated into a different bottle. The cells obtained from one donor blood in this way were called one donor unit of concentrated red cells. The concentrated red cells were either used immediately or returned to the refrigerator. The concentrated red cells were never kept longer than two days after preparation. They were administered in regular Upjohn recipient sets. The authors did not find it necessary to dilute the concentrated red cells in order to maintain the flow. The regular transfusion procedure was varied only by elevating the blood reservoir about 3 feet higher than usual to obtain a greater pressure. Thirty minutes was the average time required to administer each donor unit. Experience with 124 transfusions demonstrated that they are as efficacious as whole blood in raising the hemoglobin of anemic patients in whom only the cellular elements of the blood are deficient. The same amount of hemoglobin can be supplied in a smaller volume of transfused fluid. Concentrated red cells are of definite value in relieving anemia of patients with a reduced cardiac reserve, by reducing the chances of the production of cardiac failure and pulmonary edema. Theoretically it would also be of value to use concentrated red cells for patients who have recently bled and in whom there is danger of dislodging a newly formed clot by increasing too greatly the volume of circulating fluid with quantities of whole blood. Concentrated red cell transfusions have their limitations. They should not be used for acute blood loss until the blood volume has returned to normal and the only deficit is in hemoglobin. Their use is contraindicated in shock, burns and when the plasma proteins are below normal. The use of concentrated red cells is not limited to elevating the hemoglobin level. Evans reported that they are efficacious in controlling bleeding and other purpuric manifestations of blood dyscrasias. The authors have observed the same beneficial results in a case of monocytic leukemia.

### American Journal of Ophthalmology, Cincinnati 27 687-802 (July) 1944

- Ptoxis—Post Traumatic and Hysterical E B Spaeth—p 687  
Exophthalmos of Hyperthyroidism Differentiation in Mechanism Pathology Symptomatology and Treatment of Two Varieties Part II J H Mulvany—p 693  
Etiology and Treatment of Tobacco Alcohol Amblyopia Part I F D Carroll—p 713  
I Metastatic Carcinoma of Choroid II General Metastasis from Melanoma of Abdominal Wall with Paresis of External Rectus Muscle III Rubeosis Iridis with Melanoma of Choroid and Secondary Glaucoma E C Ellett—p 726  
Surgical Control of Glaucoma in Negro C E Iliff—p 731  
Report on Family with Ectopic Lenses C A Clapp—p 738  
Simple Test for Binocular Fixation Clinical Application Useful in Appraisal of Ocular Dominance Amblyopia ex Anopsia Minimal Strabismus and Malingering S R Irvine—p 740  
Relationship Between Bacteriology of Conjunctiva and Nasal Mucosa Especial Reference to Certain Extraocular Inflammatory Diseases C Berens and Edith L Nilson—p 747

**American Journal of Pathology, Ann Arbor, Mich**

20 665-822 (July) 1944

- Calcification of Media of Human Aorta and Its Relation to Intimal Arteriosclerosis Aging and Disease H T Blumenthal A I Lansing and P A Wheeler—p 665  
Cushing's Syndrome with Possible Pheochromocytoma Report of Case P M LeCompte—p 689  
Keratodermia Blennorrhagicum Report of Case with Autopsy J L Carr and M Friedman—p 709  
Periarthritis Nodosa in Experimental Hypertensive Rats and Dogs C C Smith Pearl M Zeek and J McGuire—p 721  
Reactions of Blood and Organs of Dogs After Intravenous Injections of Solutions of Methyl Celluloses of Graded Molecular Weights W C Hueper—p 737  
Spontaneous and Transplanted Reticulum Cell Sarcoma in Wistar Rats E J Farris and E H Yeakel—p 773  
Nonsuppurative Nodular Panniculitis (Weber Christian's Disease) D M Spain and J M Foley—p 783  
Multiple Primary Liposarcomas L V Ackerman—p 789  
True Hermaphroditism Report of Case with Mammary Carcinoma J D Moriarty—p 799  
Effects of 3,4-Benzpyrene on Wound Repair in Skin of Mice M Silberberg and Ruth Silberberg—p 809

**American Journal of Public Health, New York**

34 693-816 (July) 1944

- International Vital Statistics of Future F E Linder—p 693  
Army Field Water Supply Development H H Black—p 697  
Nutritive Value of Brined and Fermented Vegetables I D Jones and J L Etchells—p 711  
Factors Affecting Germicidal Efficiency of Chlorine and Chloramine G R Weber and M Levine—p 719  
Housing Problems of Interest to Public Health Engineer M A Pond—p 729  
Further Evaluation of EC Medium for Isolation of Coliform Bacteria and Escherichia coli C A Perry and A A Hajna—p 735  
Industrial Hygiene in Postwar World J G Townsend—p 739  
Proposed Report on Educational Qualifications of Medical Administrators of Specialized Health Activities W P Shepard—p 746  
Fly Borne Bacillary Dysentery Epidemic in Large Military Organization D M Kuhns and T G Anderson—p 750

**Am J Syphilis, Gonorrhea and Ven Dis, St Louis**

28 397-528 (July) 1944

- Sulfonamide Resistant Gonorrhea A W Frisch with the technical assistance of R B Edwards M W Edwards and Beatrice Behr—p 397  
\*Treatment of Acute Gonorrhea in Army G Campbell and G R Carpenter—p 406  
\*One Day Treatment of Gonorrhea with Sulfathiazole A Jacoby and A H Ollswang—p 413  
Method Using Solid Medium in Delayed Gonococcal Culture Procedure J D Porterfield and E A Nelson—p 417  
Use of Splenectomized and Nonsplenectomized Mice in Production of Experimental Syphilis in Rabbits U J Wile and S A M Johnson—p 422  
Biologic False Positive Spinal Fluid Wassermann Reactions Associated with Meningitis Report of 8 Cases V Scott F W Reynolds and C F Mohr—p 431  
Intensive Treatment of Early Syphilis with Mapharsen Combined with Artificial Fever Preliminary Report N N Epstein R B Rees and H D Brainerd—p 443  
Primary Syphilis of Rectum and Gonorrhea of Anus in Male Homosexual Playing the Role of Female Prostitute A J Jones and L Janis—p 453  
Peripheral Vascular Syphilis of Lower Extremities F H Grauer and H L Myers—p 458  
Effect of Fever on Distribution of Arsenic in Tissues of Rabbits Injected Intravenously with Mapharsen H E Stokinger F L Dorn R A Boak and C M Carpenter—p 465

**Treatment of Acute Gonorrhea in Army**—Campbell and Carpenter state that in a ten month period 3270 patients with acute gonorrhea were treated with sulfonamides at Fort Bragg North Carolina Following the institution of 'duty status treatment' 1,170 cases were treated without hospitalization The men on 'duty status' continued their regular military duties and training while under treatment Recovery of 79.1 per cent of the men occurred on a single five day course of sulfathiazole (20 Gm) and an additional 12.5 per cent were rendered asymptomatic by a second similar course giving a total recovery rate of 91.6 per cent In the hospital treated cases there was a 10 per cent recurrence rate Duty status treatment was highly successful and resulted in a great reduction of days lost from military duty and a large saving in hospital beds, as 93 per cent of these patients did not require hospitalization No serious drug reaction was noted Local treatment was infrequently used and as a result complications were rare Larger doses of sulfonamides for hospitalized patients may effect a higher recovery rate

**One Day Treatment of Gonorrhea with Sulfathiazole**—Jacoby and Ollswang report observations on 69 men whose ages ranged from 17 to 27 years and in whom gonorrhea had existed from one to fourteen days prior to the institution of treatment The treatment first tried was the administration of 2 Gm of sulfathiazole four times a day this was used for 2 patients The first patient through a misunderstanding, was given 4 Gm four times a day No ill effects were noted The dosage was then modified so that 4 Gm was administered twice a day this was tried on 3 patients As a further modification the entire 8 Gm was administered at one time, this was used for 62 patients Each patient was examined every day thereafter for one week A urine specimen was examined twenty-four hours after medication A complete blood count was done before and twenty-four hours after medication Blood concentration of sulfathiazole was determined twenty-four hours after medication There was relative freedom from serious toxic reaction Five patients had minor toxic reaction None showed anemia, leukopenia or disturbance in the number of granulocytes Smears and cultures became negative in 35 cases in twenty-four hours, in 9 cases in two days in 10 cases in three days and in 3 cases in four days The discharge persisted in 25 patients after the smears and cultures became negative Fifty-seven of these 69 patients were cured Positive smears and cultures persisted in 12 patients These were placed on a routine therapy of 4 Gm of sulfathiazole daily for five days Four of these patients were cured 5 others remained persistently positive, 1 was doubtful, and 1 failed to return

**Archives of Dermatology and Syphilology, Chicago**

50 1-78 (July) 1944

- \*Penicillin Therapy of Impetigo Contagiosa and Allied Diseases L C of Penicillium Inoculated Dressing H M Johnson—p 1  
Recurrent Vesicular Eruptions Appearing During Administration of Penicillin W N Graves C C Carpenter and R W Langst—p 6  
Sulfur in Dermatologic Preparations J G Downing I M Ohmart and M J Stoklosa—p 8  
Eczematous Contact Dermatitis Due to Mercurials Report of Case of Reaction to 10 per cent Ammoniated Mercury Ointment and Associated with Mercurial Poisoning M H Samitz—p 10  
\*Immunization Therapy of Warts H Biberstein—p 12  
Treatment of Psoriasis with Sarsaparilla Compound T S Saunders—p 23  
Unusual Form of Occupational Dermatitis Report of Outbreak in Plant Manufacturing Hydrochloric Acid L Schwartz—p 25  
Keratosis Follicularis Is Not Primarily a Follicular Disease F A Ellis—p 27  
Syphilitic Hepatitis with Unusual Concomitant Manifestations Report of 2 Cases J N Edson—p 31  
Dermatitis from Lemon Grass Oil (Cymbopogon Citratus or Andropogon Citratus) H V Mendelsohn—p 34  
Furuncular Myiasis O G Co to—p 36  
Triple Symptom Complex of Bechet Report of Case H Ephraim—p 37  
\*Dermatitis Due to Nal Polih Study of 26 Cases with Chief Allergic Component Toluene Sulfonamide Formaldehyde Resin and Related Substances H Keil and L S Van Dyck—p 39

**Penicillin for Impetigo Contagiosa**—Robinson and Wallace devised moist penicillin inoculated gauze pads to be used topically Johnson describes his modification in the treatment of 25 patients with common pyoderma Twelve patients with impetigo contagiosa were clinically clear of infection as early as three days and not later than seven days after the use of the penicillin containing pads was begun Four of the patients were previously treated with sulfonamides without improvement Results for 2 patients with syccosis vulgaris showed promise that this method may become a new means of treating a stubborn recalcitrant infection Ecthyma streptococcic lymphangitis, a streptococcic infection of an ear and an abdominal cutaneous wound healed within eleven days An ulcer of the leg due to Staphylococcus aureus of three months duration had healed 90 per cent in six weeks after all methods of local therapy had been used Production of crude penicillin presents many difficulties Contamination of the pure culture of Penicillium notatum could render it useless and possibly dangerous Penicillin pads and liquor should be tested for their potency by a ring test before they are used Topical penicillin therapy will possibly supplant use of sulfonamide compounds or be a valuable adjunct Absence of local reaction and sensitivity places the mold in a unique situation in comparison with the



sulfonamide compounds. A possible pitfall in the local use of penicillin is the suggested theory that one may become penicillin fast by repeated small applications. This hypothesis can be proved only by time and experience.

**Immunization Therapy of Warts**—Biberstein describes an immunization therapy for warts which consists of injections of an extract of the lesions. First results of its use were published in 1924, since then reports have been published repeatedly, including also reports of successful treatment of warts in cattle and horses. He rejects the theory that the results obtained in the treatment of warts were due to suggestion. Many of the methods used may have one important point in common: they act by way of the vegetative nervous system. Results accomplished with injections of an extract of warts and of condylomata acuminata are due to immunizing factors. While this treatment can be used in any case of warts it is indicated particularly in the presence of an excessive number of warts, in warts in locations in which other methods are impracticable or inadvisable (subungual region, nail wall and plantar region), in warts resistant to other methods of treatment and in recurrences following the administration of other treatments.

**Dermatitis Due to Nail Polish**—Keil and Van Dyck report observations in 26 cases of nail polish dermatitis in which they were able to make patch tests with toluene sulfonamide resin and a number of related substances and derivatives. The data support Simon's view that toluene sulfonamide formaldehyde resin is the chief cause of nail polish dermatitis as seen today. The occurrence of so many cases is moreover consistent with the relatively recent introduction of this synthetic resin. In 25 of the 26 subjects, tests with toluene sulfonamide formaldehyde resin, which is not a primary irritant in the concentration used, elicited intensely positive reactions. Hypersensitivity to this resin is frequently accompanied by group reactions to related chemical fractions and derivatives such as the condensate of toluene sulfonamide and formaldehyde, toluene sulfonamide and, to a lesser extent, formaldehyde. This principle of group reactions seems also to extend to sulfanilamide. In 1 of 4 subjects with nail polish dermatitis a definite positive reaction was elicited with sulfanilamide, the patient had never used this or related compounds either internally or externally. Toluene sulfonamide formaldehyde resin was established by patch tests as present in one of the straw hat lacquers found on the market. This resin appears not to be present in the hair lacquers which have lately caused instances of contact dermatitis. A person hypersensitive to toluene sulfonamide formaldehyde resin is usually unable to tolerate the majority of nail polishes commonly used. A negative reaction to a patch test with this resin does not eliminate nail polish dermatitis due to another cause.

## Archives of Internal Medicine, Chicago

73 433-504 (June) 1944

- \*Clinicopathologic Studies of Renal Damage Due to Sulfonamide Compounds. Report of 14 Cases. F D Murphy, J F Kuzma, T Z Polley and J Grill—p 433
- Importance of Bronchography in Cases of Unresolved Pneumonia. G S Crier III—p 444
- \*Infectious Mononucleosis. Study of 196 Cases. A W Contratto—p 449
- Spontaneous Pneumothorax Complicating Bronchial Asthma. Report of 2 Cases and Consideration of Possible Mechanisms Involved in Its Production. M Trowbridge Jr—p 460
- Nutritional Problems Presented by Patient with Extensive Jejunoileitis. S T Killian and F J Ingelfinger—p 466
- Late Cerebral Sequelae of Rheumatic Fever. W L Bruetsch—p 472
- Diseases of Heart. Review of Significant Contributions Made During 1943. C Williams with editorial assistance of P D White—p 477

**Renal Damage Due to Sulfonamide Compounds**—Murphy and his co-workers report clinical and pathologic data for 14 patients in whom renal damage developed after therapy with sulfonamide compounds. Thirteen of the 14 patients died and were studied post mortem. Decapsulation of the kidney was done and a biopsy specimen taken of 1 patient who recovered. Most of the commonly used sulfonamide compounds were employed, but sulfathiazole was the most commonly used. The primary disease under treatment was considered to play no part or at any rate a small one in causing the renal damage. The quantity of the sulfonamide compound administered and the

drug level in the blood appeared to be unimportant in producing the renal damage. As much as 41 Gm and as little as 10 grams (0.6 Gm) were responsible for fatal renal injury. In a few of the cases deposits of crystals of the drugs in the urinary tract causing some degree of mechanical obstruction were found associated with the nephrotic lesion, but this was not the rule, as in most of the cases reported the nephrotic lesion was independent of mechanical blocking. Microscopically there was simple tubular degeneration present in all the kidneys regardless of what other changes were present. Advanced tubular degeneration, necrosis of the tubular cells and intense inflammatory reaction outside the nephron in the surrounding tissues occurred in some cases. These various tubular lesions undoubtedly represent degrees in the severity of one process rather than different kinds of response. In 1 case advanced changes in the glomeruli were noted.

**Infectious Mononucleosis**—According to Contratto a young adult with symptoms of cold, sore throat and grip should be suspected of having infectious mononucleosis and the necessary laboratory tests should be made. The author and his associates attended a large number of young men suffering from this disease. From 1935 to 1943 there were 12,601 men admitted to the Stillman Infirmary, of whom 249 had a discharge diagnosis of infectious mononucleosis. Of this number 53 were eliminated as not presenting a typical enough picture. Type and severity of symptomatology varied greatly. Sore throat was the most common symptom. Although it did not occur as the presenting symptom in more than 50 per cent of the cases it developed at some time during the course of the illness in all except 18 per cent. Headache often heralded the onset of the disease. Fatigue and general malaise were frequent. Gastrointestinal symptoms were not prevalent, but anorexia was common. A presenting symptom of stiff or sore neck was usually referable to the swollen cervical lymph nodes. The onset of the lymphadenopathy was usually found in this area and often on the left side. The symptoms of ordinary infections of the upper respiratory tract with nasal congestion, fever and chills were conspicuous. The spleen was palpable in 91 cases. In several cases the spleen was definitely tender. The diagnosis of infectious mononucleosis cannot be made unless either the heterophile reaction of Paul and Bunnell is positive in high dilution or the blood smear is typical. The author stresses the importance of making frequent tests and smears during the course of the illness, since there is often a delay of days or even weeks before the hematologic changes are conclusive enough to permit an accurate diagnosis.

## Bulletin of Johns Hopkins Hospital, Baltimore

74 275-320 (May) 1944

- Immunization with Vole Acid Fast Bacillus Against Experimental Tuberculosis. W S Brooke and R Day—p 275
- Favism. H W Josephs—p 295
- Experimental Studies on Sulfapyrazine in Mice. G I Trevett—p 299
- Observations on Diet Deficient in Both Methionine and Cystine in Man. A A Albanese, I E Holt Jr, J E Brumback Jr, Jane E Frankston and Virginia Irby—p 308

## Bulletin New York Academy of Medicine, New York

20 319-360 (June) 1944

- Indications for Psychoanalytic Therapy. I G Alexander—p 319
- Some Psychosomatic and Therapeutic Aspects of War Neuroses. P H Hoch—p 333
- Progress in Sulfonamide Prophylaxis of Acute Infectious Diseases. W D Sutcliffe—p 348

20 361-426 (July) 1944

- \*Circulation in Traumatic Shock in Man. Harvey Lecture Feb 17 1944. D W Richards Jr—p 363
- International Health. Hermann M Biggs Memorial Lecture. W A Sawyer—p 394

**Circulation in Traumatic Shock in Man**—Richards describes a technique for measuring in man both the pressure of blood in the right auricle and the total volume flow of blood or cardiac output. These measurements are achieved by means of a long ureteral catheter introduced into a median basilic vein and thence passed along axillary and subclavian veins into the right auricle. The technique was originated by Forssmann with himself as subject more than ten years before. The technique

has been perfected and has proved to be remarkably easy, safe and painless, no serious untoward effects having been encountered in over 250 catheterizations. The research was pursued jointly by three groups. A group under Courmand was responsible for measurements of pulmonary ventilation and respiratory gas exchange, arterial and venous blood gas analyses and the catheterization technic, a group under Gregersen provided blood volume determination by the use of the dye T-1824, a group under Smith provided optical registration of arterial pressure tracings by the use of the Hamilton manometer. In a number of cases renal clearance studies were made by Smith's technic. The clinical material consisted of injured patients admitted to the Bellevue Hospital emergency service. All instances of shock were of the secondary, progressive form. While different injuries led to circulatory failure in different ways, the essential finding in all appeared to be an inadequate venous return of blood to the heart with diminished cardiac output. A deficit in circulating blood volume was responsible. Observations on the vascular bed in shock are summarized as follows: 1 In shock with blood loss there is a tendency to selective vasoconstriction, which is compensatory. 2 This compensation may fail, either gradually or suddenly. The patient in shock is in an unstable state, and the smallest additional trauma or disturbance may have disastrous effects. 3 Elevation of the feet in shock usually raises arterial blood pressure and is beneficial. 4 Drug therapy of shock is not satisfactory at present, but certain drug effects may prove to be helpful for peripheral circulatory failure. 5 Alcohol causes vasodilatation, which is unfavorable. 6 The most effective treatment is replacement of blood volume. When whole blood has been lost in large amounts, replacement by plasma alone will produce an acute anemia. The preference for whole blood in treating these types of injury has been increasingly emphasized in military casualties in this war. Restoration of blood volume brings the patient out of acute circulatory failure but is not complete treatment in itself. There is need for increased amounts of sodium salts and proteins. Fluids, salts and food should be started by mouth in the post-shock state as soon as tolerated. Oxygen therapy is frequently a necessity in chest injury and might be helpful in many cases of burns. The central circulation is better maintained if the volume of blood in the extremities is minimal, and in this sense cool extremities, particularly the avoidance of external heat applied to them, should be beneficial. This does not mean that the body as a whole should be subjected to cold. Exposure to cold affects shock most unfavorably.

#### Bull of the U S Army Med Dept, Washington, D. C.

78 1-122 (July) 1944

- Study of Parachute Injuries. C D Lord and J W Coutts—p 57  
Complications of Meningococcal Infections. Analysis of 100 Cases. P S Strong and J L Hollander—p 68  
Diarrheal Diseases in U S Troops in Belgian Congo. C D Dunham and W H Gillespie—p 76  
Reconditioning Problem at Oliver General Hospital. S E Bilik—p 81  
Neuropsychiatrist and Convalescent Training Program of Army Air Forces. A A Rosner—p 93  
Sulfathiazole for Prevention of Gonorrhea. P G Reque and D Bergsma—p 97  
Preparation of Culture Mediums in Field. M Levine and A H Stock—p 103  
\*Relation of Antisulfonamide Action of Serum to Resistance to Sulfonamide Therapy. D A Boroff—p 111

**Antisulfonamide Action of Serum and Resistance to Sulfonamide Therapy**—Boroff and his collaborators demonstrated that serums of certain individuals have an antisulfonamide action when tested *in vitro*. Boroff attempted to correlate this action with the resistance to sulfonamide therapy by certain patients with gonorrheal urethritis. A group of 18 patients with gonorrheal urethritis was selected. Thirteen of them had chronic gonorrhea and had received three or more courses of either sulfadiazine or sulfathiazole or both without apparent effect. The other 5 were patients with acute gonorrheal urethritis who showed no resistance to the drug and who were completely cured by one or two courses of sulfathiazole. From each of the selected patients 25 cc of blood was taken under sterile conditions, and the serums were studied for antisulfon-

amide action. The results indicate that there may be a relationship between the *in vitro* manifestation of antisulfonamide action of the serums and the resistance to sulfonamide therapy. The fact that this antisulfonamide action may be measured in the laboratory presents a possibility of predicting the magnitude of the dose of drug necessary for chemotherapy to be effective. The success of the therapy may thus be prognosticated. Potentially resistant cases, instead of being subjected to prolonged and ineffective drug therapy, may be immediately determined in the laboratory and some other form of therapy applied.

#### Cancer Research, Baltimore

4 401-464 (July) 1944

- Observations on Inhibition of Development of Spontaneous Leukemia in Mice by Underfeeding. J A Saxton Jr, M C Boon and J Furth—p 401  
Incidence of Spontaneous Fibroadenoma in Albany Strain of Rats. Eitel Burack, M V Danzi, J M Wolfe and A W Wright—p 410  
Non Heme Iron Content of Tissues of Mice of High Cancer and Low Cancer Strains. F L Warren and F Goulden—p 417  
Hemoglobin Content of Blood of Mice of RIII and CBA Strains. F Goulden and F L Warren—p 421  
Factors Affecting Carcinogenesis. II. Incorporation of 3,4-Benzpyrene in Media Containing Purified Lecithin or Cephalin. H Weil Malherbe and F Dickens—p 425  
Spontaneous Tumors of Adrenal Cortex in Castrated Male Rat. J Herman—p 430  
Racial Distribution of Cancer. I. Epithelial Tumors of Skin, Lip and Breast. R Schrek—p 433  
Clinical Effects of Aldehyde Bisulfites in Patients with Cancer. II. Administration of Heptylalddehyde Bisulfite to Patients with Lymphomas. H O Singher, J C Abels, L F Craver and C P Rhoads—p 444  
Studies on Tumors of Testis. I. Water and Electrolyte Content of Testicular Tumors and of Normal Cryptorchid and Estrogenized Testis. C Huggins and Lillian Eichelberger—p 447

#### Delaware State Medical Journal, Wilmington

16 73-104 (June) 1944

- Future Role of Mental Hygiene. M A Tarumian—p 73  
Atypical Case of Involutional Psychosis. P F Elfeld—p 77  
Enuresis. B G Lawrence—p 80  
Atypical Neurological Syndromes in Alcoholic States with Special Reference to Pyramidal Syndrome. G J Gordon—p 83  
Functional Psychosis in Old Age. M B Zimble—p 88  
Hypothyroidism Simulating Functional Psychoses. G S Bieringer—p 93  
Conversion Hysteria in an Individual Suffering from Korsakoff Psychosis. F A Freyhan—p 95

#### Endocrinology, Springfield, Ill

35 1-72 (July) 1944

- Influence of Hormones on Lymphoid Tissue Structure and Function. Role of Pituitary Adrenotropic Hormone in Regulation of Lymphocytes and Other Cellular Elements of Blood. T F Dougherty and A White—p 1  
Metabolism of Steroid Hormones. R I Dorfman, B N Horvitt, R A Shupley and W E Abbott—p 15  
Experimental Hypothyroidism in Monkey. J W Jailer, W M Sperry, E T Engle and G Smelser—p 27  
Influence of Diet on Cholesterol Concentration of Blood Serum in Normal Spayed and Hypothyroid Monkeys. W M Sperry, J W Jailer and E T Engle—p 38  
Extraction of Cortinlike Substances from Human Postoperative Urine. Elcanor H Venning, M M Hoffman and J S L Browne—p 49  
Evidence for Early Testis Hormone Secretion in Rat from Study of Epididymus. E S Cieslak—p 63

#### Illinois Medical Journal, Chicago

85 269-314 (June) 1944

- Pulmonary Embolism. Study of Relation of Occlusion of Pulmonary Artery to Sudden Death. M Joannides and A I Hesse—p 279  
Nervous and Mental Manifestations Observed in Spontaneous Hypoglycemia. A A Lieberman—p 287  
Surgical Complications of Pregnancy. W G Cummings and P H Smith—p 292  
Treatment of Benign Uterine Bleeding in Menopause. J R Willson—p 295  
Protecting Place of Employment. J J Bloomfield—p 299

86 1-80 (July) 1944

- Reversibility of Heart Disease. P D White—p 9  
Abdominal Tumors of Questionable Origin. Roentgenologic Aspects. A Hartung—p 14  
Health Examination for School Children Required by Law. R O Duncan—p 17  
Further Observations on Lung Changes in Electric Arc Welders. O A Sander—p 72

## Journal of Aviation Medicine, St Paul

15 149-212 (June) 1944

- Comparative Testing of Aviation Oxygen C L Gemmill—p 150  
 Thyroid Function and Resistance to Anoxia in Rat A M Hughes and E B Astwood—p 152  
 Effect of Partial Hepatectomy on General Resistance and Blood Sugar Level in Rats Exposed to Anoxia F Gregoire C P Leblond and E Robillard—p 158  
 Effects of Physical Activity and of Simulated Altitudes on Pulmonary Ventilation Maximal Inspiratory (Peak) Flow and Pressure in Relation to Oxygen Requirements F G Hall and J W Wilson—p 160  
 \*Experimental Study on Modifications of Urinary Secretion at High Altitude J Malmjac—p 167  
 Analysis of Aviation Accidents B R Bugelski—p 172  
 Modern Trends in Teaching of Naval Aviation Medicine B Groesbeck Jr—p 182  
 Review of Activities of the Royal Canadian Air Force Medical Service F A L Mathewson—p 186  
 Army Air Force Altitude Training Program H S Wigodsky—p 190  
 Acute Poliomyelitis Case Transported by Air V E Frazier—p 195

**Urinary Secretion at High Altitudes**—According to Malmjac urinary secretion decreases at high altitudes and elimination of nitrogenous wastes is momentarily upset. A series of experiments with dogs was undertaken at the Medical Schools of the Universities of Marseille and Algiers and at the Laboratory of Medicophysiology Research of the French Air Force in Algiers to determine the causes which disturb urinary secretion at high altitudes. Studies were made on the effect of depression on urinary secretion, the role of the renal nervous system, the effects of the secretion of epinephrine, the influence of peripheral physical factors, eventually intervention of various chemical factors, the role of gas bubbles and the like. The observations revealed that barometric depression is followed by a progressive decrease in urinary secretion. This reduction begins to manifest itself at a depression corresponding to an altitude of 12,000 to 16,000 feet. Three major actions occur successively to produce the oliguresis: (a) Nervous action. This is the principal one and the first which can be observed. It brings on renal vasoconstriction, origin of the oliguresis which appears from 12,000 to 16,000 feet. (b) Humoral adrenal action. This appears after the nervous action when the depression corresponds to an altitude of 24,000 feet. (c) Physical action. This is represented by gas bubbles which are produced at great depressions corresponding to more than 30,000 feet. These three factors complement one another. They not only bring about a progressive reduction of the urinary secretion but also modify the composition of the urine. The oliguresis has as a corollary the diminution of chlorides, the elimination of which is greatly disturbed. The inhalation of oxygen prevents the effects of the nervous and humoral actions.

## Journal of Immunology, Baltimore

48 335-410 (June) 1944

- \*Action of Penicillin on Staphylococcus in Vitro L A Rantz and W M Kirby with technical assistance of Elizabeth Randall—p 335  
 Titration of Tetanal Toxins and Toxoids by Flocculation P J Moloney and Joan N Hennessy—p 345  
 Agglutination of Antigens from Distemper Infected Dogs and Ferrets by Anticanine Distemper Immune Serums A J Weil F Popken and J Black—p 355  
 Purification and Character of Swine Influenza Virus A R Taylor D G Sharp I W McLean Jr Dorothy Beard J W Beard J H Dingle and A E Feller—p 361  
 Specific Precipitation VI Restricted System Bivalent Antigen Bivalent Antibody as Example of Reversible Bifunctional Polymerization A D Hershey—p 381

**Action of Penicillin on Staphylococcus in Vitro**—In view of the usefulness of turbidimetric methods for the measurement of the rate of bacterial growth in the study of sulfonamide bacteriostasis, Rantz and Kirby decided that similar techniques might be applied in the determination of the mode of action of penicillin. They used these methods in studying the effects of penicillin on various strains of staphylococci. They found that penicillin is actively bactericidal for the staphylococcus and that lysis of the organism occurs in the course of its action. This has not been demonstrated for the hemolytic streptococcus. Whether this dissolution of the organism is the result of the direct action of penicillin on the cell membrane or is caused by autolytic enzymes present in the bacterial cell that become active as the result of interference with vital bacterial metabolic processes by penicillin cannot now be determined. The latter hypothesis is perhaps the more probable since it is known that

staphylococci will, under certain circumstances, undergo spontaneous lysis. In spite of the ease with which enormous numbers of staphylococci can be killed and lysed by small amounts of penicillin, many organisms remain alive even after prolonged exposure to this chemical. The remaining viable bacteria on retesting may be shown to be as sensitive to the action of penicillin as was the parent strain, so that their survival is not the result of artificially induced penicillin resistance. The presence in the blood and tissues of 0.1 to 0.2 unit of penicillin per cubic centimeter would, on the basis of the observations recorded in this report and those of Rammelkamp, in which staphylococci were exposed to the action of penicillin in whole blood and serum seem to be adequate for the therapy of most clinical infections. It is generally stated that penicillin is not inhibited by serum, body fluids or peptones. The observations described here indicate that lysis occurs somewhat more slowly and that more organisms remain viable after prolonged exposure to penicillin if a rich broth is used rather than the relatively incomplete synthetic medium. When peptones were added to the synthetic medium in increasing concentration, the control organism multiplied more rapidly but penicillin activity was unimpaired. This is in striking contrast to the action of the sulfonamides. It is possible that the constituents of the culture medium have no effect on the inhibitory phase of penicillin action on the staphylococcus but are concerned in the ease with which the agent may induce lysis and killing of the bacteria. The authors conclude that penicillin is an extraordinarily potent agent which in minute amounts induces the death and lysis of staphylococci. That this effect is not complete and that viable organisms remain after prolonged exposure to the drug is unfortunate and may explain certain clinical failures. There is a close correlation between the concentration of penicillin and its activity. By the methods described in this report a great natural variation in the sensitivity of strains of coagulase positive staphylococci to the action of penicillin may be demonstrated, the clinical significance of which has not been evaluated.

## Journal of Infectious Diseases, Chicago

74 173-256 (May-June) 1944

- Substance in Animal Parasites Related to Human Isoagglutinogens J Oliver Gonzalez and Mercedes Vincente Torregrosa—p 173  
 Defective Granular Eggshell Formation by Schistosoma Mansonii in Experimentally Infected Guinea Pigs on Vitamin C Deficient Diet C Krakower W A Hoffman and J H Axtmayer—p 178  
 Mosquito Transfer of Pigeon Strain of Plasmodium Relictum W B Redmond—p 184  
 In Vitro Effects of High Temperatures on Avian Malarial Parasites F E Caldwell—p 189  
 Feline Pneumonitis (Daker) New Member of Lymphogranuloma Psittacosis Group of Agents Dorothy Hamre and G Rake—p 206  
 Survey of Chronic Meningococcus Carriers in Semipermanent Population C P Miller W G Beadenkopf Dolores Peck and Mary Wright Robbins—p 212  
 Ontogenetic Change in Antigenic Specificity of Organs of Chick V Burke N P Sullivan Helen Petersen and Ruth Weed—p 225  
 Observations on Two Epidemics of Infective Hepatitis in Palestine Among Recent Immigrants I J Kligler D S Biesch and W Koch—p 234  
 Effect of Type III Pneumococcus Polysaccharide and Gelatin on Circulation and Sedimentation Rate of Erythrocytes in Mice J S Youngner and W J Nungester—p 247

## Journal-Lancet, Minneapolis

64 215-252 (July) 1944

- Review of Epidemiology of Acute Anterior Poliomyelitis with Reference to Mode of Transmission K F Maxcy—p 216  
 Central Nervous System in Poliomyelitis and Polioencephalitis A B Baker—p 224  
 Electromyographic Studies in Poliomyelitis A L Watkins—p 233  
 Physiology of Spinal Cord with Relation to Poliomyelitis B Campbell—p 236  
 Metabolism of Nervous Tissue in Poliomyelitis H G Wood—p 240  
 Effect of Muscle Pain on Central Nervous System at Spinal and Cortical Levels E Gellhorn—p 242

## Journal of Neurophysiology, Springfield, Ill

7 207-252 (July) 1944

- Analysis of Variability of Spinal Reflex Thresholds J S Denlow—p 207  
 Parasympathetic Regulation of High Potential in Electroencephalogram C W Darrow J R Green E W Davis and H W Garol—p 217  
 Electrophonic Response to Phase Reversal P Kellaway—p 227  
 Afferent Path of Pupillodilator Reflex in Cat A J Harris R Hodes and H W Magoun—p 231  
 Changes of Weight and Neuromuscular Transmission in Muscles of Immobilized Joints P Thomsen and J V Luco—p 245

# Journal of Nutrition, Philadelphia

28 1-70 (July) 1944

- Production of Hypercalcemia with Small Amounts of Vitamin D J H Jones—p 7
- Efficiency of Utilization of Phosphorus by Albino Rat L F Marcy—p 17
- Metabolic Changes in Growing Chickens H H Kibler and S Brody—p 27
- \*Vitamin Content of Variety Meats J M McIntire B S Schweigert E J Herbst and C A Elvehjem—p 35
- \*Protein Nutritional Value of Soybean Peanut and Cottonseed Flours and Their Value as Supplements to Wheat Flour D B Jones and J P Divine—p 41
- Utilization of Thiamine in Human Subject Effect of High Intake of Carbohydrate or of Fat J G Reinhold J T L Nicholson and K O Shea Elsom with technical assistance of Charlotte Chornock—p 51
- Production of Vitamins in Germinated Peas Soybeans and Other Beans C E French G H Berryman J T Goorley H A Harper D M Harkness and E J Thacker—p 63

**Vitamin Content of Variety Meats**—McIntire and his associates analyzed the thiamine, riboflavin and nicotinic acid content of samples of bologna, frankfurters, pork links, beef liver, veal heart, Canadian bacon, various types of sausage, head cheese, oxtail, lamb shank and other variety meats. They found that these meats are a good source of the aforementioned vitamins, containing about the same amounts as fresh muscle meats. Retention of these vitamins in some of the meats was studied during broiling, braising and boiling. Greater amounts of all the vitamins were retained in the meat after broiling than after braising. In the case of boiling the vitamin retention in the meat was dependent on the cooking time. Broiling favored a higher total retention of thiamine than did braising. In nearly every case over 90 per cent of the nicotinic acid and riboflavin was recovered in the meat and drippings.

**Nutritional Value of Soybean, Peanut and Cottonseed Flours**—Jones and Divine studied the growth promoting values of the proteins of soybean, peanut and cottonseed flours by the rat growth method and also their values as supplements to the proteins of wheat flour. They found that soybean, peanut and cottonseed flours contain proteins of high nutritive value and offer an excellent means of supplying dietary protein to extend and partially replace protein foods of animal origin. These plant proteins are well adapted to enhance the nutritive value of the proteins of wheat flour. The addition of as little as 5 parts of peanut, soybean or cottonseed flour to 95 parts of wheat flour produced mixtures containing 16 to 19 per cent more protein than wheat flour alone and a protein combination that was definitely superior in its growth promoting value to the same quantity of protein from wheat flour.

# Journal of Urology, Baltimore

51 563 666 (June) 1944

- Mullerian Duct Cysts C L Deming and R R Berneike—p 563
- Supernumerary Kidney with Clear Cell Carcinoma M Exley and W S Hotchkiss—p 569
- \*Renal Aplasia Study of 16 Cases E F Nation—p 579
- \*Thrombosis of Renal Vein W F Melick and A E Vitt—p 587
- Primary Tumors of Kidney A L Shaheen C Cassano and J R Lisa—p 597
- Renal Hemangioma Obscure Cause of Hematuria A Rotunno and H Mohan—p 601
- Primary Epithelioma of Ureter Follow Up Study of 18 Cases with Addition of 9 New Cases V S Counsellor E N Cook and P H Seefeld—p 606
- Tumors of Ureter S McMahon—p 616
- Papillary Carcinoma of Bladder with Extensive Metastases Case Report Autopsy N P Rathbun—p 623
- Metabolism of Isolated Prostatic Tissue E S G Barron and C Higgins—p 630
- Secondary Carcinoma of Testicle Following Carcinoma of Prostate I Helfert and B M Pinck—p 635
- Metastasis in Epididymis from Cancer of Prostate Case Report M A Humphrey—p 641
- Primary Carcinoma of Anterior Male Urethra Case Report R F Hickey and R C Coleman Jr—p 643
- Malaria as Complication in Genitourinary Tract Disease A I Folsom and H A O'Brien—p 646
- \*Podophyllin Treatment of Condylomata Acuminata O S Culp M A Magid and I W Kaplan—p 655

**Renal Aplasia**—Nation believes that the term renal aplasia should be reserved for incompletely or defectively developed kidneys to distinguish the condition from renal agenesis, in which no vestige of renal tissue is to be found. There are clinical and embryologic reasons for restricting the use of the

term still further. To distinguish renal aplasia from hypoplasia and secondary atrophy it has been used properly only to denote the presence of tissue of metanephric origin which has never developed renal function or has undergone congenital atrophy. Confusion can be avoided by use of the criteria established by Gutierrez: "No true kidney, no evidence of pelvis, absence of true renal pedicle, renal artery small or absent, ureter incompletely developed and not patent, no excretion of urine, no renal function, histologic section of the supposed renal mass reveals glomeruli and tubules, showing arrest of development of renal organ." All of the cases designated as renal agenesis, aplasia and hypoplasia among approximately 27,000 necropsies performed at the Los Angeles County General Hospital were studied. There were 16 cases of true renal aplasia. Its incidence in this series was about the same as that of renal agenesis. Renal aplasia usually results from failure of proper contact between the ureter (collecting tubule system) and the metanephros. Three cases were bilateral. The right and left kidneys were involved with equal frequency. Nine of the patients were males and 7 were females. Six of the 9 patients living more than one month died as a result of hypertension, each having extensive disease of the functioning kidney. Four patients, 3 females and 1 male, had developmental defects of the genital tract. A case of persistence of the metanephros without a ureter is reported. Renal aplasia can seldom be differentiated clinically with certainty from renal agenesis. Surgical exploration for and removal of an aplastic kidney are indicated (1) for the relief of pain, (2) in patients with intractable hypertension and no evidence of disease of the functioning kidney and (3) in cases of hypertension in which pyelonephritic contracture or renal hypoplasia cannot be excluded.

**Thrombosis of Renal Vein**—Melick and Vitt describe a case of thrombosis of the renal vein in which blood prothrombin times were obtained preoperatively. A retrograde pyelogram was secured in a normal fashion within a short time after the onset of the thrombosis, which showed the early roentgenologic changes of renal vein thrombosis. They believe that this is the first time that such a pyelogram has been obtained. In the pyelogram which was made within eighteen hours of the onset, as judged by the pain and tenderness the swelling had not completely occluded the renal pelvis. The picture showed a renal pelvis irregular in outline and irregularly filled. In adults, renal vein thrombosis may be due to primary hemogenous pyelonephritis, with resultant thrombosis within the renal cortex and later extension to the pedicle. It may also be due to the involvement of the pedicle by infection from rupture of a cortical abscess or a perinephric abscess. Thrombosis of the renal vein may be part of a progressive, ascending inflammatory process involving first the vessels of the pelvis or lower extremity and then the inferior vena cava and its higher branches. In infants the thrombosis is almost always secondary to severe ileocolitis or gastrointestinal upsets. One case in an infant was secondary to a primary pneumonitis. If the possibility of such thrombosis is kept in mind, the diagnosis should be made without difficulty. The onset is usually sudden, there are fever, pain and tenderness in the affected side. On palpation the kidney has been found to be enlarged in every case reported. The kidney is also freely movable and tender. Usually there are signs of infection and severe toxicity. Frank hematuria or microscopic hematuria has been present in almost every case. In infants a history of previous ileocolitis is obtained. In adults the history of a previous thrombophlebitis of the pelvis or lower extremity is a common finding. Immediate nephrectomy seems to be the treatment of choice. A possible aid in the treatment may be the use of an agent such as dicumarol to prolong the prothrombin time. This agent must be used with great caution.

**Podophyllin Treatment of Condylomata Acuminata**—Culp and his associates used podophyllin in the treatment of 100 young men with condylomata acuminata in the genitourinary section of the station hospital of Camp Bowie, Texas. Three of the patients also had chancres and 1 had acute gonococcal urethritis, which did not complicate or prolong the condylomata treatment. The remaining patients did not have venereal disease. All but 7 patients were treated as outpatients while on full field duty. The lesions were confined to the penis,

perineum and anal area. Twelve patients had been treated by other methods (6 with acid solution of mercuric nitrate, 6 with electrofulguration) without complete disappearance of the growths or with early recurrences. In 62 cases treatment consisted of topical applications of 25 per cent podophyllin in liquid petrolatum with a cotton swab. This is prepared by suspending the crude podophyllin in liquid petrolatum and shaking well before each administration. No discomfort was experienced during the application and no anesthesia was required. Only 6 patients required more than one treatment. Most patients were cured within two to three days. The condylomas quickly turned white and dropped off, leaving a smooth, non-ulcerated base with no gross scarring. Only 2 recurrences have been reported from this group. The two responded promptly to the same type of therapy. In 35 cases the podophyllin was applied in a paste prepared by mixing the crude powder with water until the desired consistency was obtained. The drug appears to be equally efficacious when employed in this form and may be kept more localized. Only 2 patients required more than one application of the paste. The surrounding normal tissue usually is unaffected by the drug, but in isolated cases of extensive application under a tight prepucis some balanitis may result. Occasionally circumcision will be advisable because of the chemical balanitis and secondary preputial edema but disappearance of the condylomas simplifies the surgical procedure.

### Medical Annals of District of Columbia, Washington

13 213-250 (June) 1944

- Treatment of War Wounds F R Moore—p 213  
Clinician Looks at Present Day Treatment of Malaria H F Dowling—p 217  
Surgical Aspects of Management of Tetanus Report of Case F G Burke—p 221  
Two Cases of Constrictive Pericarditis W M Yater and H L Hirsh—p 223

13 251-284 (July) 1944

- Therapy of Burns P A Caulfield—p 251  
Comparative Study of Action of Globulin Insulin with Other Forms of Insulin M Protas—p 254  
Further Observations on Continuous Caudal Anesthesia G J Ellis and J B Sheffery—p 258  
Pyrogenic Reaction to Use of Thioracil for Exophthalmic Goiter Report of Case J P Kenrick and W M Yater—p 263

### Military Surgeon, Washington, D C

95 1-88 (July) 1944

- Diets of Explorers V Stefansson—p 1  
Cold—R A F's Other Enemy—Is Beaten G L Keynes—p 3  
Analysis of 150 Cases of Cardiovascular Disease in World War II Veterans A H Traum and Blanche B Wilcox—p 5  
Meningococcus Meningitis F L Price and R A Mayer—p 11  
Veterinary Service at Army Post D M Campbell—p 15  
Army Foot Disabilities W H Burnham—p 20  
Meningococcal Conjunctivitis Report of 3 Cases C E Bauer E A Gall and C D Cox—p 24  
Treatment of Pilonidal Cysts by Excision and Primary Closure V L Barker and G H Clark—p 27  
Roentgen Therapy with Army X-Ray Field Unit E W Egbert—p 30  
\*Cardiac Strain Myocardial Infarction Without Coronary Artery Disease Case Report W K Simmons and S A Wolfson—p 33  
Treatment of War Wounds R M Hardaway—p 37  
Relation of Medication to Treatment of Fusospirochetal Infections of Mouth J H Klock—p 42  
Fractures of Jaws A M Maris—p 43  
Strabismus in Army H D Rosenbaum—p 48  
Atypical Allergic Manifestations Their Identification and Treatment J A Rudolph—p 52  
Acute Rhinitis and Sinusitis Suction Displacement Treatment with Vegetable Oils F G Fox—p 56  
New Source of Penicillin in Treatment of Chronic Gonorrhea D W Atcheson—p 58  
New Suture for Use in Mucous Recession Operations C B Foster—p 62

**Myocardial Infarction Without Coronary Artery Disease**—Simmons and Wolfson report that a man aged 31 was hospitalized because of substernal pain which radiated to the left shoulder and down the inner aspect of the arm to the third and fourth fingers. He had been free of complaints up to the day of illness. Immediately after the noon meal he attempted to climb a sharply graded mountain approximately 1,600 feet in height. About one third of the way up he experienced some nausea and stopped to rest. After a brief period he continued

climbing but soon felt a substernal fulness as though 'gas was crowding his heart'. He rested a second time and proceeded to climb. About two thirds of the way up he experienced a substernal ache. He rested a third time and climbed more. A few minutes later the pain became severe and radiated to the left shoulder and down the inner aspect of the left arm to the third and fourth fingers. This time the pain persisted in spite of rest. The patient was taken by litter and ambulance to the hospital. During hospitalization he continued to have mild substernal distress and numbness and tingling of the left arm in decreasing intensity through the fourth day. The patient was at bed rest for three weeks, was then allowed up for a short interval at a time in a wheel chair and was gradually permitted restricted activity. Convalescence was uneventful. The problem of acute heart strain resulting in myocardial infarction in the absence of coronary artery disease is still a controversial subject. Parsonnet and Bernstein concluded that acute heart strain occurs in the healthy as well as the diseased heart, reasoning that the man who is working at full capacity and who then adds a little more to this exertion, may suddenly find himself with an inadequate blood supply to a portion of his myocardium, with resultant changes identical in every respect to those seen after a coronary occlusion or thrombosis. The sequence and progress of events in the case here reported make such an occurrence likely. The authors consider it probable that other such cases will be observed with greater frequency as more men are inducted into the service and participate in physical exertion foreign to them in civilian life.

### Nebraska State Medical Journal, Lincoln

29 201-232 (July) 1944

- Thrombosis and Embolism of Larger Arteries F M Conlin—p 204  
Medical Treatment of Peripheral Vascular Diseases R L Traynor—p 208  
Vasomotor Neuroses A E Bennett—p 211  
Surgical Aspects of Treatment of Peripheral Vascular Disease F C Hill—p 215  
Refrigeration Treatment of Peripheral Vascular Diseases R L Egan—p 217  
Diseases of Peripheral Vessels F L Dunn—p 219  
Penicillin—Indications Contraindications Mode of Administration and Dosage C S Keefer—p 222

### New England Journal of Medicine, Boston

231 1-34 (July 6) 1944

- Subacute Degeneration of Brain in Pernicious Anemia R D Adams and C S Kubik—p 1  
Part Time Protective Environment and Working Parole as Adjuvant in Treatment of Alcoholism J Thimann—p 9  
Epidemic Keratoconjunctivitis Report of Case with Marked Systemic Manifestations J J Curry and F C Lowell—p 11  
Physiologic Significance of Vitamin C in Man M Pijoan and E L Lozner—p 14

231 35-70 (July 13) 1944

- Hodgkin's Disease II Pathology H Jackson Jr and F Parker Jr—p 35  
\*Pemphigus Further Report on Chemical Studies of Blood Serum and Treatment with Adrenocortical Extract Dihydrocortisol or Vitamin D W F Lever and J H Talbott—p 44  
Diseases of Veins J Homans—p 51

**Treatment of Pemphigus**—In two recent communications Lever and Talbott reported that significant changes in the electrolyte content of the blood serum occur in patients with pemphigus vulgaris. In an attempt to correct the chemical changes, they have treated patients with pemphigus vulgaris with adrenal cortex extract, dihydrocortisol or massive doses of vitamin D. In the two previous publications observations on 15 patients with pemphigus were reported, since then an additional 17 patients have been studied. The authors report chemical findings in the blood serum of these patients and evaluate the effectiveness of adrenal cortex extract, dihydrocortisol and massive doses of vitamin D. They recognize six types of pemphigus vulgaris acutus (Brocq's pemphigus subaigu malin), pemphigus vegetans pemphigus vulgaris chronicus, pemphigus foliaceus pemphigus erythematosus (Senear-Usher type of pemphigus) and pemphigus conjunctivae. In pemphigus vulgaris acutus, pemphigus vegetans and pemphigus vulgaris chronicus the amount of sodium, chloride, calcium and protein in the blood serum was found to be reduced. These changes were more pronounced in pemphigus vulgaris acutus and pem-



phigus vegetans than in pemphigus vulgaris chronicus. The degree of reduction usually corresponded to the severity of the clinical condition and the amount of skin involved. No etiologic significance can be attached to the chemical changes. They are regarded as a secondary symptom produced by the disease. Thirty-two patients with pemphigus were treated with adrenal cortex extract, dihydrotachysterol or massive doses of vitamin D. Encouraging results were obtained in several cases of pemphigus vulgaris acutus, pemphigus vegetans and pemphigus vulgaris chronicus. The results of treatment in cases of pemphigus foliaceus, pemphigus erythematosus and pemphigus conjunctivae were disappointing. The treatment tends to correct the reduction of sodium, chloride, calcium and protein encountered in such patients. Since it is believed that the chemical changes are secondary symptoms produced by the disease, the treatment is merely symptomatic.

### New York State Journal of Medicine, New York

44 1391-1502 (July 1) 1944

Management of Disorders of Thyroid II Myxedema Conferences on Therapy—p 1468

Ringworm Infection of Scalp in Harlem Area Discussion of Present Inadequate Methods of Control G A Spencer—p 1486

Botulism Report of Recovery After Serum W L Marsden—p 1492

44 1503-1614 (July 15) 1944

Nephroposis and Nephropexy Critical Review of 55 Cases C G Bandler B D Pinch and P R Roen—p 1541

Facial Paralysis—Prosopoplegia H R Mervarth—p 1546

Stability of Fasting Blood Sugar in Diabetes Mellitus H O Mosenthal and F U Lauber—p 1555

Cutaneous Manifestations of Tuberculosis A C Cipollaro—p 1557

Tissues Dose Estimation in Combined Roentgen and Radium Therapy for Carcinoma of Uterine Cervix W E Howes—p 1563

Role of Motivation in Psychotherapy L R Wolberg—p 1569

Abuse of Vasoconstrictors in Hay Fever and Vasomotor Rhinitis L Sternberg—p 1573

### Oklahoma State Medical Assn Jour, Oklahoma City

37 239-284 (June) 1944

Acute Surgical Abdomen V C Tisdal—p 239

Common Orthopedic Conditions in Childhood D H O Donoghue—p 242

Intramedullary Transfusions in Infants C M Bielstein—p 243

37 285-338 (July) 1944

\*Restoration of Breathing in Emergencies and Maintenance of Respiration in Nonbreathing Patients C K Drinker—p 285

Trends in Public Health H S Mustard—p 293

Chronic Digestive Disturbance in Elderly Patient D D Paulus—p 297

**Restoration of Breathing**—Drinker says that if artificial respiration is applied at the time at which breathing stops, chances of recovery are 100 per cent. From the second to the sixth minute the chances decrease abruptly, and from the sixth to the twelfth minute the chances of regaining breathing are possible but slight. Large numbers of people requiring instant application of artificial respiration are treated first by laymen. The prone pressure method of artificial respiration, described by Schafer in 1903, is the best for lay use. The face down position, coupled with the pressure used, provides more certain and better drainage of the air passages than is possible for the layman provided with any sort of mechanical device. In the Silvester method, in which the chest is stretched into fullest possible passive expansion by bringing the arms into full extension above the head, the patient is served more by the inherent elasticity of all the tissues and less by muscle tone. The physiologic soundness of the Silvester method is, however, negated by the position of the patient on his back, which does not favor drainage from the mouth and throat and even more by the fact that the inspiratory expansion of the chest attained by arm extension may be too slight to provide an adequate minute volume. However, for a person with an open wound of the abdomen or for a woman in the last stages of pregnancy the Silvester method may have to be used. The author describes the discovery and mode of action of the tilting method of Eve. He regards the Bragg Paul pulsator as the best of the many methods which operate by mechanical imitation of the prone pressure method. Occasional successes and mechanical attractiveness of the blow and suck machines do not overbalance physiologic unsuitability. The value of oxygen and carbon

dioxide in stimulating breathing is evaluated. When the respirator was first introduced, it seemed as if a way had been opened for saving almost all the victims of acute poliomyelitis. This has not proved to be true, and if the first patient had had bulbar poliomyelitis instead of a spinal type deal for treatment, enthusiasm for the respirator would have been less. The respirator will always save the lives of some patients. There are a larger number it will not save. The cuirass type respirators give the patient freedom and they make nursing care far less difficult but they do not work well unless some ability to breathe is retained. The respirator enclosing the entire body is capable of giving good ventilation in the presence of complete respiratory paralysis.

### Radiology, Syracuse, N Y

43 1-106 (July) 1944

\*Clinical and Radiologic Studies of Pulmonary Mycosis W A Johnston and J Heydemann—p 1

Fungal Disease of Chest V L Peterson—p 14

Roentgen Therapy of Sinusitis with Special Adapter F C Christensen—p 21

Relation of Coincident Anomalies of Gastrointestinal Tract and Renal Ptoxis to Digestive Disturbance W E Reiley—p 30

Diagnosis and Treatment of Osteoclastoma J F Brailsford—p 35

Lung Abscess Secondary to Stenosing Bronchiogenic Carcinoma E Kraft—p 39

\*March Fracture Including Others Than Those of Foot G D Carlson and R F Wertz—p 48

Influence of Irradiation of Ovaries on Estrus and Neoplastic Development in Marsh Buffalo Mice F Bischoff H J Ullmann and Louise P Ingraham—p 55

**Clinical and Radiologic Studies of Pulmonary Mycosis**—Johnston and Heydemann report several cases of mycotic infection encountered in a period of eight months. They stress that classification of yeast infections is a difficult procedure. Literature dealing with mycotic infections of the lung demonstrates little, if any difference between the history, physical findings, pathology and sequelae of the various types of yeast infection. The reported cases demonstrate some of the difficulties encountered in evaluating the importance of yeast in the sputum. There may be a pure infection; there may be a secondary infection which assumes a primary role; the yeast may be an incidental finding of no clinical significance; it may be a contaminant from a receptacle. The authors feel that yeast infections are much more prevalent than ordinarily thought. As proved in the literature and in the cases reported, too many mycotic infections go unrecognized until shortly before a terminal condition exists. The recognition of mycotic infections of the lungs is in great part the responsibility of the roentgenologist. He must stimulate further study to eliminate or prove the presence of a mycotic infection.

**March Fracture**—Carlson and Wertz point out that, although march fracture shows the highest incidence in the foot, it is occasionally encountered in other bones. Their report is based on 70 cases referred to the roentgenologic service of Brooke General Hospital, Fort Sam Houston, Texas, from January 1942 to April 1943, comprising 66 involving the metatarsals, 3 the femur and 1 the os calcis. Practically all cases presented varying degrees of periosteal reaction while only 31 showed definite fracture lines. The greatest amount of callus appeared from one to two months after the onset of symptoms. Of the 66 men with metatarsal fractures, only 5 were placed on limited duty. Of the remaining 61, 11 received treatment in the outpatient clinic, consisting chiefly of arch supports, proper fitting of shoes and return to full duty. The other 50 patients were hospitalized, treatment consisting in the application of a plaster walking boot for an average of three weeks, followed by ten to fourteen days of physical therapy and proper arch supports. All 50 returned to full duty. All 3 femoral fractures involved the distal portion of the shaft with no displacement. One man returned to full duty and 2 were placed on limited duty. The patient with an os calcis fracture was likewise placed on limited duty. A diagnosis of march fracture may be made in many cases on the basis of periosteal proliferation, even in the absence of a fracture line. This condition is an example of pseudofracture. The all important factor in diagnosis is to avoid a mistaken interpretation of malignant bone tumor, leading to amputation or other unnecessary radical therapy.



## Surgery, Gynecology and Obstetrics, Chicago

79 1-112 (July) 1944

- Definition of Objectives and Importance of Controls in Evaluating Local Use of Sulfonamides in Wounds J S Lockwood—p 1
- Thyroid Function as Factor in Gallbladder Disease and Formation of Gallstones Clinical and Experimental Study—p 10
- Presacral Neurectomy for Intractable Vesical Pain and Neurogenic Vesical Dysfunction C E Jacobson W F Braasch and J G Love—p 21
- Some Complications in Surgical Handling of Carcinoma of Left Colon and Rectum H C Saltzstein and J Kelly—p 27
- \*Ligation of Thoracic Duct and Posthemorrhage Plasma Protein Level Co Tui I S Barcham and B G P Shafroff—p 37
- Local Effect of Tropic Anesthetic Drugs on Motility of Gastrointestinal Tract of Human and Dog N Crohn W H Olson and H Necheles—p 41
- \*Relation of Vitamin C to Anesthesia K H Beyer J W Stutzman and B Hafford—p 49
- Reconstruction of Common Bile Duct J Walton—p 57
- \*Deep Quiet Venous Thrombosis in Lower Limb Preferred Levels for Interruption of Veins, Iliac Sector or Ligation J Homans—p 70
- \*Canavalin New Enzymatic Bactericidal Agent Preliminary Report D L Farley—p 83
- Helmet for Protection Against Craniocerebral Injuries L Davis—p 89
- Surgery of Pelvic Colon and Rectum I W Baker—p 92
- Experimental and Clinical Study on Use of Adult Animal Tissue Extract in Acceleration of Wound Healing Preliminary Report R S Hoffman and J A Dingwall—p 103

**Ligation of Thoracic Duct and Posthemorrhage Plasma Protein Level**—Co Tui and his associates reported in a previous communication that after hemorrhage the concentration of proteins in the thoracic duct lymph undergoes a considerable increase. It was suggested that the lymph serves an important role in the compensatory mechanism of hemorrhage, not only as a pathway for fluid, but also as a source of protein replacement. The present work is an attempt to assay the role of the thoracic duct, the principal lymph collecting channel, in the maintenance of the plasma protein level after acute hemorrhage. The posthemorrhage hematocrit and plasma protein values were determined in two groups of dogs, one with the thoracic duct ligated and the other with the thoracic duct intact. In the group with the intact thoracic duct the prehemorrhage level of plasma proteins was achieved in from twenty-four to forty-eight hours. In the group with the thoracic duct ligated this level was not reached until after eight days. On the basis of this finding and on the basis of the finding previously reported of increase in protein concentration in thoracic duct lymph following hemorrhage, it is postulated that the thoracic duct and, therefore, the lymphatic system is an important pathway not only for the return of proteins from the capillary filtrate to the blood but also for the mobilization of proteins from protein depots in the body.

**Relation of Vitamin C to Anesthesia**—Beyer and his associates aimed to determine (1) the effect of anesthesia on the vitamin C content of plasma and (2) the effect of C avitaminosis on the animal's response to anesthetic agents. The anesthetics used were diethyl ether, vinethene, chloroform and cyclopropane. The first three agents were given by the "open drop" technic to 8, 6 and 12 dogs respectively. The animals used for the "open drop" anesthetizations were not intubated. None of the animals were given premedication. All the dogs were maintained at light surgical anesthesia for forty-five minutes. Six dogs were anesthetized by rebreathing a cyclopropane-oxygen mixture from a 5 liter rubber bag. Closed system anesthesia with diethyl ether was employed for 12 dogs. Guinea pigs were used to study the effect of the vitamin C content of an animal on its response to anesthesia. During and at least for the first seven hours following a forty-five minute period of anesthesia the dog plasma ascorbic acid level increased noticeably. Subsequently the plasma level fell within twenty-four hours to below the preinduction control levels. These observations held for cyclopropane, ether, vinethene and chloroform independently of the mode of anesthetization. This effect was due to the anesthetic agent and not to an inadequate oxygen intake, which tended only to reduce the rate and extent of the mobilization and to decrease or abolish the twenty-four hour fall in plasma ascorbic acid level. The initial mobilization and secondary depletion of plasma ascorbic acid which the authors observed fits in with the results of others. It is apparent that ascorbic acid is readily released from some source under the influence of anesthesia, but there is no explanation as to how

it is contained in or released by tissues. While inadequate tissue oxygenation is not responsible for the mobilization or depletion of the plasma vitamin C level, it does somehow quantitatively influence the extent of these phenomena, tending to diminish both fluctuations. Vitamin C deficiency caused guinea pigs to be more quickly inducted into anesthesia and more profoundly depressed by a given concentration of ether, chloroform or vinethene. The vitamin C deficient animals recovered slowly, if at all, from a duration of anesthesia which had little apparent after-effect on guinea pigs that had received the same scorbutogenic diet but which were injected with 30 mg of ascorbic acid daily.

**Deep Quiet Venous Thrombosis in Lower Limb**—Thrombosis of a quiet type (phlebothrombosis) commencing in the deep veins below the knee is the source of most nonobstructive processes threatening pulmonary embolism as well as most obstructive inflammatory ones responsible for painful swelling of the whole lower limb (thrombophlebitis). Thrombophlebitis of the fully obstructive type presents no indication for operations but rather for release of the associated vasoconstriction by lumbar sympathetic block. It is desirable and usually possible to distinguish an early stage of quiet, deep venous thrombosis when the process is still confined to the lower leg or has given rise to an unattached propagating thrombus in the popliteal and femoral veins, threatening pulmonary embolism. An advanced stage of quiet, deep venous thrombosis, more or less adherent but not obstructive, can also be distinguished. Thrombosis will often have propagated above the inguinal ligament into the external and, occasionally, especially on the left, the common iliac vein. With such a process, thrombosis of the deep veins among the muscles of the thigh (profunda femoris system) is usually associated. Thrombosis in these deep veins may even be present when no thrombus is found on exploration of the superficial femoral vein below the profunda. Though interruption of the common femoral vein offers a considerable degree of protection against subsequent serious pulmonary embolism, it cannot give the assurance of a yet higher division, for example, in the common iliac vein. If the common iliac vein is divided, blood can escape via the common femoral through the deep epigastric, the deep circumflex iliac and particularly through the hypogastric vein. It may pass by way of this last channel through rectal vessels into the inferior mesenteric vein or to the opposite side of the pelvis, and in women an additional collateral field is offered by the uterine and ovarian veins. Clinical experience indicates that while serious venous congestion and swelling sometimes follow interruption of the common femoral vein when the superficial and deep femoral systems are partly filled with adherent thrombus, section or ligation of the common iliac vein seems to leave no such troubles behind. Homans presents observations on interruption of the vena cava. This operation is probably indicated in the presence of bilateral thrombosis, which is believed to have arisen in the main venous stem, on both sides, to or about the level of the inguinal ligaments. It is to be preferred to separate ligation of each common iliac vein.

**Canavalin, New Enzymatic Bactericidal Agent**—Farley directs attention to his discovery of a new enzymatic bactericidal agent called canavalin. He describes the method of its preparation, experimental data showing its in vitro action and certain preliminary information as to its clinical use for patients. Canavalin is a mixture of an enzyme and a coenzyme solution separately extracted and mixed. The enzyme portion is an extract of jack bean (*Canavalia ensiformis*)—8. It also has been extracted from soy beans, liver and white potatoes. The jack bean is the best source. The coenzyme portion of canavalin is associated with the vitamins of the water soluble B group. Thiamine and riboflavin are used to produce in vitro a supply of coenzyme. This coenzyme is called "vitatropin" and has the physical characteristics usually possessed by a coenzyme—thermostability, filtrability and the property of being precipitated from a watery solution by an organic solvent. Both enzyme and co-enzyme have been found by the author to be present in normal blood. In vitro studies revealed that canavalin renders both gram positive and gram negative organisms incapable of growth. The author reports 13 cases of lobar pneumococcal pneumonia treated with canavalin. Every one showed a definite drop in temperature.

## FOREIGN

An asterisk (\*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

## Australian and New Zealand J Surgery, Sydney

13 219-280 (April) 1944

- Dangers and Complications in Treatment of Hemorrhoids T H Ackland—p 219  
New Techniques and Old Principles W B Parsons—p 232  
Traumatic Lesions of Large Blood Vessels Treated in Prison Camp in Germany B Moore—p 241  
\*Acetylcholine Synthesis and Myasthenia Gravis E R Trethowie and R D Wright—p 244  
Physiotherapy in Chest Surgery J I Hayward—p 247

**Acetylcholine Synthesis and Myasthenia Gravis**—Trethowie and Wright investigated the effect of thymic extract on the synthesis of acetylcholine. An increase in acetylcholine synthesis was detected when "normal" thymus was added to brain extracts. A decrease in acetylcholine synthesis was observed when thymus from a severe case of myasthenia gravis was added to brain extract. Three likely explanations of the deficiency in myasthenia gravis are suggested: excess destruction of acetylcholine by esterase, defective utilization of acetylcholine and defective synthesis of acetylcholine. The authors present evidence in support of the rationale of the removal of the thymus in myasthenia gravis.

## Brain, London

67 1-68 (March) 1944

- Pyramidal Section in Cat E G T Liddell and C G Phillips—p 1  
Nature of Transient Outbursts in Electroencephalogram of Epileptics D Williams—p 10  
Form of Familial Presenile Dementia with Spastic Paralysis C Worster Drought J G Greenfield and W H McMenemey—p 38  
Meralgia Paresthetica Due to Nodular Lipomatosis and to Traumatic Lesions in Thigh Reflex Theory of Sensory Neuritis M Kelly—p 44  
Recovery of Spatial Orientation in Post-Traumatic Confusional State A Paterson and O L Zangwill—p 54

## British Journal of Industrial Medicine, London

1 81-144 (April) 1944

- Training of Industrial Nurse A J Amor and Clare Sykes—p 81  
Design of Dressing Stations and Control of Wound Infection W Gissane A A Miles and R E O Williams—p 90  
First Aid Treatment of Burns and Scalds L Colebrook T Gibson and J P Todd—p 99  
Burns of Hand P H Hayes—p 106  
Prevention and Control of Cutting Oil Dermatitis E Collier—p 110  
New Aspects of Nutrition J R Marrack—p 114  
Medical Service in Industry in U S S R A Letavet—p 123

## British Journal of Ophthalmology, London

28 261-316 (June) 1944

- Eye Department in Middle East General Hospital H B Stallard—p 261  
Simple Method for Early Diagnosis of Abnormalities of Pupillary Reaction H J Stern—p 275  
Granulation Tumor of Conjunctiva J D J Freeman—p 277  
\*Genetics of Retinoblastoma A D Griffith and A Sorsby—p 279  
Encapsulated Orbital Melanoma J Foster—p 293  
Removal of Nonmagnetic Foreign Body from Vitreous V O Hea Cussen—p 296

**Genetics of Retinoblastoma**—According to Griffith and Sorsby retinoblastoma is a rare tumor. They say that at the Royal Eye Hospital, London, there were seen 59 children with retinoblastoma during the fifty years 1894-1943, and among these there was only one familial group. The pedigree of this familial group has been reported in part on previous occasions, but it is now possible to extend and amplify the previous observations of retinoblastoma in two generations to the observed occurrence of this condition in a member of the third generation. Following brief histories of the 6 affected members of this familial group the author stresses the early age at which the tumors occurred and the great tendency to bilateral involvement in this family. In only 1 of the 6 patients has the lesion been unilateral. After reviewing observations on sporadic retinoblastoma in which the incidence of bilateral involvement is much lower, the authors cite reports from the literature on retinoblastoma in sibs with clear antecedents. These reports

show that the mode of inheritance is irregularly dominant. The authors suggest that it is possible that hereditary retinoblastoma is a distinct histologic entity different from the sporadic types.

## British Medical Journal, London

1 773-802 (June 10) 1944

- Analysis of Shock V H Moon—p 773  
Meningitis Due to Pittman and Non-Pittman Strains of H. Influenzae J Gordon H E de C Woodcock and K Zinnemann—p 779  
Sulfonamide Allergy R G Park—p 781  
Treatment of Pulp Infection of Fingers in the Field T Denness—p 782  
Early Operation for Volkmann's Ischemic Contracture C A Pollock—p 783

1 803-832 (June 17) 1944

- \*Control of Scabies by Use of Soap Impregnated with Tetraethylthiuram Monosulfide ('Tetmosol') R M Gordon T H Davey K Unsworth F F Hellier S C Parr and J R B Alexander—p 803  
\*Carrier State in Sonne Dysentery J G Hailwood—p 806  
Analysis of Colles's Fracture S C Rogers—p 807  
Outbreak of Puerperal Sepsis Due to Single Type of Hemolytic Streptococcus: Its Investigation and Remedy M Kennel and Mary Barber—p 809  
\*Narcoanalysis with Nitrous Oxide C H Rogerson—p 811

**Control of Scabies by Soap Impregnated with Tetraethylthiuram Monosulfide**—Gordon and his associates show that tetraethylthiuram monosulfide ('Tetmosol') when combined with soap in 5, 10 and 20 per cent dilutions retains its sarcoptocidal properties. In rat scabies due to *Notodres* tetmosol soap produced a local therapeutic effect when used daily or weekly, the local infection being cured in some cases the mite population being reduced in others. Six men suffering from *Sarcoptes scabiei* infection received five to six baths with 20 per cent tetmosol soap on successive days; all were cured. A further series of 110 men received three baths with 20 per cent tetmosol soap over a period of a week. All remained under observation for at least six weeks at the end of which period 88 were found to have been cured and 22 to have relapsed. Although it has been shown that the repeated use of tetmosol soap cures a high proportion (80 per cent) of cases of scabies the soap is unlikely to supersede any of the standard methods employed which result in more than 90 per cent cures. On the other hand the simplicity of supplying a tablet of soap and instructing the patient to use it when bathing suggests the possible value of the soap in communities which have become disorganized as a result of war and in which it is not practicable to employ standard methods of treatment. Generalized use however, will be possible only if dermatitis does not follow prolonged use of the soap. The authors have shown that the incidence of dermatitis following the use of the soap for short periods is low, and that it was low also among a small number of people tested over a prolonged period, but no estimate can be made of the risk of dermatitis until an extensive trial with a large number of individuals has been carried out.

**Carrier State in Sonne Dysentery**—The severe outbreak of dysentery described by Hailwood occurred in an artillery regiment in July and August 1943. At least 1 Sonne positive case was found among the personnel in each cook house but only 1 man was found whose history of diarrhea was outside the limits of the incubation period. In August 1942 he had been admitted to a camp reception station with acute enteritis, pyrexia, colic and frequent stools containing blood and mucus. In November 1942 he was posted to this regiment and in February 1943 was employed in the sergeants' quarters. His duties included providing the sergeants with cups of tea, bread and butter, and so on. At this period there was a mild outbreak of enteritis in the regiment, 80 cases in all of which the majority were sergeants. For some months he was then employed on the guns, but on July 7 he was detailed for duty as orderly in one of the regimental cook houses. His job was mainly cutting bread and butter. The first cases occurred about July 20 and were among the battery personnel served from this particular cook house. It is certain that in the course of his duties this man visited the other regimental cook houses on numerous occasions, and thus infection would be conveyed to food and personnel in them, with consequent spread of the epidemic to the remaining two batteries. He did not so visit the permanent staff cook house, and no cases occurred among

the personnel served from there. This man had had no symptoms since his moderately severe attack twelve months previously, but his stool showed a heavy infection of *Bacterium sonnei*. The removal of all infected cooks from the cook house immediately stopped the outbreak. The opinion is put forward that the so-called symptomless carrier of *Sonne* dysentery is common but that a history of diarrhea at some time in the past can usually be obtained.

**Narcoanalysis with Nitrous Oxide**—Rogerson cites disadvantages of narcoanalysis by means of barbiturates and says that during the past twelve months a way has been found of overcoming these objections by the substitution of inhaled nitrous oxide for intravenous barbiturates as the anesthetic agent. The Minnitt obstetric gas-air analgesia apparatus proved ideal. The flow of gas is regulated by the patient's breathing, so that there is no waste. The patient himself controls his intake of gas and can stop at any moment. Fear is thus almost entirely eliminated. During the whole of the induction period gentle suggestions are given that he is becoming relaxed, that painful ideas will come more readily to his mind and that his thoughts are flowing easily and without restraint. As soon as he drops the mask he is urged to express whatever comes into his mind. In the case of a hysterical fugue he is told that he will relive the forgotten incidents. The author used this method with a considerable number of patients and reports 2 representative cases. He thinks that other methods of narcoanalysis could not have achieved similar results without a far greater expenditure of time. The availability of narcosis "on tap" in the consulting room, ready to be used at any moment in the course of analysis, is a great advantage. Patients themselves express a strong preference for the nitrous oxide technic, when the two have been used in a single case, access to hidden mental conflicts is fully as effective with gas as it is with a barbiturate.

### Edinburgh Medical Journal

51 161-208 (April) 1944

- Intersigmoid Hernia. Report of Case and Review of Literature. H. D. Wilson—p. 161.  
Military Surgery in Geographic Perspective. Libyan Exercise in Surgical Strategy and Tactics. I. Aird—p. 166.  
Etiology, Prophylaxis and Treatment of Cholecystitis and Cholelithiasis. L. S. P. Davidson—p. 184.  
Acute Schizophrenia in Childhood. Report of Case. Louise T. W. Eickhoff—p. 201.

### Lancet, London

1 745-776 (June 10) 1944

- \*Management of Minimal Pulmonary Tuberculosis Disclosed by Fluorography. W. D. W. Brooks—p. 745.  
Comminuted Fractures of Mandible. Report on 25 Consecutive Cases from Plastic and Jaw Unit. J. B. Cuthbert—p. 748.  
Human Factor in Military Malaria Control. R. R. Bomford—p. 750.  
Angular Conjunctivitis Treated with Propamidine. F. C. O. Valentine and A. M. Edwards—p. 753.  
Ankylosing Spondylitis. E. Fletcher—p. 754.  
Facial Palsy in Closed Head Injuries with Prognosis. J. W. A. Turner—p. 756.  
Pyroelectric Shock Therapy in Schizophrenia. J. Fuster—p. 757.  
Adsorption of Acridines by Gauze. A. Albert and W. S. Gledhill—p. 759.

**Tuberculosis Disclosed by Fluorography**—Brooks says that fluorography has made possible diagnosis of pulmonary tuberculosis on a scale far transcending anything previously achieved among the apparently healthy, and the yield of cases with minimal disease is considerable. Fluorography of 479,373 apparently healthy male personnel of the Royal Navy showed that 6,077 (12.7 per thousand) had radiologic signs of adult type pulmonary tuberculosis. In 47.9 per cent of these the lesion was "minimal." Of 23,344 of the female personnel 213 (9.1 per thousand) had similar evidence of tuberculosis, and the lesion was minimal in 55.4 per cent of these. Similar investigations among civilians will no doubt bring to light large numbers of cases of pulmonary tuberculosis of this slight degree, raising difficult problems of disposal and treatment. In some of these minimal cases the disease is arrested or is retrogressive, but in others it is progressive. Careful study is needed to decide whether the infection is active, and investigation in a hospital is essential. When 2,911 sailors with minimal lesions were first studied in a hospital 16 per cent showed evidence of active infection, while in 63 per cent the disease appeared to be inactive

but the stability of the lesions was doubtful. In 21 per cent the disease was arrested. Naval personnel with apparently inactive minimal tuberculosis have been placed on light shore duties and kept under observation. Study of these cases shows that the younger the patient the more likely the disease is to become active and the relapse to be serious. Observations indicate that a diagnosis of apparently inactive minimal tuberculosis in males under 50 should imply outpatient supervision, together with regular inpatient reexamination during the next two years. For patients under 30 this observation should probably last longer. Supervision should be combined with appropriate modifications in the patient's mode of life.

### Medical Journal of Australia, Sydney

1 453-476 (May 20) 1944

- \*Eosinophilia in Tropical Disease. Experiences at an Australian General Hospital. T. E. Lowe—p. 453.  
\*Complement Fixation Tests in Meningococcal Infections. J. M. Bonnin—p. 456.  
Fee Principle and Medical Organization. A. E. Brown—p. 460.

**Eosinophilia in Tropical Disease**—Lowe and his colleagues studied the blood picture of men returned from service in tropical areas. Most suffered from more than one tropical illness. Combinations of malaria and helminth infections were frequent. Observations were made on the effects of tropical diseases on the eosinophil picture. For comparison the eosinophil counts of normal subjects were obtained. The average reading of the eosinophil count in the control group was 145 per cubic millimeter and the range was from 0 to 700 per cubic millimeter. In 100 patients convalescent from malarial attacks the range of the eosinophil counts was between 0 and 1,350, with an average of 250 per cubic millimeter. Observations in additional selected cases suggest that the upper limit of eosinophilia in these cases may be of the order of 1,750 cells per cubic millimeter. Eosinophilia diminished as time progressed but lasted for at least eight weeks. A pronounced fall by some 50 per cent in the number of circulating eosinophil cells occurs twenty-four to thirty-six hours before the onset of malarial symptoms. After the febrile period, in cases in which treatment is given, the eosinophil cell count rises and regains its previous level in about ten days. In hookworm infection the eosinophilia was due to the presence of adult worms in the intestinal canal. It reached an average figure of 1,800 cells per cubic millimeter. After effective treatment, in two thirds of the cases the eosinophilia has disappeared within four weeks, but in the remaining one third it has persisted for much longer periods. Malaria convalescents with *Trichocephalus* infection revealed a range of eosinophil cell counts between 240 and 1,700 cells per cubic millimeter. Although the average of these figures is higher than that for subjects convalescent from malaria, it is within the range of postmalarial eosinophilia, so that *Trichocephalus* can not be considered as a frequent cause of significant eosinophilia. The patients with *Strongyloides stercoralis* infection all had pronounced eosinophilia, but they either had coexisting infection with other helminths or were convalescent from malaria. However, the eosinophil cell count did not fall during the weeks of observation, as would have been expected if the postmalarial phase was contributing greatly to the condition. Cases of infection with *Ascaris lumbricoides* are associated with eosinophil cell counts of the same order as those accompanying *Strongyloides* infection. Under the heading of unexplained eosinophilia the authors say that 14 patients convalescent from malaria have shown a persistent eosinophilia for which no adequate explanation can be offered. They think that in malaria and in the helminth infections studied two different factors are concerned with the production of eosinophilia: (a) a nonspecific factor similar to that present in bacterial infections and (b) a specific factor due to helminth infection.

**Complement Fixation Tests in Meningococcal Infections**—Bonnin shows that a close morphologic cultural and serologic relationship exists between meningococci and gonococci. It is known that a positive response to the gonococcus complement fixation test may be obtained in cases of meningococcal meningitis. The object of this investigation was to determine whether this test would be of use in the diagnosis of obscure meningococcal infections. The gonococcus complement

fixation test and the meningococcus complement fixation test were made in cases of meningitis, and control tests were performed with the serum of 58 subjects all of whom denied having had gonorrhea in the past. The gonococcus complement fixation test was found to produce a positive result in some cases of meningococcal infection. It also produced a positive response in 2 of 57 control cases. Thus it should not be regarded as absolute evidence of gonococcal infection. The meningococcus complement fixation test performed with two varieties of antigen was found to be too open to false positive results to be of any diagnostic value. The gonococcus complement fixation test may be used as an aid to diagnosis in obscure cases of meningococcal septicemia. The result should be interpreted in association with the clinical picture. The gonococcus complement fixation test may show that chronic meningococcal septicemia presenting in other than the well recognized form is more common than is generally realized. Though it cannot be used as the sole diagnostic criterion, it may be used as an indication for chemotherapy.

### Ophthalmologica, Basel

104 289 348 (Dec) 1942

- Arteriosclerotic Atrophy of Optic Nerve K. T. A. Halberstam —p. 289  
Ocular Aspects of Cushing's Disease M. Radnóti —p. 301  
\*Mode of Inheritance of Choroideremia J. Goedbloed —p. 308  
Incomplete Glaucoma Study of Glaucoma Without Hypertension R. Weekers —p. 316

**Choroideremia**—Goedbloed states that in patients with choroideremia the external examination of the eyes does not reveal anything abnormal. The media are clear. The characteristic alterations are found in the background of both eyes. With the exception of the optic disk and the region of the macula the whole fundus shows a grayish or greenish white color which gives the impression of almost complete absence of the pigment layer of the retina and the choroid. The term choroideremia is probably a misnomer, but it is impossible to say so definitely because of the complete lack of histologic information about this rare condition, of which only 34 cases have been reported in the literature. The author discovered this condition in a man aged 38. He had the opportunity to subject to ophthalmologic examination also the patient's mother and only sister, whose fundus condition is best characterized as nonsyphilitic pepper and salt fundus. Discussing the hereditary transmission of choroideremia, the author reviews some reports from the literature, particularly the report of Schlutzbach, who, in a family that could be followed for four generations, detected 3 cases of choroideremia and several cases of a fundus condition that closely resembled syphilitic pepper and salt fundus although the Wassermann test in all cases was negative. This picture was quite identical with that found in the author's female patients. He concludes that choroideremia has an intermediate gonosomal (sex linked) heredity.

### Medicina, Mexico, D. F.

24 223 246 (June 25) 1944 Partial Index

- \*Importance of Study of Bone Marrow Especially of Megakaryocytes in Hemorrhagic Diseases L. Sanchez Yllades and A. Ramirez Mendoza —p. 223

**Bone Marrow Megakaryocytes in Hemorrhagic Diseases**—Sanchez Yllades and Ramirez Mendoza report 60 cases of hemorrhagic disease, the majority in children. Special importance is given to the number of megakaryocytes in the bone marrow and of platelets in the peripheral blood, as well as to the morphologic changes of these cells in the diagnosis of hemorrhagic diseases. The number of megakaryocytes in the bone marrow and of platelets in the peripheral blood in thrombopenic purpura (including the megakaryophthitic and panmyelophthitic forms) and also in hemorrhagic leukemia is diminished. The number of megakaryocytes is increased in megakaryocytic purpura. The megakaryocytes and the platelets show morphologic changes in both the megakaryocytic and the megakaryopenic forms of thrombopenic purpura. In the various forms of hemorrhagic diatheses and purpura which are due to disorders of blood coagulability the number of blood platelets may be normal, increased or diminished, whereas the number of megakaryocytes is either normal or increased. Diminution in the number of megakaryocytes in these forms indicates aggravation

of the hemorrhagic diathesis or of hemorrhagic purpura. The former include the avitaminotic, the allergic and the toxic and infectious types of endotheloses and telangiectatic and nervous purpura, whereas the latter include hemophilia, fibropenia and hypothyroidism. The estimation of the megakaryocytes is of diagnostic and therapeutic value in the types of hemorrhagic disease mentioned.

### Semana Medica, Buenos Aires

51 1061-1112 (May 25) 1944 Partial Index

- \*Steroid Hormones Renotropic and Antiuremic Effect Selye's Method A. D. Angelo Rodriguez —p. 1062

**Desoxycorticosterone Acetate in Uremia**—D. Angelo Rodriguez administered desoxycorticosterone acetate intramuscularly to several ambulatory patients with acute or subacute uremia. The drug was given in daily doses which varied from 2 to 5 mg. The author found that the results were similar to those of Selye in experimental uremia. (1) The drug caused a progressive diminution of the amount of urea in the blood, (2) it proved to be harmless and effective when given in proper doses and (3) the arterial blood pressure of the patients was improved.

### Chirurg, Berlin

15 249-280 (May 1) 1943 Partial Index

- \*Problems of Exophthalmic Goiter E. Ljunghusen —p. 249  
Differential Diagnosis of Diseases of Lymphatic System in Surgery R. Herge —p. 254  
Question of Usefulness of Adding Colloid to Fluid Blood Substitute A. Engelhardt —p. 259  
Local Gigantism of Leg Resulting from Congenital Anomaly of Vessels and Its Operative Removal K. Scherwitz —p. 263  
Kuntzsch's Nailing of Fracture of Forearm R. Mautz —p. 278

**Problems of Exophthalmic Goiter**—Ljunghusen calls attention to the fact that cases with postoperative and spontaneous thyrotoxic crises present the same aspect: rapid pulse and rise of temperature. The typical course is that of temporary hyperfunction followed by progressive destruction of the thyroid with its biologic sequels. The concept of the absorption of thyroxine from the wound and of its predominance in the postoperative course is erroneous. The curves of pulse and of temperature of two different groups of patients were compared. One group consisted of patients on whom operation was performed for exophthalmic goiter, whereas surgical removal of a simple goiter was performed on those of the second group. In general, the simple goiter is larger than the exophthalmic goiter and the surgical exposure is greater. The thyroxine content of the wound surface is larger, and consequently a larger amount of thyroxine is likely to be absorbed. However, only a slight increase in pulse and little rise of temperature was observed after the removal of a simple goiter, whereas a fulminant, postoperative crisis with severe tachycardia and hyperpyrexia occurred in cases of exophthalmic goiter in which preoperative iodine therapy had no effect. Compensatory adrenal hyperfunction is suggested as an adequate concept of the thyrotoxic crisis. Complete recovery resulted from subtotal strumectomy in cases of tuberculosis of the thyroid as well as in cases of exophthalmic goiter. This recovery, in spite of the unbiologic crippling of the organ, is considered as a link between the two processes which have so far been considered different in origin and character. Exophthalmic goiter after severe psychic trauma should not be considered as thyrogenic thyrosis but as severe and protracted stimulation of the thyroid gland and of the adrenals from the cerebrum. Thyrotropic hormone therapy in postoperative thyrotoxic crisis is suggested because the crisis may be caused by the increased thyroxine want, which cannot be met by the silenced thyroid. By this therapy the output of the remaining part of the thyroid may be increased, provided the remaining part is not too small and is sufficiently nourished. In case the thyrotoxic gland should contain a tuberculous agent, this will be found in the interstitial tissue. The thyroid of animals experimented on should be infected by the vascular route in a study to clarify the tuberculous origin of the disease. A borderline may be demonstrated where the picture of tuberculosis may be found on one side and that of toxic diffuse goiter on the other. Roentgen therapy proved successful in cases of mild hyperthyroidism and in severe cases in which operation had been omitted. The long duration of this therapy is its greatest disadvantage.

## Book Notices

**Textbook of General Surgery** By Warren H. Cole M.D. F.A.C.S. Professor and Head of the Department of Surgery University of Illinois College of Medicine Chicago and Robert Elman M.D. Associate Professor of Clinical Surgery Washington University School of Medicine St. Louis Fourth edition Fabrikoid Price \$10 1p 1118 with 559 illustrations New York & London D. Appleton Century Company Inc. 1944

Revised four times in eight years, the latest is the best edition of this book to appear. In the past few years certain basic problems in surgical physiology have become more lucid, thus making frequent revisions of textbooks more valuable. The impetus of the war is making itself felt, and when the military experience is summated and capitulated further revisions in surgical thought will be necessary.

The great problems of shock and burns are entering phases of elucidation which give great promise. The adjunct use of chemotherapy plus rest in the treatment of wounds has revolutionized this particular field. Again with our rapid transportation tropical diseases may present increasingly grave aspects for our population.

The recent swing to plasma is an example of the cyclic trend often seen in surgical therapeutics. Plasma is, of course, one of the greatest single life saving mechanisms in the field of battle. There has been a tendency to emphasize its value and minimize to some extent the worth of whole blood transfusion. Yet recent activities on the battle fields of Europe indicate that there is a distinct advantage to the use of whole blood, even in those cases in which the choice between blood and plasma seems optional. In the light of recent experience the value of whole blood in the control of infection is not duly emphasized by the authors. An attempt to follow current trends too closely easily causes such inequalities in presentation.

In general this book follows the format of previous editions. The illustrations are excellent, material is presented in a clear fashion which will delight the student. The book follows closely latest scientific achievements in the field of surgery as attested by an adequate and modern bibliography. There is a tendency to refer the student too frequently to the bibliography. A point may be made with regard to pulmonary atelectasis as a post-operative complication. Its significance and treatment, including bronchoscopic aspiration could be emphasized more fully. It is hoped that in future editions the authors will emulate the present standard of excellence in this textbook of surgery, which can be recommended to all students.

**Urological Surgery** By Austin Ingram Dodson M.D. F.A.C.S. Professor of Urology Medical College of Virginia Richmond. With contributions by R. V. Berger M.D. F.A.C.R. et al. Cloth Price \$10 1p 768 with 576 illustrations St. Louis C. V. Mosby Company 1944

This book is written by Dodson in collaboration with seven other contributors. It is not a complete treatise on diseases of the genitourinary system, it is neither a textbook nor a reference book. It is, as its title implies, a book dealing with the more common surgical problems in urology. According to its authors the book was written primarily as a surgical supplement to the various textbooks on the principles and practice of urology. The book begins with a brief discussion on the surgical anatomy of the genitourinary system. This discussion is followed by several chapters on the various methods of diagnosis, preoperative and postoperative care and anesthesia in urology. The remaining thirty-nine chapters, except one, discuss the surgical management of urologic diseases. The text for the most part reads easily. The subjects appear to be well arranged, carefully balanced and fully illustrated. No pretense is made of exhaustiveness, but there is at the end of each chapter a short authoritative bibliography.

In the chapter on excretory pyelography and cystography are many excretory pyelograms illustrative of various urologic diseases. Little effort has been made to discuss the physiologic principles of excretory urography or to compare the fundamental differences between excretory urography and retrograde pyelography.

The care of the patient before and after operation should be an important part of any surgical book, and more prominence

could have been given to it here. For instance, only a short discussion is devoted to shock. However, one of the important and better chapters is a discussion of acid and base balance and fluid administration. Likewise the discussion of anesthesia covers competently and concisely those principles of anesthesia which pertain to urologic surgery.

In the chapters that deal with the surgical management of the urologic diseases the author has presented the various well standardized and recognized procedures which he supplements by his experiences, and throughout this presentation he maintains a broad, impartial appreciation. For instance, in the management of prostatic hypertrophy, all three well recognized procedures: transurethral resection, suprapubic prostatectomy and perineal prostatectomy are given appropriate recognition.

This book should be useful to those surgeons who have had limited training in the basic principles of urology but who from unusual circumstances are compelled to do this work.

**The Diabetic Life Its Control by Diet and Insulin. A Concise Practical Manual for Practitioners and Patients.** By R. D. Lawrence M.A. M.D. F.R.C.I. Physician in Charge Diabetic Department King's College Hospital London. Thirteenth edition with Wartime Supplement. Cloth Price \$4 1p 228 with 18 illustrations Philadelphia Blakiston Company 1944

The author in his preface explains that the book was rewritten by pruning much dead wood and has been "ingrafted fresh" with its main object "to bring the modern treatment of diabetes by diet and insulin within the scope of the general practitioner and the understanding of the patient." The intention to aid the busy practitioner and so called intelligent patient imposes a difficult task on the author. Manuals written essentially for the patient may relieve the busy doctor of much time consuming detail, but manuals actually of value to the physician are too technical for the patient. If the patient's doctor should disagree with certain forms of therapy advocated in the manual, he may be placed in a doubtful position vis a vis the patient perusing the manual. Unfortunately in American hospitals, where large diabetic clinics are maintained, there are thousands of diabetic patients of less than average intelligence for whom the reading of such a manual as this would be too technical and confusing. The war, with its imposed food rationing, the author rightly maintains, has posed many problems for diabetic patients, which he deals with in a wartime supplement. He has dealt with some of these problems in an excellent manner. His country has been subject to daily air raids making the diabetic liable to special dangers—lack or omission of insulin for those whose lives may depend on it, food difficulties and the like. The section on the available food substitutes for diabetic patients requiring insulin and for those not on insulin therapy is well planned.

The author's discussion of the leak point—the relation of the blood sugar level with the appearance of sugar in the urine, and that blood sugar estimation in severe diabetes will demonstrate that hyperglycemia is not always essential," is not conclusive. But the chapters on hypoglycemia as well as on coma are well developed and will have great value for the average general practitioner. The chapters on recipes and food tables undoubtedly will be a great aid to the diabetic seeking to avoid a monotonous diet.

The reviewer believes that if it is possible to solve the problem of writing a manual for both the physician and the patient, Dr. Lawrence has done so. He especially recommends this manual for all general practitioners because of its simplicity, and for its abbreviated but clear exposition of the subject.

**Infants Without Families. The Case For and Against Residential Nurseries.** By Anna Freud and Dorothy Burlingham. Boards. Price \$2 1p 128. New York Medical War Books International University Press 1944

This small book, written by the daughter of Sigmund Freud and by her American colleague, is based on observations made at the Hampstead Nursery. Throughout the war period the monthly reports by Miss Freud and Mrs. Burlingham detailing their observations of their small charges and describing and commenting on the numerous psychological and practical problems presented by a group of small children separated from their parents and subjected to London blitz warfare have been followed with deep interest by educators and child specialists. The present volume is based on material presented in these reports.



The subtitle "The Case For and Against Residential Nurseries" points to the most interesting feature of this account of child development. The authors show how, in some respects, residential care seems to offer some practical, if temporary, advantages over the care that these children would receive in their own homes, but also how those aspects of development that are dependent on the emotional relation with a mother are unfavorably influenced by institutional care. As an example, development of general muscular control is favorably influenced by the nursery setting where there is room for activity free from ordinary household hazards, but speech tends to be retarded when the direct stimulus of the mother, who communicates so directly and freely, is removed.

The authors discuss the relationship of their small charges to the other nursery children and describe their endeavors to provide children with real mother substitutes and family life in the nursery setting.

This is a most important work which certainly should be read by all who are interested in residential care of infants. It points ways toward the correction of the many well recognized inadequacies of institutional care of small children.

*The Argasidae of North America, Central America and Cuba.* By R. A. Cooley and Glen M. Kohls. Edited by Theodor Just. *The American Midland Naturalist Monograph No. 1.* Contribution from the Rocky Mountain Laboratory, Hamilton, Montana. Division of Infectious Diseases, National Institute of Health, United States Public Health Service. Cloth. Price \$2. Pp. 132 with 71 illustrations. Notre Dame: American Midland Naturalist, University of Notre Dame, 1944.

This contribution from the Rocky Mountain Laboratory of the U. S. Public Health Service is a taxonomic monograph of an important family of ticks containing the genera *Argas*, *Ornithodoros*, and *Antricola*. The medical and veterinary importance of the work arises from the fact that it deals with the known and perhaps potential tick vectors of human relapsing fever, Rocky Mountain spotted fever and American Q fever. No less than five species of *Ornithodoros* are proved vectors of relapsing fever spirochetes. *Argas persicus* is the vector of avian spirochetosis and is a suspect as such for fowl paralysis. *Otobius megnini*, the spinous ear tick of cattle, also attacks man so as to require medical attention. The ticks attack vertebrates from rattlesnakes and turtles to bats and man, especially those living in burrows and nests. They are thus in ecological relations favoring their becoming vectors for parasitic infections of the blood. Twenty-five species are known from North America. Host specificity is not general. Some ticks will feed on any available host. The book contains detailed descriptions of twenty-five species of like organization facilitating the comparison of characters of different species, with illustrations of diagnostic details and a spot map of distribution, and a list of hosts. There are also a glossary of terms, an illustrated account of characters used in classification and description and directions for the collection, preservation and study of these difficult parasites. The text is well arranged and the illustrations are clear.

*Narco Analysis: A New Technique in Short Cut Psychotherapy. A Comparison with Other Methods. And Notes on the Barbiturates.* By J. Stephen Horsley, Deputy Medical Superintendent of the Dorset Mental Hospital. Cloth. Price \$2.50. Pp. 134. New York & London: Oxford University Press, 1943.

This little book summarizes the author's experience with barbiturates as aids in the production of hypnosis. He contends that narcotic hypnosis resembles ordinary hypnosis in all essential respects. A chapter on the chemistry of the barbiturates is included. The author recounts his experiences with narcoanalysis in a mental hospital and in outpatient clinics. A few cases of war neurosis, simulation and malingering are discussed. The book thoroughly considers the technique of therapy with intravenous sodium pentothal and amytal. The theoretical chapters indicate that the author rightfully uses the treatment only as the first step and follows it with other psychotherapy and assistance to the patient in reconstructing his outlook on life. It is unfortunate that the author delayed writing this book concerning his early experience with narcoanalysis. It would have been invaluable to American military psychiatrists in their early therapeutic trials. However, the work is still up to date and should be read thoroughly by civilian and military psychiatrists.

*Survey of Hospital Personnel and Facilities Made by the Canadian Hospital Council in Conjunction with the National Health Survey Sponsored by the Canadian Medical Procurement and Assignment Board.* Bulletin No. 46. Paper. Pp. 32. Toronto: Canadian Hospital Council, 1943.

The report of the Canadian Hospital Council consists of three parts relating to present day conditions, postwar hospitalization and recommendations for the war and postwar periods. The first section deals with hospital capacities, occupancy and personnel. After describing briefly the hospital system of Canada it presents statistical data for 1941 showing the number and types of hospitals, classification of beds, percentage of population treated, bed/population ratios, average hospital stay and per diem costs. With this background it is further shown that the average wartime increase in bed capacity for the civilian hospitals of Canada was 10.4 per cent by January 1943. In the same period, however, the average daily census increased 18.9 per cent or nearly twice the increase in hospital beds. Changes in personnel of all types are reviewed including replacement problems, additional emergency care, sharing of personnel and facilities, utilization of military personnel, technical training and the possible expansion of hospital services for military needs.

The second part, dealing with postwar hospitalization, reports additional needs for the care of the incurable and chronically ill, the senile, mental patients, communicable diseases and convalescent patients, as well as further facilities for general hospital service. This embraces also a discussion of hospitalization in rural areas, the possible development of hospitals as health centers and the need for a commission on hospitalization to coordinate the planning and expansion of hospital facilities in accordance with the requirements of individual areas.

Part three contains a list of twenty-seven recommendations set forth by the National War Labor Board and the Canadian Hospital Council. These concern wages and other financial problems, conservation of personnel, exchange services, postwar training courses, establishment of additional hospital facilities, coordinated planning, integration of hospital and diagnostic services, development of health centers and various other items. The report is a careful analysis of hospital problems in Canada and will be of interest to all who are concerned with the development and maintenance of adequate hospital service in the coming years.

*Practical Malaria Control: A Handbook for Field Workers.* By Carl E. M. Gunther, M.D., B.S., D.T.M., Field Medical Officer, Bulolo Gold Dredging Limited Territory of New Guinea, at Present with the Australian Medical Corps. Foreword by Prof. Harvey Sutton, O.B.E., M.D., F.R.C.P., F.R.I.H.D. Price \$2.50. Pp. 91. New York: Philosophical Library Inc., 1941.

Although this handbook for malaria control has appeared only recently, it contains many recommendations that disagree with the opinion of authorities on the subject. There is nothing in the text that reflects the vast experience that has accumulated throughout the world since the beginning of the present war. For example, it is stated that it is usually possible in most cases to eliminate malaria from the system by an intensive course of treatment. One of the major problems presented by this war has been the impossibility of eradicating the large volume of vivax malaria in spite of all intensive antimalarial therapy with either quinine or atabrine in the epidemiology of the disease. It is stated as a fact that there is a local increase in virulence following introduction of the nonimmune into malarious areas. This lacks any clinical or experimental proof, although it may possibly occur, the burden of proof remains with the proponent. There is another reference that the presence of any stock will usually divert most of the mosquitoes. Such a statement can only mean that the author is unfamiliar with substantiating studies on the biting proof of certain malarial vectors as well as repeated investigations which have demonstrated the inability to control malarial transmission by animal barricades. For control, the use of surface feeding fish in permanent waters is given the preference of first importance. Again this is not in conformity with current opinion. Although there is much information of value in the text it offers no improvements on the available treatises on the subject, since it contains some misinformation, it cannot be given an unqualified recommendation for general use.



## Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT HOWEVER REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

### SENSITIVITY TO ANESTHETICS

**To the Editor**—Is there any acceptable test for determining whether a patient may be sensitive to procaine hydrochloride injected into the spinal canal for anesthesia?  
M D New York

**To the Editor**—While taking ether a child aged 5, in good health except for chronically infected tonsils broke out with a widespread urticaria. The lesions appeared shortly after the anesthetic was begun, i. e. within five minutes. No preoperative medication had been given. Within ten minutes after the injection of 3 minims (0.18 cc) of epinephrine the urticaria disappeared. Is the reaction to be expected if the child takes ether again? Is the reaction of a serious nature?  
M D Nebraska

**ANSWER**—1 There is no generally accepted test to prove definitely that a patient will be sensitive to procaine injected into the spinal canal to produce anesthesia. However, there is a test which can be used which will indicate that the patient may be sensitive to procaine. The test is carried out as follows. The patient's back is exposed. Uncolored alcohol is used as an antiseptic and is applied gently. A 1 per cent solution of procaine hydrochloride without epinephrine is prepared. A syringe and wheel needle also are prepared. Isotonic solution of sodium chloride is similarly prepared with another syringe and wheel needle. One cubic centimeter of isotonic solution of sodium chloride is injected to form a skin wheal, and the reaction of the patient both locally and systemically is noted. After a few minutes (five) another wheal is raised with 1 cc of the 1 per cent solution of procaine hydrochloride without epinephrine at a distance of 2 or 3 inches from the wheal raised with the salt solution. Again the patient is observed for symptoms of sensitivity either locally, systemically or both. If the patient shows no local difference between the wheals and is undisturbed by the injection, the probabilities are good that the drug may be used intraspinally without producing any further evidence of sensitivity. Conversely, if the patient shows no reaction to the wheal raised with the salt solution but does show a local reaction, particularly redness of the wheal that was raised with procaine, and if there are signs of dyspnea, apprehension and rapid pulse with or without a fall in blood pressure, it may be assumed that the patient is sensitive to procaine and that this agent should not be used as a spinal anesthetic.

There is considerable disagreement concerning the testing of patients for drug sensitivity. It is but rarely that the anesthetist observes symptoms during spinal anesthesia which he feels are due to sensitivity of the patient to procaine used intraspinally.

2 Blotching of the skin as a reaction with ether anesthesia is rather common in children. It usually is only temporary and is never serious. The probabilities are that if the child is given ether anesthesia again the same reaction will occur, but it is not a serious matter. Real urticaria from ether is unusual but is not serious, as was demonstrated in this case.

### ALLERGY TO COLD

**To the Editor**—A boy aged 11 has a deviated nasal septum. When exposed to the least chill as from an electric fan he gets a stuffiness in the nose followed often by a cough. The chest is normal except for a few localized sibilant rales which clear up on coughing. I have used the usual nasal drops and sprays. His condition is not seasonal; he does not have asthma. What treatment is advised? Should an operation on the septum be performed? If so at what age? Is there a chance that the septal condition will improve as the child grows older?  
M D Alabama

**ANSWER**—There is reason to believe because of the sensitivity to cold, that this patient is basically allergic even if there is no evidence of pollinosis or asthma. Septal deviations are not likely to cause the symptoms mentioned, and an operation would not be apt to help matters. Further studies should be made to prove the presence of an allergic state. Nasal smears should be examined for the presence of eosinophils, when found in number they are pathognomonic. If on examination no secretion is present, cotton plugs should be placed in the nares for a short time to excite a flow, so that a suitable smear may

be made. From the history as given, it seems unlikely that there will be found a sensitivity to food or even inhalants, the sensitivity is probably not to heat or cold per se but to the change in temperature.

Contrast baths, such as alternating hot and cold showers are one important method of treatment. If this is considered too drastic the patient may gain tolerance by rubbing an increasing area of the body surface with ice for a few minutes daily. Some observers have obtained good results by increasing doses of histamine injected twice daily for two weeks and once a day for another two or three weeks.

### Reference

Fenberg, Samuel M. Allergy in Practice. Chicago: Year Book Publishers, 1944.

### ADOPTION AND FERTILITY

**To the Editor**—It is often said that a sterile married couple tends to become fertile after adopting a baby and that repeated pregnancies tend to ensue. Do the records of specialists and of clinics dealing in sterility bear out this dictum? Do they shed any light on its mechanism? For example were the mothers' menstrual and ovulatory cycles recognizably abnormal during the sterile early years of marriage? Were the fathers' sperm recognizably abnormal and the like? Do they point to indications for advising patients to adopt a baby? Hypothalamic pathways may be involved in the endocrine phenomena that have been studied in cases of so called freshman amenorrhea in which luteinizing gonadotropic factors of the pituitary are suspected to be inhibited. Can similar mechanisms be demonstrated in cases of some of these babyless steriles?  
M D Wisconsin

**ANSWER**—Statistical studies comparing the incidence of pregnancy among previously sterile women who adopt children with the incidence of pregnancy among previously sterile women who do not are not available. If they were, they would probably show that the incidence of pregnancy in the two groups is the same. If a woman who has been sterile for some years adopts an infant and subsequently becomes pregnant, it strikes every one as a startling event and is long remembered. On the other hand, if the same woman had not adopted an infant and had become pregnant the occurrence would be much less dramatic and few people would pay much attention to it. Unless evidence can be advanced to the contrary, it would seem likely that the purported tendency of sterile women to become pregnant following adoption of an infant is based not on fact but on the over emphasis which such cases receive. There is no factual evidence bearing on the relationship between the hypothalamic pathways and sterility.

### INJECTION TREATMENT FOR VARICOCELE—VOLUNTARY HYPERVENTILATION WITH ALKALEMIA

**To the Editor**—Are sclerosing agents used for the obliteration of a varicocele? Please refer me to technic. What are the complications? In the acute hyperventilation syndrome of the hysterical type I have found that breathing into a paper bag dramatically relieves the pain and spasm. Has this been reported before? I have been unable to find any reference in the literature available to me and want to report my case.  
A M Winter M D New York

**ANSWER**—The injection treatment of varicocele is fully described in the monograph of Penn Riddle (Philadelphia and London: W. B. Saunders Company, 1940, p. 231). The most important point about varicocele is that it should be left alone unless it produces dragging pain in the testis or low back pain. Many neurotic persons suffering from a moderate degree of varicocele would be much better off if left alone. They can and frequently do develop a severe sexual neurosis.

Voluntary hyperventilation which may lead to alkalemia and tetanic contractions has been treated by ammonium chloride (Kerr, W. J., Dalton, J. W., and Ghebe, P. A. Some Physical Phenomena Associated with the Anxiety States and Their Relation to Hyperventilation, *Ann Int Med* 11: 961 [Dec.] 1937). Rebreathing from a bag increases carbon dioxide in the blood and thus counteracts alkalemia as long as the patient is unable to blow off the excess carbon dioxide.

### DIETHYLSTILBESTROL AND MALE HYPERSEXUALITY

**To the Editor**—I read in *Queries and Minor Notes* in the July 8 issue of *The Journal*, page 760, the problem submitted by George L. Kennedy, M.D. of Faribault, Minn., concerning the use of diethylstilbestrol in male hypersexuality. An article of mine entitled "Diethylstilbestrol in the Management of Psychopathological States in Males (1) Preliminary Report" was published in the *Journal of Nervous and Mental Disease* (99: 928 [June] 1944). Dr. Kennedy's problem is apparently similar to my own. For approximately eighteen months a study has been in progress at this hospital and the article mentioned constitutes the preliminary report of this study.  
Robert M. Foote, M.D. Fort Worth, Texas

# The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL 126, No 7

CHICAGO, ILLINOIS  
COPYRIGHT 1944 BY AMERICAN MEDICAL ASSOCIATION

OCTOBER 14, 1944

## THE CLINICAL USE OF PENICILLIN IN GENITOURINARY INFECTIONS

CHAIRMAN'S ADDRESS

COMMANDER GERSHOM I THOMPSON

MEDICAL CORPS, UNITED STATES NAVAL RESERVE

The Oxford investigators Abraham, Florey and their associates<sup>1</sup> were the first to call attention to the fact that penicillin in high dilution possesses strong antibacterial action on cultures of *Neisseria gonorrhoeae*. They also described a case of an infant afflicted with *Staphylococcus aureus* pyelonephritis in which the urine was quickly sterilized by comparatively small doses of the drug. Herrell, Cook and Thompson<sup>2</sup> described a series of 5 cases of gonorrhea in which response to treatment was dramatic. The extreme value of this drug in the treatment of infections of the genitourinary tract was further elaborated by Mahoney and his associates<sup>3</sup>.

Because of its particular value in gonococcal infections and owing to the fact that such infections are responsible for a considerable amount of disability in the armed forces, penicillin has been used in thousands of such cases during the past year or more. Through its use many service men have been quickly returned to duty. At first it was employed only in cases in which the infection resisted treatment with the sulfonamide compounds, but recently authorization for its use in all cases of gonorrhea has been granted. I report a series of cases which have been observed at a large naval hospital. In addition to cases of gonorrhea a number of cases in which treatment has been given for so-called nonspecific infection of the genitourinary tract will be discussed.

### DESCRIPTION OF THE DRUG

The sodium salt of penicillin is a very fine crystalline or powdery light yellow substance. In solution it is light brown to light yellow, depending on the dilution.

Concerning the sodium salt the Floreys<sup>4</sup> wrote

This substance is extremely soluble in water but is destroyed by boiling by acids and alkalis, by certain heavy metals, by

oxidizing agents and by enzymes produced by air and other bacteria. Penicillin is bacteriostatic and not bactericidal, at least in concentrations likely to be used therapeutically, and reliance must therefore be placed on the body defenses both humoral and cellular, to destroy the bacteria present in a lesion while penicillin prevents their multiplication.

Steady progress in the manufacture of penicillin has resulted in an increasingly pure product. The unit value varies from 50 units per milligram upward depending primarily on the purity. It is said that pure crystalline penicillin has a strength of about 1,600 units per milligram.

The drug was originally supplied packaged in glass ampules, but on request the various manufacturers now dispense it in vacuum sealed, rubber stoppered bottles containing 100,000 units each, to which isotonic solution of sodium chloride or another diluent in the proper amount can be added. Concentration of either 5,000 or 10,000 units per cubic centimeter should be used, as neither is irritating when injected intramuscularly. Further dilution can be made from this more concentrated preparation if continuous intravenous drip administration is desired. The stock solution should be stored in the icebox between injections.

The mode of action of the drug is uncertain. Studies have shown that blood and urine concentrations are highest about an hour after intramuscular injection, while after ninety to one hundred and forty minutes the methods of testing which are in use at the present time reveal its complete elimination. A constant level in the blood seems unnecessary, quite in contrast to the requirement in sulfonamide therapy. The methods of assaying the amount of penicillin in blood and urine are still rather crude, and until the substance is synthetically crystallized in commercial quantities and some colorimetric method is worked out the estimation of blood and urine levels will probably remain inexact.

Estimation of blood levels in clinical urologic practice is unnecessary for, given a penicillin sensitive organism, the important test of whether sufficient quantities of the drug have been given is whether the patient gets well. Because of the scarcity of the product a great deal of effort has been bent to finding a minimal effective dose, but when penicillin is available in unlimited quantities optimal doses considerably higher than those now in use will prevail.

### CLINICAL MATERIAL

Five hundred cases in which a diagnosis was made of gonococcal infection of the urethra or its adnexa and 100 cases in which the patient suffered from various nonspecific infections of the genitourinary tract form the basis for this report. All of the patients were of the male sex.

Read before the Section on Urology at the Ninety-Fourth Annual Session of the American Medical Association, Chicago, June 15, 1944.

This article has been released for publication by the Division of Publications of the Bureau of Medicine and Surgery of the United States Navy. The opinions and views set forth in this article are those of the writer and are not to be considered as reflecting the policies of the Navy Department.

<sup>1</sup> Abraham, E. P., Chalm, E., Fletcher, C. M., Gardner, A. D., Bentley, N. G., Jennings, M. A., and Florey, H. W. Further Observations on Penicillin. *Lancet* 2: 177-188 (Aug. 16) 1941.

<sup>2</sup> Herrell, W. E., Cook, E. N., and Thompson, Luther. Use of Penicillin in Sulfonamide Resistant Gonorrheal Infections. *J. A. M. A.* 122: 289-292 (May 29) 1943.

<sup>3</sup> Mahoney, J. F., Ferguson, Charles, Buchholtz, M., and Van Slyke, C. J. The Use of Penicillin Sodium in the Treatment of Sulfonamide Resistant Gonorrhea in Men. *Am. J. Syph. Gonorr. & Ven. Dis.* 27: 525-528 (Sept.) 1943.

<sup>4</sup> Florey, M. F., and Florey, H. W. General and Local Administration of Penicillin. *Lancet* 1: 387-397 (March 27) 1943.

## DOSAGE AND METHODS OF ADMINISTRATION

All of these patients were given penicillin by one or more of several methods. Most of the patients received the sodium salt of penicillin. In recent weeks the calcium salt has been used in a series of cases, and it seems identical with the sodium salt in its action. A number of dosage schedules and alterations of routes of administration seemed desirable in our early experience in order to find the easiest and most efficient methods for every one concerned. It seems desirable, avoiding too much detail, to record some of these efforts so that others may evaluate and discard various ideas which arise concerning treatment with the drug.

*Intravenous Administration*—It seems logical that a continuous intravenous drip would insure a steady flow of the drug throughout the body and a steady excretion through the urinary tract. At first each patient was given during each twelve hour period 1 liter of isotonic solution of sodium chloride containing 20,000 units of penicillin. The injection was continued day and night for ninety-six hours. Thus a total of 160,000 units was administered. Later the dose was reduced to a total of 80,000 units given in 1 liter of saline solution during a period of twelve hours. Even though excellent results were obtained with both these schedules it soon became apparent that patients so treated were more of a nursing problem than necessary. Needles became dislodged, and feeding and toilet problems involved more detail than did intermittent intramuscular injection. The patients themselves preferred multiple puncture rather than attachment to the end of an intravenous tube and flask for a full day. The method was therefore discarded.

*Intramuscular Administration*—Injection into the gluteal or deltoid muscles of a solution containing 5,000 units of penicillin per cubic centimeter seems to be the ideal treatment method for urologic cases. The injection of 20,000 units every three hours can be continued for many doses without causing irritation. When the strength of the solution was 10,000 units per cubic centimeter a number of patients complained of pain and discomfort, although these were not severe. The patients treated by intramuscular injection are ambulatory and can take care of themselves and do cleaning details or other work around the ward. The injections have been given by nurses and by hospital corpsmen who have been properly instructed, without the slightest complication. Thus the time of a medical officer is conserved in contrast to the requirements in the case of intravenous therapy.

Injections of 20,000 units each given every three hours until a total of 100,000 units has been given will result in a high percentage of cures. All the injections are given in a twelve hour period.

An attempt was made to reduce the number of injections by giving 50,000 units in each of two injections six hours apart, or a total of 100,000 units. This scheme failed miserably.

*Intraurethral Administration*—It occurred to me that perhaps intraurethral instillation might be effective. Ten patients were treated by injecting intraurethrally 3 to 4 cc of solution containing 250 or 500 units per cubic centimeter. A Cunningham penis clamp was used to retain the solution. This was continued for twenty-four hours, penicillin being reinjected after each

voiding. The urine cleared promptly and within twenty-four hours was crystal clear in all cases. However, three to four days later urethral discharge reappeared. Apparently, a few organisms lodged deep in Littre's glands and not reached by the solution provided a source of reinoculation, and after the usual incubation period urethritis again developed. Whether intra urethral injections repeated several times daily for a week or so would result in cure, I do not know. For obvious reasons this scheme of treatment was not tried. Whether penicillin solution injected locally after veneal exposure would act as a prophylactic agent is doubtful. Perhaps it would be as effective as strong protein silver (protargol). A single injection of 20,000 to 50,000 units given intramuscularly might be quite efficient. No observations along this line have been made.

*Intramuscular and Intraurethral Administration*—A group of patients, in the interest of conservation of the drug, was treated by intramuscular injection of 15,000 units every three hours for four doses or a total of 60,000 units, after which 4 cc of a dilute solution of penicillin (250 units per cubic centimeter) was injected intraurethrally and held for thirty minutes. The results by this method were not spectacular and it was therefore discontinued.

*Oral Administration*—Oral administration is generally ineffective because the drug is destroyed by the gastric acid. In cases in which there is achlorhydria, effective blood and urine concentration apparently can be obtained. Rammelkamp and Helm<sup>5</sup> administered penicillin to 2 patients who had pernicious anemia and found satisfactory blood and urine concentration levels. Florey<sup>1</sup> found as little as 1,000 units given every three hours by mouth to an infant who had staphylococcal infection of the urinary tract quite effective.

I have tried oral administration in a small series of cases, supplementing the penicillin with large doses of sodium bicarbonate, but the results have been unsatisfactory. Quite likely some effective method of oral administration will be evolved later.

*Intramuscular Injection of Slowly Absorbing Solutions*—After the great efficacy of penicillin in as short a time as twelve hours in cases of gonorrheal urethritis had been established, it was only natural to try to evolve a one injection method of treatment. The usual vehicles for insulin, such as protamine zinc and globin zinc, were considered. Those consulted advised against the use of protamine zinc on the ground that the large amount necessary would be irritating.

It might be thought that penicillin injected locally into the muscle might lose its potency in a few hours because of the body heat. However, Rammelkamp and Keefer<sup>6</sup> found that fluid aspirated from the pleural and joint cavities twenty-two and thirteen hours after injection showed appreciable amounts of penicillin remaining.

In 6 cases 100,000 units dissolved in 10 cc of 3 per cent solution of human globin was injected. In 3 cases the result was successful and in 3 the treatment failed. Immune globulin was tried as a vehicle without success. Serum albumin was used as a diluent on the ground that the very large molecule would promote slow absorp-

5 Rammelkamp C H and Helm J D Jr. Studies on the Absorption of Penicillin from the Stomach. *Proc Soc Exper Biol & Med* 54: 324-327 (Dec.) 1943.

6 Rammelkamp C H and Keefer C S. The Absorption, Excretion and Distribution of Penicillin. *J Clin Investigation* 22: 425-437 (May) 1943.

tion In a series of 10 cases there were 4 failures At the present time, therefore, a one shot method of treatment which would be suitable for dispensary or office practice seems only a hope

#### RESULTS OF TREATMENT IN GONORRHEAL INFECTIONS

Routinely, a culture of the voided urine is obtained the morning after the administration of penicillin This is twelve to eighteen hours after treatment is concluded The next day, or about forty-eight hours after the first injection, a culture is obtained from the prostatic fluid In practically all instances these post-treatment cultures were negative

Studies of the purulent urethral secretion, the sediment from the centrifuged urine and the prostatic secretion by Gram's stain are very reliable methods of studying clinical response to treatment In a number of cases specimens stained by Gram's method were studied hourly after the first injection In many cases within

TABLE 1—Details of Treatment of Gonorrhea with Penicillin

| How Treated, Units  | Doses | Total<br>Units | Cases Cured |     | Failed | Per<br>Cent<br>Cured |
|---|-------|----------------|-------------|-----|--------|----------------------|
| 90 000 units in 1 liter of saline<br>solution continuous intra<br>venous drip for 96 hours  |       | 160 000        | 10          | 10  | 0      | 100                  |
| 100,000 units in 2 liters of saline<br>solution continuous intra<br>venous drip for 12 hours  |       | 100 000        | 28          | 26  | 2      | 93                   |
| 80 000 units in 1 liter of saline<br>solution continuous intra<br>venous drip for 12 hours  |       | 80 000         | 30          | 29  | 1      | 97                   |
| 15 000 units every 3 hours in<br>tramuscularly then intra<br>urethral injection of 4 cc of<br>solution containing 250 units<br>per cubic centimeter | 4     | 61 000         | 20          | 17  | 3      | 85                   |
| 50 000 units intramuscularly<br>for 2 doses (6 hours apart)   | 2     | 100 000        | 20          | 11  | 9      | 55                   |
| 100 000 units dissolved in 10 cc<br>of 3% human globin in<br>jected intramuscularly   | 1     | 100 000        | 6           | 3   | 3      | 50                   |
| 100,000 units dissolved in 10 cc<br>of 3% serum albumin in<br>jected intramuscularly  | 1     | 100 000        | 10          | 6   | 4      | 60                   |
| 20 000 units every 3 hours<br>intramuscularly   | 10    | 200 000        | 10          | 10  | 0      | 100                  |
| 20 000 units every 3 hours<br>intramuscularly   | 5     | 100 000        | 366         | 358 | 8      | 98                   |

two hours the gonococci had disappeared from the urethral secretion Within four to six hours no organisms could be found even by the most minute study Before complete disappearance the gonococci gradually take on a deeper stain, so that they appear quite red and become greatly swollen and irregular Many seem fused together instead of diplococci in shape Later, stains of the urethral discharge or the centrifuged urine show a profusion of pus cells and some epithelial debris but no organisms

The dramatic cessation of the purulent urethral discharge is the most impressive point in penicillin therapy Within a few hours after the first injection the patient will usually note a great reduction of discharge The following morning in most instances the urethra appears dry However, in some cases a small mucopurulent or mucous drop can be expressed from the urethra each morning for several days or even as long as a week This should not prompt one to treat the patient again with penicillin Study of the sediment of the first glass urine by Gram's stain or by culture will fail to reveal gonococci and in all but a small percentage of cases in which 100,000 units is used a cure will result (table 1)

In analyzing the result of treatment it must be kept in mind that the patients who were the subject of this report were followed for relatively short periods However, it is my impression that in extremely few cases will there be an exacerbation of a latent prostatic focus If the culture of the prostatic secretion is negative forty-eight hours after treatment it will usually remain negative

One important point in considering results of therapy is that at present there is no great assurance that an ampule of penicillin contains the exact amount stated on the label It is my impression that many of these patients received much more than 100,000 units This is not the fault of the manufacturer, rather it can be attributed to the inexact methods of assay which are now available

It will be noted (table 1) that failure was reduced to 2 per cent when the recommended schedule of 20,000 units every three hours for five doses was employed Further it should be emphasized that, in the cases in which the result was classed as a failure, cure was subsequently obtained by a course of injections of penicillin In no case did the infecting organism prove penicillin resistant and necessitate other methods of treatment If enough of the drug was given, a cure was obtained in all cases

#### REINFECTIONS

Sixteen patients in this series were readmitted to the hospital several months after initial penicillin therapy because of another gonorrheal infection They freely admitted that infection developed again only after further exposure After critical analysis it seemed that these were bona fide cases of reinfection rather than recurrence of the old infection

#### COMPLICATED CASES

Acute gonorrheal epididymitis, prostatitis or seminal vesiculitis was observed in only 10 cases in this series In 5 of these it seemed prudent to give an additional amount of penicillin, hence a second ampule of 100,000 units was injected according to the original schedule of 20,000 units per injection Rapid cessation of perineal or testicular pain and prompt reduction of swelling and other signs of inflammation were noted in all cases Rectal examination disclosed rapid diminution of the size of the prostate gland, so that within three or four days the gland was practically normal in size Cultures of the secretion at this time were reported negative, although pus cells persisted Examination a week later showed the prostate secretion normal

Inflammation in the joints, so-called gonorrheal arthritis, was observed in 6 cases In 1 case the swollen knee joint was aspirated and a dilute solution of penicillin injected into the joint space No striking benefit was noted as a result Nor did continued injections of penicillin seem to aid in the other cases in which there was joint involvement In all of them however, the gonorrheal infection in the urethra and prostate quickly subsided and repeated cultures remained negative The fluid aspirated from the joint cavities was never positive at any stage of the disease

#### RESULTS IN NONSPECIFIC INFECTIONS

In 100 cases of infections in the genitourinary tract in which one or more strains of bacteria other than gonococci were isolated by culture or identified by Gram's stain, treatment has been given during the past

six months with penicillin and the results noted. It has not been possible in many cases to study the results of therapy for as long an interval as might be desirable. However, definite opinion as to the worth of the drug has been formulated. In the majority of these cases a mixture of organisms has been noted, some of which are sensitive to the action of penicillin while some of them are not. Study by Gram's stain of the urethral or prostatic secretions will reveal the disappearance of gram-positive organisms while gram-negative organisms persist.

In table 2 the cases are listed according to diagnosis and the effect of treatment. The series of cases is not as comprehensive as might be desired but nevertheless, some idea of the worth of penicillin in such cases can be obtained.

*Acute Nonspecific Prostatitis*—In the 4 cases observed the response to treatment did not seem as rapid as it was in the cases of acute gonorrheal prostatitis.

Cultures of prostatic secretion in 3 cases were reported to be *Staphylococcus albus* and in the fourth case nonhemolytic *Streptococcus*. In the latter case the acute inflammatory process was confined to the right lobe of the gland, the region was quite indurated

TABLE 2—Nonspecific Infections Treated with Penicillin

| Diagnosis             | Cases | Improved | Unimproved |
|-----------------------|-------|----------|------------|
| Acute prostatitis     | 4     | 4        | 0          |
| Chronic prostatitis   | 30    | 24       | 6          |
| Urethritis            | 36    | 33       | 3          |
| Acute epididymitis    | 8     | 7        | 1          |
| Balanitis             | 6     | 6        | 0          |
| Infected wound        | 3     | 3        | 0          |
| Cystitis interstitial | 3     | 0        | 3          |
| Pyelonephritis        | 10    | 8        | 2          |

and extremely tender, suggesting abscess, but there was no fluctuation. This patient also had keratitis. He was given fifteen injections of 15,000 units each. Almost immediate improvement of the ocular condition was noted and within a week the region in the prostate gland had changed to normal consistency and the expressed secretion contained much less pus than before and no organisms.

*Chronic Prostatitis*—An excellent response was noted in 24 of the 30 cases in which a diagnosis of chronic prostatitis was made. The best indication of chronic infection in the prostate gland is the presence of pus cells and the finding of bacteria in stained smears of the expressed secretion. Cultures were made in the majority of the cases. Among the organisms reported found were *Staphylococcus albus*, *Streptococcus* (hemolytic), *Streptococcus* (green producing), *Bacillus subtilis*, *Micrococcus*, diphtheroids and *Alcaligenes fecalis*. In my experience more knowledge and a better idea of the severity of the prostatic infection can be obtained by noting the polymicrobial character and relative number of organisms in a smear stained by Gram's method than by cultures. I believe that many urologists will concur in this opinion.

Frequently gram-positive cocci are found in a smear when a culture of the same material is reported negative. For this reason in my opinion cultures provide corroborative data, but conclusions should not be based on cultures alone.

Of greatest importance is a correlation of all the symptoms and signs, including size of the gland and presence of induration. In 80 per cent of the cases in which penicillin was used there was improvement—in the majority, pronounced, in only a few, moderate. How many cures were obtained is conjectural, since past experience shows that chronic prostatitis does not often remain cured, and few of the cases in this series have been followed for more than a few months. The results to date, however, are very encouraging. A reduction of the pus cell count of the expressed secretion from 150 or more cells to the high dry field down to 8 or 10 per field is the rule rather than the exception. Such results may be seen a few days to a week after a course of five injections of 20,000 units each. In some cases a second course of 100,000 units two or three weeks after the first was necessary to obtain a really striking effect.

*Nonspecific Urethritis*—In 36 cases in which the diagnosis of nonspecific or nonvenereal urethritis was made, treatment with penicillin was given. Purulent urethral discharge presenting as a morning drop was the chief complaint. These patients usually had noted the infection for months prior to admission. Gonorrheal infection was first ruled out. Routine examination of the prostate and the passage of urethral sounds to detect strictures of small or large caliber were done. Urethroscopy was done in most cases. A marrow meatus was found in some instances and meatotomy was performed. In the majority, however, there was no sign of urethral abnormality other than the infection. Response to penicillin therapy in this group is not as good or as dramatic as it is in the case of gonorrheal infections. However, in the uncomplicated cases a high percentage of patients noted improvement as evidenced by reduction or cessation of discharge. Shreds disappeared from the urine in some cases in which they had formerly persisted for months in spite of all other treatment.

It should be emphasized that in any case of chronic nonspecific urethritis thorough examination should be made to detect stricture and so forth before institution of treatment.

*Nonspecific Acute Epididymitis*—In 7 of 8 cases there was notable response to a course of ten injections of 20,000 units each. In the 1 case in which there was no appreciable benefit the infection developed within a few days after transurethral prostatic resection. Acute inflammation in the epididymis usually is accompanied by an infection in the corresponding seminal vesicle, and sometimes the adjacent testicle is also involved. Often in acute hydrocele forms. These patients suffer great pain and discomfort and are quite disabled. The prompt relief of pain and the rapid reduction of the tenderness and swelling were most convincing of the efficacy of penicillin. In no case was epididymotomy or other incision required.

*Balanitis and Wound Infections*—In 6 cases in which there was considerable infection of a redundant, unretractable prepuce treatment was by local instillation of a solution containing 250 units of penicillin per cubic centimeter. Improvement was so remarkable that circumcision was possible within forty-eight to seventy-two hours. Dorsal slit was avoided in all cases. In 2 cases wound infection following nephrectomy was quickly cleared up by instillations of 5 to 10 cc of the

dilute solution. Apparently the antibacterial action of these solutions, when they are instilled into wounds, lasts for many hours. It has not been necessary to instill the solution oftener than twice daily. In 1 case of purulent inguinal adenitis which required incision and drainage the infection healed with remarkable rapidity as a result of instillation of penicillin solution. There was practically no drainage after the first instillation. Instillations of a few cubic centimeters once daily were continued until healing was practically completed.

*Interstitial Cystitis*—In 3 cases interstitial cystitis was treated by intramuscular injection of 10,000 units every three hours for fifty doses. In addition in 2 cases intravesical instillation twice daily of 30 to 45 cc of a solution containing 250 units per cubic centimeter was done. The patients were able to hold the solution in the bladder for an hour or two. No irritation was noted. Cultures of the urine were reported *Staphylococcus albus* in 2 cases and diphtheroids and *Staphylococcus* in the other. In none of the cases was there any benefit which could be attributed to penicillin. Subsequently intravenous injections of neocarsphenamine and irrigations of silver nitrate were given. All were benefited by this treatment.

*Pylonephritis*—As far as I have been able to determine, penicillin is equally effective in alkaline or acid urine. In several cases infection of the upper part of the urinary tract in which there was a mixture of organisms I have employed another drug such as ammonium mandelate or sulfanilamide in addition to penicillin, hoping that the combined effect would result in sterilization of the urine. Abraham and Chan<sup>7</sup> have shown that gram-negative rods, including *Escherichia coli*, actually secrete an enzyme penicillinase which destroys penicillin. Results of combined therapy in some cases therefore might well be superior to the use of penicillin alone.

In practically all of the cases of pyelonephritis which I have seen the disease has been acute, and it is well known that a large percentage of these will recover spontaneously. It is therefore extremely difficult to evaluate the particular virtue of penicillin. In 2 cases of chronic renal infection complicated by the presence of multiple calculi not sufficiently large to warrant operation the condition was treated with penicillin. In these there was a mixture of organisms, both gram-positive cocci and gram-negative bacilli. The cocci disappeared from the urine after penicillin therapy, but the bacilli persisted. Cultures following treatment revealed *Proteus vulgaris* in 1 case and *Escherichia coli* in the other. In the case in which there was *Proteus* infection a catheter was introduced into the renal pelvis and lavage with solution G and solution M<sup>8</sup> was performed. This resulted in a remarkable reduction of the number of organisms which could be found in stained smears, but two days after lavage was discontinued the bacilli reappeared in great number. No effect on the stones was observed.

I believe that penicillin will be of great value in the treatment of renal infections due to a susceptible organism when the patient is unable to tolerate sulfonamide compounds. For infants and small children suffering

from acute renal infection it should have particular value because the risk of toxic reactions from sulfonamide compounds is greater for them than for adults.

It is possible in any case to make tests *in vitro* to determine the penicillin sensitivity or resistance of the particular organism. However because of the fact that renal infections are often of mixed type a clinical trial would seem more practical than a test *in vitro*.

#### TOXIC REACTIONS

No serious toxic reactions were noted in any of the 600 cases. One patient had an elevation of temperature to 101.5 F, but this was attributed to some contaminant rather than to the penicillin. Several days after treatment 2 patients had a mild macular eruption which faded quickly. Three patients had an id reaction on the palms which very definitely was precipitated by injections of penicillin in my opinion.

Attention should be directed to the lack of local reaction, the ease of administration and the lack of any systemic symptoms even after large doses. In a number of cases in which treatment was given for conditions other than urologic disease doses of 500,000 units during a period of twenty-four hours have been employed without toxic manifestations. Therefore in urologic cases one need not be hesitant about using much larger doses of the drug than have been suggested in this paper.

It is unnecessary to alter the diet in any way in my opinion. In cases of septicemia, chronic osteomyelitis or severe systemic infections changes of diet might be important while the drug is being administered but in urologic practice any change of diet is unnecessary and superfluous.

#### CONCLUSIONS

1 Penicillin is a particularly valuable drug for the treatment of gonorrhea. The most practical method of administration is the intramuscular injection of a solution containing 5,000 or 10,000 units per cubic centimeter. Doses of 20,000 units injected every three hours until 100,000 units has been given will result in cure in fully 98 per cent of the cases.

2 Penicillin is unstable in solution and at room temperature will rapidly lose its antibacterial power. Solutions should be freshly prepared and kept in the icebox between injections.

3 Penicillin is an extremely useful drug in the treatment of various nonspecific infections of the genitourinary tract. If the infection is caused by penicillin sensitive organisms the result of treatment is excellent. In most cases, however, the infection is of mixed type and the result of therapy is not dramatic. Nevertheless it is worth while. Penicillin combined with other urinary antiseptics in these cases might well be superior to other methods of treatment.

4 The results of treatment in urologic cases can be determined well by making repeated Gram's stains of the urethral or prostatic secretions or of the sediment of the centrifuged urine.

5 Treatment with penicillin is so devoid of toxic reaction that there is no reason to outline difficult schedules or to use complicated methods. The physician need not be fearful of using too much of the drug and should follow the dictum that the dose of any medicine is 'enough'.

7 Abraham E. P. and Chan E. An Enzyme from Bacteria Able to Destroy Penicillin. *Nature* London 146: 837 (Dec 28) 1940.

8 Sub. H. 1 and Albright Fuller. Dissolution of Phosphatic Urinary Calculi by the Retrograde Introduction of a Citrate Solution Containing Magnesium. *New England J. Med.* 228: 81-91 (Jan 21) 1943.



## PENICILLIN IN THE PREVENTION AND TREATMENT OF CON- GENITAL SYPHILIS

REPORT ON EXPERIENCE WITH THE TREATMENT OF  
FOURTEEN PREGNANT WOMEN WITH EARLY SYPHILIS  
AND NINE INFANTS WITH CONGENITAL SYPHILIS

J W LENTZ, M D

NORMAN R INGRAHAM JR, M D

HERMAN BEERMAN, M D

AND

JOHN H STOKES, M D

PHILADELPHIA

The treatment of the pregnant syphilitic woman and of the congenitally syphilitic infant with weekly injections of neoarsphenamine or mapharsen supplemented by a bismuth preparation, although eminently satisfactory from the standpoint of both preventive and curative medicine, still has several aspects in which improvement may be expected. These facts have led us to try penicillin in the treatment of these conditions with the hope that it might be possible to eliminate some of the deficiencies in present day therapy.

Included among the factors in the prevention and treatment of congenital syphilis which we would like to see improved by the discovery and application of new drugs and new technics, the following may be mentioned:

1 Arsenotherapy is relatively toxic. Although, generally speaking, arsenicals are well tolerated and safe to use in the average case,<sup>1</sup> reactions do occur which interfere with treatment or at times preclude their use entirely, and death of the expectant mother has been known to result from chemotherapy for syphilis during pregnancy.<sup>2</sup> A safer drug is accordingly a desideratum.

2 Antepartum syphilis treatment, as usually administered, is not curative of the mother's syphilis. For this purpose it must be continued for long periods post partum and, in order to prevent the birth of syphilitic infants, it must usually be repeated in each subsequent pregnancy.<sup>3</sup> It is true that intensive arsenotherapy (five day drip) has been employed successfully for a small number of pregnant women with early syphilis.<sup>4</sup>

From the Institute for Control of Syphilis, University of Pennsylvania. This work was done under a contract between the University of Pennsylvania and the Office of Scientific Research and Development recommended by the Committee on Medical Research.

In addition to the directing investigators whose names appear as authors the following contributed directly to the observations in this paper: H H Perlman, M D, chief, Syphilis Clinic, Children's Hospital; Elizabeth Kirk Rose, M D, representing the pediatric staff; and G D Gammon, M D, representing the neurologic staff of the Hospital of the University of Pennsylvania. Virgine Wammock, M D, and O M Carrozzino, M D, representing the staff of the Syphilis Clinic, Philadelphia General Hospital. Roentgenographic studies were performed by the Department of Roentgenology, and Radium Therapy of the Hospital of the University of Pennsylvania (E P Pendegress, M D, director). Quantitative titrated blood serologic tests for syphilis were carried out by Mrs. Verna Mayer Stein, serologist to the Syphilis Clinic, Hospital of the University of Pennsylvania. Attendance follow up after termination of penicillin treatment was carried out under the immediate direction of Public Health Nurse Dolores Hill Middleton of the staff of the Institute for the Control of Syphilis, University of Pennsylvania.

1 Cole H N and others. Cooperative Clinical Studies in the Treatment of Syphilis. *Syphilis in Pregnancy*. Ven Dis Inform 17: 39 (Feb.) 1936.

2 Ingraham Norman R Jr. Complications Due to Arsenical Therapy in Syphilitic Pregnant Women. Report of Seven Maternal Deaths. *J A M A* 112: 1537 (April 22) 1939. Moore J E. Arsenical Reactions in Pregnant Women. *Am J Syph Gonorr & Ven Dis* 23: 518 (July) 1939. Arnell R E and Guerrieri W I. Arsenical Encephalitis During Pregnancy, with Report of 2 Fatal Cases. *New Orleans M & S J* 94: 482 (April) 1942.

3 Cole H N, Jeans P C and others. Syphilis in Mother and Child. *Ven Dis Inform* supplement 7, U S Gvt Print Office 1940.

4 Sadusk J F and Shaffer T E. Observations on the Massive Dose Arsenotherapy of Early Syphilis by the Intravenous Drip Method. III. Pregnancy and Its Outcome Associated with or by the Treatment of Early Syphilis by Massive Arsenotherapy. *Yale J Biol & Med* 14: 365 (March) 1942. Rattner H. The Treatment of Early Syphilis by the Concurrent Administration of Arsenic and Bismuth in a Period of Five Days. *J A M A* 122: 986 (Aug 7) 1943.

but this approach to the prevention of congenital syphilis is not generally accepted. It is relatively toxic and must be considered dangerous in routine medical practice and a questionable choice even under ideal circumstances. One of the extremely difficult public health and social problems in this field has been the post partum observation of the mother for syphilis.<sup>5</sup> A drug which would be curative during the pregnancy of both mother and child is to be wished for.

3 Although several short series of cases appear in the medical literature in which 100 per cent normal infants have resulted from adequate arsenotherapy of the syphilitic pregnant woman, larger series show a definite residuum of syphilitic infants sometimes in spite of ideal therapy.<sup>6</sup> This is usually in the neighborhood of 5 to 8 per cent diseased infants if the treatment has approached accepted adequacy. Particularly difficult cases for intravenous arsenotherapy are those in which treatment is not commenced until the latter months of the pregnancy, particularly if the expectant mother is in the early stages of her disease.<sup>7</sup> Under such circumstances a very high percentage of infants are syphilitic in spite of therapy. This problem is bound to the permeability of the placenta to the arsenobenzene derivatives and to the effectiveness of the uncertain quantities of the drug which do pass from the mother to the child after the fetus in utero has been infected.<sup>10</sup> In such instances the placental membrane must be traversed by a curative dose of the drug if a normal infant is to be born. An effective spirillicide which will readily traverse the placenta is still to be hoped for.

4 Three principal factors still complicate the treatment of infantile congenital syphilis. They are the extreme caution with which therapy must be inaugurated when the disease is manifest,<sup>8</sup> the prolonged course of treatment essential to cure,<sup>11</sup> and again the residue of patients who are not cured by arsenotherapy and bismuth, a proportion which increases rapidly with the age of the infant at the time treatment is begun.

In addition, the treatment of the syphilitic pregnant woman and, more than this, the observation of the treated syphilitic woman who subsequently becomes pregnant are both critical experiments in the testing of the effect of the new drug. Since the fetus is intimately associated with the mother and is almost uniformly infected if the maternal syphilis is active and untreated, these circumstances give the counterpart in the human being of the inoculation test of cure in the rabbit or other experimental animal. In the woman the

5 Stokes J H. The Wartime Control of Venereal Disease. Problems in the Application of Recent Scientific Discoveries. *J A M A* 120: 1093 (Dec 5) 1942.

6 Ingraham N R Jr. The Importance of Treatment in the Control of Congenital Syphilis. *Ven Dis Inform* 19: 124 (May) 1938. Ingraham L B and Ingraham N R Jr and others. The Prevention of Congenital Syphilis in the Large Urban Hospital. A Study of Clinic Administration. *Am J Syph Gonorr & Ven Dis* 25: 731 (Nov.) 1941.

7 Greenlees J R C cited by Ingraham N R Jr and Kahler J E. The Diagnosis and Treatment of Syphilis Complicating Pregnancy. *Am J Obst & Gynec* 27: 134 (Jan.) 1934. Speiser M D. Results of Treatment in the Antepartum Syphilis Clinic at Bellevue Hospital. *ibid* 35: 1013 (June) 1938. Mosley V, Callaway J L, and Sharpe J S. A Study of the Incidence of Syphilis in Pregnant Women and Some Results of Therapy. *ibid* 39: 990 (Dec.) 1940.

8 McKelvey J L and Turner T B. Syphilis and Pregnancy. An Analysis of the Outcome of Pregnancy in Relation to Treatment in 943 Cases. *J A M A* 102: 503 (Feb 17) 1934. Syphilis in Pregnancy.<sup>1</sup>

9 Ingraham N R Jr. The Management of Syphilis in the Newborn and During Early Childhood. *Pennsylvania M J* 42: 950 (May) 1939.

10 Eastman N J. The Arsenic Content of the Human Placenta Following Arsenphenamine Therapy. *Am J Obst & Gynec* 21: 60 (Jan) 1931. Eastman N J and Dippel A L. The Passage of Arsenic Through the Human Placenta Following Arsenphenamine Therapy. *Bull Johns Hopkins Hosp* 53: 288 (Nov.) 1933. Stokes J H and Ingraham N R Jr. Diagnosis and Treatment of Congenital or Prenatal Syphilis. *M Clin North America* 28: 1575 (Nov.) 1939.

11 Smith F R Jr. Congenital Syphilis in Children. *Am J Syph & Neurol* 12: 532 (Oct.) 1935.

ultimate test of cure of her syphilis will always remain her ability to give birth to normal children in subsequent pregnancies, even though no further antisyphilitic treatment is administered

#### MATERIAL

The cases used for this report consist of 12 pregnant women with symptomatic early syphilis and 2 with early latent syphilis and 9 infants with early congenital syphilis. None had received any type of antisyphilitic therapy prior to treatment with sodium penicillin.

The first pregnant woman started treatment on Nov 19, 1943 and was delivered March 20, 1944. The maximum period of observation, therefore at the time of writing this paper (June 29, 1944) has been for the mother seven and one-half months and for the newborn infant three months. Seven of the mothers had not delivered at the time this material was analyzed.

The first infant with congenital syphilis commenced his treatment on Feb 8, 1944, so that in this case the maximum period of observation is about four months. All patients treated have been included in this report in order to evaluate the initial response to therapy and the contraindications to treatment, if any.

The material has been drawn from the clinics and wards of several of the Philadelphia hospitals<sup>12</sup> and observations were made by members of the University of Pennsylvania Penicillin Panel under the chairmanship of John H. Stokes, M.D.

#### RESULTS

*In the Pregnant Syphilitic Woman and Her Child*—The clinical response to treatment and the result of delivery in each of the 7 pregnant women who have reached term is summarized in table 1. This table also shows graphically the serologic response to treatment of both mother and child. In each instance an apparently normal infant has resulted at full term except in case 76 in which the infant was considered to be premature because it weighed only 4 pounds 10½ ounces (2,112 Gm.) at birth, but it appeared otherwise healthy. Dark field examination of the umbilical vein was negative in 5 instances and not performed in 2. Roentgenograms of the long bones during the neonatal period performed in 4 cases at birth and repeated at the age of 6 weeks or later in every instance were all normal. Three of the infants had positive cord and neonatal blood serologic tests in every case with quantitative titers either equal to the mother's or lower. In case 13, the mother's blood serologic test was 4 Kline units at birth and the infant's ½ unit, in case 25 the mother's titer was 32 units at birth and the infant's 16 units, in case 49 the mother's and infant's titers were both 64 units.

In each instance in which the infant's blood serologic test was positive at birth it has fallen sharply postnatally.

<sup>12</sup> The Hospital of the University of Pennsylvania supplied 8 cases for this study, the Philadelphia General Hospital 11 cases, the Children's Hospital 2 cases, the Pennsylvania Hospital and the St. Luke's and Children's Medical Center each 1 case.

#### FOOTNOTES TO TABLE

Symptomatic clinical response in the mother in each instance was immediate.

Given in Kline units for sake of uniformity. Tests were checked with quantitative Kolmer Wassermann and Eagle flocculation with comparable results.

<sup>2</sup> The seven mothers as of Sept. 1, 1944 have been followed a maximum of 86 days post penicillin (average 16 days). All have become seronegative except case 4 and case 49 (each less than 1 unit of reagin) and case 71 which retains ½ units. All are clinically normal. Each of the infants has remained clinically and serologically normal for a maximum period of 165 days post partum (average 14 days). One of the fourteen pregnant women mentioned in the text who was treated with 1,000,000 units of penicillin developed infectious relapsing fever just prior to delivery 1 day post penicillin (Kolmer Wassermann).

TABLE 1—Summary of Clinical Course of Seven Pregnant Women with Early Syphilis Treated with Penicillin

| Clinical Data                       |  | Days After Penicillin | Mother Serologic Test Kline Units* | Days After Delivery | Infant Serologic Test Kline Units* |
|-------------------------------------|--|-----------------------|------------------------------------|---------------------|------------------------------------|
| <b>Case 1 B 17 years U of Pa H</b>  |  |                       |                                    |                     |                                    |
|                                     |  | 0                     | 2 G                                |                     |                                    |
| Secondary syphilis                  |  | 10                    | 256                                |                     |                                    |
| Penicillin started 11/19/43         |  | 31                    | 64                                 |                     |                                    |
| Total dose 1,000,000 units          |  | 74                    | 64                                 |                     |                                    |
|                                     |  | 93                    | 8                                  |                     |                                    |
| Delivered 3/20/44                   |  | 105                   | 64                                 |                     |                                    |
|                                     |  | 115                   | 8                                  | 0                   | Negative                           |
|                                     |  | 122                   | 3 <sup>2</sup>                     | 1 <sup>7</sup>      | Negative                           |
| Infant weight 6 lbs 1 oz            |  | 159                   | 4                                  | 45                  | Negative                           |
|                                     |  | 175                   | 3 <sup>2</sup>                     | 55                  | Negative                           |
| Dark field umbilical vein negative  |  | 207                   | 64                                 | 74                  | Negative                           |
| normal physical examination         |  | 223                   | 8                                  | 101                 | Negative                           |
| roentgenogram of long bones normal  |  |                       |                                    |                     |                                    |
| <b>Case 13 B 20 years P G H</b>     |  |                       |                                    |                     |                                    |
|                                     |  | 0                     | 1 <sup>8</sup>                     |                     |                                    |
| Secondary syphilis                  |  | 9                     | 1 <sup>8</sup>                     |                     |                                    |
| Penicillin started 12/16/43         |  | 26                    | 2 <sup>2</sup>                     |                     |                                    |
| Total dose 1,200,000 units          |  | 68                    | 1 <sup>0</sup>                     |                     |                                    |
|                                     |  | 89                    | 2                                  |                     |                                    |
| Delivered 3/29/44                   |  | 104                   | 4                                  | 0                   | 0.5                                |
|                                     |  | 114                   | 16                                 | 20                  | Negative                           |
| Infant weight 6 lbs ½ oz            |  | 141                   | Negative                           | 37                  | Negative                           |
|                                     |  | 159                   | Negative                           | 54                  | Negative                           |
| Dark field umbilical vein negative  |  | 173                   | 0 <sup>2</sup>                     | 69                  | Negative                           |
| normal physical examination         |  |                       |                                    | 83                  | Negative                           |
| roentgenogram of long bones normal  |  |                       |                                    |                     |                                    |
| <b>Case 15 B 16 years Pa Hosp</b>   |  |                       |                                    |                     |                                    |
|                                     |  | 0                     | 1 <sup>8</sup>                     |                     |                                    |
|                                     |  | 10                    | 64                                 |                     |                                    |
| Secondary syphilis                  |  | 25                    | 1 <sup>8</sup>                     |                     |                                    |
| Penicillin started 12/24/43         |  | 29                    | 32                                 |                     |                                    |
| Total dose 1,000,000 units          |  | 60                    | 32                                 |                     |                                    |
|                                     |  | 74                    | 16                                 |                     |                                    |
| Delivered 5/15/44                   |  | 87                    | 4                                  |                     |                                    |
|                                     |  | 115                   | 0.5                                |                     |                                    |
| Infant weight 6 lbs 11 oz           |  | 132                   | Negative                           |                     |                                    |
|                                     |  | 136                   | Negative                           |                     |                                    |
| Dark field umbilical vein negative  |  | 143                   | Negative                           | 0                   | Negative                           |
| normal physical examination         |  | 163                   | Negative                           | 25                  | Negative                           |
|                                     |  |                       |                                    |                     |                                    |
| <b>Case 25 B 18 years U of Pa H</b> |  |                       |                                    |                     |                                    |
|                                     |  | 0                     | 1 <sup>8</sup>                     |                     |                                    |
|                                     |  | 16                    | 61                                 |                     |                                    |
| Secondary syphilis                  |  | 29                    | 64                                 |                     |                                    |
| Penicillin started 1/10/44          |  | 53                    | 64                                 |                     |                                    |
| Total dose 1,000,000 units          |  | 63                    | 16                                 |                     |                                    |
|                                     |  | 79                    | 3 <sup>2</sup>                     |                     |                                    |
| Delivered 4/13/44                   |  | 94                    | 3                                  | 0                   | 16                                 |
|                                     |  | 103                   | 32                                 | 0                   | 4                                  |
| Infant weight 6 lbs 14½ oz          |  | 114                   | Negative                           | 29                  | Negative                           |
|                                     |  | 128                   | 2                                  | 34                  | Negative                           |
| Dark field umbilical vein negative  |  | 148                   | 4                                  | 54                  | Negative                           |
| normal physical examination         |  | 163                   | Negative                           | 69                  | Negative                           |
| roentgenogram of long bones normal  |  |                       |                                    |                     |                                    |
| <b>Case 49 B 21 years U of Pa H</b> |  |                       |                                    |                     |                                    |
|                                     |  | 0                     | 61                                 |                     |                                    |
| Secondary syphilis                  |  | 8                     | 64                                 |                     |                                    |
| Penicillin started 2/15/44          |  | 21                    | 128                                |                     |                                    |
| Total dose 2,400,000 units          |  | 36                    | 64                                 |                     |                                    |
|                                     |  | 48                    | 64                                 | 0                   | 61                                 |
| Delivered 4/1/44                    |  | 49                    |                                    | 1                   | 16                                 |
| Infant weight 6 lbs ¾ oz            |  | 77                    | 64                                 | 29                  | Negative                           |
|                                     |  | 93                    | 2 <sup>2</sup>                     | 50                  | Negative                           |
| Dark field umbilical vein negative  |  | 112                   | 2                                  | 64                  | Negative                           |
| normal physical examination         |  | 136                   | 2                                  | 78                  | Negative                           |
| roentgenogram of long bones normal  |  |                       |                                    |                     |                                    |
| <b>Case 71 B 22 years U of Pa H</b> |  |                       |                                    |                     |                                    |
|                                     |  | 0                     | 128                                |                     |                                    |
| Early latent syphilis               |  | 14                    | 64                                 |                     |                                    |
| Penicillin started 3/11/44          |  | 23                    | 128                                |                     |                                    |
| Total dose 1,000,000 units          |  | 46                    | 3 <sup>2</sup>                     |                     |                                    |
|                                     |  | 60                    | 3 <sup>2</sup>                     |                     |                                    |
| Delivered 6/14/44                   |  | 76                    | 61                                 | 0                   | Negative                           |
| Infant weight 5 lbs ¼ oz            |  | 77                    |                                    | 1                   | 0.5                                |
| Normal physical examination         |  |                       |                                    |                     |                                    |
| <b>Case 76 B 21 years P G H</b>     |  |                       |                                    |                     |                                    |
|                                     |  | 0                     | 64                                 |                     |                                    |
| Secondary syphilis                  |  | 13                    | 125                                |                     |                                    |
| Penicillin started 4/3/44           |  | 27                    | 64                                 |                     |                                    |
| Total dose 1,000,000 units          |  | 41                    | 61                                 |                     |                                    |
|                                     |  | 51                    | 32                                 |                     |                                    |
| Delivered 6/17/44                   |  | 69                    | 64                                 |                     |                                    |
| Infant weight 4 lbs 10½ oz          |  | 75                    | 64                                 | 0                   | Negative                           |
| Normal physical examination         |  |                       |                                    |                     |                                    |

and has become normal in less than one month. In the period of observation none have shown any tendency to revert to positive. The remaining 4 infants were born with negative blood serologic tests for syphilis and have remained seronegative up to the time these data were compiled. In the period of observation, only 3 of the mothers have become seronegative. Patient 15 was found to be seronegative ninety-five days post penicillin and forty-seven days prior to delivery and patient 39 who has not yet reached term, was found to be seronegative seventy-seven days post penicillin and has remained so for two months. Patient 25 was found to be seronegative sixty-nine days after delivery.

In the 7 cases in which delivery has occurred penicillin treatment was started 142, 121, 103, 93, 76, 73 and 47 days respectively prior to delivery or from the fifth to the eighth lunar months of the pregnancy respectively. In no instance was treatment instituted

after the commencement of penicillin treatment. In 2 cases threatened abortion as evidenced by spotting and by lower abdominal cramps, occurred in 1 instance in eighteen hours and in the second case in forty-eight hours after the start of penicillin therapy. The drug was immediately discontinued but resumed in full dosage in twenty-four hours without a recurrence of symptoms. Thus the only type of reaction that developed in any of our pregnant patients could perhaps be considered to be a form of therapeutic shock (Herxheimer reaction) occurring in a grossly diseased area and would possibly fall in the category of placental shock, described in the older literature and occasionally seen after arsenotherapy administered without preparatory treatment to pregnant women with active syphilis. It would suggest that, in the present state of our knowledge at least, it might be best to reduce the penicillin dosage by three fourths to one half during the first

TABLE 2—Summary of Case Records of Five Infants with Early Congenital Syphilis Treated with Penicillin

| Identifying Data   | Initial Clinical Findings  | Weight on Admission | Total         | Per Pound of Body Weight | Duration of Observation After Penicillin | Result  |
|--|--|---------------------|---------------|--------------------------|--|---|
| Case 43 P G H<br>Race—B<br>Sex—F<br>Age—42 days<br>Treatment started 2/5/44      | D F + skin lesions snuffles enlarged liver roentgenogram advanced osteochondritis and periostitis serologic test positive 120 units (Kline)        | 6 lbs 3 oz          | 100 000 units | 16 181 units             | 99 days                                  | Living normal physical examination normal roentgenogram of long bone negative serologic test since 5/18/44  |
| Case 47 U of Pa<br>Race—B<br>Sex—F<br>Age—18 days<br>Treatment started 2/11/44   | Premature snuffles enlarged liver roentgenogram pronounced osteochondritis and periostitis serologic test positive 178 units (Kline)               | 4 lbs 7 oz          | 80 000 units  | 18 099 units             | 16 days                                  | Died 2/27/44 circulatory collapse possible congenital heart disease no autopsy  |
| Case 58 Child H<br>Race—B<br>Sex—M<br>Age—4 months<br>Treatment started 2/29/44  | Scaling skin lesions most pronounced on palms and soles snuffles roentgenogram periostitis of long bones serologic test positive 178 units (Kline) | 13 lbs 11 oz        | 26 000 units  | 18 373 units             | 79 days                                  | Normal physical examination roentgenogram periostitis disappearing serologic test 8 units (Kline) 5/17/44   |
| Case 63 U of Pa H<br>Race—B<br>Sex—F<br>Age—8 months<br>Treatment started 3/1/44 | Malnutrition dysphagia serologic test positive 64 units (Kline) roentgenogram not diagnostic   | 13 lbs              | 240 000 units | 18 615 units             | 37 days                                  | Normal physical examination blood serologic test 34 units (Kline) 6/8/44  |
| Case 11 St Luke's<br>Race—B<br>Sex—F<br>Age—51 days<br>Treatment started 3/29/44 | Roentgenogram osteochondritis and periostitis serologic test strongly positive associated gonococcal vaginitis                                     | 10 lbs 8 oz         | 111 000 units | 10 611 units             | 8 days                                   | Died 6/6/44 temperature elevation to 104 F severe diarrhea and dehydration with weight loss of 3 lbs autopsy gross and microscopic findings of congenital syphilis only |

All of the mothers had seropositive latent syphilis and none were treated prior to birth of the infants given in the table. \* This patient developed dark field positive skin lesions on Aug 21 1944. The infant never became seronegative and blood titer rose to 32 units when relapsing lesions appeared. Mother showed no evidence of open lesions at the time of relapse in the infant and was receiving treatment with phenarsine hydrochloride and bismuth subarsenate. This was considered to be a penicillin failure and the infant was retreated with penicillin.

prior to the midpoint of the pregnancy or in the month immediately preceding term.

**Method of Treating the Syphilitic Pregnant Woman**—Each of the pregnant women who have thus far reached term had received 1,200,000 Oxford units as her total dose of sodium penicillin, with the exception of patient 71, who left the hospital without receiving her last two four hourly injections and patient 49, who received 2,400,000 units. Three additional patients who have as yet not reached term also received 2,400,000 units. The injections were given intramuscularly, each dose in approximately 1 cc of sterile distilled water every four hours around the clock for a period of approximately eight days. The individual four hourly dosage for 10 cases was 25,000 units and for 4 cases 50,000 units.

The clinical response of infectious surface lesions to treatment of the expectant mother was very rapid. Usually, *Treponema pallidum* disappeared as determined by dark field examination in less than eight hours. In no case did the dark field preparation show *Treponema pallidum* longer than twenty-four hours

thirty-six to forty-eight hours of treatment of the syphilitic pregnant woman. We have followed this suggested procedure of reduced dosage during the first forty-eight hours for the last 10 pregnant women treated and have not had an additional instance of threatened abortion.

**In Infantile Congenital Syphilis**—Nine patients with early congenital syphilis were treated with sodium penicillin. The results in the 3 cases which have been followed long enough to make any report possible are given in table 2. Two deaths possibly not due to penicillin treatment which occurred among 9 cases thus far treated are also included in this table. The 3 living infants followed for 99, 97 and 79 days respectively after administration of sodium penicillin all became clinically normal to physical examination.

All 3 infants had relatively high blood serologic titers initially, but these dropped sharply to normal in 1 instance and to relatively low levels in the other 2 instances ( $\frac{1}{2}$  unit and 8 units respectively) during the period of observation.

The 2 infants who showed definite roentgenographic changes of syphilitic osteochondritis and periostitis have resumed approximately normal bone development, as shown in the illustration

**Dosage Employed in Infantile Congenital Syphilis**—In 6 of the 9 cases treated, the total dosage of sodium penicillin given every four hours around the clock over approximately an eight day period was between 16,000 and 19,000 units per pound of body weight. This is considerably in excess of the dosage given the majority of the pregnant women, which except in 4 cases was not in excess of 10,000 units per pound of body weight. The remaining 3 infants received respectively 2,935, 10,631 and 11,111 units per pound of body weight.

The only definite treatment reaction noted among the 7 infants who are still living was in the first infant



A Before penicillin



B After penicillin

Improvement in syphilitic osteochondritis from penicillin therapy in case 43 in which treatment was started when the child was forty one days old. Only the right knee joint is shown though all the long bones had similar involvement. In A note complete disorganization of distal femoral metaphysis and proximal metaphysis of the tibia. This area is approximately normal in B eighty three days after commencement of penicillin.

treated (case 43 in table 2). After receiving 19,000 units of sodium penicillin in the first forty-eight hours this patient developed severe dyspnea and cyanosis, necessitating supportive treatment and the administration of oxygen. His condition remained critical during the next eighteen to twenty-four hours during which period penicillin was withheld. The drug was then resumed in full dosage without recrudescence of symptoms and with apparently a favorable outcome. This is the only infant that thus after a ninety-nine day period has developed a completely negative blood serologic reaction.

#### COMMENT

Our case material does not permit us to draw sweeping conclusions either as to the management of the syphilitic pregnant woman or with regard to the care of the syphilitic infant. We are of the opinion that the total dosage of penicillin used, the time dose relationship or the duration of treatment employed for our patients is not the ideal. In fact we are experimenting with other dosage systems. On the other hand since penicillin is now available for general medical use it is felt highly desirable to make such factual information as exists available in the medical literature as rapidly as possible.

It is our belief that, as far as it is possible to determine with a limited number of cases, a total dosage of sodium penicillin in the same magnitude (1,200,000 units) as was originally used by Mahoney, Arnold and Harris<sup>13</sup> in the treatment of early acquired syphilis in the adult is safe to use for the pregnant woman, preferably with reduced individual doses for the first thirty-six to forty-eight hours. By safe we mean that it clears the mother of infective surface lesions, with proper time dose relationship it need provoke no after-effects and it will apparently "protect" a good proportion of the offspring from early or immediate manifestations of congenital syphilis. This is what, plus the danger of other reactions, we had come to expect of the arsenicals. Penicillin may therefore perhaps replace them. In view, however, of the demonstration of an incompletely curative result under 1,200,000 Oxford units in not less than 10 per cent of cases of early syphilis and the trend to higher dosage (2,400,000 Oxford units) on the part of some authorities and competent advisory agencies, we believe that such an advance in the total dose of penicillin is now proper and presumably safe for the pregnant woman in good general condition. By such a total dose, using a therapeutic agent with the reactionless record of penicillin we shall, we hope, approach more nearly, if not reach, the cure of the mother with the full protection of the child.

It is not of course, possible to say whether all the infants in the present series have escaped infection nor will it be possible so to state short of several years of postnatal observation. It will further not be possible to evaluate the effectiveness of treatment of a syphilitic pregnant woman to prevent congenital syphilis without the analysis of much larger case material observed for a much longer time. It must also be pointed out that the permeability of the placental membrane to penicillin is at present unknown and that cases treated immediately before delivery or prior to the fifth lunar month have not as yet been reported.

There are indications that penicillin given to the mother just prior to delivery (Barksdale) is not recoverable from the umbilical vein at birth. Considering the fact, however, that untreated pregnant women with early syphilis almost uniformly give birth to dead or diseased children, we believe that it is encouraging, to say the least, that among the 14 women treated by us not a single stillbirth or neonatal death has occurred. The 7 infants delivered have, moreover, remained physically normal and seronegative for days of observation numbering 101, 81, 78, 69, 25, 5 and 1 post partum respectively.

We realize that a six months or longer period of active postnatal observation is desirable to rule out the

13 Mahoney J R, Arnold R C and Harris A. Penicillin Treatment of Early Syphilis. A Preliminary Report. Ven Dis Inform 24: 355 (Dec.) 1943. Bloomfield L A, Rantz I A and Kirby W M M. The Clinical Use of Penicillin. J A M A 124: 627 (March 4) 1944.

possibility of congenital syphilis. But, if the type of medical follow-up evidence which has been found satisfactory for pregnant women treated with arsenicals is acceptable for those treated with penicillin, then it is distinctly exceptional to encounter congenital syphilis which is not detectable with the use of roentgenographic and blood serologic test procedures by the end of the second month. It seems unlikely therefore, that the 4 infants who have passed the sixtieth day of postnatal observation will develop signs of congenital syphilis in the future, though we expect to keep them under observation for a matter of years, if possible.

*Infantile Congenital Syphilis*—The present state of our knowledge with respect to the ideal treatment of infantile congenital syphilis is much less exact than is our limited knowledge even of the treatment of the syphilitic pregnant woman. Not only are we uncertain that we have developed a proper and effective total dosage or time-dose relationship for the administration of a sodium penicillin to infants with congenital syphilis but we are in addition not certain that the method of treatment employed by us is entirely safe for the small grossly diseased infant. A word of caution as to the possible dangers of indiscriminate experimentation in this field is therefore given.

It is highly possible that the severe reaction (dyspnea, cyanosis and so on) observed in case 43 would fall into the category of therapeutic shock (Herxheimer reaction). In this instance, in spite of the severity of infection in the infant, little attempt was made to reduce the initial dosage for any considerable time, even though the first three injections (i.e. the first eight hours of treatment) were reduced to one-half the calculated dosage. We are likewise not certain that either of the two observed deaths resulted from the use of sodium penicillin as such. In each instance the death could be accounted for from another cause. In case 47 a possible congenital heart lesion and in case 112 a severe diarrhea with dehydration, uncontrolled by pediatric care, were undoubtedly important contributing factors to the deaths of the infants. In treating congenitally syphilitic infants in the past, however, the reactions caused by injudicious treatment have been considered not infrequently a primary rather than a secondary cause of death.

We believe that it may be significant that each of the infants in whom severe reaction or death occurred was less than 2 months of age. All of the other infants treated were older than 2 months at the time treatment was started. They therefore had had their infectious longer, were more fully adjusted to extrauterine existence, had presumably built up some individual resistance and were better able to combat any toxemia which might develop from the too rapid treatment of overwhelming infected body tissue. We are reminded forcefully that the real danger of too energetic arsenotherapy of congenital syphilis lies in these first few weeks of life when the infection is overwhelming, the nutritional state of the infant poor and its resistance to disease undeveloped. We cannot fail to remember also that for complete safety it has been shown that it is necessary to maintain reduced dosage in these cases not for a matter of a few days but often for three or four weeks. Here, then, may be a situation in which too rapid treatment with large dosage of penicillin may be injurious to the infant even though beneficial for the disease itself.

Since the cases described were treated we have observed another infant 2 months old at the inception of penicillin therapy but not reported in detail, since

treatment was completed only on June 5, 1944. This infant which weighed 9 pounds (4.1 Kg.), was given a total dosage of 100,000 units of sodium penicillin in eight days (approximately 11,000 per pound of body weight), but the dosage was kept much reduced from the first to the third day. Five per cent of the total dosage was given in the first twenty-four hours, 10 per cent on the second and third day each and 15 per cent on each day thereafter with no untoward reaction.

In some of the older and heavier infants we have also recently given greatly reduced doses for the first two or three days of treatment without reaction. In spite of this, however, we are not certain that reduced dosage carried out for so short a period will be effective in preventing reaction in every instance if we are here dealing with the type of therapeutic paradox in the small severely infected infant which has accompanied other types of rapidly effective chemotherapy. One necessity for safety certainly stands out with increased emphasis. This is the insistence on painstaking and experienced general pediatric care as an accompaniment to penicillin therapy.

It is too soon to discuss the proof of "cure" of syphilis in women by their ability to bear normal children in subsequent pregnancies, since this is a question which can be studied only over a period of years. If the apparently normal infants born of the women with early syphilis in this study prove on subsequent observation to be nonsyphilitic, then it is a probable but not yet an established fact that these women have been cured of their disease. The most obvious conceivable exception to this supposition would be that the infection was suppressed in the mother as a result of treatment for the several months of her pregnancy in which she was carrying the child to the point where the disease was not transmitted, only to have a recrudescence subsequent to delivery.

It should also be noted that the present report deals with early syphilis complicating pregnancy. It is not certain that these observations are necessarily applicable to the greatest problem confronting the medical profession in this field, namely latent syphilis of unknown duration complicated by pregnancy. It is highly desirable, therefore, that the question of penicillin treatment of latent syphilis complicated by pregnancy be studied as soon as possible.

#### CONCLUSIONS

1. There are several factors in the medical treatment of the syphilitic pregnant woman and the infant with congenital syphilis which are in need of further study and improvement.

2. It was with the thought that some solution to these problems might be found through the use of penicillin that the present study was undertaken. Sodium penicillin exclusively was employed. Experience with the treatment of 14 pregnant women with early syphilis and 9 infants with congenital syphilis formed the basis for this analysis.

3. The material is reported at this time, even though incomplete, since preliminary observations indicate that sodium penicillin has a definitely good effect both on the mother and on the child in syphilis in pregnancy and on infantile congenital syphilis. Because the drug has been released for general distribution, dissemination of even our present limited knowledge seems desirable.

4. The proper total dosage and the time-dose relationship has not been worked out to complete satisfaction either for syphilis and pregnancy or for infantile congenital syphilis.



5 The limited existing data would seem to indicate, however, that total doses of the magnitude of 1,200,000 Oxford units and 2,400,000 Oxford units given intramuscularly round the clock in approximately eight days, as used in the treatment of early syphilis, are well tolerated by the pregnant woman, with the possible exception that therapeutic or placental shock may occur, to be avoided by considerably reducing the dose for the first thirty-six to forty-eight hours of therapy. The course of expert experience with penicillin in syphilis in general suggests the desirability of the higher dosage (2,400,000 Oxford units).

6 Preliminary results indicate that "cure" or suppression of the infection takes place in a number of the mothers and that miscarriage, stillbirth and neonatal death are averted and the infants are born apparently healthy. It must be reiterated, however, that the period of observation for either mother or child has not been long enough to be certain that they have been cured by the dosages employed. The course of the disease has nonetheless been profoundly and favorably affected.

7 Infants with congenital syphilis make a good response to dosage of approximately 18,000 units per pound of body weight. Grossly infected syphilitic infants, however, may be injured by the injudicious use of penicillin. In the present state of our knowledge their treatment should be approached with extreme caution, with reduced dosage and with great emphasis on proper general pediatric care.

## THE MEDICAL TREATMENT OF PSYCHOSOMATIC DISTURBANCES

WITH SPECIAL REFERENCE TO THE GASTRO-INTESTINAL TRACT AND FATIGUE

SIDNEY A. PORTIS, M.D.  
CHICAGO

While physicians in the past have given "lip service" to the emotional status of the patient, little insight has been developed into the results of emotional factors on processes of the body. The patient has often been rebuffed because his complaints were thought to be functional, he has been dismissed as a neurotic and told "go home and quit worrying about yourself." The patient who expresses his emotional difficulty in terms related to disabilities of organs may or may not be satisfied with this diagnosis. He may become the victim of varied treatment, including even multiple operations within the abdomen. Physicians should realize that a majority of ambulatory and even of bedfast patients may have altered functions that result from disturbances of the emotions. The patient who is not conscious of his difficulties presents a bizarre collection of symptoms unrelated to any determinable organic disease. The mechanisms of such syndromes are as yet little understood even by those who use the psychoanalytic approach to their significance. Therefore, large amounts of data should be collected which will make the physician just as certain in his knowledge of the mechanisms concerned as he is in controlling well recognized organic manifestations with which he is familiar. The patient must nevertheless be treated and his problems approached in a logical manner while laboratory and clinical observations evolve to the level of established science.

Physicians should develop much tolerance and sympathy for patients with such complaints. Their troubles should be heard with an open mind. They should be allowed to talk—catharsis or release by expression. History of the patient's life from early childhood to the present must be recorded painstakingly without the usual haste of present day technic. However, familiarity with the technic leads the ingenious physician to many short cuts in procedure. These short cuts may arouse resentment and antagonism unless used with finesse. The physician should always be on his guard not to offend the patient.

Nothing is as private as the emotional life of the patient. He will fence with the physician and try to mislead for the same reasons that prevent him from admitting the real facts to his consciousness. He may relate dreams that are camouflaged as the reason for his symptoms. The physician must gain the confidence of the patient. Once this has been established, the task becomes easier and the resistance less. A thorough clinical and laboratory investigation should always precede the evaluation of the emotional status for two reasons. 1 The significance of symptoms must not be neglected. 2 When the established methods of investigations have failed to yield a satisfactory explanation the physician's own assurance will be apparent to the patient, his analysis of the mechanism concerned will carry more weight and prepare the patient to accept the physician's advice. If the physician feels that the emotional factors are too deep seated and too complicated, he should recommend that the patient have psychiatric help. The "brow beating" psychiatry of the past is not the method of choice. The patient must be referred to a psychiatrist with insight into modern technics and keenly aware of the sensitivities resulting from emotional factors. The great difficulty arises in convincing the patient of the necessity for this help, because he does not want to feel that there is something wrong with his mind. As experience increases, the physician will find that the mere suggestion creates a resentment, and if the issue is not forced the patient's own desire to seek this help at a later date prevails. The art of medicine is not overtreating the patient; applies here equally in not trying to persuade him to do something against his will. Once the physician is convinced of the rationale of this approach, there must be no retreat or the patient will have conquered the physician just as he has repressed or suppressed his own emotional factors.

The psychosomatic approach to disease is no easy road to clinical success. The physician will discover that it requires much study and long practice to acquire competence in this technic.

This discussion will be centered on the gastrointestinal tract, and even here treatment can only be general. I shall also elaborate on my observations of fatigue as seen in patients with psychosomatic disturbances.

The gastrointestinal tract affords a fertile field for such investigation. The abundant clinical material, the frequency of complaints relative to the digestive organs, laboratory study and roentgenologic control provide a foundation on which to build. That the digestive tract should be a seat of altered emotional response is best explained anatomically on the basis of its abundant afferent and efferent nerve supply. The ease of transmission of emotional stimuli from the hypothalamic region to the digestive organs is recognized. Furthermore, no other vital function plays such an important

role in the emotional life of the individual from early life as does eating. The relief from physical discomfort that the infant experiences while eating and the satisfaction of hunger becomes deeply ingrained in the child, being associated with a feeling of well-being and security. In addition, feeding is associated with a feeling of being loved. To a child, feeding and love become inseparable. This oral-receptive manifestation in early infancy is a natural emotional state of the child. In later life it must be suppressed, because it is not harmonious with independent adult life. The repressed oral trends may produce disturbed function leading to changes in the physiologic equilibrium. The recognition of this physiologic imbalance affords the physician an opportunity to explore the symptom complexes of patients and develop adequate and rational therapy. No one is justified in advising the therapy here outlined unless all known organic disease has been eliminated: infectious, parasitic, toxic, neoplastic and even metabolic disturbances of nonemotional origin. Serious organic changes may be masked by neuropsychiatric complaints. Keen clinical judgment should not be discarded because of a new or unestablished panacea. Physicians now recognize that a large percentage of gastrointestinal complaints are due to disturbed function having its origin for the most part in the emotional system. Gastritis, hypertrophic and even atrophic, may thus be classified. The irritability of the gastric mucosa makes it intolerant to food, and symptoms referable to this intolerance are frequently discerned. The same may be true of the duodenum, be the symptoms those of duodenitis, duodenal ulcer or even duodenal stasis.

Dyskinesia of the biliary tract without other abdominal reflex causes may and probably does have its origin in the parasympathetic nervous system. The so-called "stasis cholecystitis" which occurs in hypomotility leads to the formation of gallstones which in turn lead to trauma of the mucous lining, which may be secondarily infected and result in inflammatory disease. "Stasis cholecystitis" may have its origin in disturbed function resulting from altered emotional stimuli reaching the biliary tract.

The disturbances of the small intestine, which may manifest themselves by rumbling and gurgling, colicky and severe cramplike pains, gaseous disturbance, segmental spasm and rapid motility, have been seen in emotionally disturbed patients. Some of the vitamin imbalances, the iron deficiency anemias and disturbed protein and electrolyte balance may be due to the rapid emptying of the small intestine. This increased motility leaves too little time for complete digestion, absorption and utilization of the dietary intake. Hypothetically many of the deficiency diseases have their origin in this mechanism. The disturbed small bowel gives to the colon partially and incompletely digested food which later alters the physiology of the colon. The colon is compelled to do what it normally should not, the results of this disturbed function may be pain, cramps, diarrhea and even constipation. The colon itself may be the receptor of these altered emotional stimuli. Colitis, often used by the physician as an escape diagnosis, is probably the result of the same mechanism. In the majority of cases pathologic changes cannot be found to explain the symptom complex. Even ulcerative colitis has in many cases associated emotional factors. When psychiatric treatment is given in addition to the medical regimen improvement is frequently observed.

The problem of duodenal ulcer becomes intensely interesting when studied from this point of view. If psychodynamic factors play a role in the life cycle of ulcer, then the time honored method of treatment may be improved. If the hyperacidity is due to some emotional stimulus, prevention of these stimuli from reaching the duodenal and gastric mucosa is more important than the neutralization of the acidity. However, the hyperirritable gastric glands may be more susceptible to hormonal factors from the small intestine, and hyperacidity may result from this phase of gastric secretion. Therefore, until the irritability of the acid cells is decreased, some neutralization may be necessary to buffer this type of increased acidity. The medical regimen for these patients consists in giving aluminum salts or other neutralizing agents a half hour after the three main meals and atropine sulfate in doses of  $\frac{1}{100}$  to  $\frac{1}{200}$  grain (0.65 to 0.3 mg) three times a day at meals and at bedtime. In addition, small doses of phenobarbital at meals and at bedtime in doses of  $\frac{1}{4}$  to 1 grain (0.016 to 0.065 Gm), depending on the therapeutic need. The following diet is suggested.

#### Avoid

Coffee, tea, alcohol in all forms, tobacco  
Fried foods, oils, greasy foods, e. g. sardines, salad dressing  
Raw fruits and vegetables  
Whole grain cereal and breads  
Spices and condiments, e. g. mustard, pepper  
Meat including poultry, meat and meat stock soups  
Sugar, pie, candy, cake, jelly, syrup, honey

#### May have items listed—nothing else

Butter as desired  
Five minute enriched cream of wheat, strained oatmeal and Pettijohns, rice, noodles, macaroni plainly cooked, cornmeal, farina  
Enriched white bread, toasted, unsalted white crackers, zwieback, holland rusk, melba toast  
Vegetable milk soups made with pureed vegetables alone, no meat or meat stock to be used  
Lean fresh water fish, e. g. whitefish, perch, trout, bass. To be broiled or boiled alone  
Two eggs daily, either soft boiled or poached  
Cottage and cream cheese in very small portions  
All vegetables to be thoroughly cooked and pureed (as baby foods). Avoid all those with tough fibers and seeds  
Stewed fruit, e. g. prunes, must be pureed. Canned peaches, pears, apricots may be taken whole. All other fruit must be pureed. Juice of strained orange or grapefruit juice daily.  
Avoid all syrup of the canned fruit  
Mashed, baked or boiled potatoes are permissible  
Baked custard, rice and tapioca pudding (no raisins), vanilla blanc mange, plain fruit gelatin  
Milk, buttermilk, unsweetened cocoa, small amounts of cream  
Only salt to be used in moderate portions

#### A sample menu is given in table 1

The patient with uncomplicated duodenal ulcer responds rapidly to this regimen and is free from symptoms in a relatively short time. Night emptying of the stomach is unnecessary. Complete neutralization of the gastric acidity is not indicated, and many an ulcer will heal promptly under this management. While this management is here given in an abbreviated form, any physician familiar with management of cases of ulcer can fill in the necessary details.

The role played by psychodynamic factors in the life cycle of many patients with ulcer of the duodenum has been well substantiated in recent years. Today it is known that permanent cure of a peptic ulcer patient cannot be secured where the unconscious emotional factors are significant in the clinical picture unless those emotional factors are carefully evaluated and properly

eradicated. The recurrence of peptic ulcer can often be ascribed to the failure of the physician to take these factors at face value. Symptomatic relief due to any medical or surgical procedure is not enough. However, psychoanalytic or psychologic study, be it brief or prolonged, must always be combined with adequate medical control. Only through the pooling of all efforts, somatic and psychologic, can we hope to bring about a permanent cure of these conditions. It is important in this connection not to make unwarranted generalizations. For example, gastric ulcer frequently presents an entirely different therapeutic problem. Carcinomatous ulcer or even the remote malignant transformation of a benign to a malignant ulcer is all too frequent to warrant procrastination. Not even the most competent internist, surgeon, pathologist, roentgenologist or, I might add, gastroscopist can differentiate between a benign and a malignant ulcer in questionable cases. The final diagnosis must rest on the microscopic evidence. Therefore I plead for a great deal of care and circumspection in the conservative care of a chronic gastric ulcer. Until reliable differentiation between benign and malignant ulcer can be made, the surgical approach is preferable to any conservative treatment, medical or psychotherapeutic. The simple, early,

physiology, the prevention of reflex phenomena due to stimulation of various foods, the adequate vitamin and mineral contents and finally rapid return to near normal of body metabolism.

2 If altered emotional stimuli may result from the cortical influence on the midbrain the medication should be directed at either the eradication or the removal of this influence.

3 If stimulation reaching the gastrointestinal tract by way of the parasympathetic system produces pathologic physiology therapy should be directed at the site of innervation of these nerves to prevent these altered stimuli from producing these changes.

4 Most important is the philosophic concept of complete approach to this syndrome from the psychosomatic point of view. Simply stated, emotional stimuli produce disturbed function, disturbed function ultimately results in pathologic change. The treatment of pathologic change may be medical or surgical, but the fundamental etiologic approach and prevention of recurrence depends on a study and normalization of the emotional status.

#### FATIGUE

I have previously reported that emotionally disturbed patients may have fatigue which may result in a disturbance of their carbohydrate metabolism. In a further study of a large number of patients I have found that they uniformly gave a so-called "flat curve" when tested by the intravenous glucose tolerance test (chart 1). Furthermore, an additional group of patients who presented not too flat a curve or were relatively hypoglycemic at the end of the two hours after the injection of intravenous glucose also were fatigued. These patients were submitted to a searching clinical and laboratory investigation. In none were there any organic etiologic factors present which could cause their fatigue.

The fatigue had some striking and almost uniform clinical manifestations. It was usually present on awakening, somewhat relieved by breakfast, usually reappeared in the midafternoon and disappeared after a large dinner. Frequently it was associated with severe early morning headache, more prominently associated at times with midafternoon headache (the kind that is often associated with or thought to be due to eyestrain). There was characteristically a pernicious inertia, even to the extent of continuous bed rest. Hypoglycemic attacks of faintness, vertigo, sweating and extreme weakness often were described. Psychologic investigation revealed a lack of zest and enthusiasm in the few patients critically observed by Dr. Franz Alexander. The sugar level observed could be returned to near normal when the patient was given a dose of atropine sulfate hypodermically,  $\frac{1}{50}$  or  $\frac{1}{75}$  gram (13 or 1 mg.) and the intravenous glucose tolerance test repeated under identical conditions as initially undertaken in the first test (chart 2).

#### INTRAVENOUS GLUCOSE TOLERANCE TEST

The patient presents himself after a twelve hour fast (no morning bath, no water by mouth except oral hygiene) and is weighed. A fasting blood sugar sample is withdrawn. He is then given the intravenous glucose ( $\frac{1}{2}$  Gm. per kilogram of body weight of 50 per cent glucose solution and a large syringe 50 or 100 cc. type). The time for administration is usually two to five minutes depending on the age of the patient. Samples of blood are then withdrawn at thirty, sixty, ninety and one hundred and twenty minute intervals after the completion of the initial glucose injection. The blood samples are analyzed according to the Folin Wu method.

TABLE 1—Sample Menu for Gastrointestinal Complaints

| Breakfast                   | Lunch  | Dinner                   |
|-----------------------------|--|--------------------------|
| 3 oz. strained orange juice | 4 oz. strained cream of vegetable soup             | 3 oz. strained juice     |
| $\frac{1}{4}$ cup farina    | 2 poached eggs on white toast                      | 3 oz. broiled lake trout |
| 3 oz. milk cream            | 1 slice white toast                                | Small baked potato       |
| Unsweetened cocoa           | 1 pat butter                                       | Purée carrots 3 oz.      |
| No sugar                    | Purée peas 3 oz.                                   | Purée peas 3 oz.         |
|                             | 1 pat butter                                       | 1 slice white toast      |
|                             | Purée spinach                                      | 1 pat butter             |
|                             | Strained applesauce                                | Canned pear 3 oz.        |
|                             | 6 oz. milk   | Milk 6 oz.               |
|                             | No sugar   | No sugar                 |
|                             | Nourishments                                       |                          |
| 10 a m.—milk 6 oz.          | 3 p m.—baked custard                               | 9 p m.—milk 6 oz.        |
|                             | Bedtime—milk 6 oz. buttered toast                  |                          |
|                             | U. c. saccharin as a substitute for sugar          |                          |
|                             | Protein 111 fat 106 carbohydrate 273 calories 2281 |                          |

uncomplicated gastric ulcers that occur frequently in young persons do not necessarily fall into this category. In such cases there is a place for the psychotherapeutic approach under constant medical vigilance.

Duodenal ulcer in its life cycle, its healing and course may be viewed more optimistically, even here when the duodenal ulcer penetrates beneath the mucosa—when it becomes indolent and refractory to medical management—the psychotherapeutic approach does not provide a positive answer. It should not be considered a panacea. Many patients may have to be treated surgically first and only then handed psychotherapeutically to prevent the recurrence or new occurrence of ulcers. The careful honest evaluation of each case on its merits offers the best possible hope for permanence of cure. One cannot warn too emphatically against making the psychotherapeutic approach a panacea for all patients. Therefore, some medical management should be available which will be helpful not only for the relief of these symptoms but also for placing the patient in a more normal physiologic state, thus preventing untoward emotional stimuli from disturbing the harmonious functioning of the gastrointestinal tract.

#### SUMMARY

Four basic considerations confront the physician in the medical treatment of these patients:

1 A dietary regimen should be constructed to take into consideration the irritability of the mucous lining of the digestive tract resulting from this pathologic

The results of these values were noted and charted. Attempts were not made to determine the amount of sugar in the urine during the course of this test, because clinical significance did not appear to be attached to such results. Similarly, oral glucose tolerance tests are not of much clinical value because of the uncertainty of the absorption, which frequently leads to false interpretation.

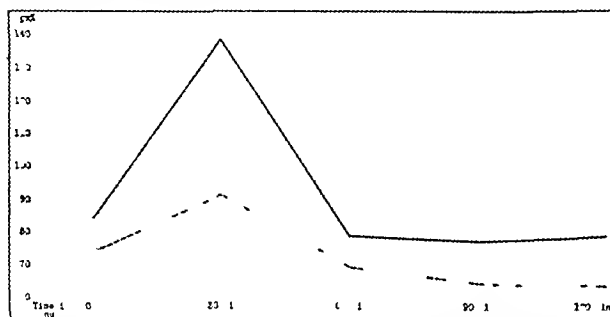


Chart 1—Intravenous glucose tolerance test: solid line—average normal curve of 30 patients; broken line—average of 55 patients with fatigue.

On the basis of the laboratory data I feel that the fatigue in the patients is due to a relative hypoglycemia, by which I mean that probably these particular individuals have "normal" blood sugar levels which are "hypoglycemic" for their central nervous system.

I do not have physiologic experiments to support my clinical conclusion that this was the only factor in the fatigue. Occasionally the clinician is justified in drawing tentative conclusions from his powers of observation even though unsupported by colorimetric or other laboratory investigation, particularly when sufficient experimentation has not been done to destroy the validity of the clinical observation. The uniformity of therapeutic results for these patients merits more widespread application of the method and further investigation as to the exact mechanism involved.

In the treatment of these patients diet is important. The diet should be essentially high in protein, moderately high in fat (except in patients with determined pathologic change in the gallbladder, or in those with hyperkinetic dyskinesia of the gallbladder) and relatively high in carbohydrates.

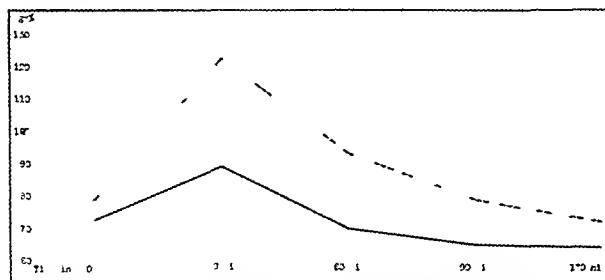


Chart 2—Intravenous glucose tolerance test: solid line—average curve of 55 patients with fatigue; broken line—average curve of 15 of these patients given 1/50 grain of atropine sulfate hypodermically one half hour before administration of glucose.

#### Foods allowed

**Cereals** Any type cooked or dry. Use one serving daily, preferably whole grain cereals.

**Breads** Enriched white, whole wheat, light rye, may use melba toast, white crackers, zwieback if desired.

**Soups** Vegetable, milk soups. Lean meat stock soups.

**Meat** Lean meat or fowl. May use crisp boiled bacon at times.

**Fish** Lean fresh water fish, e. g. whitefish, perch, trout, bass. To be broiled or boiled. Fresh shrimp and oysters.

**Eggs** One daily, either soft boiled or poached, soft scramble.

**Cheese** Cottage, cream, mild American and mild Swiss in small portions only.

**Vegetables** All types cooked and raw are permissible with the exception only of radishes and onions.

**Fruits** Fresh, stewed or canned. Use orange or grapefruit at least once daily. Use no syrup of the canned fruit.

**Desserts** Baked custard, rice and tapioca pudding, fruit gelatins, cornstarch puddings. Sponge cake, vanilla wafers to be used occasionally, if desired.

**Beverages** Milk, buttermilk, tea, coffee, unsweetened breakfast cocoa, cream in small amounts.

**Butter** Specified amounts only.

#### Foods to avoid

Very fat meat or fish, e. g. sardines, pork, products.

Pie, cake, pastry, candy, sugar, jelly, honey, syrup, alcoholic and carbonated beverages, dried peas and beans, onions, radishes.

A sample menu is given in table 2.

It will be noted that free sugar in any form is omitted. This omission was based on twofold evidence. First, the injection of glucose in normal dogs at a slow rate greatly increases the tolerance of these animals to subsequent more rapid injection; second, the deamination of protein and the formation of carbohydrate go on at a much slower rate in the liver and therefore will give a

TABLE 2.—Sample Menu in Fatigue

| Breakfast   | Lunch   | Dinner  |
|---|---|---|
| 3 oz orange juice<br>½ cup oatmeal<br>3 oz milk cream<br>1 poached egg<br>1 slice toast<br>1 pat butter<br>Coffee<br>No sugar | 4 oz cream of vegetable soup<br>4 oz broiled lake trout<br>Parsley boiled potato<br>Dressed vegetable salad<br>Lemon juice salt garnish<br>1 slice bread<br>1 pat butter<br>Fresh applesauce<br>6 oz milk<br>No sugar | Fresh shrimp cup<br>Broiled lamb chops<br>Small baked potato<br>Asparagus tips<br>Sliced tomatoes<br>1 tsp dressing<br>1 slice bread<br>1 pat butter<br>Fresh strawberries<br>Tea or coffee<br>No sugar |
| Nourishments  |   |   |
| 10 a. m.—milk 6 oz  | 3 p. m.—baked custard   | 9 p. m.—fresh fruit crackers  |
| Bedtime—milk 6 oz, dry cereal or buttered toast   |   |   |
| Use snecharin as a substitute for sugar   |   |   |
| Protein 127 fat 101 carbohydrate 221 calories 9301  |   |   |

more prolonged secretion of dextrose over a long period, and the postdigestive hypoglycemia of these patients will be delayed if necessary to the next intake of food. However, more frequent feedings than the normal three meals a day were used as an additional factor of safety to prevent hypoglycemia from becoming manifest in these patients. This was further amplified by giving a feeding before retiring to prevent hypoglycemic manifestations (possibly associated with the "night" pains of peptic ulcer) between the last regular meal at night and the subsequent breakfast. The patient receives his three main meals, a midmorning feeding, one or two midafternoon feedings and a feeding before he retires at night.

Too much emphasis cannot be placed on the importance of a good wholesome breakfast. The menus outlined will give sufficient weight to this observation. Too many people rush to their occupations without being fortified with needed calories to do the day's work. This is especially true of women, who seem proud that they eat little, particularly at breakfast, only to have their efficiency proportionally reduced by limitations of diet. Absenteeism is noteworthy among those women workers who go regularly without breakfast. One of the most important functions of food is to give the brain an adequate amount of glucose at all times. Therefore it may be assumed that a possible vicious circle may exist. First starvation, then altered brain

physiology, then altered emotional stimuli, more altered carbohydrate metabolism due to these stimuli and finally the escape mechanism of fatigue

The rapidity of improvement in patients studied and put on this therapeutic regimen was striking. Furthermore, the small group of patients psychiatrically controlled had an improvement in their psychologic status and a definite reduction of the time during which

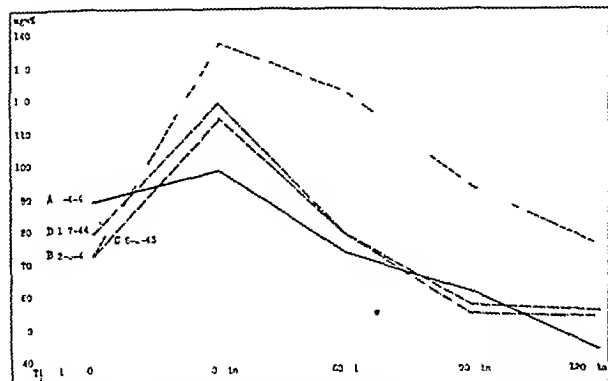


Chart 3—Intravenous glucose tolerance test. *A* of a patient suffering from fatigue. *B* one-half hour after the administration of 1/50 grain of atropine sulfate hypodermically. *C*, after psychotherapy and medical treatment. *D* with no medical treatment and no psychotherapy for seven months.

psychotherapy was needed. The psychiatrist is now fortified with a more normal metabolism in the patient, and his task is definitely easier.

Furthermore, at the outset it was evident that dietary management alone would not suffice, that drugs which paralyze the parasympathetic nervous system would be needed to insure that these emotional stimuli would not reach the pancreas. Clinical experimental studies have shown that atropine will raise the blood sugar and if continuously given should and probably does maintain a relatively high level of blood sugar at all times. Therefore to insure complete atropinization, these patients were given atropine three times a day at meals in doses varying from  $\frac{1}{75}$  to  $\frac{1}{200}$  grain (1 to 0.3 mg) and at bedtime from  $\frac{1}{150}$  to  $\frac{1}{200}$  grain (0.4 to 0.3 mg). If undue dryness or visual disturbance was noted, the dosage was reduced. Furthermore, extreme care was instituted in giving atropine to elderly patients

As the fatigue improves the dose of atropine is gradually reduced. Some patients for whom atropine has been discontinued have remained without fatigue (charts 3 and 4). The number of patients in this category are too few to justify any conclusions and the time is too short to warrant any definite statements. Additional therapeutic measures such as small doses of phenobarbital during the day and at bedtime and small doses of thiamine hydrochloride at each of the three meals, were uniformly given to these patients.

The charts presented indicate curves of a group of these patients who have had the intravenous glucose tolerance test, the improvement in 2 patients studied psychiatrically and the results of the intravenous tolerance curves when atropine is not given.

I have been particularly impressed by the good clinical results the ability of these patients to lead a more nearly normal existence, the improvement in the emotional state, the return of zest and enthusiasm, the increased efficiency and finally the possibility of helping out semi-invalidated patients.

However, a note of warning must be issued. The disappearance of the fatigue may stimulate overactivity and elderly patients must be told to engage in only those



Chart 5—Intravenous glucose tolerance test. *A* lowest flat curve of the series. *B* average of 55 patients. *C* average of 50 normal patients. *D* average of 15 patients given 1/50 grain of atropine hypodermically one-half hour before administration of glucose.

activities compatible with their age and the status of their cardiovascular system. This treatment should not be considered a "fountain of youth."

#### CONCLUSIONS

1. Physicians must survey more critically the emotional status of patients.
2. They should approach with tolerance and insight the problems of a patient whose symptoms indicate emotional factors.
3. Gastrointestinal symptoms are in a majority of instances due to disturbed physiology resulting from altered emotional stimuli.

104 South Michigan Avenue

#### ABSTRACT OF DISCUSSION

COLONEL LEONARD G. ROWNTREE, M.C., A.U.S. Now that we realize that peptic ulcer may fall into the realm of psychosomatic disease, we are taking a long step forward. The war itself has brought the clinching proof of the importance of emotionalism in many diseases, particularly peptic ulcer and other visceral diseases. The war has wrought havoc with nerves, more perhaps in the early days when men were torn with uncertainty as to what they should do or had to face, probably more before induction than after induction. Their nerves play havoc with their bodies and with their viscera and particularly with their minds. There are millions of young men on whose bodies, viscera and minds this emotionalism is having some effect, mild or severe. I believe that understanding in this

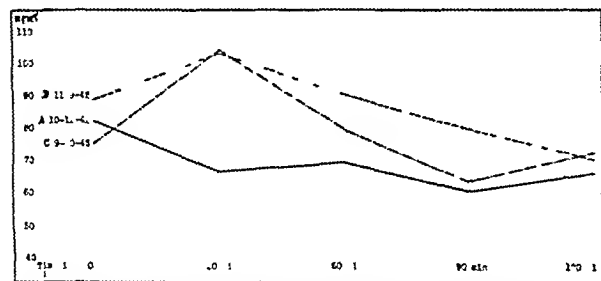


Chart 4—Intravenous glucose tolerance test. *A* of a patient suffering from fatigue. *B* one-half hour after the administration of 1/75 grain of atropine sulfate hypodermically. *C* after discontinuance of psychotherapy and medical treatment.

because of the precipitation of acute glaucoma or in those with evident eye disease, for whom atropine was distinctly contraindicated. In only 1 case in over 300 in which atropine was used for the fatigue or other psychosomatic disturbances was an allergy noted to the drug. Recent experience with syntropan indicates that it may have a similar therapeutic application but up to the present good results have not been as uniform as those seen with the use of atropine.



field is one of the crucial needs for the improvement of medical care. I particularly like Dr Portis's second conclusion, "that a physician should approach with tolerance and insight the problems of patients whose symptoms indicate emotionalism." Emotionalism is nothing of which to be ashamed. All who are worth while have emotionalism. Fear is nothing of which to be ashamed. If we could bring to the young men of this nation the concept and the fact that fear is normal, that it is a part of a protective mechanism and that so long as it is properly controlled it is beneficent and not anything of which to be ashamed, we would accomplish much. This would do a great deal to help the problem of psychoneurosis. Dr Portis's insistence on the role of fatigue is also correct. Fatigue is rampant throughout the nation. It is much more rampant among those who are emotional.

DR HOBART A. REIMANN, Philadelphia. I am in complete agreement with Dr Portis as to the great importance of considering the patient's emotional status or reaction in relation to the disease or complaints from which he suffers. Thus, in brief, encompasses the field to which the euphonious fashionable name psychosomatic medicine has been given: the management of certain gastrointestinal disturbances as outlined by Dr Portis with psychotherapy, diet and medication is indeed the treatment of choice for the conditions mentioned. But one must attempt to differentiate whether the emotional disturbance is the apparent direct cause of organic disease, as it may be in peptic ulcer or ulcerative colitis, or whether the organic disease is primary and merely complicates, aggravates or incites emotional disturbance. Dr Portis's treatment is, of course, useful in either circumstance. Besides, the recognition of underlying difficulties, if they are psychic, will serve to prevent many unnecessary surgical operations. It is not clear whether the fatigue disturbs the carbohydrate metabolism or is caused by hypoglycemia. It is so to confuse cause with effect. Atropine seems to be helpful, as stated, but I suspect that the type of patient discussed could be included under the term vagotonia in the sense used by Eppinger and Hess. If this is the case, hypoglycemia is usually only one of many other evidences of imbalance all of which perhaps require management. It reminds me of a case I often cite for discussion. A man of 54 was a painter with a multitude of complaints. He had persistently subnormal temperature, a bradycardia of 50, a blood pressure of 90/60, and a basal metabolic rate of minus 20. He was treated by various physicians in turn for lead poisoning because he was a painter, for bradycardia, for hypotension and for hypothyroidism, when in fact each of the measurable abnormalities was part and parcel of his general makeup. Furthermore, the type of patient under discussion may be relieved of various complaints referable to one system only to have them shift to another, so that these patients should not be referred particularly to gastroenterologists, cardiologists and other specialists according to their predominant symptoms. There is evidence that shift of this type has occurred *en masse*. According to reports, peptic ulcer is of great importance in the Army at present, so much so that in this war as compared with the last "soldier's stomach" seems to have replaced "soldier's heart" in frequency or in fashion.

DR SIDNEY A. PORTIS, Chicago. I would like to reemphasize that when we exclude carcinoma, neoplastic disease, parasitic and bacterial infections, metabolic disease and intoxications we must have a logical explanation for the symptoms of which the patient complains. The medical schools are noticeably lax in their discussion of pathologic physiology as it relates to man, and for the most part physiology is taught from observations on dogs. It is this approach to the problem which I have tried to emphasize. I am not willing to admit that all peptic ulcer is of psychosomatic origin, but I think the greater percentage of these ulcers are associated with a problem due to emotional disturbances. No one needs a better example than the occurrence of a large number of peptic ulcers in our 18, 19 and 20 year old soldiers. This group offers excellent opportunities for

studying the incidence of ulcers associated with emotional disturbances. Certainly no one could say that these soldiers have been exposed to the ravages of life, and one can only conclude that peptic ulcer is an organ language for emotional disturbance. We as physicians must be fully prepared to solve these postwar medical problems. The army has to be prepared with enough insight to handle this situation, or the veterans' bill following World War II will be stupendous. Dr Reimann raised the question whether or not slight deviations from normal in blood sugar could cause the symptoms which were outlined. It seems to me that we shall have to change our ideas on the clinical significance of blood sugar levels. Formerly we would talk only about hypoglycemia in terms of 30 or 40 mg per hundred cubic centimeters. This work has shown that deviations of 5 or 10 or 15 mg per hundred cubic centimeters make the difference between fatigue and normal energy. The rapidity of response of the patients to the management outlined was so striking that I think this conclusion justified. Finally we, as physicians, must be exceedingly tolerant, gain insight into the problems of the patient and help him over that hump over which he has no conscious control, namely his disturbed emotional system.

## COMBINED PENICILLIN AND SULFONAMIDE THERAPY

IN THE TREATMENT OF PNEUMOCOCCIC  
MENINGITIS

ANTONIO J. WARING, JR., MD  
AND

MARGARET H. D. SMITH, MD  
BALTIMORE

Before the advent of chemotherapy, pneumococcal meningitis was an almost invariably fatal disease. Recoveries were rare. The mortality was greater than 99 per cent. In 1927 a review of the literature revealed only 150 recoveries.<sup>1</sup> With the appearance of the sulfonamides the mortality rate for the first time seemed less forbidding, varying, according to different authors, from 31 per cent to 80 per cent.<sup>2</sup>

Since 1937 the use of type specific antipneumococcal rabbit serum in conjunction with sulfonamide therapy (sulfapyridine, sulfathiazole, sulfadiazine, sulfapyrazine and sulfamerazine) has come into fashion. There again reports of the comparative advantages of combined serum and sulfonamide therapy as opposed to sulfonamides alone are somewhat equivocal. Certainly the advantages of combined therapy are not particularly striking, and in many cases the overzealous use of serum may be actually deleterious. The use of intrathecal serum, for example, is probably ill advised, as is the pushing of intravenous serum to high levels after an adequate reaction is obtained with the patient's own serum. In most instances it is noted that the mortality seems somewhat lower in the group of patients given combined therapy, and therefore the use of serum with sulfonamide therapy is probably justified if not carried to excess.

From the Department of Pediatrics, Johns Hopkins University, the Harriet Lane Home, Johns Hopkins Hospital and Sydenham Hospital, Baltimore City Health Department.

<sup>1</sup> Goldstein H. Z. and Goldstein H. J. Review of Literature on Pneumococcus Meningitis. *Internat. Clin.* 3: 155 (Sept.) 1927.

<sup>2</sup> Steele C. W. and Gottlieb J. Treatment of Pneumococcal Meningitis with Sulfanilamide and Sulfapyridine. A Statistical Study of All Reported Cases in Which Chemotherapy Was Used With or Without Specific Antipneumococcus Serum. *Arch. Int. Med.* 68: 211 (Aug.) 1941. Hodess C. M. and Burnett J. Hodess Smith and Ickes.

Since this paper represents the most recent experience at the Harriet Lane Home and Sydenham Hospital, Baltimore, it is felt worth while to recapitulate the past results in these clinics in the treatment of pneumococcic meningitis, most of which have been published. Between 1930 and 1936, 29 cases were seen at Sydenham. No therapy other than supportive was used. The mortality was 100 per cent. The comparable series in the Harriet Lane Home (August 1912 to January 1937) consisted of 150 cases. These received the usual treatment of stimulants, transfusions and spinal drainage. There was not a single recovery in this entire series.

From December 1936 to October 1938, 17 patients at Sydenham Hospital were treated with sulfanilamide with 1 recovery. The experience at the Harriet Lane Home was similar. 8 patients were treated with 1 recovery, and that patient developed a severe myelitis with permanent damage. In October 1938 sulfapyridine and its sodium salt became available. In 1939 Hodes, Gimbel and Burnett<sup>3</sup> reported a series of 17 cases treated with sulfapyridine with recovery of 8 patients. Since then 43 additional cases (Sydenham Hospital and the Harriet Lane Home) have been reported by one of us.<sup>4</sup> Therapy consisted both of sulfonamide alone (sulfapyridine, sulfadiazine and sulfathiazole) and of serum and sulfonamide combined. Sulfonamide levels of 80 to 120 mg per hundred cubic centimeters were obtained, and serum was given intra-

of these 21 patients, only 7 recovered. On the other hand several instances of recovery have been reported following combined sulfonamide and penicillin therapy.<sup>5</sup>

At the time the present series started we hoped to obtain a clear evaluation of the role of penicillin in the treatment of pneumococcic meningitis. During November 1943 we had in the wards in the Harriet Lane Home a 5 months old Negro infant who died after a forty-four day illness. The patient had received penicillin in high doses intrathecally and intramuscularly for two weeks. Spinal fluid cultures became negative early in the course, but, because of persistent fever and leukocytosis, penicillin was continued. It was later found that the child, having recovered from the pneumococcic infection had developed an *Aerobacter aerogenes* meningitis secondary to a cellulitis of the back and the child died despite sulfadiazine therapy. Autopsy revealed a chronic basilar meningitis and obstruction of the foramina of Luschka and Magendie with pronounced hydrocephalus. In retrospect we should probably have discontinued intrathecal penicillin on the seventh or eighth day. The infection was obviously carried intrathecally by a lumbar puncture through the area of cellulitis.

With this result still fresh in mind, we were confronted with 3 cases of pneumococcic meningitis simultaneously in early January. Patient 1 had been in the ward since mid-November and patient 2 since the end of December. Patient 3 was a new arrival and had been under treatment for five days. Our policy at that time was to treat the disease first with a course of penicillin intrathecally and intramuscularly in essentially the doses about to be outlined. After a seven to ten day trial, if the result seemed discouraging, we proposed to change from penicillin to combined use of sulfonamide and serum. Patient 1 was a 4 months old infant who had been treated for six days with penicillin without results. Penicillin was discontinued and the child was started on sulfapyrazine and serum combined. This form of therapy was used for almost four weeks. During the greater part of the time the child seemed neither better nor worse but spinal fluid cultures remained persistently positive. Suddenly, in the middle of her fifth hospital week, the patient's condition began to deteriorate rapidly, the temperature rose, the child became stuporous and developed convulsions. At this point the blood sulfapyrazine level was 140 mg per hundred cubic centimeters and the patient's serum showed a positive quellung reaction with its own pneumococcus in a dilution of 1:8. It was decided to try a last course of penicillin before abandoning therapy. The child showed an immediate response, the temperature fell, the clinical appearance improved rapidly and the spinal fluid cultures, which had been persistently positive for five weeks, became negative in twenty-four hours and remained so throughout the course. The convalescence was uneventful with no residual damage except for a spastic monoplegia of one arm.

The likeliest explanation seemed to be that for a period of forty-eight hours at least the child was getting intensive combined therapy with a high sulfonamide level, good quellung reaction and adequate penicillin therapy. At this time patient 2, a 15 months

TABLE 1—*Recoveries by Ages*

|               | Number of Cases | Recovered | Percentage Recovered |
|---------------|-----------------|-----------|----------------------|
| Under 2 years | 32              | 7         | 22                   |
| Over 2 years  | 28              | 18        | 64                   |
| Total         | 60              | 25        | 42                   |

venously until the patient's serum produced a definite capsular swelling with the patient's own pneumococcus in a dilution of 1:5. The results of experience with pneumococcic meningitis in these clinics are summarized in table 1.

Thus there is striking difference in recovery rate according to the age of the patient. Only 22 per cent of those under 2 years of age recovered, in contrast to 64 per cent of those over 2.

Between January 1943 and November 1943, when the present series of 12 consecutive cases started, no single therapeutic regimen was followed. Some patients were treated with sulfonamide and serum, others, since February 1943, have been treated with penicillin alone. It is difficult to evaluate the results in this group. In the Harriet Lane Home 10 cases were treated in this interval with only 3 survivals. The survivals were all of children treated with sulfonamide and serum. The experience at Sydenham Hospital was similar. Penicillin alone seemed capable of curing the disease only in a small percentage of cases. In other cases it was our impression that it served to check the course of the disease for a space of time but was unable to arrest it completely despite vigorous intrathecal and intramuscular therapy. Recently 21 cases of pneumococcic meningitis treated with penicillin alone were reported to the National Research Council,

<sup>3</sup> Hodes H L, Gimbel H S and Burnett G W. Treatment of Pneumococcic Meningitis with Sulfapyridine and the Sodium Salt of Sulfapyridine. *J A M A* 113: 1614 (Oct 28) 1939.  
<sup>4</sup> Hodes H L, Smith M H D and Ickes H J. Sixty Cases of Pneumococcic Meningitis Treated with Sulfonamides. *J A M A* 121: 1374 (April 24) 1943.

<sup>5</sup> Dawson M H and Hobby G J. The Clinical Use of Penicillin. *J A M A* 124: 611 (March 4) 1944. Barker L F. Gradenigo Syndrome Complicated by Pneumococcic Meningitis. Recovery After Intensive Treatment with Penicillin and Sulfadiazine. *Am J M Sc* 206: 701 (Dec) 1943. Tillett W S. Paper read before the Society of American Bacteriologists, New York City in May 1944.

old white boy, had been on intensive penicillin therapy for almost fourteen days and his condition had suddenly grown worse, the temperature had risen, spinal fluid cultures were positive and the child was becoming increasingly drowsy. At the same time patient 3 had been on penicillin for a period of five days, the tem-

time. Subsequently 10 Gm every four hours is given. Blood levels are determined daily, and the dosage is manipulated in such a manner as to assure the maintenance of a blood concentration between 6.0 and 12.0 mg per hundred cubic centimeters. Actually, levels over 40 mg per hundred cubic centimeters are probably effective, and it has been our own experience that no advantage is achieved by obtaining levels higher than 120 mg per hundred cubic centimeters. The only drug reactions encountered were both in adults and consisted of drug fever.

**Penicillin Therapy**—Intramuscular and intrathecal penicillin is started as soon as the diagnosis is established. There is no regular dosage system for this agent, but the following general rules are observed. In infants and small children receive daily 5,000 to 10,000 Oxford units intrathecally. During the first two to three days of treatment this is given twice daily in doses of 2,500 to 5,000 Oxford units. Thereafter a single intrathecal injection of 2,500 to 5,000 units is given daily. Infants and small children also receive 1,500 to 2,500 units intramuscularly every three hours day and night a total of 12,000 to 20,000 units daily. Older children and adults receive 10,000 to 20,000

units intrathecally daily and 5,000 to 10,000 units intramuscularly every three hours day and night.

The penicillin is prepared for intrathecal injections by taking up the required dose in 5 cc of sterile isotonic solution of sodium chloride. A lumbar puncture needle is inserted into the spinal canal and approximately 5 cc of spinal fluid allowed to drip out into the sterile container. The penicillin is then slowly injected by

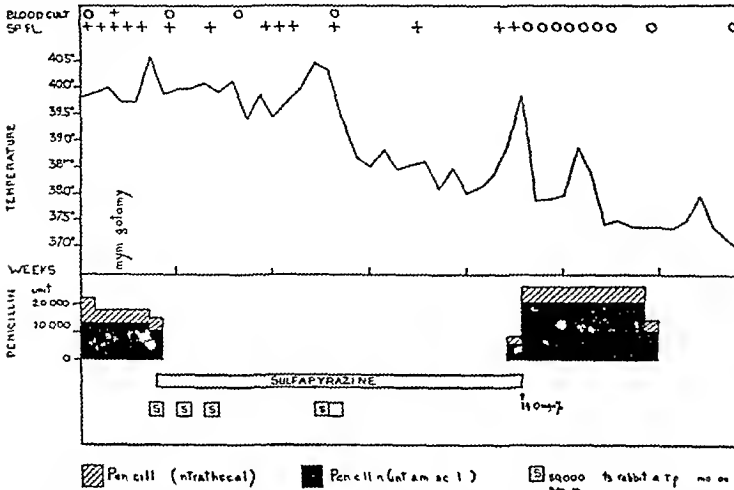


Chart 1—Results of treatment of a 4 months old white girl with meningitis (pneumococcus type VI) showing prompt response to combined penicillin and sulfonamide therapy after failure of penicillin alone and combined sulfonamide and type specific serum.

perature was remaining high, cultures were positive and the child was still drowsy. It was felt that penicillin alone was failing to cure those cases. Accordingly, sulfonamide and penicillin were used simultaneously. Spinal fluid cultures of patient 3 became negative, and, except for a period of unexplained fever, recovery was uneventful. Combined therapy of patient 2 was halted prematurely and a cellulitis of the back developed. The meningitis recurred but the patient recovered when combined therapy was reinstituted.

Charts 3, 4 and 5 demonstrate the effectiveness of combined penicillin and sulfonamide therapy when instituted early in the course of the disease.

#### TREATMENT

We now proceed as follows as soon as the diagnosis of pneumococcal meningitis is established.

We do not feel that any one sulfonamide presents particular advantages over the others. Sulfadiazine and sulfapyridine are usually used for our patients. The initial dose in most instances is given intravenously in the form of the sodium salt, which for children is 0.05 Gm of the sodium salt per kilogram of body weight, freshly made up in a 5 per cent solution with distilled water. At the same time the patient receives 0.1 Gm per kilogram of body weight by mouth or, if unconscious, by stomach tube. From then on approximately 0.2 Gm per kilogram of body weight is given in six divided doses during each twenty-four hour period. Adults receive initially 3.0 Gm intravenously and 2.0 to 4.0 Gm by mouth at the same

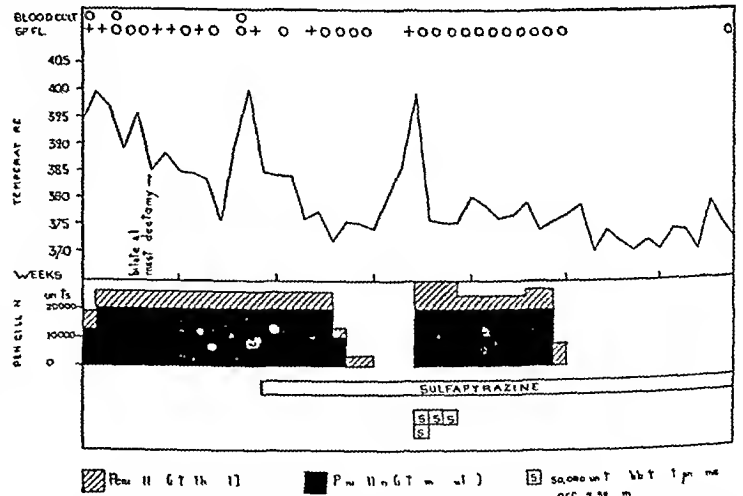


Chart 2—Results of treatment of a 15 months old white boy with meningitis (pneumococcus type VI) which failed to respond to adequate penicillin therapy but apparently responded to combined penicillin and sulfonamide therapy. Spinal fluid cultures again became positive when penicillin was discontinued prematurely but when combined therapy was reinstituted there was a prompt response with recovery.

6 The penicillin was provided by the Office of Scientific Research and Development from supplies assigned by the Committee on Medical Research for clinical investigations recommended by the Committee on Chemotherapeutics and Other Agents of the National Research Council.

syringe into the spinal canal. Particular care is taken to avoid going into the same interspace twice in succession, the three upper lumbar spaces are used in rotation. Whenever possible, treatments are performed by the same individual, rigorous sterile technic is always employed, the operator preferably wearing rubber gloves.

Ill effects were few. One patient, who had had numerous lumbar punctures before combined therapy was instituted developed a cellulitis of the back. The adult patients complained in several instances of headache and nausea following intrathecal injections. This type of reaction had previously been noted by Rammelkamp and Keeter.<sup>7</sup> Our patients did not show definite pleocytosis. One complication should be mentioned, however, which may have been secondary to intrathecal penicillin. A 2 months old infant (patient 10) received 20,000 units of penicillin intrathecally in a single injection. The child had been sick only twenty-four hours at the time treatment was begun. She had a negative spinal fluid culture after twenty-four hours of treatment and otherwise underwent an uneventful recovery. Unfortunately she developed optic atrophy and was discharged totally blind. This occurrence may bear no relationship to the intrathecal dose of penicillin, but it should give us pause before injecting unnecessarily large amounts of penicillin into the spinal canal.

The general rule which has evolved for the maintenance of combined therapy is that treatment be continued for at least six days following the last positive

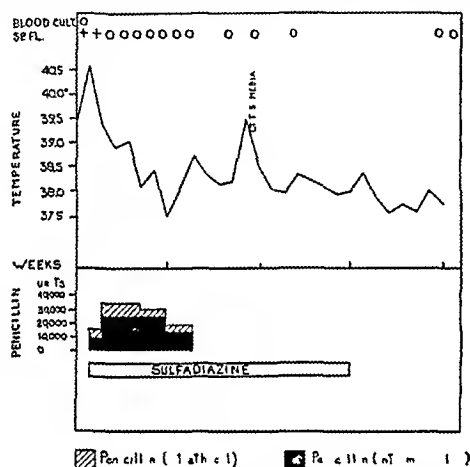


Chart 3—Results of treatment of a 16 months old white girl with meningitis (pneumococcus type XII) whose treatment was instituted early in the course of the disease showing prompt response to combined penicillin and sulfonamide therapy

spinal fluid culture. After this period has elapsed penicillin is withdrawn, but the sulfonamide is continued for an additional seven to fourteen days. After the sulfonamide has been discontinued the patient is kept in the hospital for at least a week with no specific treatment at all.

**Serum**—Type specific antipneumococcal rabbit serum was employed in 4 of our 12 cases. The methods used were essentially those outlined by Hodes, Smith and Ickes.<sup>4</sup> It was used in cases early in our series when we were unsure of our scheme of treatment and any minor reversal seemed an indication for its use. In the light of subsequent experience we feel that in all probability, it contributed little to the ultimate recovery of our patients. Intravenous serum should be kept in mind, however, as an additional procedure in cases of relapse despite adequate combined therapy.

**Operative Procedures**—Unless there is obvious need for surgical drainage of a sinus or a mastoid, it is felt that these procedures should be avoided. Myringotomy is performed freely as indicated. In any event it is our present policy to defer any surgical procedure until

the acute phase of the illness has passed. Since we have been using combined therapy the question of mastoidectomy has not arisen.

**Other Forms of Treatment**—General supportive measures are used as indicated. Fluids are forced by mouth and gavage. If vomiting is a prominent feature the fluid complement is maintained through intravenous or subcutaneous routes. In the face of high fever or collapse, continuous intravenous infusion is employed and blood plasma, 10 per cent glucose, 5 per cent glucose and isotonic solutions of sodium chloride are given as indicated. For infants we use 0.45 per cent in preference to isotonic solution of sodium chloride. If possible, the needle (ranging anywhere from a size 25 to

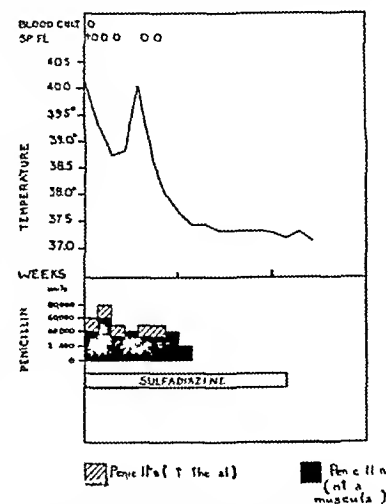


Chart 4—Results of early treatment of a 7 year old white girl with meningitis (pneumococcus type III) showing prompt response to combined penicillin and sulfonamide therapy

19) is taped into a scalp, wrist, arm or ankle vein. In the case of infants, if no such vein is available, a cannula is tied into the saphenous vein at the ankle. We have found that a cut off lumbar puncture needle (size 19 or 20) serves very well. When fluids are discontinued at any time, the stylet which is kept sterile at the bedside, may be inserted. The needle and vein remain patent for periods of six to eight hours, and fluids may be resumed at will. The only necessary procedure before the resumption of fluids is

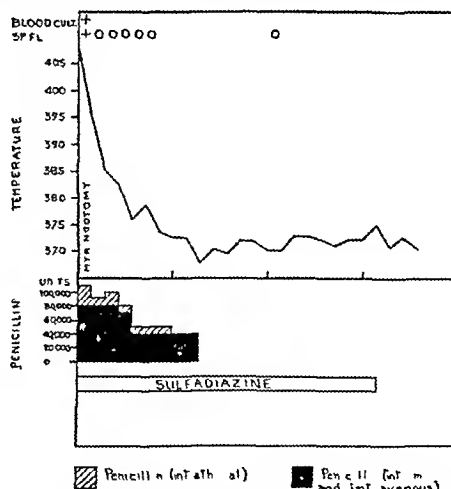


Chart 5—Results of early treatment of a 40 year old white man with meningitis (pneumococcus type III) showing prompt response to combined sulfonamide and penicillin therapy

that 10 to 15 cc of isotonic solution of sodium chloride be forced through the cannula with a syringe. The use of the cannula and stylet has many advantages with small infants and those having precarious circulations.

Sedation is often necessary. We use paraldehyde, either by gavage or by intramuscular injection, and avoid the use of the barbiturates, codeine and morphine.

7. Rammelkamp, C. H. and Keeter, C. S. Absorption, Excretion and Toxicity of Penicillin Administered by Intrathecal Injection, *Am. J. M. Sc.* 205: 342 (March) 1943.

## RESULTS

In 12 consecutive cases of pneumococcic meningitis combined use of sulfonamide and penicillin was employed. Eight of the patients were infants ranging from 2 to 16 months of age. One was a child of 7 years. The remaining 3 were adults. The majority of the cases were seen early in the disease, 9 within the first forty-eight hours, 3 within the first seventy-two hours.

Foci of infection other than the meninges were common, and in all cases the same pneumococcus found in the spinal fluid was present elsewhere in the body. In 6 instances the meningeal signs were either accom-

panied by the pneumococcus was isolated from the nasopharynx.

In all cases the pneumococcus was cultured from the spinal fluid. In 7 cases the same organism was found in the blood stream.

The spinal fluid was cultured at the time of each intrathecal treatment, and spinal fluid sugar and protein determinations were made at regular intervals. These values were of some aid in following the course of the disease, but the correlation between the clinical and bacteriologic progress and the protein and sugar levels was variable.

TABLE 2—Results in 12 Cases of Pneumococcic Meningitis Treated with Combined Penicillin and Sulfonamide

| Case No. | Name, Age, Color, Sex     | Condition on Admission                           | Spinal Fluid Findings                 | Previous Therapy   | Combined Therapy   | Spinal Fluid Sterile (Days After Combined Therapy Began) | Duration of Combined Therapy                | Outcome                                      |
|----------|---------------------------|--|---------------------------------------|--|--|--|---|--|
| 1        | J. A. H.<br>4 mo<br>W. ♀  | Stuporous convulsions, T 39.8 C                  | Pneumococcus VI<br>800 polys          | Sulfadiazole 3 days, penicillin 6 days, sulfadiazine and serum 27 days                     | Sulfadiazine, penicillin 5,000 units intrathecally q d and 1,000 units intramuscularly q 2 h   | 2  | 2 days                                      | Recovered (spastic paralysis right arm)      |
| 2        | J. McM.<br>16 mo<br>W. ♂  | Opisthotonos, pneumonia otitis T 38.4 C B P 30/0 | Pneumococcus XVI<br>2,150 polys       | Penicillin 6,000 units intrathecally q d and 2,000 units intramuscularly q 3 h for 14 days | Sulfapyrazine, penicillin 6,000 to 10,000 units intrathecally q d and type specific rabbit serum 100,000 units   | 12   | 1st course 8 days in days 2d course 11 days | Recovered (partial paralysis total deafness) |
| 3        | B. L.<br>8 mo<br>W. ♂     | Stuporous convulsions, otitis T 40.0 C           | Pneumococcus XIX<br>8,900 polys       | Penicillin 6,000 units intrathecally q d and 3,000 intramuscularly q 3 h for 5 days        | Sulfapyrazine, penicillin 6,000 units intrathecally q d and 2,000 units intramuscularly q 3 h type specific rabbit serum 90,000 units  | 3  | 8 days                                      | Recovered                                    |
| 4        | R. M. S.<br>16 mo<br>W. ♀ | Irritable drowsy T 39.0 C                        | Pneumococcus XII<br>415 polys         | 0  | Sulfadiazine, penicillin 10,000 units intrathecally q d and 2,000 intramuscularly q 3 h  | 2  | 8 days                                      | Recovered                                    |
| 5        | S. W.<br>52 yr<br>C. ♂    | Combative disoriented T 39.8 C                   | Pneumococcus XXXVI<br>3,750 polys     | 0  | Sulfadiazine, penicillin 10,000 units intrathecally b d and 10,000 units intramuscularly q 3 h   | 2  | 4 days                                      | Recovered                                    |
| 6        | N. S.<br>7 yr<br>W. ♀     | Moderately ill otitis media T 40.0 C             | Pneumococcus III<br>6,000 polys       | Sulfonamide 2 days   | Sulfadiazine, penicillin 10,000 units intrathecally b d and 10,000 units intramuscularly q 3 h   | 1  | 8 days                                      | Recovered                                    |
| 7        | L. M.<br>9 mo<br>C. ♂     | Pertussis pneumonia convulsions otitis T 41.0 C  | Pneumococcus XIV<br>2,000 lymphocytes | Sulfadiazine 2 days  | Sulfadiazine later sulfapyrazine, penicillin 5,000 to 10,000 units intrathecally b d and 2,500 to 5,000 units intramuscularly q 3 h type specific rabbit serum 500,000 units | 12   | 18 days                                     | Recovered                                    |
| 8        | H. G.<br>40 yr<br>W. ♂    | Seriously ill drowsy otitis T 41.0 C             | Pneumococcus I<br>650 polys           | Sulfonamide 2 weeks (irregularly)  | Sulfadiazine, penicillin 5,000 to 10,000 units intrathecally b d and 5,000 to 10,000 units intramuscularly q 3 h   | 2  | 9 days                                      | Recovered                                    |
| 9        | R. G.<br>2 mo<br>W. ♂     | Vorlund petechiae shock T 38.4 C                 | Pneumococcus XII<br>400 polys         | 0  | Penicillin   |  |   | Died in less than 24 hours                   |
| 10       | M. D.<br>3 mo<br>W. ♀     | Moderately ill purulent conjunctivitis T 40.0 C  | Pneumococcus XXIX<br>6,000 polys      | 0  | Sulfadiazine later sulfamerazine, penicillin 5,000 to 20,000 units intrathecally q d and 2,500 units intramuscularly q 3 h   | 2  | 16 days                                     | Recovered* (blindness)                       |
| 11       | M. A.<br>52 yr<br>C. ♀    | Moderately ill pneumonia T 39.4 C                | Pneumococcus XII                      | Sulfonamide 3 days   | Sulfadiazine, penicillin 10,000 units intrathecally q d and 5,000 units intramuscularly q 3 h  | 5  | 11 days                                     | Recovered                                    |
| 12       | N. L.<br>6 mo<br>C. ♂     | Moderately ill dehydrated otitis T 38.5 C        | Pneumococcus XXXIII<br>4,500 polys    | 0  | Sulfadiazine, penicillin 2,500 to 5,000 units intrathecally and 2,500 units intramuscularly q 3 h  | 2  | 9 days                                      | Recovered                                    |

\* This patient was treated at the Union Memorial Hospital and permission to report the case was given us by Dr. D. C. Wharton Smith and his staff.

panied or preceded by purulent otitis media and the offending pneumococcus was isolated from the ear and nasopharynx. Three cases were complicated by pneumonia at the time of admission. In one patient a 9 months old Negro boy the pneumonia itself was a complication of pertussis. In another patient, a 3 months old white girl, the original source of the organism appeared to have been a conjunctivitis. A history of preceding trauma was obtained in only 1 instance, a 52 year old Negro man who had been struck on the head two days prior to admission and had bled from the ear. No fracture of the skull was demonstrable. In 1 case the only infection noted was a pharyngitis,

Previous treatment of one sort or another had been employed in 7 cases. Four patients received sulfonamide for forty-eight to seventy-two hours before combined therapy began. Three patients had received intrathecal and intravenous penicillin in adequate dosage for periods of five, six and fourteen days respectively. One patient had had penicillin for six days and sulfadiazine and serum for twenty-seven days. In all cases, despite previous treatment, the spinal fluid cultures were positive at the beginning of combined therapy.

The average duration of combined treatment was 102 days, the shortest being an estimated forty-eight hours, the longest eighteen days. The latter was in



the case of a relapse, however. Spinal fluid cultures became permanently negative in an average of 41 days, but the general average is increased by the 2 cases in which relapse occurred and in each of which the spinal fluid became negative on the twelfth day. In 7 cases the spinal fluid culture had become negative by the time the second therapeutic lumbar puncture was performed. Combined therapy was maintained in most instances from five to seven days after the spinal fluid had become negative.

Sulfonamide was usually continued after the penicillin was stopped, but in the 2 patients who developed drug fever the penicillin was continued when the sulfonamide therapy had to be terminated.

Recurrences were observed in 2 cases. In 1 of these (patient 2) therapy was stopped early because of cellulitis of the back. In the other (patient 7) the penicillin dosage was reduced on the third day of treatment. Both patients had a protracted course.

The only death in this series occurred within ten hours of the patient's admission. Patient 9 was a 2 months old white boy who was admitted in collapse, covered with petechiae and breathing in short, spasmodic gasps, the blood pressure was unobtainable. Shortly after admission the child developed acute dilatation of the stomach and began to vomit changed blood. He was treated with gastric lavage, intravenous saline solution, 50 per cent glucose, blood and adrenal cortex extract and also received initial doses of penicillin and sulfadiazine. The blood pressure rose for a while, but the child again went into circulatory collapse and died ten hours after admission.

Thus there were 11 recoveries and 1 death within ten hours of admission. The death occurred too quickly to be a fair test of any form of therapy. Residua, consisting of a spastic monoplegia and bilateral nerve deafness, occurred in 2 cases. In both of these the meningitis had been active for thirty-six days and seventeen days respectively before combined therapy was started. Patient 10 developed optic atrophy. As

of pneumococcal meningitis in the pediatric age group (0-14 years) based on the Harriet Lane Home records over a period of thirty-two years (August 1912 to July 1944). The figures are tabulated in chart 6. We feel, on the basis of this chart that the 12 cases in our present series represent a fair sampling.

A total of 206 cases are presented. Of these 137 (66.4 per cent) occurred during the first year of life. Thirty (14.5 per cent) occurred during the second year of life. The remainder were scattered fairly uniformly over the following twelve years. Thus 80.9 per cent of all the cases admitted to Harriet Lane Home fell in the age group in which the mortality has been demonstrated to be 78 per cent with the best of serum and sulfonamide therapy.

When the 167 cases occurring during the first two years of life are broken down into three month intervals an interesting curve is obtained (chart 7). The incidence is high during the first three months, rises to a peak at about the sixth month of life and then begins to fall off abruptly.

Six cases occurred in very young infants. The youngest was in an infant 5 days old. One occurred at 2 weeks, another at 3 weeks. Three cases occurred at 1 month of age. There were no recoveries in this group.

#### COMMENT

In the light of the age incidence of pneumococcal meningitis and the difference in mortality according to age group, it will be noted that the present series has a representative age distribution. Eight of our 12 cases fall under 2 years of age. With serum and sulfonamide therapy we could have expected to lose 6 or 7 of these 8 infants. Under penicillin and sulfonamide therapy we lost 1. All 4 older patients recovered. Under the old form of therapy we would have expected to lose 1.

The pneumococcus types isolated from these 12 cases were in most instances different. Type XII was recovered three times. Other than this there was no reduplication of type.

Case 4 was of interest in that the meningitis occurred in a child that had been followed in the Harriet Lane Dispensary as a proved case of toxoplasma encephalitis. There was no other patient with a previous history of central nervous system disease.

The question of mastoidectomy often comes up in the younger age group. Two thirds of our patients are infants, and most have otitis media. We feel that during the first two years of life the mastoid cells are more or less involved in all cases of otitis media. While the mastoids and middle ear may well be the source of the bacteremia or septicemia responsible for the meningeal infection, direct extension from the mastoid is probably rare and usually cannot be demonstrated at post-mortem examination. Mastoidectomies were performed in 2 of our cases but that was before the present

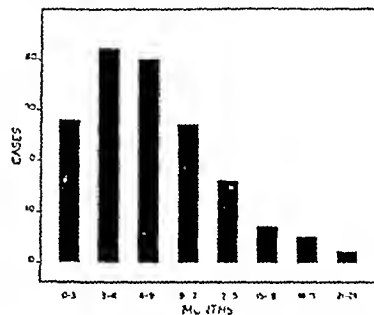


Chart 7—Age incidence of pneumococcal meningitis during the first twenty-four months of life. 167 cases (Harriet Lane Home August 1912 to July 1944). 0-3 months 28 cases, 3-6 months 42 cases, 6-9 months 36 cases, 9-12 months 6 cases, 12-15 months 9 cases, 15-18 months 16 cases, 18-21 months 15 cases, 21-24 months 2 cases.

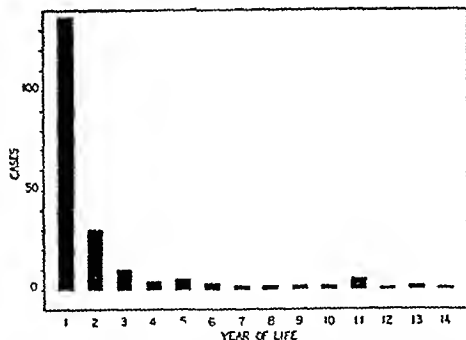


Chart 6—Age incidence of pneumococcal meningitis during the first fourteen years of life. 206 cases (Harriet Lane Home August 1912 to July 1944). First year of life 137 cases, second year 30, third year 10, fourth year 5, fifth year 3, sixth year 2, seventh year 2, eighth year 2, ninth year 2, tenth year 2, eleventh year 2, twelfth year 2, thirteenth year 2, and fourteenth year 1.

mentioned earlier, this may possibly be due to excessive intrathecal dosage of penicillin. In all cases the general performance level seemed unimpaired.

#### AGE INCIDENCE

As has been pointed out earlier in this paper the mortality in pneumococcal meningitis is particularly high in infants. In order to determine whether the present 12 cases form a representative group with regard to age a study was made of the age incidence

system of combined therapy was begun. We feel that the procedure is rarely justified.

Twelve cases form too short a series for statistical analysis, but our experience suggests that combined use of sulfonamide and penicillin gives results which are not obtained by the use of either agent alone or by the use of combined sulfonamide and serum.

#### SUMMARY

1 Twelve patients with pneumococcic meningitis were treated with combined sulfonamide and penicillin therapy.<sup>8</sup>

2 Of these 12 patients, 11 recovered and 1 died. Death occurred within ten hours of admission. Three had previously failed to respond to penicillin therapy alone.

3 These results are better than our experience with sulfonamide alone, with sulfonamide and serum combined or with penicillin alone.

4 Two hundred and seven cases of pneumococcic meningitis admitted to Harriet Lane Home (August 1912 to July 1944) were analyzed on the basis of age incidence and the data presented in chart form, demonstrating (a) the high incidence of this infection during the first year of life and (b) the fact that our 12 recent cases represent a fair sampling with regard to age.

5 If combined sulfonamide and penicillin therapy is used, particular pains must be taken to pursue both forms of treatment vigorously as well as simultaneously.<sup>9</sup>

## EFFECTS OF TETRYL

MAJOR E. W. PROBST

MEDICAL CORPS, ARMY OF THE UNITED STATES

LIEUTENANT M. H. MUND

MEDICAL CORPS, ARMY OF THE UNITED STATES

AND

L. D. LEWIS, BS, MT (ASCP)

DOVER, N. J.

Since the literature concerning the chemistry and toxic effects of tetryl has been reviewed by other writers, we have intentionally avoided repetition and confined our remarks to the clinical experiences and observations of the medical department of an arsenal with the hope that we shall be of practical assistance to physicians who have patients working in the munitions industry.

Our study of the effects of tetryl was made on a working population of about 800 to 900 employees in the tetryl areas. Although most of the workers were engaged in loading operations, some were doing research work and manufacturing tetryl. To make our study complete we included a very small group that worked in the areas but had no direct contact with tetryl, such as guards, janitors and clerks.

These employees were observed in the work rooms, in the dispensary and during periodic examinations, which in most cases were done monthly and consisted of a complete history, blood count, urinalysis, blood pressure determination according to the Foulger system,<sup>1</sup>

physical examination and other tests as indicated. Employees who exhibited dermatitis or complained of eye, nose and throat symptoms or other symptoms were given special attention.

Skin irritation was found to be a common complaint of tetryl workers. Although the incidence of dermatitis was gradually decreasing as the result of control measures, an average of 4 per cent of the tetryl workers were found to have dermatitis. Of all dermatitis cases seen at this arsenal, 62 per cent were caused by tetryl.

Most of the dermatitis cases occurred in the loading areas, probably because these areas employed the least people and most of the loading operations invited spillage and skin contact. Pellet production and tetryl manufacturing were to some extent closed operations and under better control and therefore offered little opportunity for dermatitis except in a very small group of employees who were allergic to tetryl. Only 2 cases of skin irritation were observed among the laboratory and research workers. One case was a problem of allergy, and the other case was that of a chemist who mopped perspiration from his face with a handkerchief he had carried in his work clothes while working in a dusty area. Severe reactions were noticed in several guards who patrolled areas near tetryl buildings. A clerk who handled time cards and shipping tickets from tetryl buildings was treated for tetryl dermatitis of the face but recovered completely only after she was given a job of handling reports from a tetryl free area.

In reviewing 404 cases of tetryl dermatitis we found that, in general, age, sex and color had no influence. It was noticed that most cases occurred in new workers one to two weeks after their introduction to tetryl. Some individuals developed skin irritation in a few moments while others required several weeks or even months of exposure before a rash appeared.

The face was found to be most frequently affected, particularly in the circumocular region and in the areas of the face containing natural creases and folds such as the nasolabial folds and the corners of the mouth. The neck was involved in many cases, particularly at the collar line and in the natural creases. Although the extremities were less frequently involved, these cases occurred at points of friction such as the wrists or ankles and extensor surfaces of the forearms. No cases involving the thorax or genital area were observed.

If seen early, the worker usually complained of slight burning or itching of the skin. Examination in these cases revealed nothing. If the person continued to expose himself to tetryl an erythema developed in a few hours. In some cases the erythema was accompanied by an edema of the lower eyelids (fig 1). In severe cases the edema involved the upper and lower eyelids and in some cases was so extensive as to distort the facial features beyond recognition. This phenomenon was particularly observed in workers who were so sensitive to tetryl that merely entering a tetryl area precipitated an attack in a short time.

The typical contact dermatitis as a rule progressed to a papulovesicular stage and then became brawny followed by scaling and some discoloration of the skin (fig 2). This was particularly noticed in cases in which the neck had been affected by tetryl which was present in coat collars, and in cases of wrists and forearms that had been affected by contaminated coat sleeves or work benches. In a few cases secondary infections and an exfoliative dermatitis were superimposed because of the self medication administered by the patient in an

<sup>8</sup> Permission to employ penicillin and sulfonamides simultaneously was given by Dr. Chester Keefer, chairman of the Committee on Chemotherapeutics and Other Agents of the National Research Council.

<sup>9</sup> Since submitting this manuscript for publication the authors have had the opportunity to treat another patient with penicillin and sulfadiazine combined. The patient was a white boy aged 14 years with meningitis due to pneumococcus type 37. He made a prompt and complete recovery.

<sup>1</sup> Foulger, J. H. Medical Control of Industrial Exposure to Toxic Chemicals. *Indust. Med.* 12: 214 (April) 1943.

attempt to hasten recovery. Several cases of acne were found, particularly in young women, which abated after these workers were removed from tetryl exposure. Similar observations were made in several cases in which dermatophytosis developed on the palms and between the fingers.



Fig. 1—Erythema accompanied by edema of lower eyelids

Our observations of the staining of the skin and discoloration of the hair from tetryl exposure did not differ from those of other investigators. It was definitely noticed, however, that the degree of staining in most cases was directly proportional to the cleanliness of the worker.

Individuals, in our experience, did not appear to develop any immunity or "hardening" on repeated exposures. In some cases when the person was permitted to return to work while under care for dermatitis the condition became worse and the person became exceedingly uncomfortable and had to be removed from the area. For this reason we pursued a policy of removing all operators from exposure until treatment was completed. By following this system all but a very small group of allergic persons were ultimately returned to their regular jobs.

All cases were treated as individual problems. In general persons mildly affected were treated with 10 per cent boric acid ointment and removed from exposure for several days. Persons more severely affected were sent home and treated with 5 per cent sodium bicarbonate wet dressings followed by boric acid ointment and were returned to their regular job after treatment was completed. Persons with pronounced allergy were not permitted to return to any exposure and persons with very severe allergy were granted releases to obtain a job in a tetryl free environment.

Thirty-five patients were treated with a 5 per cent aqueous solution of sodium thiosulfate. These patients were given 20 cc intravenously each day for two or more days. In less than 50 per cent of these cases itching and burning stopped and the rash began to fade. However, 10 cases failed to respond to this treatment. At this time of writing we have come to no conclusions, as this treatment is still under trial.

In evaluating the effect of tetryl on the eyes, ears, nose and throat as seen in over 500 employees in the course of one year's investigation at this arsenal, no

systemic reactions can be said to have occurred. Most of our complaints were exaggerated because of a wholesale fear of "tetryl or powder poisoning." Apparently in this arsenal "powder poisoning phobia" is part and parcel of fear of trinitrotoluene poisoning. All powder is suspect, but tetryl in particular because of its early irritative effects, gives us the most complaints. This ungrounded fear of tetryl is unwarranted and should be discouraged by all concerned.

The effect of tetryl on the eyes and adnexa was one of primary chemical irritation resulting in an erythema of the lids combined with pruritus of the lids. Trauma, rubbing and scratching resulted in lid edema. Some cases showed such pronounced edema noninflammatory in nature, that allergy must be considered as playing some part. The bulbar and palpebral conjunctivas were not affected despite the often intense erythema and edema of the lids. Injection of the conjunctiva when present had been slight and easily explained on the basis of trauma. Those cases exhibiting pronounced conjunctivitis with lachrimation, photophobia, blepharospasm, itching and smarting have been demonstrated to be infectious in nature and merely coincidental with tetryl complaints.

In our study vision has never been affected. No cases of corneal infection or ulceration have been seen, and routine ophthalmoscopy has been negative.

Hearing is unaffected by working in, or exposure to tetryl powder. In the past year there have been only 15 cases in which complaint was made of impaired hearing and these were found to be due to cerumen impacted in the canal and to acute otitis media. We have been on the lookout for eighth nerve involvement but have found none.



Fig. 2—Typical contact dermatitis

Headache has not been a prominent symptom among our employees working in tetryl. Our statistics show that in an average of over 500 workers in this material complaints of headache occurred in only 4 per cent of workers coming to the clinic. On routine questioning by laboratory technicians, 21 per cent complained of headache at one time or another but nothing specific as to the location, severity, times of occurrence or

duration was present. We therefore consider tetryl exposure of no significance in causation of headache.

The nose and throat have been the chief organs affected by tetryl in our eye, ear, nose and throat study. Complaints referable to the nose included all those seen with the ordinary common cold. Subjective symptoms included nasal dryness, burning or sneezing, stuffiness, smarting and anosmia. Added to these were many cases of epistaxis. These symptoms occurred early in the course of employment, usually in the first two weeks, although many employees complain of nasal irritation after only a few hours exposure. The subjective sensations were analogous to those of the common cold, except that the initial stage of dryness and smarting was not succeeded by increased mucous secretion. Objective signs were a dry injected nasal mucosa, with edematous turbinates. The color of the nasal mucosa was a bright scarlet, even in the colored race, except where allergy was present, when the color was slaty gray in the colored race and varied to a pale pink in the white race. In the absence of concomitant infection, no discharge was present. The mucosa remained dry and glairy and even after a week of further exposure did not become moist.

It was of interest to note that subjective complaints were in almost all cases associated with objective nasal pathologic changes in the form of deviations of the nasal septum, chronic hyperplastic rhinitis, nasal polypoidosis and varied forms of allergic rhinitis. It was practically an invariable finding to note that tetryl workers with poor nasal ventilation due to obstruction of septal deviations and enlarged turbinates had complaints early in the course of their work.

Epistaxis was a common finding, occurring in 14 per cent of workers routinely questioned by laboratory workers. It was never alarming or profuse. Its origin was usually at Kiesselbach's area and associated with capillary engorgement. Much of it was due to finger trauma occasioned by the dryness of the mucosa. Occasionally the lower turbinate, anterior border, showed factitial ulcers. Bleeding usually stopped spontaneously, and packing with cotton or gauze was rarely resorted to. The use of a simple nasal constrictor such as 2 per cent ephedrine sulfate drops was usually sufficient to restore nasal comfort and relieve complaints.

Throat symptoms consisted of dryness, cough, smarting and tightness in nervous persons. Objectively the pharynx was dry, glazed and injected. There was a conspicuous finding that most of these employees also showed pathologic change in the form of chronic infection of the tonsils, pharyngeal and lingual, as well as a chronic pharyngitis with lymphoid follicle enlargement.

These findings have led us to conclude that in workers exposed to tetryl for the first time antecedent infection and anatomic abnormalities of the nose and throat were primary agents in the development of symptoms. Many of these workers were advised to seek medical and surgical treatment, and those that did were able to return and work free from symptoms. Those that did not seek treatment were seldom free from symptoms and eventually had to be taken out of tetryl exposure.

The question of allergic sensitivity to tetryl, with regard to the nose and throat, is a moot one. In our opinion some patients did develop a typical nasal allergy on exposure to tetryl, with the result that the nasal tissues remained constantly engorged, an ensuing train of symptoms occurring analogous to those of hay fever.

These patients were never comfortable because of mouth breathing and when forced to wear a mask, as in certain operations with tetryl, were unable to do so with comfort. Removal from all tetryl exposure restored normal nasal function in these cases.

Laryngitis and tracheitis specifically due to tetryl, without other signs of infection, have not been found in tetryl workers here.

As our workers have frequent chest x-ray examinations, before employment as well as on annual physical examination, we have been able to detect any pathologic developments in the lungs. Employees with pulmonary pathologic changes are screened out on preemployment examination and are not permitted to work in toxic operations. Accordingly, we were able to keep a strict check on workers in tetryl but to date have been unable to find any pulmonary conditions attributable to powder.

It is notable that symptoms directly due to tetryl arose early in the course of employment. Those symptoms of the nose and throat which are the worst offenders were seen, almost without exception, in employees with previous pathologic conditions. In the few with out obvious pathologic conditions, symptoms ceased spontaneously in one to two weeks, but, in the others, symptoms increased to the point where the worker was useless in tetryl operations, and in some workers apparent neuroses intervened. A few workers who developed a nasal allergy on exposure to tetryl were removed early. Systemic symptoms due to tetryl, initiated through the nose and throat, have not been seen.

In the course of routine periodic examinations of tetryl workers we found anemia (defined as less than 11 Gm of hemoglobin per hundred cubic centimeters for women, less than 12.5 Gm for men) in only 4 per cent, and 92 per cent of the anemic persons were women. There is no reason to believe that this exceeded the figure for the population at large.

White blood cell count findings were difficult to interpret. Leukocytosis and leukopenia appeared to be completely unrelated to the type and duration of exposure, symptoms or complaints. About the only conclusion we could draw is that leukopenia occurred about twice as often among colored workers as among white workers, while leukocytosis had about the same occurrence in the two races.

Abnormal blood pressure findings occurred with varying frequency in 18 per cent of tetryl workers. Four per cent was hypertension in workers of an average age of 42 years compared to an average age of 33 years for all tetryl workers. The remaining 14 per cent consisted of hypotension, low pulse pressure and the like, and the average age was 33, the same as the average for all tetryl workers. We have regarded severe or persistent blood pressure abnormalities as sufficient cause for removal from tetryl exposure.

#### PREVENTIVE PROGRAM<sup>2</sup>

With the aid of the management and the safety department, we were able to carry out an effective preventive program, which was divided into several phases.

*Preemployment and Periodic Examination*—All workers were given a complete preemployment examination, and those who were found to have a disqualifying history and physical defects were not assigned to any work involving tetryl exposure. Employees were given a physical examination annually, and those who were

<sup>2</sup> Probst, E. W., and Lewis, L. D. An Effective Preventive Medical Program. *Indust. Med.* 13: 43 (Jan.) 1944.

found to have physical defects or a history which contraindicated tetryl exposure were removed from exposure and placed in another job

Routine laboratory examinations of tetryl workers were done monthly or quarterly, depending on the degree of the exposure and the condition of the worker. Significant or persistent abnormalities of blood count, urinalysis or blood pressure were considered indication for removing the worker from tetryl exposure, although each case was reviewed individually by the industrial medical officer before removal.

**Environment**—Periodic inspections of the tetryl areas were conducted, and every effort was made to eliminate or reduce the dust by modifying the operations and installing ventilation and exhaust systems. Skin contact with the tetryl powder and pellets was reduced to a minimum.

**Protective Clothing and Personal Hygiene**—All exposed workers were furnished with special powder uniforms, which offered fairly good protection. These uniforms were changed frequently and were laundered at the arsenal. Adequate washing and bathing facilities with sufficient soap and towels were made available. Since protective ointment and respirators were found to be generally unsatisfactory, these items were used only when other methods were inadequate.

**Education**—An educational program was established to encourage cleanliness in operations, personal hygiene, safety and better nutrition. This program was accomplished by posters, placards, editorials in the plant newspaper and conferences with individual workers.

**Other Measures**—In some dusty areas workers were advised not to use their handkerchiefs and were encouraged to use paper wipes. They were also advised not to bring their lunches or personal belongings into the work rooms.

In case of workers with signs or symptoms referable to tetryl exposure, the health records and the work environment were immediately checked and reviewed before any action was taken. Cases exhibiting any severe reaction were removed immediately from exposure.

#### CONCLUSIONS

The most common finding in tetryl workers at an arsenal was contact dermatitis. A small percentage of the workers were found to show evidence of sensitivity.

Those individuals who had nose and throat complaints showed preexisting pathologic changes except for a few cases of nasal allergy. No evidence of eye pathologic change due to tetryl was noticed.

Under our methods of control, no evidence of systemic illness developed.

**First Hospital in Western Europe**—The first hospital in western Europe was founded in 380 A. D. by Fabiola, a Roman matron of distinguished piety. The exact site of this rather famous hospital is uncertain, but St. Jerome describes it as "a house in the country for the reception of the unhappily sick and infirm persons who were before scattered among the places of public resort, where they would be furnished in a regular way with nourishment and those medicines of which they might stand in need. To conform with the growing Christian idea of charity, hospitals began to be founded for special purposes, there were hospitals for the sick alone, for foundlings, for orphans, for the helpless poor, for the aged and for poor and infirm pilgrims."—The Hospital in Modern Society, edited by Arthur C. Brehmeyer and Gerhard Hartman, New York Commonwealth Fund, 1943.

## TREATMENT OF MULTIPLE FURUNCULOSIS WITH PENICILLIN

ROSE COLEMAN, M.D.  
AND  
WALLACE SAKO, M.D.  
NEW ORLEANS

The incidence of furunculosis superimposed on malaria is much increased during the warm summer weather. In the South this condition constitutes a common problem which often proves to be very refractory to treatment. The remarkably rapid response of multiple furunculosis to penicillin therapy we have observed in 6 young children serves as the basis of this communication.

#### REPORT OF CASES

**CASE 1**—R. B., a white boy aged 1 year, was admitted to Charity Hospital on June 19, 1944, with numerous furuncles of one week's duration scattered over the scalp, face, neck, shoulders, chest, back and the left thigh. The patient did not



Fig. 1 (case 6)—Front view of infant with multiple furuncles of scalp, face and neck at the beginning of penicillin therapy.

appear to be ill, and the rectal temperature was 100.6 F. The physical findings were normal and the blood serologic reaction and the Mantoux test were negative. Local therapy and sulfadiazine administered orally for seventeen days brought no appreciable improvement in the condition of the skin. On July 7 an initial dose of 20,000 units of penicillin was given intramuscularly followed by 10,000 additional units every three hours until July 13. The patient received a total of 440,000 units. Within twenty-four hours after penicillin treatment was begun distinct improvement in the furuncles was noted and without the aid of any local therapy all of the lesions were healed in four days (July 11) except for a large abscess on the left thigh which drained spontaneously and healed two days later. The patient was discharged on July 14 completely cured of all skin lesions.

**CASE 2**—J. A. L., a white boy aged 7 months, was admitted to Charity Hospital on June 22, 1944, with severe malaria and widespread furunculosis of three weeks' duration involving

the scalp, face, neck and upper portion of the trunk. The remainder of the physical examination was negative. The temperature on admission was 102 F rectally and fluctuated between 97 and 102 for one week. All the laboratory findings were negative except for a leukocytosis of 26,000. Since local



Fig. 2 (case 6)—Rear view of patient before treatment

therapy and sulfadiazine given orally for seven days resulted in no improvement, the intramuscular administration of penicillin was started on June 30. The initial dose of 20,000 units was followed by additional injections of 10,000 units every three hours until the patient had received a total of 460,000 units. No local therapy was used after penicillin was started. All the lesions, several of which were fluctuant, improved in twenty-four hours and had completely disappeared seventy-two hours after the penicillin therapy was started. The patient was discharged on July 14, completely cured.

CASE 3—M. C., a white girl aged 10 months developed a heat rash in May 1944. On June 1 examination revealed

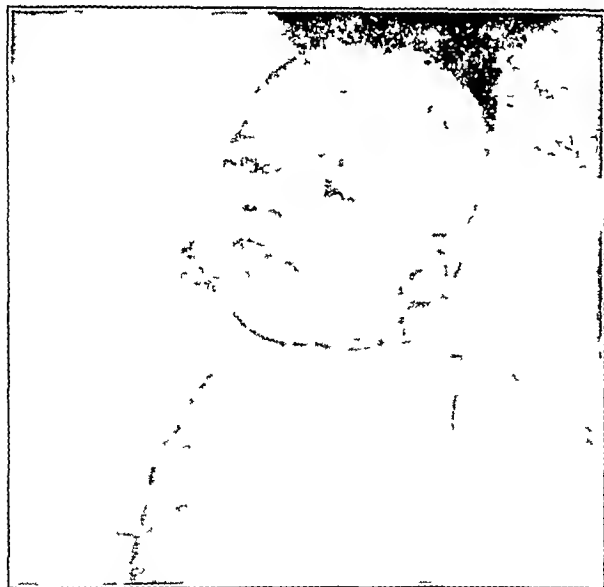


Fig. 3 (case 6)—Front view of patient showing disappearance of furuncles after five days of penicillin therapy

multiple furuncles on the scalp, face, neck, chest and back. The blood serologic reaction and the blood culture were negative. Local therapy consisting of frequent baths, saline packs, sulfathiazole ointment and staphylococcus vaccine proved of no avail. The patient was hospitalized on June 12 and penicillin therapy was started, 5,000 units being administered intramuscularly every three hours. A total of 200,000 units of penicillin

was given. Within forty-eight hours the furuncles began to regress, and hard papular swellings as well as the small fluctuant furuncles became absorbed and completely disappeared after four days of penicillin treatment. The patient was discharged after six days of hospitalization.

CASE 4—E. B., a Negro boy aged 3 years, was admitted to the hospital June 21, 1944 for cellulitis of the right leg and numerous furuncles of the scalp, face, neck, chest and extremities. The rectal temperature was 101 F and the blood culture was negative. An initial intramuscular injection of 10,000 units of penicillin was given followed by an additional 5,000 units every three hours until the patient had received a total of 230,000 units. The temperature returned to normal in twenty-four hours and the cellulitis cleared in forty-eight hours. The furuncles began to regress in twenty-four hours and completely disappeared in seventy-two hours except for two large fluctuant abscesses of the scalp which were incised and drained and completely healed two days later. The patient was well when discharged on June 29.

CASE 5—B. J. M., a white girl aged 9 months, was admitted to Charity Hospital on June 13, 1944 with multiple furuncles



Fig. 4 (case 6)—Rear view of patient after treatment

of two weeks' duration and bronchopneumonia. The temperature on admission was 103 F rectally. The physical examination disclosed numerous furuncles over the entire scalp, neck and upper part of the chest. X-ray examination of the chest revealed bronchopneumonic patches of the right lung.

Treatment consisted of incision and drainage of the larger fluctuant abscesses. On June 14 an initial dose of 10,000 units of penicillin was given intramuscularly followed by 10,000 additional units every three hours. A total of 480,000 units was given. The temperature returned to normal in four days. The furuncles and pustules improved rapidly and were completely healed on June 19. The patient was discharged on June 24 and had suffered no subsequent recurrence of furunculosis when seen on July 11.

CASE 6—E. M., a Negro girl aged 6 months, was admitted to the hospital on July 13, 1944 with the complaint of multiple 'boils' of four weeks' duration. The temperature on admission was 102 F rectally. The physical examination revealed numerous furuncles, small pustules and papules scattered over the scalp, face, neck and shoulders (figs. 1 and 2). A large fluctuant abscess about 3 by 3 cm. was located in the left occipital region. The remainder of the physical examination was negative. The blood culture and serologic test were both



negative. Culture of pus from the abscesses revealed *Staphylococcus pyogenes aureus*. The patient was started on penicillin on July 14. The initial dose was 10,000 units administered intramuscularly followed by 5,000 units every three hours. The total dose was 230,000 units. The temperature came down to normal in three days. The superficial furuncles cleared up in seventy-two hours and the larger furuncles disappeared in five days. The large fluctuant abscess healed promptly after incision and drainage (figs 3 and 4).

## SUMMARY

The rapid disappearance and cure of multiple furunculosis observed in 6 children under penicillin treatment indicates a result far superior to any previously known therapy for this condition.

## Clinical Notes, Suggestions and New Instruments

## ALLERGY TO PENICILLIN

LEO H. CRIEP, M.D., PITTSBURGH

Urticarial reactions to penicillin have been described by Lyons<sup>1</sup> as occurring in 12, or 157 per cent, of 209 cases treated in army hospitals. Following is the report of a case of penicillin allergy manifested by generalized severe urticaria and studied from the point of view of the possible immunology involved in this reaction.

## REPORT OF CASE

A man aged 23 was admitted to the United States Veterans Hospital, Aspinwall, Pa., during March 1944 with a diagnosis of suppurative arthritis of the right hip. This condition started in the summer of 1943 while the patient was in the service and followed an abscess on his left elbow. The abscess was incised. Because it was associated with osteomyelitis, penicillin therapy was begun on Oct. 13, 1943. The patient received 200,000 units daily for a period of fourteen days. Penicillin therapy was resumed on Nov. 6, 1943, and he received 120,000 units daily

TABLE 1—Results of Direct Skin Tests

|                     | Patient<br>O. H. | Controls |    |    |    |
|---------------------|------------------|----------|----|----|----|
|                     |                  | 1        | 2  | 3  | 4  |
| 1. Penicillin conc. | +++              | +++      | ++ | ++ | ++ |
| 2. Penicillin 1:10  | +++              | ++       | +  | 0  | 0  |
| 3. Penicillin 1:100 | ++               | 0        | 0  | 0  | 0  |
| 4. Saline solution  | 0                | 0        | 0  | 0  | 0  |

TABLE 2—Precipitin Tests with Penicillin

| Blood Serum | Penicillin Conc.  | Penicillin 1:100  |
|-------------|-------------------|-------------------|
| 1:10        | Positive          | Positive          |
| 1:50        | Positive          | Positive          |
| 1:100       | Positive          | Positive          |
| 1:1,000     | Slightly positive | Slightly positive |
| 1:10,000    | Slightly positive | Slightly positive |
| 1:50,000    | Slightly positive | Slightly positive |

until November 12. Immediately on resumption of this therapy, that is on November 6, and following the administration of the first dose of penicillin in this course of treatment, the patient developed massive generalized urticaria, which persisted until the penicillin therapy was discontinued on November 12. The patient stated that the urticarial reaction would occur almost immediately on his receiving the injection of penicillin, and in the period when the drug was given daily the urticaria was continuous and universal. He presented no family history

of allergy. He stated that he has never had urticaria before. There was no history of hay fever, asthma or any other allergic manifestations.

On his last admission to the hospital the measurements of the legs revealed that there was a shortening of the right leg of approximately 3 cm., this shortening being located above the greater trochanter. Roentgenograms revealed evidence of a suppurative process in the right hip with partial absorption of the articular surface of the head of the femur and the acetabulum. The laboratory work was essentially negative, the urine, blood count and serologic reaction were negative.

## SPECIAL INVESTIGATION

The following represents an attempt to study the immune bodies accompanying this reaction.

1 *Direct Skin Tests to Penicillin*—Direct skin tests (intra-dermal) with penicillin drug solution yielded the results, as compared with controls, given in table 1.

2 *Passive Transfer Tests*—Presence of Reagents. Passive transfer tests performed with the patient's serum yielded a positive reaction with penicillin in a dilution of 1 to 100. These were done on two substitutes. The controls were negative.

3 *Precipitin Tests with Penicillin*—Controls were done with normal serum, and these showed no precipitin reaction.

4 *Anaphylactic Antibodies*—An attempt was made to sensitize passively 2 guinea pigs with the serum of the sensitive patients. The serum was injected intravenously into the animals. Following a period of twelve to twenty-four hours penicillin solution was administered by the same route. Neither guinea pig showed evidence of anaphylactic shock. It would appear therefore that there were no anaphylactic antibodies to penicillin in the patient's serum.

5 *Comparison with Skin Reaction to Penicillium*—Direct skin tests on the patient with penicillium extract were negative. This is of interest because Feinberg<sup>2</sup> recently found that individuals clinically sensitive to penicillium spores did not give a positive reaction to penicillin. It would therefore seem that there is no cross sensitization between penicillin (drug) and penicillium (spore) extract.

## COMMENT

The urticarial reaction presented by this patient is obviously one of allergy to penicillin. In view of the fact that little is known about the method of preparation of penicillin, it was not possible to conduct investigations which would indicate whether the drug or culture mediums employed in its preparation might be the offending allergen. However, direct skin tests to corn extract and corn steep were negative. Present evidence indicates however, that the sensitivity is to penicillin itself. This allergy, in all probability, is not unlike that shown in serum allergy. As is the case with other instances of sensitization to biologic products, such as insulin, posterior pituitary injection and liver extract, the reactions occurred after the resumption of treatment following a period during the course of which the drug was discontinued.<sup>3</sup> At this time the urticaria occurred immediately after the first injection of the second series. The same thing occurred some months later when treatment with the drug was reinstituted.

There seems to be evidence of the presence of some immune substances in the serum of this patient such as reagins and precipitins. This is proved by the positive direct skin test, by the positive passive transfer and the positive precipitin test. Just what role, if any, these antibodies might have in mediating the reaction is not exactly clear.

These findings are of interest because they vary with the statement contained in the report<sup>1</sup> that in the patients who showed an urticarial reaction to penicillin 'the course' of the urticaria was 'independent of continuance or cessation of treatment'. Also that 'subsequent courses of penicillin therapy in patients with a history of urticaria during the first treatment period have been uneventful and not associated with recurrent urticaria'. None of the patients included in the report quoted showed precipitins or positive skin reactions to penicillin.

<sup>2</sup> Feinberg S. M. Penicillin Allergy. *J. Allergy* 15: 271 (July) 1944.

<sup>3</sup> Crippe L. H. Allergy to Liver Extract. *J. A. M. A.* 110: 506 (Feb. 12) 1938. Allergy to Pancreatic Tissue Extract with Report of 2 Cases. *J. Allergy* 12: 154 (Jan.) 1941.

From the Allergy Clinic, U. S. Veterans Hospital, Aspinwall, Pa., and the Allergy Clinic, University of Pittsburgh School of Medicine.  
<sup>1</sup> Lyons C. Penicillin Therapy of Surgical Infections in the U. S. Army. *J. A. M. A.* 123: 1007 (Dec. 18) 1943.

## SUMMARY

- 1 A case of acquired sensitivity to penicillin was observed
- 2 Penicillin allergy is probably unrelated to sensitivity to *Penicillium* spores
- 3 Associated with penicillin allergy, there may be found in the serum of the patient immune bodies (reagins and precipitins), but their exact role in the reaction is not known
- 4 This form of allergy represents one analogous to drug or serum allergy

1004 May Building

## ALLERGIC HEADACHE

AN UNUSUAL CASE OF MILK SENSITIVITY

THERON G. RANDOLPH, M.D., CHICAGO

This case report illustrates many of the pitfalls in the general recognition and specific diagnosis of allergic headache. It is of further interest in view of the severity of symptoms and the pronounced degree of food sensitization existing in the absence of skin tests.

## REPORT OF CASE

I. K., a graduate nurse aged 24, developed her initial sick headache at the age of 14, one year after the menarche. Symptoms recurred in 1939 at the age of 17. An allergic investigation at this time revealed a negative past and family history for other evidences of allergic manifestations. Cutaneous tests, including foods, were entirely negative. She was placed on a Rowe No. 1 elimination diet for two periods of ten days each. One headache occurred during this interval. At the time of the diet trials she was subject to a headache every three to four weeks.

In May 1940 the attacks of head pain became more frequent and severe. In the following eighteen months she was hospitalized twenty-five times because of severe attacks with one hundred and ten days hospitalization. Many attacks did not require hospital admission. During this period she lost approximately one third of her time as a student nurse because of incapacitating headaches.

A typical attack began with a sense of pressure and pain over the right frontal sinus, followed by drooping of the right upper lid and twitching of both upper lids and terminated in a prolonged period of severe throbbing right temporal pain which extended to involve the right ear region. The headaches were associated with pronounced photophobia, dizziness, anorexia, nausea and vomiting. When the head pain was most severe she often lapsed into a state of altered consciousness which lasted from a few minutes to as long as forty-five minutes. At the onset of these periods she temporarily lost motor control, several times falling and injuring herself. These attacks were characterized by varying degrees of stupor from which she could be only partially aroused. She appeared to be oriented but responded with a prolonged reaction time. Apparently perception was normal, but she had some difficulty in enunciating and spoke in a monotone with slurring of syllables. She claimed that during these times she had difficulty to find the words to express her thoughts. There were no convulsions, incontinence, opisthotonos or biting of the tongue.

The headaches varied in length from two hours to ten days. They were associated with and followed by fatigue to the point of utter exhaustion. As the headaches became more frequent, troublesome fatigue persisted between attacks, materially interfering with her efficiency in studying and working. Her fatigue was unrelieved by obtaining the customary amount of rest prescribed for student nurses, nor was it relieved by excessive rest. It occurred whether at work or on vacation. Coincident with the persistent fatigue, her friends noticed that she was less alert than formerly.

Her physical examination was consistently negative between attacks. During attacks she was extremely restless, writhing and clutching her head in her arms with each recurrent pain. There was drooping and slight edema of the right upper eyelid, twitching of both upper lids, a fine nystagmus and tenderness

of the right face and neck region. At the height of the symptoms the pulsations of the right temporal and carotid vessels were stronger than the left. There were no other physical findings.

Blood counts and other routine laboratory data were within normal limits during and between attacks. A lumbar puncture during a headache revealed the spinal fluid under normal pressure and negative on laboratory tests. X-ray films of the skull were negative. Electroencephalograms will be described in a succeeding article.<sup>1</sup>

Provocative doses of 0.1 cc of 1:10,000 and 0.05 cc of 1:100,000 dilutions of histamine diphosphate produced violent headaches. A course of histamine "desensitization" beginning with 0.025 cc of 1:1,000,000 dilution of histamine diphosphate, gradually increasing the dose twice daily, failed to alter the course of symptoms. Histamine administered by iontophoresis was also without effect. Doses of 0.3 and 0.1 cc of a 1:100 dilution of histamine azo protein ("Hapamine") produced severe headaches within an hour after subcutaneous injections.

Various drugs were ineffective in affording symptomatic relief; these included acetylsalicylic acid, phenobarbital, pentobarbital, phenytoin sodium, ergotamine tartrate and various opiates.

Surgical section of the right middle meningeal artery was performed during an attack April 3, 1942. The previous headache had subsided by the time consciousness was regained from the intravenous pentothal sodium anesthesia. There were no abnormalities in the caliber of the middle meningeal artery or the appearance of the dura. Following this she remained symptom free for a period of three weeks but then developed frequent attacks of "tic-like" pain in the region of the right ear. On May 22, 1942 a suboccipital craniectomy with section of the right ninth nerve was performed for relief of the severe, lancinating ear pain. This operation was followed by Bell's palsy of three weeks' duration and complete relief of all head pain for five weeks. The sick headaches then returned in their former severity and frequency.

In the presence of long standing, unexplained symptoms, psychogenic factors were considered of increasing etiologic importance. A diagnosis of anxiety hysteria was made. Attempts to explain her symptoms from this point of view shamed and antagonized the patient following which she tried, unsuccessfully, to conceal her attacks.

Because of her persistent symptoms she was finally dismissed from Nursing School in October 1942.

In mid November 1942 she was restudied from the standpoint of allergic disease. Although foods were not suspected in relation to her attacks, she had been in the habit of drinking a quart of milk daily for many years, and beef had been her principal meat. It is of interest that during several of her more prolonged attacks she refused all food except ice cream.

Cutaneous and intracutaneous tests were negative.

She was started on a series of elimination diets at a time when the fatigue was pronounced and headaches were present every five to seven days. The initial diet eliminated milk except for that in butter, cheese and small amounts in baked goods, all cereals except rice, all meats except lamb and, in addition, eggs, legumes, citrus fruit, chocolate, nuts and condiments. On the fourth day of this diet she reported a decided general improvement with striking relief of her dragging fatigue. She had no headaches for a period of two weeks except after one meal in which she failed to follow the diet. This contained milk in mashed potatoes and a large serving of beef.

When milk was returned to the diet after two weeks of avoidance the first glass for breakfast was tolerated, the second glass at noon was followed in forty minutes by a violent headache during which she became semiconscious for a period of thirty minutes, the headache persisting for forty-eight hours. Returning beef to the diet in repetitive doses also produced headaches. Similar but more mild reactions followed attempts to replace chocolate, tomato and grape juice. All other foods have been taken without trouble. With the complete avoidance of listed foods she has had no unexplained headaches for the past twenty months. She was readmitted to Nursing School.

<sup>1</sup> From the Allergy Clinic, Department of Internal Medicine, University of Michigan Medical School. Financed in part by Parke-Davis & Company.

<sup>1</sup> Biguchi, B. K. Migraine and the Electroencephalogram to be published.

graduated and is now regularly employed on the graduate staff. Her previous fatigue has been entirely relieved and she feels rested after the usual amount of sleep. The control of her allergic symptoms has resulted in a decided change in her personality.

The milk sensitivity in this case appeared to be one of severe and increasing degree. Although butter and cheese were originally tolerated, she began to notice headaches in January after butter and in March 1943 after cheese. A later attempt was made to include a small amount of butter in her diet. Within a few days her former fatigue returned, followed on the eighth day by a severe headache which persisted for three days. All milk products have been rigidly avoided since. Of two recent severe headaches, each beginning thirty minutes after a meal, one was traced to the ingestion of buttered vegetables and the other to the use of the small amount of milk solids contained in a teaspoon of commercial salad dressing. These were both errors made in the preparation of her special tray and were traced in retrospect after the onset of symptoms.

In November 1943 she started to work in the infants' ward. In preparing the evaporated milk formula for the day she suddenly became dizzy, developed severe pain over the right eye and in attempting to leave the room fell to the floor stuporous. Head pain and vomiting persisted for three days. She returned to the formula room on the second day, but her headache became much worse and she reported off duty. She came back on the third day and after being in the formula room forty-five minutes developed erythema, pruritus and urticaria of the exposed parts of the body.

She was unable to work with infants who were being fed evaporated milk. On three different occasions babies regurgitated on her skin, although she washed the milk off immediately, erythema developed at the sites within twenty minutes. Because of the persistent fatigue, generalized pruritus and recurrent headaches associated with work in the nursery, she was excused from these duties.

On April 22, 1944 an electroencephalogram was obtained prior to and following the ingestion of a small dose of milk taken fasting (1 cc diluted to 100 cc with water). To control the psychogenic factor, dilute amphotel having an identical taste and appearance (when the two samples were tested by samplers the milk was not identified) was given first, the patient understanding that she was receiving milk. Forty-five minutes later she developed mild twitching of the right upper lid and nausea which lasted twenty minutes. No other symptoms occurred during a period of ninety minutes.

She was then given 1 cc of milk in water, understanding that she was receiving a second dilute dose. Ten minutes later she developed throbbing right temporal pain which became progressively more severe. On two occasions in the following five hours at the height of her agonizing pain she lapsed into semiconsciousness for several minutes. The headache syndrome persisted two days, the residual fatigue for an additional day.

Cutaneous tests with raw milk and the standard milk extract were again performed July 20, 1944 and found negative. One half hour later 0.02 cc of a 1:10 dilution of the scratch test material (the standard intracutaneous test for milk) was injected intradermally. Ten minutes later she noted flushing and itching of the anterior part of the neck and face, this became generalized in the next five minutes. Epinephrine hydrochloride 0.5 cc in a dilution of 1:1,000 was then administered subcutaneously, following which the erythema and pruritus gradually disappeared. Thirty minutes after the intracutaneous test she developed mild right frontal head pain, which became progressively more severe. Nevertheless she reported on duty two hours after the test, starting an operation as a surgical nurse. During the operation the pain became extreme and was associated with severe dizziness. Without warning except for a transient sensation of faintness, she fell to the floor two hours and thirty minutes after the skin test. Although altered consciousness persisted for only two or three minutes, headache, dizziness, nausea and weakness continued, making it necessary to report off duty. With rest all symptoms except for residual fatigue subsided after a duration of three and one half hours.

The intracutaneous test site was negative when read at twenty minutes and remained so throughout the headache. After the head pain had subsided she noticed mild pruritus at this area followed by erythema 2 cc. in diameter, which reached a maximum between six and seven hours after the injection. A wheal was not observed at any time and there was very little edema as judged by the insignificant degree of elevation. The site was negative the following morning and remained so thereafter. There were no delayed reactions at the scratch test sites.

#### COMMENT

This case illustrates how the diagnosis of allergic headaches may be missed by the routine allergic investigation including history, skin tests and the trial of elimination diets for short periods when the incidence of the attacks is greater than once in two weeks. No clues were obtained from the past and family history, as they were both negative for other allergic manifestations. This, however, is not an uncommon finding and one must always be alert to the possibility of the untrial allergic expression.

It is of interest that milk the major offending food had been received in large amounts daily for many years and that beef had been the principal meat of the diet. This is such a common observation notwithstanding the fact that acute episodes may occur only occasionally, that the elimination of those foods eaten most frequently and in greatest abundance sometimes results in improvement giving clues to the major offenders.

Cutaneous tests to the common allergens were negative in 1939, cutaneous and intracutaneous tests were again negative in 1942, and both cutaneous and intracutaneous tests with milk were negative in 1944 as these reactions are customarily read. The last intracutaneous injection of milk was followed by a constitutional reaction and headache following which there was a moderate delayed reaction at the test site. The absence of skin tests with milk, as performed and read by standard technique, is in striking contrast to the extreme and increasing degree of milk sensitivity. This case affords additional evidence of the general unreliability of the skin test as a diagnostic method in food allergy.

The production of severe symptoms by the subcutaneous injection of 0.1 cc of a 1:10,000 dilution of histamine diphosphate is suggestive of "histaminic cephalgia" as described by Horton.<sup>2</sup> In fact this is the minimal provocative dose recommended by him as a diagnostic measure. It is of interest that a twenty-fold diminution in dosage (0.05 cc of a 1:100,000 dilution) also produced an abrupt and violent attack, identical as far as could be determined with the attacks occurring after the ingestion of milk. Repeated efforts to "desensitize" with histamine by daily and twice daily injections failed to alter the general course of the headaches.

The fact that the patient was temporarily improved after extensive surgical procedures is not an uncommon finding. Relief of symptoms from four to six weeks after surgery of various types is not an infrequent experience in dealing with allergic manifestations.

The severity of the cephalgia and the close relationship of the violent pain with periods of altered consciousness or stupor are unusual features of this case. It is of interest that the patient never had an attack of altered consciousness which was not associated with severe headache. From the clinical standpoint it appeared that she lapsed into a state of altered consciousness as a result of the severity of the pain. Although slightly suggestive from the standpoint of the mode of onset, the features of these bouts of semiconsciousness were not typical of a convulsive disorder such as epilepsy. The interpretation of the electroencephalograms is of interest in this respect.<sup>1</sup>

The fatigue unrelieved by rest occurring in this case both during and between attacks of headaches deserves emphasis, as it must be considered an expression of the uncontrolled allergic reaction. This symptom was first described by Rowe<sup>3</sup> in 1930 and called allergic toxemia. He<sup>4</sup> has observed that it

<sup>2</sup> Horton, B. T. Use of Histamine in Treatment of Specific Types of Headaches. *J. A. M. A.* 116:377 (Feb. 1) 1941.

<sup>3</sup> Rowe, A. H. Gastrointestinal Food Allergy. A Study Based on 100 Cases. *J. Allergy* 1:172, 1930.

<sup>4</sup> Rowe, A. H. Allergic Toxemia and Migraine Due to Food Allergy. *California & West Med.* 33:785, 1930.

is frequently associated with head pain of allergic origin. It is a common symptom resulting from intolerance to foods and may be associated with any of the clinical manifestations of allergy. In an occasional case it may be the only evidence of allergic imbalance at the time the patient is seen. In a recent survey<sup>6</sup> periods of this type of fatigue were found to occur more commonly in persons with a positive past history of allergy than in a control group with negative histories of allergic disease. "Fatigue unrelieved by rest" is so frequently associated with the allergic headache that relief of the former as the result of an elimination diet is often the first evidence of an allergic causation of the latter.

The common features of the fatigue and weakness of the uncontrolled allergic reaction, as illustrated in this case, and the debility of the patient with neurasthenia must be carefully differentiated. This is obviously difficult to do and in some cases, particularly if the allergic reaction is of long standing, both factors may be present. The fact remains, however, that fatigue as a symptom of the allergic reaction has received little emphasis and is not generally appreciated in contrast to the more widely known relationship of fatigue as a manifestation of a psychogenic disturbance.

This case is a good example of long standing incapacitating headaches in which the absence of apparent organic cause led to the assumption that the headaches were of psychogenic origin. It should be recalled that there are no measurable residual structural effects as a result of multiple attacks of allergic head pain. The possibility that headaches may be of allergic origin should be considered prior to establishing the diagnosis of psychogenic headaches.

#### SUMMARY

A case of allergic headache of unusual severity associated with fatigue and a state of altered consciousness resulting from sensitization to milk illustrates many of the pitfalls in the recognition and specific diagnosis of allergic head pain.

700 North Michigan Avenue

## Council on Foods and Nutrition

*With the increasing emphasis being placed on vitamins in nutrition the practice of adding these substances to many foods has become widespread. Fresh milk has been one of the foods to which the addition of several vitamins as well as minerals has been advocated. Several products of this type are now on the market. The Council has authorized for publication the following report discussing this principle of milk fortification.*

GEORGE K. ANDERSON, M.D., Secretary

### FORTIFICATION OF MILK WITH VITAMINS AND MINERALS

For several years the practice of fortification of milk with vitamins and minerals has been increasing. The tendency exists to have a retail unit of milk contain the full daily requirement of most of the vitamins and minerals for which requirements have been stated by the Food and Drug Administration. On several occasions the Council on Foods and Nutrition has been requested to express an opinion concerning these fortifications.

Several years ago the Council stated a policy of encouraging restorative additions of dietary essentials to foods to recognized high natural levels, provided the additions are limited to essentials for which a wider distribution is considered to be in the interest of public health. On several occasions the Council has reaffirmed this policy. The Council has accepted and encouraged the fortification of milk with vitamin D well beyond any natural level because of the belief that such fortification is in the interest of public health. Vitamin D is not present in important amounts in a customary diet unless fish oils are

included. Milk is an ideal carrier of vitamin D because of its content of calcium and phosphorus, with the utilization of which vitamin D is directly concerned. The Council has not approved any other addition to milk.

A fortified milk has been submitted to the Council for acceptance. With the exception of ascorbic acid, each quart of this product contains the minimum daily adult requirement of those vitamins and minerals for which the Food and Drug Administration has established requirements, and in addition it contains 10 mg of niacin. The label (bottle cap) statement of content is as follows: vitamin A, 4,000 units, thiamine, 1 mg, riboflavin, 2 mg, vitamin D, 400 units, niacin, 10 mg, calcium, 1 Gm, phosphorus, 0.8 Gm, iron, 10 mg, iodine, 0.1 mg. Of these components the entire amounts of calcium and phosphorus are natural to the milk and do not represent additions. All other materials are added in whole or in part.

The question arises as to whether it is in the interest of public health to fortify milk with vitamin A, thiamine, riboflavin, niacin, iron and iodine or any one of these materials.

The vitamin A content of milk varies with the feed of the cow. Winter milk of barn fed cows contains approximately half as much vitamin A as does the milk of cows on good pasture. With this wide range of content, fortification such as would insure a minimum content of 4,000 units to the quart must be with an amount which would be certain to raise to this level those milks with the lowest values. In a considerable proportion of instances the addition would be in excess of the need, particularly in the summer when the natural content of milk is at its maximum. In at least a commercial sense this excess would be wasted.

Some vitamin A deficiency has been shown to exist in this country. Such deficiency as exists is to be found chiefly at the lowest economic levels. In the surveys reported by the U. S. Department of Agriculture (Miscellaneous Publication Number 452, 1941) among nonrelief families in all sections of the country, intakes of vitamin A less than 5,000 units daily are recorded for only two of thirty-seven groups. In both instances the weekly expenditure for food was less than \$2.08 for each person. Such persons are not likely to buy milk sold at a premium. Those who consistently use milk are likely to be ingesting diets of good quality and therefore of good vitamin A content. It appears that little public health need exists for fortification of milk with vitamin A. Such need as may exist is insufficient to warrant Council acceptance of milk so fortified.

The thiamine content of milk varies, but 0.38 mg to the quart may be considered as an approximate average, with about 10 per cent loss with pasteurization. This amount is more than that required for the metabolism of milk. Milk more than carries its own load as regards thiamine. Any fortification would be for the purpose of covering the deficits of other foods. Such deficits as may occur are chiefly those associated with the refinement of foods, especially cereal foods. Much effort is being expended on a national scale to restore to cereal foods those nutritional essentials which have been lost in the processing. This is a laudable effort which deserves every encouragement. Cereals are much more important as a vehicle for added thiamine than is milk. Almost every one eats cereal in some form, whereas unfortunately milk does not yet have universal use. Those in the lower economic levels are the ones who subsist importantly on cereal foods and are the ones who are less likely to use milk. The greater the addition to the cost of milk because of fortification, the less likely are those who need it most to get it. It is concluded that public health need is not particularly well served by the fortification of milk with thiamine and that such need as may exist is not sufficient to warrant Council acceptance of thiamine fortified milk.

An average content of riboflavin in milk is approximately 1.8 mg to the quart, an amount which is four to six times that required for metabolism of the milk. While liver and yeast are excellent sources of riboflavin, milk is the only common food likely to be ingested daily which supplies a high proportion of the requirement for this material. The same type of discussion as given for thiamine fortification of milk applies also to fortification with riboflavin. The fortification of processed cereal foods with riboflavin is considered to be more useful and more effective in supplying the riboflavin needs of the popu-

5 Randolph T. G. and Gibson E. B. Blood Studies in Allergy. II. The Presence in Allergic Disease of Atypical Lymphocytes and Symptoms Suggesting the Recovery Phase of Infectious Mononucleosis. *Am J M Sc.* 207: 638, 1944.

6 Randolph T. G. and Hettig R. A. The Coincidence of Allergic Disease, Unexplained Fatigue and Lymphadenopathy. Possible Diagnostic Confusion with Infectious Mononucleosis. *Am J M Sc.* to be published.

lation than is the fortification of milk. It is concluded that such need as may exist for the fortification of milk with riboflavin is not sufficient to warrant Council acceptance of riboflavin fortified milk.

Despite its low niacin content, milk has long been known as a food useful in a pellagra preventive diet. Pellagrins are not milk drinkers. Niacin deficiency has not been recognized in those who ingest diets which are average for the country as a whole. Niacin is sufficiently plentiful in meat and fish and in potatoes, tomatoes, peas and other vegetables to insure against deficiency. The foods mentioned are commonly eaten, some of them daily. The enrichment of family flour and baker's bread with niacin is now common practice. The addition of niacin to milk does not seem to be the answer to the problem of correcting such niacin deficiency as exists. The public health need for addition of niacin to milk is not such as to warrant Council acceptance of milk so fortified.

A diet containing meat, eggs, green vegetables and whole grain or enriched flour and bread amply supplies the iron requirement. Despite the fact that milk is a poor source of iron, no indication is evident that the fortification of milk with iron serves a useful purpose. The restoration of iron in processed cereal foods is more definitely indicated. Those who eat the largest quantity of cereal foods are, in general, the ones who ingest the least milk. Those who include milk in their diets are usually of an economic and social status in which people generally include iron-containing foods. The public health need for fortification of milk with iron is not sufficient to justify Council acceptance of milk so fortified.

The iodine content of milk varies from a negligible amount to 2 mg or more to the quart, depending on the iodine content of the food of the cow. Except in regions where goiter is prevalent, milk usually may be depended on to contain in each quart at least 0.1 mg, the amount stated by the Food and Drug Administration as the minimum daily requirement and also the amount which is added to the fortified milk under discussion. In regions where iodine is deficient, the addition of iodine to the diet by some means is highly desirable. It has now become a generally accepted concept that the most effective method of insuring an adequate iodine intake in regions where this element is deficient is to add iodine to some food which is eaten daily by every one. Table salt has been selected as the appropriate food. It seems unwise to sanction the addition of iodine to more than one food. Some years ago the Council published its decision that foods other than table salt fortified with iodine are not eligible for acceptance. No reason for altering this decision has developed.

Multivitamin preparations have come into general use and are now included in the U. S. Pharmacopeia. The use of milk as a vehicle for these same vitamins may seem reasonable at first thought. However, it is appropriate to consider that the use of multivitamin preparations is a therapeutic measure and is to be sanctioned only under special circumstances. The special situations which have been listed by two of the Councils of the American Medical Association (The Proper Use of Vitamins in Mixtures, *THE JOURNAL*, July 18, 1942, p. 948) are essentially the treatment of deficiency states, supplementation of reducing diets for obesity, supplementation of restricted diets used for the treatment of allergy, supplementation of restricted diets during convalescence from severe infections, supplementation of special diets for peptic ulcer, and infant feeding. The use of special multivitamin preparations in normal infant feeding is unnecessary. Except for infant feeding, all the situations mentioned are in the treatment of abnormal conditions. The use of multivitamin preparations in normal nutrition is not only unnecessary, but conflicts with the teaching of good nutritional practice. The same logic applies to the addition of minerals to the diet. It is to be assumed that the fortified milk under consideration is intended chiefly for use in the normal diet and not primarily for treatment of abnormal states. Such use does not conform to general principles acceptable to the Council.

From the preceding discussion it is concluded that the fortification of milk with vitamin A, thiamine, riboflavin, niacin,

iron and iodine or any one of these materials does not serve a public health need sufficiently to warrant Council acceptance of the fortified product.

#### D-Q (DAILY QUOTA) MILK OF THE BORDEN COMPANY NOT ACCEPTABLE TO THE COUNCIL

This milk product, which is being marketed in several areas in the East has been fortified by the addition of vitamins and minerals to contain the following amounts of these nutritional elements per quart:

|            |                  |
|------------|------------------|
| Vitamin A  | 4000 U S P units |
| Vitamin D  | 400 U S P units  |
| Thiamine   | 10 mg            |
| Riboflavin | 20 mg            |
| Niacin     | 100 mg           |
| Iron       | 100 mg           |
| Iodine     | 0.1 mg           |

As shown in the foregoing report, the addition of these nutrients to milk with the exception of vitamin D is not considered to be necessary in the interest of the public health or to conform with the general principles of nutrition advocated by the Council. Therefore D-Q milk is declared not acceptable.

## Council on Pharmacy and Chemistry

### NEW AND NONOFFICIAL REMEDIES

*The following additional articles have been accepted as conforming to the rules of the Council on Pharmacy and Chemistry of the American Medical Association for admission to New and Nonofficial Remedies. A copy of the rules on which the Council bases its action will be sent on application.*

AUSTIN E. SMITH, M.D., Secretary

**MERBROMIN** (See New and Nonofficial Remedies, 1944, p. 139)

The following dosage forms have been accepted:

**PREMO PHARMACEUTICAL LABORATORIES, INC., NEW YORK**

**Merbromin Crystals** 10 Gm, 100 Gm, 500 Gm and 1,000 Gm bottles

**Solution of Merbromin—N F** 75 cc, 15 cc, 30 cc, 473 cc and 3,785 cc bottles

**Surgical Solution of Merbromin—N F** 473 cc and 3,785 cc bottles

**VITAMIN D** (See New and Nonofficial Remedies, 1944, p. 624)

The following additional dosage form has been accepted:

**WINTHROP CHEMICAL CO., INC., NEW YORK**

**Capsules Drisdol Concentrated Solution in Oil** 5 minims. Each capsule contains 125 mg of Drisdol and has a potency of 50,000 units of vitamin D (U. S. P.)

**TETRACAINE HYDROCHLORIDE** (See New and Nonofficial Remedies, 1944, p. 88)

The following additional dosage form has been accepted:

**WINTHROP CHEMICAL CO., INC., NEW YORK**

**Ampuls Pontocaine Hydrochloride "Niphanoid" for Spinal Anesthesia** 250 mg. Ampuls containing tetracaine hydrochloride in finely divided and instantly soluble form.

**ESTROGENIC SUBSTANCES** (See New and Nonofficial Remedies, 1944, p. 414)

The following additional dosage form has been accepted:

**GEORGE A. BREON & CO., KANSAS CITY, MO**

**Solution of Estrogenic Substance (in oil) with Chlorobutanol 3%** 10 cc vial. Each cubic centimeter contains 20,000 international units of estrogenic substance and chlorobutanol 3 per cent.

cent) was recorded in the north and middle counties, southern England yielding only 0.6 per cent

Five of the 266 cases were double infections, the bovine bacilli being associated with tubercle bacilli of human type. Clinical and anatomic evidence, such as previous cervical or mesenteric glandular tuberculosis or bone and joint tuberculosis, was strongly in favor of the digestive tract as the usual channel of entry of the bovine bacilli. Personal histories left little doubt that raw cow's milk was the main source of infection in the majority of cases. The probability of human to human infection with the bovine bacillus was ruled out in all but 4 cases. One probable instance of infection with bovine bacilli spreading from man to cattle was recorded.

The British survey led to the conclusion that cases of tuberculosis of the lungs due to bovine tubercle bacilli are indistinguishable clinically, radiologically or by postmortem examination from cases due to the human tubercle bacilli. From this Griffith concludes that human and bovine tubercle bacilli are equally pathogenic for man. This is but a belated endorsement of the opinion long held by American pathologists, many of whom believe that the bovine bacillus is often more highly virulent for man than the average human strain.

Griffith closes his posthumous report with a plea for avoidance of the consumption of raw milk in Great Britain, which is currently causing an estimated annual loss of 2,000 human lives in Scotland and England, two thirds of them of children under 15 years of age.<sup>3</sup>

### THE REVERSIBILITY OF HEART DISEASE

Recently Dr Paul Dudley White<sup>1</sup> called attention to the extent of the reversibility of heart disease in the annual oration in medicine before the Illinois State Medical Society. Twenty years ago Hamilton and Lahey<sup>2</sup> proved that serious thyrocardiac disease, now almost unknown, could be dispelled by subtotal thyroidectomy, the cardiac enlargement and failure in such cases had previously been considered risks too hazardous for surgery. Since that time every kind of heart disease has been shown to be reversible, in proportion of cases, either surgical or medical treatment. From that recalled Council years ago, time, although the report

and that at best we could simply delay a little the day of dissolution and make a bit more comfortable the remaining hours of the victims."

Following the demonstration of the reversibility of thyrotoxic heart disease and of the cardiac enlargement of myxedema, the reversibility of various other conditions has been proved. In 1928 the first case in this country of cure of chronic constrictive pericarditis by pericardial resection was carried out by Churchill, since that time relief has been given in many other cases. Some ten years ago it was realized that cardiac dilatation due to acute rheumatic myocarditis could entirely subside with the disappearance of mitral diastolic as well as of mitral systolic murmurs. Aneurysms, sacular and arteriovenous, have been attacked successfully by wiring or excision. Coronary heart disease, one of the most important of all types, has been shown to be reversible also, primarily through the spontaneous development of an adequate collateral circulation. Thus myocardial infarction and indeed also angina pectoris in many cases may exist merely as acute or subacute illnesses and not necessarily as chronic disabilities. The acute cor pulmonale consisting of dilatation of the right heart chambers may quickly subside on recovery from the immediate effects of massive pulmonary embolism. Cardiac dilatation and even failure found in acute hemorrhagic nephritis, avitaminosis of the B<sub>1</sub> type and severe anemia may also subside, with recovery from these underlying diseases.

Six years ago congenital heart disease joined the ranks of the types of reversible heart disease, when Gross<sup>3</sup> of Boston successfully ligated the patent ductus arteriosus, since then, in a good many cases, cardiac strain and dilatation have been relieved by this procedure. Subacute bacterial endocarditis has been yielding slowly but definitely to chemotherapy, first in slight degree to the sulfonamides and now apparently more successfully to massive doses of penicillin. Finally, the last of the types which was thought not long ago to be particularly irreversible, namely hypertensive heart disease, is now being relieved on occasion by the more extensive splanchnic resection carried out by Smith

concludes "Where does this all lead us?" first and most obviously, along search for still further chances evidences of heart disease, in our attacks as hypertension, is our ultimate cure, prevention

<sup>1</sup> Joseph V. David D. Carr, Ph.D., J. Roy He, George St. J. Per, and Nathan Sinai.

<sup>2</sup> Wilton L. I., vice chairman, Regu, M.D., Dwight M., Graves, M.D., Kenneth F. Maxcy, M.B., D.P.H., George, I. Scummon, M.D.





# THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

535 NORTH DEARBORN STREET - - CHICAGO 10, ILL

Cable Address

Medic, Chicago

Subscription price

Eight dollars per annum in advance

*Please send in promptly notice of change of address giving both old and new always state whether the change is temporary or permanent. Such notice should mention all journals received from this office. Important information regarding contributions will be found on second advertising page following reading matter.*

SATURDAY, OCTOBER 14, 1944

## AMERICAN PUBLIC HEALTH ASSOCIATION HEALTH INSURANCE DECLARATION

At its annual meeting in New York, October 4, the Governing Council of the American Public Health Association adopted a report favoring in effect a federal plan of compulsory health insurance. The text of the adopted report appears elsewhere in this issue (page 441). This report, first prepared by a subcommittee,<sup>1</sup> was approved after several amendments by the association's Committee on Administrative Practice.<sup>2</sup> The proposed medical service would be supported by social insurance, supplemented by general taxation, or by general taxation alone.

The ratification of the report as amended came after extended debate in which there was opposition to the adoption and publication of the report as a stated policy of the association. Those who opposed pointed out (a) that the administration of public health in the United States was by no means so universal or so generally adequate that public health departments in general were ready for this step, (b) that before the association placed itself publicly on record in the terms of this report there should be consultation with the most interested professional groups, particularly the American Medical Association and the American Dental Association, and (c) that the publication of the subcommittee report, its approval by the Committee on Administrative Practice and the call for adoption in the Governing Council occurred within less than thirty days elapsed time, although the subcommittee had been working on the report for a year.

1 Joseph W. Mountin, M.D., chairman; Earle G. Brown, M.D., David D. Carr, M.D., Edwin F. Daily, M.D., Graham Davis, I. S. Falk, Ph.D., J. Roy Hege, M.D., Hugh R. Leavell, M.D., Emory Morris, D.D.S., George St. J. Perrott, Marion G. Randall, R.N., Edward S. Rogers, M.D., and Nathan Sinai, D.P.H.

2 Wilton L. Halverson, M.D., chairman; Haven Emerson, M.D., vice chairman; Reginald M. Atwater, M.D., secretary; Gregoire F. Amyot, M.D., Dwight M. Bissell, M.D., George B. Darling, Dr. P.H., Lloyd I. Graves, M.D., Willard C. Hanson, M.D., Ira V. Hiscock, Sc.D., Kenneth F. Macey, M.D., Joseph W. Mountin, M.D., John T. Phair, M.B., D.P.H., George H. Ramsey, M.D., W. S. Rankin, M.D., Clarence L. Scrutton, M.D., Marion W. Sherhan, R.N., and H. A. Whittaker.

The motion to adopt the report was made at the October 2 meeting of the Governing Council and was extensively debated at that time. Action was postponed until the October 4 meeting. At that time an amendment was offered to the motion to adopt. This amendment called for the Governing Council to receive this portion of the report of the Committee on Administrative Practice and to refer it to the Executive Board of the American Public Health Association with instructions to confer with the Board of Trustees of the American Medical Association and with the American Dental Association in an attempt to arrive at a statement which these three great professional groups could support. The amendment was lost by a standing vote approximately three to one after a voice vote had left the chair in doubt. The Governing Council then proceeded to vote on a motion to adopt the report, this vote was 49 Aye and 14 No. The opposition to the adoption of the report was led by Drs. Walter A. Biering, Past President of the American Medical Association, Haven Emerson and W. W. Bruer.

Now what is the group that adopted this report? Of the 7,493 members of the American Public Health Association 1,571 are Fellows. Only Fellows have a right to vote for governing councilors; the vote is conducted by ballot given to each Fellow when he registers at the meeting; Fellows not in attendance do not have a vote. The Governing Council consists of approximately 100 members of whom 30 are elected by vote of the Fellows, 10 each year for three year terms, the rest of the members of the Governing Council hold membership by virtue of being section officers or representatives of affiliated (mostly state) public health associations. Members of the association other than Fellows can vote only on section affairs. The report on compulsory health insurance represents, therefore, the action of the subcommittee which prepared it, the Committee on Administrative Practice which approved it, and the 49 members of the Governing Council who voted in its favor. Here is not a democratic practice in action, here is a shrewdly manipulated performance by full time public officials, economists, bureaucrats. Most of the names of those on the subcommittee are those of men long committed to federal compulsory sickness insurance and to federal control of all matters in the health field.

The American Public Health Association has an obvious right to express itself on any subject related to the public health. The rejection by the majority group of the proposal for consultation with medical and dental leaders indicates the attitude that may be expected of them if they should have control of the Washington bureaucracy that would dominate American medicine should their ideas become effective. Perhaps this step in which these men had leadership will be useful in

serving notice once more on the medical, dental, nursing, pharmaceutical and other professional groups as to the nature of the political manipulators in the fields of social security and public health whom the medical professions will be forced to combat

### PROLONGING THE ACTION OF PENICILLIN

Penicillin injected intramuscularly is rapidly absorbed by the local capillaries, the penicillin titer of the blood stream usually reaching its maximum within fifteen minutes. Half of the absorbed penicillin is excreted by the kidneys or otherwise removed from the circulation within the next fifteen minutes. The penicillin titer falls to one fourth of the maximum by the end of one hour and to zero by the end of two hours. To prolong the therapeutic period, repeated intramuscular injections or continuous intravenous instillations of penicillin have been tried.

Renal excretory blockade by the simultaneous injection of penicillin and diodrast or penicillin and p-amino-hippuric acid have been suggested to accomplish the same purpose.<sup>1</sup> More recently a slowing and prolongation of penicillin absorption from the injected muscle by suspending penicillin in inert protamine, oil or wax has been tried by Romansky and his associates<sup>2</sup> of the Walter Reed General Hospital. In their initial experiments penicillin was suspended in peanut oil, sesame oil, cottonseed oil, castor oil or protamine zinc and the suspension injected intramuscularly into rabbits. A distinct prolongation of therapeutic blood titer resulted from this technic, with a parallel prolongation of penicillin excretion in the urine.

Following reported prolongation of the action of desoxycorticosterone acetate,<sup>3</sup> histamine<sup>4</sup> and heparin by the use of beeswax, Romansky suspended penicillin in a mixture of from 0.75 to 6 per cent beeswax in peanut oil. Several rabbits were injected intramuscularly with 5,000 to 10,000 Oxford units of penicillin in 1 cc of this mixture, and an equal number of control rabbits were injected with the same number of units in saline solution. In none of the control animals was a therapeutic level of penicillin maintained in the blood for as long as two hours. In rabbits injected with the penicillin-beeswax-peanut oil mixture an adequate therapeutic level was maintained for from six to twelve hours. This is a greater prolongation of penicillin action than previously obtained with unmixed oils.

Patients were then given intramuscular injections of about 50,000 Oxford units of penicillin in 2 to 2.5 cc of beeswax-peanut oil. In these patients an effective therapeutic blood titer was maintained for six to seven hours while penicillin excretion in the urine continued for twenty to thirty-two hours. The therapeutic efficiency of this technic was then tested on 12 patients with gonococcal urethritis, 11 of whom were cured by a single intramuscular injection with the penicillin-beeswax-peanut oil mixture. Fifty-three additional patients with gonorrhea were similarly cured by a single intramuscular injection by other members of the staff of Walter Reed General Hospital. Detailed reports are promised for the near future.

### PULMONARY TUBERCULOSIS OF BOVINE ORIGIN

At the London Congress on Tuberculosis in 1901 Koch asserted that bovine tubercle bacilli are virtually nonpathogenic for man and that measures to protect human populations against tuberculosis of bovine origin are unnecessary. Following repeated demonstrations by other investigators of bovine tubercle bacilli in glandular tuberculosis in children, Koch modified this view. At the Washington congress in 1908 he admitted that bovine tubercle bacilli might have sufficient virulence to cause local glandular lesions in man but still asserted that they are never sufficiently virulent to cause human pulmonary tuberculosis. By that time only 2 possible cases of human pulmonary tuberculosis of bovine origin had been reported in the literature, 1 of which was doubtful.

During the next fifteen years work by the scientific staff of the Royal Commission on Tuberculosis of Great Britain under the leadership of the late A. Stanley Griffith seemed to confirm Koch's view. Bovine tubercle bacilli were demonstrated in the sputum of only 4 of the 266 cases of human pulmonary tuberculosis examined by the British clinicians. Since then, however, the accumulated evidence has pointed to a quite different conclusion. From the sputums of 6,963 cases of human pulmonary tuberculosis in Great Britain Griffith and his associates<sup>1</sup> have cultivated and identified bovine tubercle bacilli in 241 cases, or 3.4 per cent of all cases examined.

The relative frequency of bovine infections was highest in Scotland, reaching 25.8 per cent in the Orkney Islands and falling to 9.1 per cent in adjacent districts of the mainland. The average for all of Scotland was 5.2 per cent, falling to 4.4 per cent in the city of Aberdeen. In England the highest frequency (2 per

6 Romansky, Monroe J. and Rittman, George E. Penicillin Bull U. S. Army Med. Dept. October 1944, page 43.  
1 Griffith, A. S. and Munro, W. T. J. Hyg. 43, 229 (Jan.) 1944.

1 Penicillin Excretory Blockade editorial J. A. M. A. 126, 369 (Oct. 7) 1944.

2 Roman, M. J., and Rittman, G. E. Science 100, 196 (Sept. 1) 1944.

3 Code, C. F., Gregory, R. H., Lewis, R. E., and Kotke, F. J. Am. J. Physiol. 133, 240, 1941.

4 Code, C. F., and Varco, R. L. Am. J. Physiol. 137, 225, 1942.

5 Brown, J. C., and Code, C. F. Proc. Staff Meet. Mayo Clin. 19, 100, 1944.

cent) was recorded in the north and middle counties, southern England yielding only 0.6 per cent

Five of the 266 cases were double infections, the bovine bacilli being associated with tubercle bacilli of human type. Clinical and anatomic evidence, such as previous cervical or mesenteric glandular tuberculosis or bone and joint tuberculosis, was strongly in favor of the digestive tract as the usual channel of entry of the bovine bacilli. Personal histories left little doubt that raw cow's milk was the main source of infection in the majority of cases. The probability of human to human infection with the bovine bacillus was ruled out in all but 4 cases. One probable instance of infection with bovine bacilli spreading from man to cattle was recorded.

The British survey led to the conclusion that cases of tuberculosis of the lungs due to bovine tubercle bacilli are indistinguishable clinically, radiologically or by postmortem examination from cases due to the human tubercle bacilli. From this Griffith concludes that human and bovine tubercle bacilli are equally pathogenic for man. This is but a belated endorsement of the opinion long held by American pathologists, many of whom believe that the bovine bacillus is often more highly virulent for man than the average human strain.

Griffith closes his posthumous report with a plea for avoidance of the consumption of raw milk in Great Britain, which is currently causing an estimated annual loss of 2,000 human lives in Scotland and England, two thirds of them of children under 15 years of age.<sup>3</sup>

### THE REVERSIBILITY OF HEART DISEASE

Recently Dr Paul Dudley White<sup>1</sup> called attention to the extent of the reversibility of heart disease in the annual oration in medicine before the Illinois State Medical Society. Twenty years ago Hamilton and Lahey<sup>2</sup> proved that serious thyrocardiac disease, now almost unknown, could be dispelled by subtotal thyroidectomy, the cardiac enlargement and failure in such cases had previously been considered risks too hazardous for surgery. Since that time every kind of heart disease has been shown to be reversible, in at least a small proportion of cases, either spontaneously or by surgical or medical treatment. This is a different situation from that recalled by White, who states that some thirty years ago when he was medical student, intern and hospital resident "it was still being taught and believed that heart disease was final and fatal, that the coronary arteries were forever 'end arteries'".

<sup>1</sup> Reichle H S. Primary Tuberculous Infection of the Intestine. *Arch Path* 21: 79 (Jan) 1936.

<sup>2</sup> Jordan L. Medical Research Council Special Report Series 184. London: H. M. Stationery Office, 1933.

<sup>3</sup> White P D. The Reversibility of Heart Disease. *Illinois M J* 86: 9 (July) 1944.

<sup>4</sup> Hamilton Burton E. Heart Failure of the Congestive Type Caused by Hyperthyroidism. *J A M A* 83: 405 (Aug 9) 1924.

Lahey F H. End Results in Thyrocardiacs. *Ann Surg* 90: 750 (Oct) 1929.

and that at best we could simply delay a little the day of dissolution and make a bit more comfortable the remaining hours of the victims."

Following the demonstration of the reversibility of thyrotoxic heart disease and of the cardiac enlargement of myxedema, the reversibility of various other conditions has been proved. In 1928 the first case in this country of cure of chronic constrictive pericarditis by pericardial resection was carried out by Churchill, since that time relief has been given in many other cases. Some ten years ago it was realized that cardiac dilatation due to acute rheumatic myocarditis could entirely subside with the disappearance of mitral diastolic as well as of mitral systolic murmurs. Aneurysms, sacular and arteriovenous, have been attacked successfully by wiring or excision. Coronary heart disease, one of the most important of all types, has been shown to be reversible also, primarily through the spontaneous development of an adequate collateral circulation. Thus myocardial infarction and indeed also angina pectoris in many cases may exist merely as acute or subacute illnesses and not necessarily as chronic disabilities. The acute cor pulmonale consisting of dilatation of the right heart chambers may quickly subside on recovery from the immediate effects of massive pulmonary embolism. Cardiac dilatation and even failure found in acute hemorrhagic nephritis, avitaminosis of the B<sub>1</sub> type and severe anemia may also subside, with recovery from these underlying diseases.

Six years ago congenital heart disease joined the ranks of the types of reversible heart disease, when Gross<sup>3</sup> of Boston successfully ligated the patent ductus arteriosus, since then, in a good many cases, cardiac strain and dilatation have been relieved by this procedure. Subacute bacterial endocarditis has been yielding slowly but definitely to chemotherapy, first in slight degree to the sulfonamides and now apparently more successfully to massive doses of penicillin. Finally, the last of the types which was thought not long ago to be particularly irreversible, namely hypertensive heart disease, is now being relieved on occasion by the more extensive splanchnic resection carried out by Smithwick.<sup>4</sup>

Dr White concludes "Where does this all lead us? In two directions: first and most obviously, along our continued optimistic search for still further chances and methods of reversing the evidences of heart disease, and second and still more importantly, in our attacks on the causes of heart disease, such as hypertension, before the heart itself is affected. That is our ultimate goal in cardiology, as in all fields of medicine, prevention rather than cure!"

<sup>3</sup> Gross R E and Hubbard J P. Surgical Ligation of a Patent Ductus Arteriosus. Report of First Successful Case. *J A M A* 112: 729 (Feb 25) 1939.

<sup>4</sup> Smithwick R H. A Technique for Splanchnic Resection for Hypertension. Preliminary Report. *Surgery* 7: 1 (Jan) 1940.

## Current Comment

### SHOCK THERAPY FOR DEMENTIA PRECOX

Patients with dementia precox treated by insulin shock at the Brooklyn State Hospital, New York, did substantially better in all respects than comparable patients who did not receive any form of shock therapy. This fact, based on a study of 1,128 patients with dementia precox treated with insulin shock therapy and 876 not treated with shock therapy was embodied in a report recently submitted by the Temporary Commission on State Hospital Problems in New York State.<sup>1</sup> Among the benefits of insulin shock treatment was the consistently higher proportion of insulin treated patients who were returned to gainful employment. A much larger proportion of the treated patients were able to leave the hospital, the hospitalization period prior to release was 3.8 months shorter per patient among the insulin treated group than among the nontreated. The report pointed out that insulin treatment thus effected a saving of 286,695 days of hospital care. The recommendation of the commission was that insulin shock therapy should be made available to all patients with dementia precox in state hospitals in New York.

### ASCORBIC ACID FOR BLEEDING GUMS

A number of reports have indicated that ascorbic acid is valuable for various forms of gingivitis and bleeding gums. Consequently vitamin C frequently has been administered for that purpose. The Royal Air Force, for example, has used large quantities for the treatment of all forms of bleeding gums. Now a report has appeared based on an investigation carried out between October 1941 and May 1942 to discover the incidence of bleeding gums in the Royal Air Force and to evaluate the use of ascorbic acid in the treatment of this condition. The total number of personnel under investigation was 2,962 at four stations. Of these, 588 had some degree of bleeding of the gums, or a percentage of 19.8. The gums of the lower jaw were examined for bleeding after digital massage. Bleeding was recorded as of three degrees: (a) bleeding just perceptible at one or two points after firm massage; (b) bleeding more easily produced or bleeding from several points; and (c) bleeding apparent on inspection or at the slightest touch. An average amount of ascorbic acid present in the food served to the airmen at three of the stations was 25.8 mg per man daily during October and November 1941 and 16.8 mg during March 1942. Alternate members of the group with bleeding gums were given ascorbic acid tablets and dummy tablets. The dose was 200 mg of ascorbic acid daily for seven days followed by 100 mg daily for fourteen days. Of one group of men with bleeding gums, 250 completed the test, 119 receiving ascorbic acid and 131 receiving dummy tablets. There was no greater improvement in the gum conditions observed in those treated with

ascorbic acid than in those who received the control tablets. In one of the stations observations were carried out on 600 men over a six weeks period. There was a large normal variation in the degree of bleeding of the gums, irrespective of treatment. Those having "sponginess" as well as bleeding of the gums did not show any greater improvement with ascorbic acid treatment than with dummy tablets. The personal opinions of patients with regard to the degree of bleeding from the gums and effectiveness of treatment did not bear any relation to the objective signs. Stamm and his colleagues<sup>1</sup> concluded that greater improvement in the gum condition was not obtained by treatment with ascorbic acid than with dummy control tablets. In view of the shortages in vitamin C supplies it seems advisable to use ascorbic acid in the future with more discrimination. Large supplementary doses may be limited to those conditions for which scientifically acceptable evidence establishes the value of vitamin C.

### TRANSLATION OF MEDICAL BOOKS FOR LATIN AMERICAN USE

Important books of this country, particularly in the fields of science, medicine and technology, will be made more readily available in Spanish and Portuguese translations for peoples of the other American republics as the result of a project to be conducted by Science Service, the nonprofit scientific institution, as a part of the Department of State's broad program for intellectual cooperation in the Western Hemisphere. Spanish and Portuguese translations of American books, issued by publishers in the other American republics as well as by United States publishers, will receive financial aid under this project. Books originally published in Spanish and Portuguese will be made available in English in the United States under provisions for similar aid to United States publishers. A grant-in-aid by the Department of State provides Science Service with funds to help defray the costs of translations to obtain and distribute copies of the translated books to libraries, institutions and other organizations and to cooperate otherwise in making the literature of any one American republic available to other peoples on the two continents. The purpose of this two way translation program is "to overcome the barriers raised by difference of language by making available to the peoples of the other American republics the writings which represent the thought and the cultural and intellectual life of the United States and making available to the people of the United States the writings which represent the thought and cultural and intellectual life of the peoples of the other American republics." Suggestions as to translations needed are being received from officials, scientists, educators, publishers and others in this country and the other American republics. This program should contribute materially to the increasing interdependence and good will of physicians and scientists in our own country and in our sister republics.

1. Temporary Commission on State Hospital Problems. Aug. 27, 1944.

1. Stamm, W. P., Mierce, T. F. and Audlin, Simon. Incidence of Bleeding Gums Among R. A. F. Personnel and the Value of Ascorbic Acid in Treatment. Brit. M. J. 2: 239 (Aug. 19) 1944.

# MEDICINE AND THE WAR

## PROCUREMENT AND ASSIGNMENT SERVICE FOR PHYSICIANS, DENTISTS AND VETERINARIANS

### POLICY STATEMENT

Paul V. McNutt, chairman of the War Manpower Commission, issued the following statement on the policy adopted by the directing board of the Procurement and Assignment Service of the War Manpower Commission at a meeting on September 23:

The war is not yet over and we must continue our efforts to keep the armed services supplied with a sufficient number of doctors, dentists and nurses to meet the critical needs of this period of the war and also fulfil our obligation to the home front.

In common with the other divisions of the War Manpower Commission, however, the Procurement and Assignment Service is cooperating with those charged with the responsibility for developing demobilization plans. In view of the information collected incident to the mobilization of our medical resources for war, this office can perform many useful services in connection with these demobilization plans in the interest of the members of the professions now in service. The War Manpower Commission wishes to be of whatever service possible but in common with all war agencies, has no interest in perpetuating its controls beyond the period necessary."

In order that the point of view of the directing board of the Procurement and Assignment Service may be understood by

the doctors, dentists, veterinarians, sanitary engineers and nurses the following statement of policy was adopted at its meeting on September 23:

1 The Procurement and Assignment Service is an organization which was created at the request of these professions to meet a war problem, and in meeting its responsibilities this service has had the support of these professions.

2 As a war agency this service is discharging and will continue to discharge its obligations until the end of the war. It will cooperate with the agencies concerned with the effective utilization of the individual members of these professions who are demobilized before the end of the war.

3 In the directive under which it was created the responsibilities of the Procurement and Assignment Service did not extend beyond the duration of the war.

4 Therefore it does not contemplate dealing with peacetime demobilization but will continue its activities including cooperation with agencies working on demobilization plans so long as the war continues.

The members of the directing board are Drs. Frank H. Lahey, chairman, Harvey B. Stone, vice chairman, C. Willard Camalleri, Jr., Harold S. Ditch, James E. Paulin and Abel Wolman.

## NAVY

### NAVY RELIEF SOCIETY ASSISTANCE IN MEDICAL CARE OF NAVAL DEPENDENTS

The primary purpose of the Navy Relief Society, incorporated Jan. 23, 1904 under the Laws of the District of Columbia, is to assist, in time of emergency need, the widows, minor orphans and dependent mothers of deceased men of the Navy and Marine Corps. It is also its purpose, in cases of emergency need, to help active servicemen provide hospital, medical and surgical care for their dependents when they and their families are unable to do so with their own resources. This financial assistance takes the form of a loan without interest or a gratuity or a combination of the two, depending on the man's ability to repay a loan without undue hardship.

The Navy Relief Society is not a government agency. Its funds are raised by voluntary contributions, largely from service personnel, except that the general public contributed during the year 1942.

The society deems it unwise to make loans that cannot be repaid, and its funds are not adequate to permit it to assume the obligation to advance, as a gratuity, sufficient funds to pay in full normal medical and surgical fees, but it does desire to help the serviceman to meet such emergency needs of his dependents.

It is the policy of the society to help active servicemen secure hospital (open ward rates), medical and surgical care for their dependents in cases of other than chronic illness, provided (a) the serviceman and his family do all that they can to meet their own obligations, (b) the resources of the community are utilized as far as possible, without prejudice to the status of the family prior to the man's entry into the service, and (c) the application for assistance has been approved by the Navy Relief Society before the services are rendered, except in emergency cases when application must be made within forty-eight hours to the Navy Relief Society directly through its auxiliaries or through the American Red Cross.

The Navy Relief Society may, after full consideration of the facts of the case, help a serviceman provide hospital, medical

and surgical care for his dependents, but it cannot (a) accept the obligation to advance as a gratuity (gift) sufficient funds to pay in full normal medical and surgical fees, (b) pay bills for operations or medical care in chronic cases or (c) pay hospital, medical or surgical bills contracted without its knowledge or approval except under conditions stated in c in the preceding paragraph.

It is expected that physicians and surgeons will arrange with the family for the payment of their fees. When the dependent or the man concerned needs assistance, application should be made by the man or his dependent to the Navy Relief Society directly or through its auxiliaries or through the American Red Cross prior to creating the obligation.

The society will usually agree to assist but the extent to which the society is able to assist is limited and will be based on the full consideration of all the facts in the case. As a rule the assistance will be rendered by sending to the patient, for delivery to the physician or surgeon, a check drawn in favor of the physician or surgeon.

### CAPTAIN ALPHONSE McMAHON HONORED

Capt. Alphonse McMahon, St. Louis, recently returned from eighteen months' service in the South Pacific and is now on duty at the U. S. Naval Hospital at the National Naval Medical Center, Bethesda, Md. He was recently honored by the Mississippi Valley Medical Society as its distinguished service award recipient for 1944. The award, a gold medal and certificate was presented by the society's president, Dr. C. Paul White, September 27. The citation accompanying the award read in part: "To Captain Alphonse McMahon of St. Louis, Medical Corps, U. S. Navy, for his long service as a teacher of clinical medicine at St. Louis University Medical School, for his continuous interest in postgraduate medical education in recognition of which he was elected Vice President of the American Medical Association and President of the St. Louis Medical Society a few years ago, and for his fine example as a citizen of the United States by leaving a lucrative private practice promptly on declaration of World War 2 and entering the



U S Navy although over the draft age. Here he spent eighteen months in the South Pacific in the establishment of one of the first hospitals to receive combat injured from the battles of the Coral Seas and Guadalcanal, in recognition of which he has been cited by Admiral William F Halsey as a naval officer who has 'reflected great credit on himself by his outstanding professional ability and keen judgment, particularly in the management of war wounds and in the treatment of tropical diseases. His long experience as a teacher of medicine and his effective leadership in the instruction of young medical officers contributed materially to the success of the Navy's operations.'"

## NAVY AWARDS AND COMMENDATIONS

### Lieutenant Mark Walton Wolcott

Lieut Mark Walton Wolcott, formerly of Philadelphia, was recently awarded the Air Medal "for meritorious achievement in aerial flight as crew member of an R4D transport plane attached to the South Pacific Air Transport command from July 15 to 25, 1943. When his craft was unable to land on the densely overgrown jungle terrain while transporting urgently needed supplies to our forces on New Georgia Island, Lieutenant Wolcott skilfully performed his duties and rendered invaluable assistance to his pilot in accurately dropping the cargo as the unarmed plane flew in at terrific speed and at tree top level to avoid intense enemy antiaircraft fire and aerial opposition, making several hazardous runs on the targets to complete the mission and frequently returning to base with-

out the protection of covering planes. Lieutenant Wolcott's cool courage and unwavering devotion to duty under extremely difficult conditions contributed materially to the success of these vital missions and were in keeping with the highest traditions of the United States Naval Service." Dr Wolcott graduated from the University of Pennsylvania School of Medicine Philadelphia, in 1941 and entered the service July 15 1942.

### Lieutenant Commander David Charles James

The Navy and Marine Corps Medal was recently awarded to Lieut Comdr David Charles James formerly of East Cleveland Ohio. The citation read: "For heroic conduct as medical officer aboard the LST-396 when that ship with a cargo of gasoline and ammunition was attacked and sunk by enemy Japanese forces in the New Georgia Area on Aug 18 1943. Despite recurrent explosions and spreading flames Lieutenant Commander (then Lieutenant) James disregarded imminent personal danger and entered a troop berthing compartment under which the powder and gasoline had been stored to save a helpless shipmate pinned under a mass of twisted wreckage. Bringing the severely injured man topside, he swiftly performed an emergency amputation in the midst of enveloping smoke and flames and then assisted in getting him over the side and into a life raft where he applied a tourniquet and administered to the wounded comrade until rescued. Lieutenant Commander James's outstanding valor his professional integrity and selfless devotion to duty were in keeping with the highest traditions of the United States Naval Service." Dr James graduated from New York University College of Medicine, New York in 1939 and entered the service July 14, 1941.

## ARMY

### NEW MEDICAL PLAN FOR AAF COMMANDS

A new program of industrial medicine and hygiene, developed by the medical staff of the Air Technical Service Command, will be installed in all AAF commands in the United States. The program, instituted by Col J M Hargreaves, ATSC surgeon, is being taught and demonstrated to medical officers from other AAF commands in five twelve day seminars, which opened recently at five depots of the ATSC under a standardized plan developed by Colonel Hargreaves and Lieut Col Grover Sladczyk, chief, Industrial Hygiene Branch. One hundred leading medical officers from the AAF Training Command, the Second, Third and Fourth Air Forces and the Air Transport Command are attending the seminars conducted at Middletown, Pa, Ogden, Utah, Oklahoma City, San Antonio and Warner Robins, Ga. The program has been endorsed by the American Medical Association and the American College of Surgeons. Simultaneous conduct of the seminars was decided on, Colonel Hargreaves stated, in order to facilitate installation of the ATSC program in other commands as quickly as possible, following receipt of an order to that effect from Major Gen David N W Grant, Air Surgeon, Washington, D C. Lectures on more than fifty subjects will be followed by demonstrations and tours around each of the ATSC depots. On completion of the course the AAF medical officers will return to their respective commands to begin immediate installation of the ATSC program.

### CONTROLLED RATION TEST COMPLETED

The most extensive controlled ration test ever conducted using U S military personnel was recently concluded with highly satisfactory results. Major William Beane of the Armored Medical Research Laboratory, Fort Knox, Kentucky, directed the test in cooperation with Major James Robinson, Inf, and Capt David Bell of the Royal Canadian Medical Corps. American and Canadian expeditionary rations were used.

A battalion of American soldiers on maneuvers at an altitude of 8850 feet above sea level in Colorado were fed exclusively on American rations C, K and 10 in 1 and Canadian Mess Tin B ration for a period of sixty days. During this time they were engaged in vigorous combat training. At the conclusion of the

test it was found that the troops were in better physical condition than at the start, with high morale. The rations were proved to be wholly adequate to sustain troops in vigorous combat. Certain items in the rations, however, were found less acceptable to the men than others and these will be improved.

Four consultants in nutrition to the Surgeon General Dr Julian M Ruffin, Dr Frederick J Stare, Dr R H Kampmeier and Dr Virgil P Sydenstricker assisted in the physical examinations. Dr Albert Mendeloff and Dr Carleton B Chapman of the Public Health Service also aided in the test. A unit from the Harvard Fatigue Laboratory under Dr R E Johnson performed the laboratory examinations.

### HONOR BRIGADIER GENERAL JAMES S SIMMONS AT MARQUETTE UNIVERSITY

An honorary degree of Doctor of Science was recently bestowed on Brig Gen James S Simmons, U S Army, at Marquette University School of Medicine, Milwaukee. Dr Eben J Carey, dean of the school, stated that 'Brigadier General James Stevens Simmons, U S Army, doctor of medicine from the University of Pennsylvania in 1915, doctor of philosophy from George Washington University in 1934, doctor of public health from Harvard University in 1939, lecturer in preventive medicine and public health at Johns Hopkins, George Washington and Yale universities, member of the visiting committee for the Harvard University School of Public Health, chief and director of various army laboratories and schools from 1917 to 1940, chief, Preventive Medicine Service, Office of the Surgeon General, U S Army, since 1940, subchairman on the Lehman Committee, director of the Philippine Research Board of Manila from 1928 to 1930, president of the National Malaria Committee in 1942, member and fellow of many medical associations and committees, awarded the Sedgwick Memorial Medal in 1943, the medal of the Carlos J Finley National Order of Merit in 1944, and for 'exceptionally meritorious services' in the United States of America Typhus Commission Medal in 1944 by his many distinct contributions to medical science, is entitled to the degree Doctor of Science, honoris causa.' General Simmons was represented by Rev Edward J Drummond S J, Ph D, dean of the Graduate School.

## MEDICAL ADMINISTRATIVE CORPS OFFICERS

In order to relieve the critical shortage of doctors, the Medical Department recently increased its quota for admission to officer candidate schools and is continuing a program of training graduate administrative officers as battalion surgeon assistants. From now until April 1945 appointments will be made in the Medical Administrative Corps after seventeen weeks' training at Camp Barkeley, Texas and Carlisle Barracks, Pa. From among those graduates, officers with appropriate backgrounds will be selected to receive six weeks' additional training at Camp Barkeley for duty assisting battalion surgeons.

The special training consists principally of advanced first aid which will qualify officers to relieve battalion surgeons of details and thus free the surgeons' time for purely medical and surgical work.

The thirty-second class of the Camp Barkeley Medical Administrative Corps Officer Candidate School graduated September 20. At the present time there are four other classes in various stages of the seventeen weeks instruction. Courses of instruction at the school include medical administration, supply, organization of the army, sanitation, first aid, chemical warfare, tactics, training and logistics. Brig Gen Roy C. Heflebower is commandant of the school.

## MISCELLANEOUS

### POSTWAR MEDICAL SERVICE COMMITTEE'S QUESTIONNAIRES

At the request of the Committee on Postwar Medical Service, questionnaires designed to gather information that would be useful for postwar planning were distributed by the Surgeons General of the Army, Navy and Public Health Service to each medical officer on active duty. Letters have been received from a number of medical officers indicating that they did not receive a questionnaire. In the event any medical officer did not receive a Postwar Planning Questionnaire, it is suggested that he write to the Committee on Postwar Medical Service, 535 North Dearborn Street, Chicago 10, and request one.

### WARTIME GRADUATE MEDICAL MEETINGS

The following subjects and speakers for Wartime Graduate Medical Meetings have just been announced:

Camp McCoy, Wisconsin: Psychiatry, Psychoneurosis, Neurocirculatory Asthenia and Malingering, Dr. Lloyd H. Ziegler, November 1.

U. S. Naval Hospital, Santa Margarita Ranch, Oceanside, Calif.: Audiovisual Kinesthetic Methods in the Rehabilitation of the War Deafened, Lucelia M. Moore, October 16.

Truax Field, Wisconsin: Peptic Ulcer and Gastritis, Dr. Carl W. Eberbach, November 1.

U. S. Naval Hospital, Long Beach, Calif.: Some Aspects of the Treatment of Peptic Ulcer, Dr. William C. Boeck, October 21.

An extensive lecture tour of the various military hospitals in Kentucky and Tennessee will be made by Dr. Louis A. Bue of the Mayo Clinic under the auspices of the Wartime Graduate Medical Meetings. His topics for discussion will be "Anal Abscess and Fistula," "Anal Fissure, Hemorrhoids and Stricture," "Pilonidal Disease" and "Lesions of the Terminal Portion of the Colon." The schedule to be followed is: Nichols General Hospital on the 9th of October, Fort Knox on the 10th, Camp Breckenridge on the 11th, Camp Campbell on the 12th, Nashville Army Air Center on the 13th, Camp Forrest on the 14th, Thayer General Hospital on the 16th, Kennedy General Hospital on the 17th and Dyersburg Station Hospital on the 18th.

### NURSING IN THE UNITED STATES PUBLIC HEALTH SERVICE

Katharine S. Read, superintendent of nurses, United States Public Health Service, in supplement 176 to *Public Health Reports*, gives an outline of the service since it was established in 1798 by act of Congress as the Marine Hospital Service. That name was used for more than a century or until 1902, when it was changed to the Public Health and Marine Hospital Service and in 1912 was changed to its present name.

For many years the duty of caring for American merchant seamen was the sole function of the Marine Hospital Service,

and nursing in the marine hospitals was done largely by male nurses. In 1918 the Surgeon General of the Public Health Service requested the American Red Cross to detail a nurse to survey the marine hospitals for the purpose of making a report on the nursing situation. Miss Lucy Muningerode was assigned to make this survey. The Surgeon General was so impressed with her report that he recommended that she be appointed superintendent of nurses of the U. S. P. H. S. This was effective in 1919. On March 3, 1919 the Public Health Service was authorized to furnish medical service to veterans.

Since Pearl Harbor the Public Health Service has expanded greatly. The increase in the Coast Guard and the activities of the War Shipping Administration have developed an entirely new activity. Nurses have been assigned to act as instructors in nursing arts at the Pharmacist's Mates School of War Shipping Administration, Sheepshead Bay, Brooklyn. This school takes in a class of fifty trainees each week for a course of three months.

The functions of the nursing service are to provide nursing care to all service beneficiaries in the hospitals and dispensaries of the service and related projects and to instruct trainees of the Maritime Service and the Coast Guard in nursing arts both in the pharmacist's mates school and in the hospital wards.

Those entitled to hospital care by the Public Health Service include seamen, Coast Guard, Coast and Geodetic Survey officers, ships' officers, and crews of coast and geodetic survey vessels; persons with leprosy, U. S. Employees Compensation Commission beneficiaries, Public Health Service officers and employees (quarantine and field), immigration and naturalization service (persons detained under immigration laws and regulation), special study cases and pay patients.

### HOSPITALS NEEDING INTERNS AND RESIDENTS

The following hospitals have indicated to the Council on Medical Education and Hospitals that they have not completed their house staff quota allotted by the Procurement and Assignment Service:

(Continuation of list in THE JOURNAL, October 7, page 374)

#### MASSACHUSETTS

Boston City Hospital, Boston: Capacity 2,537 admissions, 40,314. Dr. James W. Manary, Medical Director and Superintendent (2 residents—dermatology and syphilology).

#### NEW YORK

Cumberland Hospital, Brooklyn: Capacity 400 admissions, 6,705. Dr. Max Seide, Medical Superintendent (14 interns, July 1, 1945). St. John's Long Island City Hospital, Long Island City: Capacity 284 admissions, 5,418. Sister Thomas Francis, Superintendent (interns). Genesee Hospital, Rochester: Capacity 256 admissions, 5,981. Dr. Leslie H. Wright, Superintendent (resident—medicine). St. John's Riverside Hospital, Yonkers: Capacity 220 admissions, 4,398. Dr. John W. Pangburn, Chairman, Intern Committee (interns).

#### OHIO

Longview Hospital, Cincinnati: Capacity 2,827 admissions, 482. Dr. E. A. Baber, Superintendent (3 residents—psychiatry).

# ORGANIZATION SECTION

## MEDICAL CARE IN A NATIONAL HEALTH PROGRAM

*The following amended report was adopted by the Governing Council of  
The American Public Health Association  
at its annual meeting, held in New York on October 4*

### A THE NEEDS

I A large portion of the population receives insufficient and inadequate medical care, chiefly because persons are unable to pay the costs of services on an individual payment basis when they are needed, or because the services are not available

II There are extensive deficiencies in the physical facilities needed to provide reasonably adequate services. Such facilities include hospitals, health centers and laboratories. The needs are most acute in poor communities, in rural areas and in urban areas where the population has increased rapidly or where the development of facilities has been haphazard or the financial support inadequate

III There are extensive deficiencies in the numbers and the distribution of personnel needed to provide the services. Here again the needs vary according to types of personnel and to types of communities

IV There are extensive deficiencies in the number and types of personnel qualified to administer facilities and services

V Many communities still are not served by public health departments, others inadequately maintain such departments. Thus, some communities have never utilized organized health work to reduce the burden of illness and others share its benefits only in part. In these communities especially, people lack information on the benefits of modern medical care

VI Expansion of scientific research is urgently needed. Despite past and current scientific advances, knowledge as to the prevention, control or cure of many diseases is lacking

Each of the six conditions defined above can be broken down into many component parts representing specific needs. In general, however, solutions of these broad problems require simultaneous attack on four fronts—namely, the distribution of costs, construction of facilities, training of personnel and expansion of knowledge

### B THE OBJECTIVES

I A national program for medical care should make available to the entire population all essential preventive, diagnostic and curative services

II Such a program should insure that the services provided be of the highest standard and that they be rendered under conditions satisfactory both to the public and to the professions

III Such a program should include the constant evaluation of practices and the extension of scientific knowledge

### C RECOMMENDATIONS

The recommendations presented in this report represent guides to the formulation of a policy for action. It is believed that study of these recommendations by the professions and others concerned in the states and localities will produce new and more specific recommendations for the attainment of the objectives of a national health program

#### *Recommendation I The Services*

a A national plan should aim to provide comprehensive services for all the people in all areas of the country. In light of present day knowledge, the services should include hospital care, the services of physicians (general practitioners and specialists), supplementary laboratory and diagnostic services, nursing care, essential dental services, and prescribed medicine and appliances. These details of content must remain subject to alteration according to changes in knowledge practices and organization of services

Because of inadequacies in personnel and facilities, this goal cannot be attained at once, but it should be attained within ten

years. At the outset as many of the services as possible should be provided for the nation as a whole having regard for resources in personnel and facilities in local areas. The scope of service should then be extended as rapidly as possible accelerated by provisions to insure the training of needed personnel and the development of facilities and organization

b It is imperative that the plan include and emphasize the provision of preventive services for the whole population. Such services include maternity and child hygiene, school health services, control of communicable diseases, special provisions for tuberculosis, venereal diseases and other preventable diseases, laboratory diagnosis, nutrition, health education, vital records and other accepted functions of public health agencies which are now provided for a part of the population

c Insofar as may be consistent with the requirements of a national plan, states and communities should have wide latitude in adapting their services and methods of administration to local needs and conditions

#### *Recommendation II Financing the Services*

a Services should be adequately and securely financed through social insurance supplemented by general taxation or by general taxation alone. Financing through social insurance alone would result in the exclusion of certain economic groups and might possibly exclude certain occupational segments of the population

b The services should be financed on a nationwide basis in accordance with ability to pay, with federal and state participation and under conditions which will permit the federal government to equalize the burdens of cost among the states

#### *Recommendation III Organization and Administration of Services*

a A single responsible agency is a fundamental requisite to effective administration at all levels—federal, state and local. The public health agencies—federal, state and local—should carry major responsibilities in administering the health services of the future. Because of administrative experience and accustomed responsibility for a public trust they are uniquely fitted among public agencies to assume larger responsibilities and to discharge their duties to the public with integrity and skill. The existing public health agencies as now constituted may not be ready and may not be suitably constituted and organized in all cases, to assume all of the administrative tasks implicit in an expanded national health service. Public health officials, however, should be planning to discharge these larger responsibilities and should be training themselves and their staffs. This preparation should be undertaken now because when the public comes to consider where administrative responsibilities shall be lodged, it will be influenced in large measure by the readiness for such duties displayed by public health officers and by the initiative they have taken in fitting themselves for the task

b The agency authorized to administer such a program should have the advice and counsel of a body representing the professions, other sources of services and the recipients of services

c Private practitioners in each local administrative area should be paid according to the method they prefer, i.e., fee-for-service, capitation, salary or any combination of these. None of the methods is perfect, but attention is called to the fact that fee-for-service alone is not well adapted to a system of wide coverage

d The principle of free choice should be preserved to the population and the professions

e State departments of health and other health agencies are urged to initiate studies to determine the logical and practical administrative areas for a national medical care plan

#### *Recommendation IV Physical Facilities*

a Preceding or accompanying, the development of a plan to finance and administer services a program should be developed for the construction of needed hospitals, health centers and related facilities, including modernization and expansion of existing structures. This program should be based on federal aid to the states and allow for participation by voluntary as well as public agencies, with suitable controls to insure the economical and communitywide use of public funds. The desirability of combining hospital facilities with the housing of physicians' offices, clinics and health departments should be stressed.

b Federal aid to the states should be given on a variable matching basis in accordance with the economic status of each state.

c Because of its record of experience and accomplishment in this field, the U S Public Health Service should administer the construction program at the federal level, in cooperation with the federal agencies responsible for health services and construction.

d Funds available under this program should be granted only if

(1) The state administrative agency has surveyed the needs of the state for hospitals, health centers and related facilities and has drawn up a master plan for the development of the needed facilities (taking account of facilities in adjacent states), or, in the absence of a state plan, the project is consistent with surveys of construction needs made by the U S Public Health Service,

(2) The proposed individual project is consistent with the master plan for the state; its architectural and engineering plans and specifications have been approved by the state agency and/or the U S Public Health Service and there is reasonable assurance of support and maintenance of the project, in accordance with adequate standards.

c State health departments are urged to conduct studies to develop state plans for the construction of needed hospitals, health centers and related facilities. Such studies should be made in cooperation with official health agencies, with state hospital associations and other groups having special knowledge or interests.

#### *Recommendation I Coordination and Organization of Official Health Agencies*

a The activities of the multiple national, state and local health agencies should be coordinated with the services provided by a national program. There is no functional or administrative justification for dividing human beings or illnesses into many categories to be dealt with by numerous independent administrations. It is difficult to reorganize agencies or to combine activities, and this cannot be accomplished hurriedly. Therefore studies and conferences should be undertaken without delay at the federal level and in those states and communities where the health structure is already unnecessarily complex.

b The federal and state governments should provide increased grants for the extension of adequate public health organization to all areas in all states. Increased federal grants should be made conditional upon the requirement that public health services of at least a specified minimum content shall be available in all areas of the state.

#### *Recommendation VI Training and Distribution of Service Personnel*

a Within the resources of the program, financial provisions should be made to assist qualified professional and technical personnel in obtaining postgraduate education and training.

b The plan should provide for the study of more effective use of auxiliary personnel (such as dental hygienists, nursing aides and technicians) and should furnish financial assistance for their training and utilization.

c Professional and financial stimuli should be devised to encourage physicians, dentists, nurses and others to practice in rural areas. Plans to encourage the rational distribution of personnel, especially physicians, should be developed as quickly as possible in view of the coming demobilization of the armed forces. Such plans should be integrated with the whole scheme of services and the establishment of more adequate physical facilities.

#### *Recommendation VII Education and Training of Administrative Personnel*

a Education and training of administrative personnel should be encouraged, financially and technically, especially for those who may serve as administrators of the medical care program, for hospital and health center administrators and for nursing supervisors.

b State health departments should utilize training funds that are now available to train personnel in such techniques as administration of health and medical services, and hospitals. Such a training program may contribute more than any other single activity to the future role of the official public health agency. As a corollary, the attention of schools of public health is directed to the importance of establishing the necessary training courses.

#### *Recommendation VIII Expansion of Research*

a Increased funds should be made available to the U S Public Health Service, to other agencies of government (federal, state and local) and for grants-in aid to nonprofit institutions for basic laboratory and clinical research and for administrative studies and demonstrations designed to improve the quality and lessen the cost of services.

b The research agencies and those responsible for making grants-in-aid should be assisted by competent professional advisory bodies to insure the wise and efficient use of public funds.

The American Public Health Association through its national organization and its constituent societies stands ready to collaborate with the various professional bodies and civic organizations who may be concerned with either the provision or receipt of medical service with a view to implementing the foregoing general principles.

### WASHINGTON LETTER

(From a Special Correspondent)

Oct 9 1944

#### Honorary Consultants of the Army Medical Library

Sixty physicians who met here on October 5 and 6 to organize the honorary consultants of the Army Medical Library heard Archibald MacLeish, librarian of Congress describe the projected Holmes Memorial and the location nearby, of the new Army Medical Library Building, to be built after the war. Plans are by Eggers and Higgins, architects of the National Gallery of Art and the Thomas Jefferson Memorial. Col Harold W Jones, M C, director, presided, and Major Gen George F Lull greeted consultants for the Surgeon General. Colonel Jones said that one of the difficult tasks was recruiting adequate personnel as the library because of special requirements could

not find suitable staff under Civil Service recruiting. Miss Mary Louise Marshall of the committee on new classification, Wyllis Wright, cataloguing consultant. Major Thomas E Keys Sn C, and Dr Max Fisch of the Cleveland branch discussed technical aspects. Keyes D Metcalf, director of the Harvard University libraries, described the recent survey and Dr Thomas S Cullen reviewed legislation.

Dr O H Perry Pepper was toastmaster at a dinner in the Statler Hotel at which Dr Morris Fishbein, Editor of THE JOURNAL, said that in view of the necessity "of making the library a living bibliographical force for medical research," private funds might be obtained to supplement the regular appropriation from Congress. Dr Reginald Fitz of Harvard University discussed the history of medicine with special reference to the book by Henry I Bowditch, published in 1800.

Dr John F. Fulton, professor of physiology and librarian of the Historical Library at the Yale School of Medicine, was elected president of the honorary consultant group, Dr Chauncey D. Leake, vice president and dean of the University of Texas School of Medicine vice president, Colonel Jones secretary-treasurer and Dr Clyde L. Cummer of Cleveland Dr Wilburt C. Davison, dean of the School of Medicine of Duke University, Dr Henry R. Viets, librarian of the Boston Medical Library and Dr Morris Fishbein Executive Committee members

### American Medicine Aware of Its Responsibility

Optimism for the future of medicine in the United States was expressed by Dr John H. Fitzgibbon of Portland Ore. chairman of the Council on Medical Service and Public Relations of the American Medical Association at the sixteenth annual scientific assembly of the District of Columbia Medical Society. He expressed his confidence in the 'sincerity and unselfishness of the medical profession and their adaptability to any situation' American medicine, he said, is 'the best in the world today' which, he said, American doctors took pride "in maintaining at its high level while at the same time recognizing and admitting its inadequacies" The medical profession he said is cognizant of the evil effects on a community and nation of ill health, poor housing malnutrition, congestion, economic insecurity, unemployment, lack of cultural development intolerance and moral imperfection "Correction of all these evils is our responsibility as citizens, but the solution of health problems is our own special responsibility as medical citizens"

Expanding in detail on the objective of the American Medical Association, as reaffirmed by the House of Delegates in June

1944 namely 'availability of medical care of a high quality to every person in the United States' Dr Fitzgibbon added I recognize that there will be a minority disagreement by those advocating complete socialization and government control of medicine and allied activities Those who believe in compulsion have their arguments which I am willing to listen to as a private practitioner and part time teacher I cannot agree with them I cannot agree that the private practitioner has been relegated to the position of distributor of medical service or that the full time salaried man is alone God's gift to humanity No doubt much can be said on both sides but further argument merely adds to the medical windstorm The National Program for Physical Fitness outlined by Col. Leonard G. Rowntree will he said enable America which is predestined to play a major role in world leadership, 'to make her people physically mentally and morally fit'

Accelerating the production of doctors by getting boys and girls into college two years earlier by cutting out the overlapping between high school and college was advocated by William Mather Lewis, president of Lafayette College in an address which concluded the three day session He criticized the 'deferred maturity' of doctors at the age of 31 and expressed the belief that they could complete education much earlier 'at least during the transition period between war and peace'

Among the other speakers were Major Gen. Norman T. Kirk, Army Surgeon General Vice Admiral Ross T. McIntire Navy Surgeon General Major Gen. David A. W. Grant Air Surgeon and Commodore Arthur W. Clarke DSO, Royal Navy chief of staff to Admiral Sir Percy Noble of the British navy delegation to the United States

## MEDICAL ECONOMIC ABSTRACTS

### OHIO MEDICAL CARE PLAN

The Academy of Medicine of Cincinnati has endorsed a plan by which a mutual insurance company in cooperation with the Blue Cross Plan of Ohio will undertake to provide surgical and obstetric service for members of the Blue Cross Plan

In a statement which accompanies the issue of the Monthly News Letter of the Academy of Medicine for August 12 it is stated that the plan proposes to include the following benefits for subscribers

1 The benefits to be paid the subscriber for surgical and obstetric care not to be lower than the highest provided by commercial insurance carriers nor lower than the scale of fees, where applicable, paid by the industrial commission to physicians

2 Full coverage for dependent members of subscribers family, which now is not available through commercial insurance carriers

3 All types of surgical procedure covered and no exclusions except where such treatment is available without cost to the subscriber under existing laws

4 No limitations except as follows

- (a) Hospitalized illnesses only
- (b) Waiting period of six months for tonsil and adenoid operations
- (c) Membership waiting period of nine months for obstetric benefits
- (d) Obstetric benefits available only on insured or insured's spouse
- (e) Waiting period of one year for pre-existing conditions
- (f) Available only on group underwriting basis with requirement of 50 per cent enrolment of employees
- (g) Fees must be paid by employer or collected by him on payroll deduction basis from employee
- (h) \$150 limit for two or more operations within period of three months

Payment is to be on the indemnity plan but sufficient to meet the usual charge made to wage earners To organize such a mutual company a deposit of \$50,000 with the state insurance department is required, and another \$25,000 must be raised to pay the cost of the organization period

### UNITED MEDICAL SERVICE PLAN OF NEW YORK

According to a circular addressed 'to the members of the Medical profession of Metropolitan New York in which the United Medical Service Inc. will operate this service is the result of a merger of Community Medical Care, Inc. and Medical Expense Fund of New York Inc. It is the only company of this type in greater New York which has been approved by the Medical Society of the State of New York The merger brings to the new organization approximately 6,500 members who have been subscribers to the previous organization

The United Medical Service, Inc. has adequate cash resources its legal surplus as of July 1, 1944 was approximately \$144,000 It has medical contracts at present in force insuring over 56,000 persons It is affiliated through the organization of the Associated Hospital Service which now has 1,500,000 subscribers Physicians fees will be based on the workmen's compensation schedule, and in the beginning only a limited service contract covering obstetrics and surgical specialties in hospitals will be offered

The income limits are to be determined by the board of directors and approved by the council of the Medical Society of the State of New York It is proposed to issue comprehensive contracts for full medical service on an experimental basis limited in the beginning to not more than 25,000 subscribers

Nathan B. Van Etten M.D. is chairman of the board and Rowland H. George president

## Medical News

(PHYSICIANS WILL CO-OPERATE BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES NEW HOSPITALS EDUCATION AND PUBLIC HEALTH)

### ALABAMA

**Personal**—Dr Hubert S Houston has resigned as tuberculosis physician at the Kilby Prison Hospital Montgomery, to devote full time to his duties as resident physician at the Montgomery Tuberculosis Sanatorium

**Pediatric Meeting**—On September 26 the Alabama Pediatric Association held its eighteenth annual meeting in Birmingham. Among the speakers were

Dr Albert E Casey Birmingham Human and Place Contacts and Radial Spread of Epidemic Poliomyelitis  
Dr William Fred Mayes Atlanta Ga The Premature Infant  
Dr Ralph V Platon New Orleans Kodachrome Clinic  
Dr Roy R Kracke Birmingham Diagnosis of Hemorrhagic Diseases in Children  
Dr Hughes Kennedy Jr Birmingham The Rh Factor in Pediatrics

**New Medical School Receives Donation for Research**—A check for \$25 000 has been given to the new University of Alabama Medical School for use exclusively in research work. The gift was made possible under the will of John R Irby, owner of the Shelby Springs properties. Newspaper reports indicated that Mr Irby directed that the net proceeds from the sale of Shelby Springs be turned over to some medical school, to be selected by the executor for use in research into the cause and cure of arthritis, from which he had suffered for many years. Sidney W Smyer, Birmingham attorney as executor, selected the Alabama medical school for the gift.

### CALIFORNIA

**Changes in Licensure**—At a meeting of the California State Board of Medical Examiners in Los Angeles in August the licenses to practice medicine were restored to Drs Pearl J Anderson and Paul S Traxler.

**Medical Society Completes Fifty Years**—The Santa Barbara County Medical Society, which was organized July 4, 1894 with the late Dr James B Shaw as president, is planning a program to commemorate the event sometime this year, it is reported.

**Symposium on Heart Disease**—The fifteenth annual postgraduate symposium on heart disease of the San Francisco Heart Committee will be held October 26-28. The first day's session will be at the University of California Medical School and the second at the Stanford University School of Medicine and San Francisco Hospital. The third day's program will be held in the auditorium of the nurses' home, Mount Zion Hospital. Dr Francis L Chamberlain is chairman of the San Francisco Heart Committee of the San Francisco Tuberculosis Association.

**Institute in Health Education**—Clair E Turner, Dr P H, health education consultant of the Office of the Coordinator of Inter-American Affairs, will conduct an institute in health education for professional workers, October 17-18. At the first meeting for physicians, dentists, nurses and others the discussion will be devoted to community efforts in education for health. The second meeting will deal with the balancing of learning by experience against learning by instruction individual health education and the doctors and dentists place in health education. The institute is being sponsored by the San Francisco County Medical Society and the health education committee of the San Francisco Community Chest.

### ILLINOIS

**Personal**—Dr Edward K Steinkopf Janesville Wis, has been appointed superintendent of the Madison County Sanatorium Edwardsville effective November 1, succeeding Dr Joseph T Maher. Dr Steinkopf recently resigned his position as chief of the state division of tuberculosis control to accept a position as medical director of the Pinckney Sanatorium, Janesville (THE JOURNAL, July 22, p 858).

**Dr Kronenberg Joins Caterpillar Tractor Company**—Dr Milton H Kronenberg Chicago, chief of the division of industrial hygiene of the Illinois Department of Public Health, has been appointed assistant to the medical director at Cater-

pillar Tractor Company, Peoria, effective October 1. Dr Harold A Vonachen, Peoria, is medical director. Dr Silvio M Sealzo, a member of the staff at the company since 1942, has been promoted to chief plant physician. Dr Herman M Soloway who has been serving as venereal disease control officer in the state division of industrial hygiene (THE JOURNAL, July 22, p 858) will be acting chief until a successor to Dr Kronenberg has been named.

### Chicago

**University News**—Dr Malcolm T MacEachern, associate director of the American College of Surgeons, lectured at the University of Chicago School of Medicine, September 27, under the auspices of the Nu chapter of Alpha Kappa Kappa. His subject was "Postgraduate Medical Education."

**Affirm Jail Term for Dr Fernel**—The circuit court of appeals on October 3 affirmed the sentence of one year in prison and a fine of \$500 given a year ago by Judge Philip L Sullivan to Dr Jean Paul Fernel (THE JOURNAL, Nov 27 1943 p 849) for using the mails to defraud, newspapers report. It was also reported that Dr Fernel has been in the county jail for the past several weeks because of inability to post a \$5 000 bond on new government fraud charges.

### KANSAS

**Thirty Years' Service on State Board Honored**—Dr Harry L Aldrich Caney, was guest of honor at a luncheon given by the Kansas State Board of Health recently in recognition of his thirty years of service as a member of the board. A plaque was presented to Dr Aldrich bearing the following inscription:

In recognition of thirty years of service as a member of the Kansas State Board of Health and as a memento of his valuable contribution to the work of maintaining and promoting the public health of our great state of Kansas for nearly a third of a century this plaque is dedicated by his colleagues.

**Medical Education Fund**—To provide refresher courses and graduate training for physicians of the state, the executive council of the Kansas Medical Society has authorized the establishment of a fund to finance the work. A goal of \$100 000 has been set. The plan proposed a series of short, intensive courses to be offered by the University of Kansas School of Medicine, Lawrence-Kansas City, with classes starting early in 1945 and with the state medical society and the state board of health cooperating. The main purpose of the funds are to

Provide immediate assistance to returning Kansas physicians now in military service through refresher courses covering all fields of medicine.  
Rehabilitate those wounded or suffering other service incapacities by training in specialties adapted to their disabilities.  
Provide a revolving medical scholarship for children of Kansas physicians losing their lives in service in the present war who have been accepted as students in any approved medical college.  
Provide a permanent program of postgraduate training in medicine and surgery for all Kansas physicians.

Postgraduate courses will be conducted on a circuit basis in forty-five or fifty centers of the state to supplement the short postgraduate courses that will continue to be given in various towns in the state. According to the *News Letter* of the Kansas State Board of Health the Kansas Medical Society formulated the plan especially in recognition of the sacrifices so willingly made by members now serving in the armed forces.

### MARYLAND

**Course in Industrial Medicine**—The John Hopkins School of Hygiene and Public Health will conduct a course in industrial health for eight weeks beginning October 17. The program will include a comprehensive range of industrial health phases.

### MINNESOTA

**Personal**—Dr Walter Henry Judd, Minneapolis representative in Congress from the fifth district of Minnesota, received the honorary degree of doctor of laws from Washington and Jefferson College, Washington, Pa, recently.

**Pediatric Meeting**—The Northwest Pediatric Society held its fall meeting at the White Pine Inn, Bayport, September 29-30. The guest speaker was Dr Arild E Hansen, Galveston who discussed "Problems of Lipid Metabolism in Pediatrics."

**Dr Rosenow Goes to California**—Dr Edward C Rosenow, who recently became emeritus professor of experimental bacteriology at the Mayo Foundation, University of Minnesota Graduate School has accepted an invitation to join the



California Institute of Technology Pasadena, to continue with his research. Dr. Rosenow graduated at Rush Medical College in 1902 and has been identified with the Mayo Clinic and University of Minnesota since 1915.

### MISSISSIPPI

**Changes in Health Personnel**—Dr. Barbara Hunt Meridian, has been appointed health officer of Chickasaw County. Dr. Robert E. Rothermel has been appointed director of the Harrison County Health Department, succeeding Dr. Henry W. Kassel, who has been assigned to a position in Guatemala City, Guatemala. Dr. Robert H. Bostwick Jr. has resigned as health officer of Marshall and Union counties, New Albany, he will enter private practice in New Albany.

**Dr. Underwood Honored**—The *Mississippi Doctor* for September has been designated the Underwood issue in honor of Dr. Felix J. Underwood, state health officer. Dr. Underwood is past president of the American Public Health Association. The journal carries many tributes for Dr. Underwood and a review of the health of the state under his direction. Among contributors are Thomas Parran, Surgeon General of the U. S. Public Health Service, Dr. John A. Ferrell, medical director of the John and Mary R. Markle Foundation, New York, and Dr. Waller S. Leathers, dean of the Vanderbilt University School of Medicine, Nashville, Tenn., and the immediate predecessor in Mississippi of Dr. Underwood.

### MISSOURI

**New Director of Child Hygiene**—Dr. Lynn M. Garner, formerly health officer of district number 8 with headquarters at Higginsville, has been appointed director of the division of child hygiene for the state board of health, Jefferson City. Dr. Garner graduated at St. Louis University School of Medicine in 1930.

**Medical Committee for Vocational Education**—Dr. Robert Elman, St. Louis, has been appointed chairman of a committee which was recently appointed to work with the state board of vocational education in extending the state's rehabilitation program. The program which was made possible by legislation in 1943, aims to assist the indigent disabled to full or increased earning capacity. Other members of the committee include Drs. Frank R. Bradley, J. Arthur O'Reilly, James B. Costen, Edwin F. Gildea, St. Louis, B. Landis Elliott, Frank D. Dickson, Herbert L. Mantz, A. Graham Asher, Kansas City, Arthur R. McComas, Sturgeon, William A. Bloom, Fayette, C. B. Souter, Smith, Springfield, Dudley S. Conley, Columbia, and John W. Williams Jr., Jefferson City.

**Health Plan Soon in Operation**—With the granting of a pro forma decree of incorporation to Missouri Medical Service, plans are near completion to start the state's prepayment medical and surgical care plan approved this year by the Missouri State Medical Association (*THE JOURNAL*, July 22, p. 859). The October state medical journal expected the plan to be in operation within six weeks. The plan will be administered through Blue Cross Service under authorization of the board of trustees of Missouri Medical Service, which will guide policies. It provides for medical and surgical care for hospitalized cases at a cost to single persons of 85 cents per month and to families, regardless of their size of \$2.25 per month. Although subscribers must join in groups, professional or trade association, labor unions or others the plan is open to every one. For the present families will be limited to \$1,000 of medical and surgical care in one year.

### NEBRASKA

**Mid-West Clinical Society**—The twelfth annual session of the Omaha Mid-West Clinical Society will be held at the Hotel Paxton, Omaha, October 23-27, under the presidency of Dr. James F. Kelly, Omaha. Among the speakers will be:

- Dr. Leroy Sante, St. Louis: Correlation of the Roentgenologic and Pathologic Findings in Acute Pneumonic Process.
- Dr. Thomas P. Findley Jr., New Orleans: The Symptomatology of Chronic Amebiasis and Shigellosis.
- Dr. Clarence Guy Lane, Boston: The Cutaneous Disturbances Caused by Therapeutic Measures.
- Lieut. Col. James Barrett Brown, M. C.: Compound Facial Injuries.
- Major Albert B. Sabin, M. C.: Natural History of Human Polio myelitis.
- Dr. Edward H. Ryerson, Rochester, Minn.: Real versus Supposed Disturbances of the Endocrine Gland.
- Dr. Clifford B. Full, Philadelphia: Diet in Pregnancy.
- Dr. Paul H. Holmgren, Chicago: Post-Thyroidectomy Bilateral Laryngeal Paralysis: Medical and Surgical Aspects.
- Dr. Alton R. Kilgore, San Francisco: The Changing Picture of Breast Cancer.

- Dr. Nolan D. C. Lewis, New York: Psychosomatic Medicine.
- Dr. Carl E. Badgley, Ann Arbor: Much Pain in the Upper Extremity: Differential Diagnosis and Treatment.
- Dr. Malcolm T. MacEachern, Chicago: The American College of Surgeons Program for the Expansion of Graduate Training in Surgery.
- Edward R. Loveland, executive secretary, American College of Physicians, Philadelphia (subject not announced).

There will be symposiums on 'Place of X-Ray and Radioactive Substances in the Treatment of Disease', 'Acute Upper Respiratory Infections' and 'Diabetes'. In addition a series of lecture courses and round table discussions will be held during the meeting covering a wide range of subjects. The program will also include a number of clinics. Thursday evening has been designated the Omaha Douglas County Medical Society Night with the following speakers: Dr. Badgley on 'Present Day Concept of the Treatment of Acute Hematogenous Osteomyelitis' and Dr. Lewis, 'Recent Trends in Neuropsychiatric Thinking and Practice'. Friday morning will be devoted to a discussion of military medicine with the following speakers:

- Lieut. Col. Vernon L. Hart, M. C.: A Study of One Hundred Fractured Legs.
- Col. John B. Grow, M. C.: Bronchiectasis: Its Surgical Treatment.
- Major Frank P. Foster, M. C.: Rheumatic Fever: Clinical Findings, Comment on Diagnostic and Therapeutic Features from 30 Cases.
- Major Charles R. McAdam, M. C.: Meningococcal Infections.
- Lieut. Col. Frank B. Queen, M. C.: Clinical Uses of Penicillin with Reasons for Therapeutic Failures.

### NEW YORK

**Personal**—Dr. Charles R. Seymour Binghamton was given a citation for distinguished service by the Alumni Association of Albany Medical College September 16. Dr. Seymour graduated at Albany in 1892 and has served twice as president of the Broome County Medical Society. Dr. Walter W. Wicks, Pine Plains, was recently appointed township health officer, succeeding the late Dr. Ellwood Oliver.

**Rest Center for Merchant Seamen**—The seventh rest center in the United States to care for the merchant seamen was dedicated September 28 when the 72 acre estate of the late Mrs. Christian R. Holmes the Clumney's Sands Point, L. I., was turned over to the United Seamen's Service and the War Shipping Administration which will jointly operate the place for the benefit of seamen who suffer from convoy fatigue or enemy action according to the *New York Times*. Dr. Daniel Blain, New York, is medical director. The dedication also marked the second anniversary of the USS-WSA medical division. Among the speakers at the dedication was Ralph C. Williams, assistant surgeon general of the U. S. Public Health Service.

### New York City

**Harvey Lecture**—E. Newton Harvey, Ph.D., Henry Fairfield Osborn professor of physiology, Princeton University, N. J. will deliver the first Harvey Society Lecture October 26 on 'Decompression Sickness and Bubble Formation in Blood and Tissues'. The lecture is one of a series given annually by the Harvey Society in affiliation with the New York Academy of Medicine.

**Friday Afternoon Lectures**—On November 3 the regular Friday afternoon lectures of the New York Academy of Medicine will open for the current season with a talk by Dr. James A. Shannon on 'Recent Advances in Drug Therapy'. The lectures for the remainder of 1944 include:

- Lieut. Col. Theodore C. Thompson, M. C.: War Fractures, November 10.
- Dr. Joseph Harkavy: Newer Concepts of Bronchial Asthma and Treatment, November 17.
- Dr. Frank L. Meleney: The Problem of Infection in Burns, December 1.
- Dr. Emanuel Ishman: Diagnostic Observations on Abdominal Diseases, December 8.
- Dr. Arthur M. Fishberg: The Surgical Treatment and Course of Essential Hypertension, December 15.

**Suiter Lectureship Created**—Dr. Stuart Mudd, professor of bacteriology, University of Pennsylvania School of Medicine, Philadelphia, will deliver the newly created A. Walter Suiter Lecture, November 2, on 'Air Borne Infection: The Rationale and Means of Disinfection of Air'. The lecture was created under the will of the late Dr. A. Walter Suiter, Herkimer, N. Y., and will be conducted annually under the auspices of the committee on public health relations of the New York Academy of Medicine. Dr. Suiter, who graduated at the Medical Department of Columbia College, New York, in 1871, died May 28, 1925, aged 75. He served for a long time as coroner of Herkimer County and as medical examiner for a number of insurance groups. He aided in the establishment of the state board of medical examiners. He was vice president of the state medical society in 1888, president in 1891, held at various times other positions of importance and was considered a pioneer in the development of legal medicine.

## PENNSYLVANIA

**Society News**—Dr Lewis R Wolf, Philadelphia, discussed the Surgical Treatment of Strabismus before the Reading Eye Ear Nose and Throat Society in Reading September 20 —Dr Ross K Childerhose, Harrisburg, was elected president of the Pennsylvania chapter of the American College of Chest Physicians at its recent annual meeting in Pittsburgh Dr Chevalier L Jackson Philadelphia, is vice president and Dr Edward Lebowitz Pittsburgh, secretary-treasurer —Dr Charles H Mann Jr, New York discussed Recent Developments in Diagnosis and Control of Venereal Disease before the Harrisburg Academy of Medicine September 19

## Philadelphia

**Dr Bertolet Named Coroner**—Dr J Allan Bertolet has been appointed coroner of Philadelphia to succeed the late Dr Herbert M Goddard Dr Bertolet graduated at the Jefferson Medical College of Philadelphia in 1916

**University News**—Among the speakers at the annual alumni dinner of the Jefferson Medical College of Philadelphia September 21 were Dr William H Perkins, dean of the medical college, who graduated in 1917, Major Gen George F Lull M C class of 1909 and Dr John Lincoln Bower, class of 1888 who represented the "old guard" Sixteen members of this year's graduating class received commissions as lieutenant (jg) medical corps, U S Naval Reserve 109 members temporary commissions as first lieutenant, medical corps Army of the United States and two members commissions as first lieutenant Army Medical Reserve Corps Franklyn B Snyder LL.D. president of Northwestern University, Evanston Ill gave the 120th annual commencement address September 22 on "An Incident in the History of Fort Ticonderoga" The September graduating class recently presented to the college a portrait of Dr Charles E G Shannon, professor of ophthalmology since 1927

**Graduate Medical School to Include Dentistry**—The Graduate School of Medicine of the University of Pennsylvania, organized in 1916 to provide for graduate studies in clinical medicine will in the future extend its activities to include graduate studies in dentistry The new work will be under the direction of John W Ross DDS, who has been appointed vice dean for dentistry in the graduate school of medicine and who will work in cooperation with the vice deans for other medical studies under Dr Robin C Buerki dean of the Graduate School of Medicine In connection with the new graduate program in dentistry courses are being planned for graduate studies in oral surgery, orthodontics prosthetics and oral medicine-periodontics The first period of study for those students entering the graduate program will be devoted to basic studies involving the medical sciences as applied to the clinical specialties concerned, together with the principles and practice of that specialty and its relation to other clinical specialties The studies of this period will lead to a certificate The second period of study will be under preceptors and this period must be preceded by the basic studies at the university The studies under the preceptors may be carried on at any approved institution and academic credit will be granted for time by the university, provided the specific plan for such studies for each candidate receives due approval and acceptance by the university The successful completion of the period of study carried on under the preceptors will lead to the degree of master of science in dentistry The program in dentistry in the Graduate School of Medicine will be independent of the School of Dentistry at the university Dr Ross graduated at the School of Dentistry at the University of Pennsylvania in 1917

## RHODE ISLAND

**Medical Convocation**—Brown University, Providence, sponsored a medical convocation recently with Dr Charles A McDonald chairman of the newly created department of medical sciences, presiding James P Adams LL.D, vice president of the university, opened the meeting with a talk on "Department of Medical Sciences in Brown University" to which Dr Elihu S Wing, Providence, president of the Rhode Island Medical Society responded The convocation address was delivered by Dr Henry R Viets, librarian of the Boston Medical Library, on "Medical Education—Old Purposes and New Methods" The new department was announced in THE JOURNAL, July 22, page 861

**State Journal Honors Hospital on Centennial**—The Rhode Island Medical Journal for August was designated the Butler Hospital Centennial Issue The journal carried historical material on the hospital reviewing its progress in the last hundred years The hospital was created with a bequest of \$30,000 left by Nicholas Brown in 1841 "toward the erection or endowment of a retreat for the insane" After the original charter was granted to establish the Rhode Island Asylum for the Insane the Hon Cyrus Butler gave \$40,000 toward the institution provided a contingent gift could be subscribed In November 1844 the institution was named the Butler Hospital for the Insane Butler Hospital was not only the first mental hospital but the first hospital in Rhode Island

## TEXAS

**Change in Health Officers**—Dr William P Scarlett director of the division of venereal diseases in the Corpus Christi Health Department, has been appointed in charge of the Wichita County Health Unit succeeding Dr David F Bradley who has been appointed medical officer in charge of the state quarantine hospital, Corpus Christi

**State University Considers Move**—In a recent report to the board of regents of the University of Texas, Homer P Rainey LL.D, president of the university, made the recommendation that the medical branch be moved from Galveston to Austin to be merged with the main university The recommendation has evoked considerable discussion in newspapers and other sources but no definite action has been taken

**New Experimental Society**—Dr James A Greene, Houston was recently elected chairman of the newly organized Southwest Section for the Society of Experimental Biology and Medicine and Dr Donald H Slaughter, Dallas, was elected secretary Meetings of the new group will be held three times a year in rotation at Southwestern Medical College Dallas Baylor University College of Medicine, Houston, University of Texas, Austin, and occasionally at the University of Oklahoma School of Medicine, Oklahoma City

**Dallas Clinical Conference**—The Dallas Southern Clinical Society will hold its fifteenth annual spring clinical conference at the Hotel Adolphus, Dallas, March 19-22, with the following speakers

Dr J Arnold Bergen Rochester Minn gastroenterology  
Dr Charles A Dean Columbus Ohio internal medicine  
Dr Samuel C Harvey New Haven Conn surgery  
Dr Charles B Higgins Chicago urology  
Dr Ira H Lockwood Kansas City Mo radiology  
Dr Donovon J McCune New York pediatrics  
Dr Joe V Meigs Boston gynecology  
Dr Leroy A Schall Boston otolaryngology  
Dr William H Seabell Jr Bethesda Md basic science  
Dr Edmund B Spaeth Philadelphia ophthalmology  
Dr Richard H Sweet Boston surgery  
Dr George W Thorn Boston internal medicine

## VIRGINIA

**Dr Wampler Goes to Baltimore**—Dr Frederick J Wampler has resigned as professor of preventive and industrial medicine at the Medical College of Virginia, Richmond to become medical director of the Rustless Iron and Steel Corporation Baltimore effective October 1

**Change in Health Personnel**—Dr Peyton M Chichester assistant director of local health services with headquarters in Richmond of the state health department has been named to a similar position at Abingdon to succeed Dr Harold M Kelso, who has accepted a position with the Knoxville Tenn Health Department

**Hospital News**—Dr John A Shackelford owner and operator of Shackelford Hospital, Martinsville, which was opened more than twenty years ago by his father the late Dr Jesse M Shackelford announces that the institution will be closed on the opening of the new Martinsville General Hospital A federal grant and loan totaling \$602,000 has been made to the new project according to Southern Medicine and Surgery The 54 bed hospital is located in the downtown section of the city When closed all operational equipment will be moved to the new hospital and the building will be converted into business property

## WASHINGTON

**State Medical Election**—Dr George H Anderson, Spokane was chosen president-elect of the Washington State Medical Association at its annual meeting in Seattle, September 9-10 and Dr Raymond L Zech Seattle, was inducted into the presidency Dr Ross D Wright, Tacoma, was named vice president

## GENERAL

**Meeting on Clinical Research**—The seventeenth annual meeting of the Central Society for Clinical Research will be held at the Drake Hotel Chicago, November 3-4. Dr. Carl V. Moore, Washington University School of Medicine, St. Louis 10, is the secretary.

**Director of Technical Education Named to Infantile Paralysis Foundation**—Miss Catherine A. Worthingham has been granted a leave of absence from Stanford University, Calif., where for the past seven years she has been director of physical therapy in the school of health (women), to become director of technical education for the National Foundation for Infantile Paralysis. Miss Worthingham will act in a liaison capacity between the National Foundation and the treatment centers throughout the United States where training courses in occupational therapy are being sponsored by the foundation.

**Special Society Elections**—At the annual meeting of the Radiological Society of North America in Chicago in September, Dr. Lowell S. Gonn, Los Angeles, was chosen president-elect and Dr. Lewis G. Allen, Kansas City, Kan., was installed as president. Other officers are Drs. Sydney J. Hawley, Danville, Pa.; Robert R. Newell, San Francisco; and John S. Bouslog, Denver, vice presidents. Dr. Donald S. Childs, Syracuse, N. Y., was reelected secretary-treasurer. Dr. Ross Golden, New York, was named president-elect of the American Roentgen Ray Society at its recent annual meeting in Chicago and Dr. Lyell C. Kinney, San Diego, was inducted into the presidency. Other officers include Dr. Raymond C. Beeler, Indianapolis, and Comdr. Harold W. Jacob (MC), vice presidents. Dr. H. Dabney Kerr, Iowa City, secretary, and Dr. James B. Edwards, Leona, N. J., treasurer. Dr. Milton J. Rosenau, Chapel Hill, N. C., was chosen president-elect of the American Public Health Association at its annual meeting in New York, October 4, and Dr. John J. Sippy, Stockton, Calif., was inducted into the presidency. Vice presidents are Dr. Malcolm R. Bow, Edmonton, Canada; Carlos E. Paz-Soldan, Lima, Peru; and Marion W. Sheahan, R.N., Albany, N. Y. Dr. Reginald M. Atwater, New York, is the executive secretary and Louis I. Dublin, Ph.D., New York, is reelected treasurer.

**Meeting of Urologists**—The nineteenth annual meeting of the North Central Section of the American Urological Association will be held at the Stevens Hotel, Chicago, October 19-21, under the presidency of Dr. Harry W. Plaggemeyer, Detroit. Among the speakers will be

Dr. Austin I. Dodson, Richmond, Va., Renal Pathology Resulting from Nephroptosis  
Dr. Edward J. Stieglitz, Washington, D. C., Significance of Senescence  
Lieut. Col. Walter M. Kearns, M.C., Postcaval Ureter Preoperative Diagnosis, Resection and Successful Anastomosis  
Harry J. Anson, Ph.D., Chicago, Blood Supply of the Kidneys: Supra-renal Glands and Associate Structures  
Drs. Edward N. Cook and Francis R. Keating, Jr., Rochester, Minn., Renal Stone Associated with Hyperparathyroidism  
Drs. Robert W. McAllister and Vincent J. O'Connor, Chicago, Effect of Penicillin on Carbuncle of Kidney  
Drs. Robert H. Herbst and James W. Merrick, Chicago, Staphylococcus Albus Septicemia Following Nephrolithotomy: Recovery with Penicillin  
Drs. Budd C. Corbus and Budd C. Corbus, Jr., Evanston, Ill., Endocrine Management of Prostatic Cancer  
Comdr. Gershon J. Thompson (MC) and Dr. Laurence F. Greene, Rochester, Transurethral Prostatic Resection in Patients with Advanced Renal Insufficiency  
Drs. Reed M. Nesbit and Edgar A. Webb, Ann Arbor, Mich., The Use of Scrotal Skin for Covering the Denuded Penis  
Dr. Charles C. Higgins, Cleveland, Transplantation of the Ureters into the Rectosigmoid in Infants  
Dr. Daniel C. Moore, Chicago, The Use of Intravenous Alcohol in Surgical Patients  
Dr. William J. McMartin, Omaha, Urological Aspects of Filariasis  
Comdr. Robert A. Burhans (MC), Observations on Filariasis in U.S. Naval Medical Service  
Dr. George H. Ewell, Madison, Wis., An Acute Exacerbation of Brucellosis Complicating Urological Surgery  
Major Frank C. Hamm, M.C., Renal Polyp of the Upper Calyx Treated by Heminephrectomy  
Dr. Mary Karp, Chicago, Anesthesia for the Urological Patient

At a joint meeting with the Chicago Urological Society, Thursday evening, William C. Rose, Ph.D., Urbana, Ill., will deliver the sixteenth annual William T. Belfield Memorial Lecture on "The Amino Acid Requirements of Man."

**Board of Obstetrics and Gynecology**—The American Board of Obstetrics and Gynecology will conduct its next written examination and review of case histories, part I, for all candidates in various cities of the United States and Canada on Saturday, Feb. 3, 1945, at 2 p.m. Candidates who successfully complete the part I examination proceed automatically to the part II examination held later in the year. All applications must be in the office of the secretary by Novem-

ber 15. All candidates are now required to be out of medical school not less than eight years, and in that time they must have completed an approved one-year internship and at least three years of approved special formal training or its equivalent in the seven years following the intern year. The board's requirements for internships and special training are similar to those of the American Medical Association since the board and the Association are at present cooperating in a survey of acceptable institutions. Beginning with the next written examination which is scheduled to be held Feb. 3, 1945, the board will limit the written examination to a maximum period of three hours and in submitting case records at this time all obstetric reports which do not include measurements other by calipers and as indicated by acceptable x-ray pelvimetry will be considered incomplete. All candidates are required to take the part I examination which consists of a written examination and the submission of 25 case history abstracts and the part II examination which consists of an oral clinical and pathology examination. The part I examination will be arranged so that the candidate may take it at or near his place of residence while the part II examination will be held late in May 1945 or early June 1945 in the city nearest to the largest group of candidates.

## CANADA

**University News**—Group Captain George E. Hall, director of medical research for the Royal Canadian Air Force, has recently been appointed dean of the University of Western Ontario Medical School, London. Dr. Fraser B. Gurd has been named chairman of the department of surgery at McGill University Faculty of Medicine, Montreal, succeeding Dr. Frank E. McKenty.

**Special Fellowships for Chinese**—Dr. Yang Gir-lung, associate professor of surgery, West China Union University, Chengtu, has been awarded the first fellowship under a recently inaugurated program of postgraduate training for Chinese physicians at McGill University Faculty of Medicine, Montreal. The fellowships will be known as the McGill-Chinese Medical Fellowships. "In token of appreciation of the heroism of the people of China and particularly of the magnificent work done during the past ten years of the medical profession in that country, the board of governors of McGill University has decided to award a small number of McGill-Chinese Medical Fellowships to outstanding physicians and surgeons from China." Each person awarded a fellowship will receive a senior's intern appointment at one of the teaching hospitals of the city. It was announced that because of the circumstances of the war the Chinese government will not be in a position to grant permission for many Chinese physicians to accept this offer.

## LATIN AMERICA

**Health Activities in Latin America**—*Institute for Hospital Administrators*—The Inter-American Hospital Association will sponsor the second regional institute for hospital administrators in Lima, Peru, December 3-16. The director of the institute will be Dr. Guillermo Almenara, director of the Hospital Obrero, Lima, and the secretary will be Felix Lamela, Washington, D. C., executive director, Inter-American Hospital Association, Washington. The program will cover all phases of hospital operation and the faculty includes forty-eight authorities in hospital and related fields from Mexico, Central America, South America and the United States. Eleven educational institutions of Peru and eight professional and government organizations of the United States are participating in the institute, which will be held under the auspices of the Pan American Sanitary Bureau. Dr. Gustavo Briz, minister of public health and assistance of Mexico, is president of the institute and Drs. Malcolm T. MacEachern, Chicago, and Hugh S. Cumming, Washington, honorary presidents.

**Society News**—The first congress on pediatrics is planned for Santiago, Chile, late in November under the auspices of the Sociedad Chilena de Pediatría.

## CORRECTION

**Thiourea and Thiouracil**—The word "collection" should have appeared in place of "correlation" on the sixth line from the bottom first column, in the editorial on page 173 of THE JOURNAL, September 16. The word "no" should have been inserted between the words "thiouracil" and "new" on the same page, second column, fifth line from the top.

## Foreign Letters

### LONDON

(From Our Regular Correspondent)

Sept 9, 1944

#### British Empire Casualties in Five Years of War

Casualties to all ranks of the British Empire forces during the first five years of the war now amount to 925,963, which include 242,995 killed, including died of wounds, 80,603 missing, 311,500 wounded and 290,865 prisoners of war and internees. Civilian air raid casualties, casualties to merchant seamen and deaths from natural causes are excluded, together with missing personnel who subsequently rejoined, and repatriated prisoners of war.

The casualties of merchant seamen in British ships during the five years were 29,381 deaths (including deaths presumed in missing ships) and 4,192 internees. These include nationals of the dominions, India and the colonies serving in British registered ships but do not include losses in ships registered outside the United Kingdom.

Civilian air raid casualties in the United Kingdom for the five years were 56,195 killed (or missing, believed killed) and 75,897 injured and detained in hospitals.

The complete total of casualties for the fighting forces, merchant seamen and civilians is 1,091,628. These figures compare favorably with those of the four and one-quarter years of the first world war. The total casualties for the British Empire forces were 3,490,907, of which 1,089,919 were killed and 2,400,988 wounded.

#### The Training of the War Blinded at St Dunstan's

The great work done by St Dunstan's in training men blinded in the war of 1914-1918 for various occupations has been described in previous letters to THE JOURNAL, as has also the treatment of British and allied men blinded in this war. In the annual report just published, the founder, Sir Ian Fraser M.P., reports that he has recently talked in St Dunstan's Hospital to men who had returned from the battles in France. A few will recover useful sight, but the majority will be blind for the rest of their lives. They will shortly go to St Dunstan's training center to "learn to be blind." Three thousand veterans of the last war and several hundred of this war have already passed through the training center. They include many Canadians and Americans as well as representatives of all our dominions and most of our allies and men and women from most of our home defense and air raid services. The majority of the older veterans and already many of the newcomers have learned to lead normal lives and to earn their living. St Dunstan's continues to look after blinded veterans of the last war, who are now of middle age or even old age. Nearly 1,800 still survive. St Dunstan's in Great Britain has never been without a bed or a training place for any new patient. St Dunstan's throughout the empire is now developing rapidly to meet the inevitable casualties which will arise from the widespread engagement of our armed forces.

#### Penicillin for Civilians

The use of penicillin has been almost confined to the fighting forces as the government regarded their needs as paramount. With increased production it has been possible to allot a limited supply for civilian use. So that it may be used to the best advantage the Ministry of Health invited the faculties of medicine and schools of universities to be responsible for its use and distribution. The ministry has issued the following list of diseases for which penicillin may be used: 1. Conditions which call for admission to a hospital if the case is otherwise suitable for treatment with penicillin: staphylococcal infection, sep-

ticemia, early acute osteomyelitis, severe carbuncle, cavernous sinus thrombosis or any other life endangering infection, hemolytic streptococcal, pneumococcal and meningococcal infections, any life endangering infection (septicemia, pneumonia, meningitis) which has failed to respond to adequate sulfonamide treatment. Gas gangrene.

2. Conditions deserving special consideration which may be treated if supplies are sufficient: (a) injuries of the eye and infections of the conjunctiva and cornea, (b) sepsis in wounds and burns, (c) infections of the skin resistant to other treatment (syphilis, impetigo), (d) sulfonamide resisting gonorrhea, (e) acute empyema and pyogenic infections of the pleura as a complication of tuberculosis, (f) traumatic lesions, including compound fractures, extensive muscle injuries, facial injuries, injuries necessitating suture of tendon or nerve, thoracic injuries (hemothorax) and post-traumatic pneumonias.

3. Conditions not to be treated are those caused by organisms not known to be susceptible to penicillin. These include rheumatic fever, ulcerative colitis and all other intestinal infections. Bacterial endocarditis and syphilis are also excluded.

#### A Professor of Child Health

The council of Liverpool University has created a post which is new in this country, 'professor of child health,' to which it has appointed a pediatrician, Dr Norman B. Capon, who will be part time director of a new department of child health. The establishment of the new department has been made possible by the collaboration of the university with the city council and the Royal Liverpool Children's Hospital. The cost will be shared by all three bodies. The new department will be formally opened by the minister of health in the autumn. Its establishment is a logical extension within the faculty of medicine of the university and gives practical expression to the importance of child health in the welfare of the nation. The department will be concerned not only with investigation of the diseases of children but also with the preservation of good health, physical and mental during the early years of life. It is in such great urban centers as Liverpool that problems of child health are most pressing while opportunities for its study and promotion are most plentiful. The new title 'professor of child health' is noteworthy. Only a short time ago the title would have been 'professor of children's diseases', but, as in the case of the proposed 'National Health Service,' we want to emphasize that health is the goal and disease a thing to be prevented.

#### The Representative Meeting of the British Medical Association

The annual meeting of the British Medical Association did not take place in consequence of the war. The annual representative meeting was to have been held in London in July but was postponed for the same reason. Now it is announced that the representative meeting will be held on December 5. It is of great importance this year because its main business will be to determine the policy of the association in regard to the government's proposals for a comprehensive medical service.

## Marriages

DONALD G. MASON, Menominee, Mich., to Miss Catherine Ryan of North Miami, Fla., in Ann Arbor, Mich., June 16.

BONNIE CLYDE HALLEY JR., Temple, Texas, to Miss Joy Smith of Dallas in San Francisco, July 14.

THOMAS M. SPROCK, Latrobe, Pa., to Miss Joyce L. Rose of Allentown in Pittsburgh, August 19.

WILLIAM A. SAUTTER, Jackson, Mich., to Miss Marceline Joanne Chevie of Leslie, August 1.

ARTHUR GERRARD MACK, Troy, N. Y., to Dr. JANE ANDREWS of Albany, August 19.

## Deaths

**Michael Hoke** ☉ Beaufort, S C University of Virginia Department of Medicine Charlottesville, 1895 member of the House of Delegates of the American Medical Association in 1908 member of the Medical Association of Georgia and the American Academy of Orthopaedic Surgeons, member and past president of the American Orthopaedic Association, honorary member of the Fulton County (Ga.) Medical Society, at one time clinical professor of orthopedic surgery at the Atlanta College of Physicians and Surgeons, appointed surgeon-in-chief of the Georgia Warm Springs Foundation, Warm Springs, Ga. in 1931 and resigned in 1936, for many years on the staff of the Scottish Rite Hospital for Crippled Children, Decatur, Ga., served as orthopedic surgeon to the Piedmont Hospital, Presbyterian Hospital, Wesley Memorial Hospital and the Tabernacle Infirmary, Atlanta, conferred the honorary degree of doctor of laws by the University of North Carolina in 1931, died September 24, aged 70

**William Jerome Arlitz** ☉ Hoboken, N J, Hahnemann Medical College and Hospital of Philadelphia, 1890, Baltimore Medical College, 1897, fellow of the American College of Surgeons, for many years police surgeon, served during World War I, member of the staffs of the Christ Hospital, Jersey City, New Jersey State Hospital, Greystone Park, North Hudson Hospital, Weehawken, and the Moses Taylor Hospital, Scranton, Pa., formerly on the staff of St Mary's Hospital, served as chief surgeon of the Lackawanna Railroad and Public Service Corporation of New Jersey and the New York Central and Lehigh Valley railroads, died in Elizabethtown, N Y, August 22, aged 75

**Grover Cleveland Weil** ☉ Pittsburgh, University of Pittsburgh School of Medicine, 1910, associate professor of surgery at his alma mater, specialist certified by the American Board of Surgery, member of the American Society of Clinical Pathologists, American Association for the Surgery of Trauma, American Association of Railway Surgeons and the American Association of Pathologists and Bacteriologists, fellow of the American College of Surgeons, on the staff of the Mercy Hospital, chief surgeon for the Pittsburgh Coal Company, died in Lake Placid, N Y, August 17, aged 59, of coronary heart disease

**Enoch Marvin Mason** ☉ Birmingham, Ala., Johns Hopkins University School of Medicine, Baltimore, 1906, past president of the Jefferson County Medical Society, member of the Southern Medical Association, served as councilor of the Ninth District of the Medical Association of the State of Alabama, specialist certified by the American Board of Internal Medicine, veteran of the Spanish-American War and World War I, at one time director of laboratories of the state board of health at Montgomery, visiting physician on the staff of St Vincent's Hospital, medical director of the Alabama Power Company, died August 14, aged 66

**Hugh Loyd Davison** ☉ Champaign, Ill., University of Pennsylvania School of Medicine, Philadelphia, 1924, fellow of the American College of Surgeons, member of the John B. Deaver Surgical Society, formerly physician for the Pennsylvania Railroad Company, at one time fellow in surgery at the Mayo Foundation in Rochester, Minn., served during World War I on the staffs of the Champaign County and Carle Memorial hospitals in Urbana, serving as chief of staff and director of the latter, a founder of the Carle Hospital Clinic, died in Benton Harbor, Mich., August 24, aged 47, of coronary occlusion

**David A. Holland**, Mahanoy City, Pa., Medico-Chirurgical College of Philadelphia, 1903, member of the Medical Society of the State of Pennsylvania, formerly served as a member and president of the city school board, school director for twenty years, a member of the board of directors of the Schuylkill County Crippled Children's Society and of the Union National Bank, surgeon for the Reading Coal and Iron Company and for the Reading and Lehigh Valley railroads, on the staff of the Locust Mountain State Hospital, Shenandoah, died July 16, aged 63, of chronic osteomyelitis of the right leg

**John Elmer Virden** ☉ New York Bellevue Hospital Medical College, New York, 1890, an Affiliate Fellow of the American Medical Association, fellow of the American College of Surgeons, specialist certified by the American Board of Ophthalmology, formerly associate professor of clinical ophthalmology at the New York Post-Graduate Medical School and Hospital, Columbia University, visiting ophthalmologist,

Union Hospital, consulting ophthalmologist, Westchester Square and Lincoln hospitals, Bronx, Eye and Ear Infirmary and Home for Incurables, died August 30, aged 81

**Samuel Treat Armstrong** ☉ Katonah, N Y St. Louis Medical College, 1879, member of the American Psychiatric Association, Association for Research in Nervous and Mental Diseases, American Association for the Advancement of Science and the New York Academy of Sciences from 1881 to 1890 had been with the U S Marine Hospital Service veteran of the Spanish-American War received the Companion Military Order of Foreign Wars and the Order of the Spanish-American War medical director of the Hillbourne Farms, where he died August 31 aged 84 of cerebral thrombosis

**Spencer Lyman Dawes**, Kingston N Y Bellevue Hospital Medical College, New York 1887 formerly adjunct professor of materia medica at the Albany Medical College medical examiner in the state department of mental hygiene from 1919 to 1935 secretary and executive officer of the Commission on Federal Legislation for Alien Insane when it was created by the state legislature in 1914 served as medical examiner for the State Bureau of Deportation formerly consulting physician of Kingston City Hospital died in the Orthmann Sanitarium July 13, aged 80 of cerebral hemorrhage

**Frederick Henry Dillingham** ☉ New York College of Physicians and Surgeons, New York 1880 professor of dermatology and syphilology at the New York Polyclinic Medical School and Hospital, fellow of the New York Academy of Medicine, for many years assistant sanitary inspector for the New York City Board of Health consulting dermatologist to St Francis and St John's Riverside hospitals and dermatologist to St Joseph's Hospital in Yonkers died in the New York Polyclinic Hospital August 30 aged 87 of bronchopneumonia

**Edward Holden Blair** ☉ Wethersfield Conn College of Physicians and Surgeons Baltimore 1906 member of the American Academy of Pediatrics and the New England Pediatric Society, served in the medical corps of the U S Army during World War I, consultant on the staff of Hartford Hospital school physician died in Hartford August 14 aged 65 of coronary thrombosis

**Carrie Simpson Coleman Burr**, Ann Arbor, Mich University of Michigan Department of Medicine and Surgery Ann Arbor, 1898, died in the University Hospital July 1, aged 76 of gastric carcinoma

**Martha Nancy Canfield Redlands**, Calif., Woman's Medical College of Pennsylvania, Philadelphia, 1908 formerly on the staff of the Battle Creek Sanitarium Battle Creek Mich served as resident physician at the Loma Linda Sanitarium and Hospital, Loma Linda, died July 28, aged 77, of hypertensive cardiovascular disease

**Wellman Franklin Chaffin**, Raymore Mo State University of Iowa College of Medicine, Iowa City 1890 member of the Missouri State Medical Association served during World War I, past president and secretary of the Cass County Medical Society, died July 30, aged 77, of cerebral hemorrhage

**George A. Clement**, Spencer N C Leonard Medical School, Raleigh, 1905, died June 29, aged 73 of cerebral hemorrhage

**Mark A. Conway**, Locust Gap Pa., Temple University School of Medicine, Philadelphia, 1917, member of the Medical Society of the State of Pennsylvania, died July 31, aged 49, of coronary thrombosis

**J. Demorest Curtis**, Detroit, College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1907, member of the auxiliary staff, Providence Hospital, died at Houghton Lake, Mich., August 29, aged 59 of coronary heart disease

**Joseph Elbert Daniel** ☉ Houston, Texas, Memphis (Tenn.) Hospital Medical College, 1901, for many years medical director of the Great Southern Life Insurance Company died July 22, aged 66, of cerebral hemorrhage

**William R. S. Denner**, Manchester, Md Johns Hopkins University School of Medicine, Baltimore, 1908 resident physician at the Western Pennsylvania Hospital, Pittsburgh, 1908 1909, resident pathologist at St Francis Hospital, Pittsburgh from 1909 to 1912 at one time served as associate in pathology at the University of Pittsburgh School of Medicine member of the extrarurban staff, Union Memorial Hospital, Baltimore vice president of the Farmers and Mechanics Bank of Westminster died July 3, aged 61, of carcinoma of the prostate

**William Henry Egan**, New York Bellevue Hospital Medical College, New York, 1895, served as president of the



United States Pension Board and as chief surgeon of the Workmen's Compensation Board, died August 31, aged 72, of heart disease

David R Godlin, Miami Beach, Fla., New York Homeopathic Medical College and Flower Hospital, New York, 1926, member of the Florida Medical Association formerly police surgeon in North Bergen N J, served on the staffs of the North Hudson Hospital, Weehawken, N J, and the Christ and Margaret Hague Maternity hospitals, Jersey City, died in the Mount Sinai Hospital New York July 27 aged 43 of carcinomatosis

Mary Clayton Hurlbut @ Lockport, N Y Cooper Medical College San Francisco 1894 served as school physician, on the staff of the Lockport City Hospital, where she died July 20 aged 73, of pulmonary edema and a fractured hip received in a fall

Frank Kelly, Versailles Pa., Western Pennsylvania Medical College Pittsburgh 1901, member of the staff of McKeesport General Hospital died July 8, aged 71, of coronary occlusion

David Benjamin Knox, Georgetown, Ky., Kentucky School of Medicine Louisville, 1893 member of the Kentucky State Medical Association, on the staff of the John Graves Ford Memorial Hospital surgeon for the Southern Railway for many years, died July 31, aged 75, of hypertensive cardiovascular disease

Henry Kuehne, Coupland Texas Baylor University College of Medicine, Dallas 1906 member of the State Medical Association of Texas for twenty-seven years school trustee on the staff of the Stromberg Clinic and Hospital Taylor, where he died July 6 aged 69, of carcinoma of the prostate with metastases to pelvic and lumbar vertebrae

Frank La Rue @ Dexter Mo St Louis University School of Medicine 1910 served overseas during World War I died July 29, aged 55 of coronary occlusion and acute pericarditis

Malcolm Graeme MacNevin, Palo Alto, Calif University of Michigan Department of Medicine and Surgery Ann Arbor 1890 fellow of the American College of Physicians on the staff of the Southern Pacific General Hospital San Francisco died on a train May 21, aged 78 of chronic myocarditis and coronary occlusion

Joseph Leo McEvitt, Akron Ohio Yale University School of Medicine, New Haven Conn, 1914 member of the Ohio State Medical Association served overseas during World War I formerly on the staffs of the Bellevue Hospital and Manhattan Maternity and Dispensary, New York on the staff of St Thomas Hospital, died August 16 aged 55, of coronary heart disease

Charles Ati Morgan @ Indianapolis, Medical College of Indiana, Indianapolis, 1902 served on the staff of the Methodist Hospital, died August 31, aged 67, of coronary thrombosis

Frank Hoyt Nye, Plainview, Neb., College of Physicians and Surgeons, Keokuk Iowa, 1891, served on the staff of the Plainview General Hospital, died July 18, aged 78, of coronary thrombosis

Oliver Lee Ogle, Belleville, Ill Washington University School of Medicine, St Louis, 1897 died in St Elizabeth Hospital July 31, aged 76 of hypertensive heart disease, hypertrophy of the prostate and uremia

Jacques Voorhees Quick, Wahpeton N D, Jefferson Medical College of Philadelphia, 1886 member of the North Dakota State Medical Association also a pharmacist, died in St John's Hospital Fargo, July 19, aged 82 of duodenal ulcer with hemorrhage

Daniel Webster Schaffner Enhaut, Pa University of Maryland School of Medicine Baltimore, 1887, member of the Medical Society of the State of Pennsylvania died July 5, aged 87

Ernest Elliot Sparks @ Cochituate Mass University of Vermont College of Medicine Burlington, 1902 served as

Wayland town physician, school physician, formerly member of the board of health and school committee, examining physician for numerous insurance companies, active in the establishment of the civilian defense medical center, on the staffs of the Framingham Union Hospital, Framingham, and the Leonard Morse Hospital Natick where he died July 21, aged 71, of acute myocarditis

Percy de Stanley, Union, N J, Medico Chirurgical College of Philadelphia 1907, also a lawyer director and health officer of Union and Roselle Park on the staff of the Irvington General Hospital, Irvington, a trustee of the state civil service commission died September 10 aged 69 of carcinoma of the sigmoid colon

Amasa M Tower, Sacramento, Calif, Omaha Medical College 1901 died in Petaluma July 28 aged 73, of carcinoma

Treva Really Trick, Stockton Calif College of Physicians and Surgeons of San Francisco, 1921 member of the California Medical Association, on the staff of the Stockton State Hospital died July 20 aged 49

William Kenneth Turner @ Lieutenant Colonel, U S Army, retired San Francisco, Tufts College Medical School, Boston 1909 U S Army Medical School, 1926, served during World War I entered the medical corps of the U S Army as a first lieutenant in 1920, promoted to captain in 1921, to major in 1930 and retired with the rank of lieutenant colonel Feb 28 1941 died in the Letterman General Hospital Oct 5, 1942, aged 55, of bronchopneumonia

George Alvin Ulrich @ Philadelphia Jefferson Medical College of Philadelphia 1901, clinical professor of obstetrics at his alma mater, in 1941 the senior class of Jefferson presented his portrait to the college served on the staffs of the Philadelphia Lying-In Hospital and the Jefferson Hospital, where he died July 18, aged 70 of carcinoma of the pancreas

Pieter van der Leek, Brookport, Ill the Hahnemann Medical College and Hospital, Chicago, 1922 died in the Riverside Hospital Paducah, Ky, July 1, aged 56 of coronary thrombosis

Burr Jessell Van Doren @ Los Angeles, Northwestern University Medical School, Chicago, 1932, associated with the Pacific Mutual Life Insurance Company, past president of the Rotary Club of Laguna Beach, Calif died in the Good Samaritan Hospital July 3, aged 37, of cerebral hemorrhage

James B Vaughn @ Castlewood, S D Missouri Medical College, St Louis 1894 delegate to the American Medical Association 1922-1923, president of the Citizens State Bank, died in the Luther Hospital Watertown July 16 aged 76

Royal Wilson Walters @ Battle Creek Mich University of Michigan Medical School, Ann Arbor 1932, secretary treasurer of the Battle Creek Academy of Medicine and Dentistry, on the staffs of the Community and Leila Y Post Montgomery hospitals died in St Joseph's Hospital Ann Arbor, July 24 aged 37, of acute myocarditis

Francis Marion Williams @ Anderson Ind Indiana University School of Medicine, Indianapolis 1918 served overseas during World War I, mayor of Anderson from 1926 to 1930 on the staff of the St John's Hospital, killed August 18 aged 56 when the automobile in which he was driving was struck by a train

#### KILLED IN ACTION

James Edward Flanagan, West Roxbury, Mass., Tufts College Medical School Boston, 1938 member of the Massachusetts Medical Society served an internship at St Joseph's Hospital in Lowell commissioned a lieutenant (jg) in the medical corps U S Naval Reserve on Nov 18 1942 began active duty on Jan 4 1943 died at sea in the Atlantic area of extreme multiple injuries, aged 31 presumptive date of death January 3 according to the Navy Department



LIEUT (JG) JAMES E FLANAGAN  
(MC), U S N R 1912-1944



## Medical Examinations and Licensure

### COMING EXAMINATIONS AND MEETINGS

#### BOARDS OF MEDICAL EXAMINERS BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Examinations of boards of medical examiners and boards of examiners in the basic sciences were published in *THE JOURNAL* Oct 7 page 386

#### NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS Parts I and II Various centers Nov 13 15 Part III Various centers October Exec Sec Mr E S Elwood 225 S 15th St Philadelphia

#### EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF ANESTHESIOLOGY *Written* Part I Various centers Jan 19 Final date for filing application is Oct 21 Sec Dr P M Wood 745 Fifth Ave New York 22

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY New York June 8 9 Final date for filing application is March 12 Sec Dr George M Lewis 66 E 66th St New York 21

AMERICAN BOARD OF INTERNAL MEDICINE *Written* Feb 19 Final date for filing application is Dec 15 Asst Sec Dr W A Werrell 1301 University Ave Madison 5 Wis

AMERICAN BOARD OF NEUROLOGICAL SURGERY Spring 1945 Final date for filing application is Feb 1 Sec Dr Paul C Bucy 912 S Wood St Chicago 12

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY *Written* Part I Various centers Feb 3 Sec Dr Paul Titus 1015 Highland Bldg, Pittsburgh 6

AMERICAN BOARD OF OPHTHALMOLOGY New York June Chicago October 1945 Final date for filing application is Dec 1 Sec Dr S Judd Beach 56 Ivie Road Cape Cottage Maine

AMERICAN BOARD OF PEDIATRICS *Oral* New York April 14 15 Final date for filing application is Dec 15 Chicago May 19 20 Final date for filing application is Jan 19 Sec Dr C A Aldrich, 115 1/2 First Ave SW Rochester Minn

## Bureau of Legal Medicine and Legislation

### MEDICOLEGAL ABSTRACTS

**Malpractice Failure to Secure Roentgenograms in Treating Fractured Finger**—While adjusting a folding bed Saturday, Aug 30, 1941, Mrs Lashley suffered a crushing injury to her right ring finger. Her family physician, the defendant in the reported decision, was out of town and did not see her until the following Tuesday. Acting in accordance with directions given her by some one in the physician's office, she periodically soaked the finger in a hot epsom salt solution. On Tuesday the physician diagnosed the injury as a fractured terminal phalanx, but the hand was so swollen that he could do nothing with it that day. He directed that the patient continue soaking the hand as previously. When she suggested that a roentgenogram be taken of the finger he assured her that it was not necessary. On Thursday the hand was still "so swollen and crooked" that it could not be manipulated but the physician placed the finger in splints after putting the finger in "as full extension as possible." Splints were changed every few days by the physician and on several of those occasions he reassured his patient that a roentgenogram was not necessary. The hand continued to stay swollen and crooked and on October 26 the patient consulted another physician who had roentgenograms taken. About a month later the patient again returned to the physician and informed him about the roentgenograms but did not show them to him. It was then determined that an operation to correct the condition might be necessary but the physician did not want to "rush the operation" and informed the patient that he would operate later after he had had a roentgenogram taken and if he then believed the course advisable. In January the patient again returned to the physician, this time with her husband, and the advisability of an operation was again discussed. Acting in accordance with the physician's instructions the patient had a roentgenogram taken which

showed a fracture at the base of the terminal phalanx whose shaft was decidedly displaced in the volar direction. The physician testified that a piece of the bone to which a tendon was attached had been broken off, the tendon had pulled the chip out of position and arthritis in the joint had prevented the chip from uniting to the bone. The physician determined that he could not operate on the finger and referred the patient to an orthopedic specialist. The patient however apparently did not follow the treatment ordered by the specialist, and the physician apparently withdrew from the case.

Subsequently the patient sued the physician for malpractice alleging that he did not exercise proper care and skill in ascertaining her true condition and in treating her as a result of which her finger had become permanently crooked. Apparently the claim of negligence was founded mainly on the failure of the physician to have roentgenograms taken of the finger. At the trial the only medical testimony adduced by the plaintiff was that of the defendant physician himself who testified so far as is here material that he had correctly diagnosed the patient's condition without the aid of roentgenograms that if roentgenograms had been taken when the plaintiff was first injured they would only have confirmed his diagnosis, that it was not necessary to have roentgenograms taken because he had made a correct diagnosis from the clinical examination and that if a roentgenogram had been taken at any time up to the first of October his treatment would have been the same and that the treatment he gave the patient was such as is generally given by physicians of good repute in his community. The trial court entered a nonsuit on the ground that the patient had produced no expert testimony to show that the physician's treatment was not in accordance with the usual practice of physicians in that locality or that the failure to have a roentgenogram taken constituted negligence. The patient then appealed to the district court of appeal, first district, division 1, California.

The general rule here applicable, said the appellate court is stated as follows in *Engelberg v Carlson* 13 Cal 2d 216, 88 P 2d 695:

The law has never held a physician or surgeon liable for every untoward result which may occur in medical practice. It requires only that he shall have the degree of learning and skill ordinarily possessed by physicians of good standing practicing in the same locality and that he shall use ordinary care and diligence in applying that learning and skill to the treatment of his patient. *Hesler v California Hospital Co* 176 Cal 764 174 P 654. Whether he has done so in a particular case is a question for experts and can be established only by their testimony. *Perkins v Trueblood* 180 Cal 437 181 P 642. *Patterson v Marcus* 203 Cal 550 265 P 222. And when the matter in issue is one within the knowledge of experts only and is not within the common knowledge of laymen the expert evidence is conclusive. *Wm Simpson & Co v Industrial Acc Comm* 74 Cal App 239 240 P 58. *Johnson v Clarke* 98 Cal App 358 276 P 1052. Negligence on the part of a physician or surgeon will not be presumed; it must be affirmatively proved. On the contrary in the absence of expert evidence it will be presumed that a physician or surgeon exercised the ordinary care and skill required of him in treating his patient. *Donahoo v Loras* 105 Cal App 705 246 P 698. It is true that in a restricted class of cases the courts have applied the doctrine of *res ipsa loquitur* in malpractice cases. But it has only been invoked where a layman is able to say as a matter of common knowledge and observation that the consequences of professional treatment were not such as ordinarily would have followed if due care had been exercised.

In the present case, the court said, the only testimony given on the subject shows that the injury was correctly diagnosed and the plaintiff offered no expert testimony to show that the physician had been negligent in his treatment of her finger or that the failure to take an x-ray in a case of this kind constituted negligence. The patient contends, however, that the use of x-ray to determine the location of fractures and the progress of their healing is within the realm of judicial knowledge and that therefore it was not necessary to produce expert testimony to the effect that the defendant should have taken an "x-ray" of her finger. The authorities do not support this view. As was said in *Bickford v Larson*, 27 Cal App 2d 416, 81 P 2d 216, 219, where a fractured leg failed to heal properly because of a lack of callus formation and the plaintiff sought to hold the physician because he did not take "x-rays" nor use traction in reducing the fracture:

It may not be said as a matter of law that the failure to use an x-ray machine in the reducing of a fractured limb constitutes negligence under all circumstances. The necessity of employing an x-ray apparatus in

reducing a fractured limb depends entirely upon the circumstances of the particular case. The question as to whether the reduction and treatment of a fractured limb without the use of an x-ray machine constitutes negligence depends upon what an ordinarily skilled physician practicing in that vicinity in the exercise of due care and professional judgment, would be required to do under like circumstances. The determination of those questions depends upon expert testimony. (*Perkins v Trueblood* 180 Cal 437 443 181 P 642 *Arais v Kalenskoff* [10 Cal 2d 428] 74 P 2d 1043 [115 A L R 163])

The evidence in this case, continued the court, shows that the physician did know the nature of his patient's injury and there is no evidence that his treatment would or should have been any different if roentgenograms had been taken. Nor is there any showing that his treatment in any way caused the deformation of the finger. The only medical testimony in the case was given by the physician himself to the effect that the present condition of the finger was caused by arthritis. Even assuming that the physician might have discovered the arthritis sooner if he had taken roentgenograms sooner, the failure to do so would constitute a mere error of judgment, not actionable negligence, as was said in *Bickford v Laeson*, supra.

From a careful reading of the entire record we are convinced that the only omission of which the plaintiff may reasonably complain is a failure to use x-ray pictures after the reducing of the fracture at an earlier date with the possibility that the defendant might have thus discovered the lack of callus and that he would then have advised his patient to consult a bone specialist. But the defendant testified that he had no intimation of that lack of callus until the x-ray picture was taken December 20 [two months after the injury]. That omission if it may be said to have contributed to the injury of the patient was a mere error in judgment which does not constitute actionable malpractice.

The patient contended that the testimony of the physician himself was sufficient to establish negligence on his part that there is a material variance between the treatment outlined by him as being in accord with good practice and that actually administered by him as described by the patient. However, said the court, the record does not show any substantial conflict of testimony in this regard. The defendant described in detail his method of applying splints to the injured finger, stating that 'the finger was splinted in as full extension as possible, that is, with the finger sticking out straight', "with two of these splints applied and tape wrapped around them tightly, the finger must be extended straight out, or as near so as it was humanly possible to get it." He further testified, with reference to his first use of a splint, that "at the time this finger was splinted it was still slightly swollen and inflamed from the crushing force of her injury. The finger was brought up in as full extension as possible, and that is all that anybody can do to reduce that type of fracture." (Italics added.) These statements are not inconsistent with plaintiff's assertion that "the finger was not straightened out when the splint was put on", that he did put splints on it and left it crooked the way it was at that time, with the splints on, he didn't straighten it out with the splints on." She herself testified that on that occasion the finger was so swollen still and so crooked that he could not manipulate the finger even yet" from which statement it is manifest that the attainment of full extension was not then possible.

Finally, the patient contended that a jury should have passed on the evidence because of the testimony of herself and of her husband that in the course of a conversation between them and the physician sometime subsequent to the termination of the physician's services he admitted that she had asked him over and over again for "x-ray" and that "I know it is not your fault. It is all my own." The general rule stated the court, is, however, that an admission to be sufficient must be an admission of negligence or lack of the skill ordinarily required for the performance of the work undertaken. *Markart v Zeimer* 67 Cal App 363, 227 P 683. Where the admission does not amount to an admission of negligence it is held that the physician is not responsible. *Phillips v Poacell* 210 Cal 39, 290 P 441 443. In that case a blade used in making an incision broke and became embedded in the flesh, and testimony was introduced that the defendant had said "It is my fault in using that kind of blade in that kind of an operation." The court there said "We are of the opinion that these statements or otherwise did not constitute admissions that the defendants 'did not possess and use that reasonable degree of learning and skill which was ordinarily possessed by the members of their profession in good standing practicing in their vicinity' which

is the only standard by which the liability of the defendants may be determined. See *Markart v Zeimer*, 67 Cal App 363, 371, 227 P 683, *Hesler v California Hospital Co*, 178 Cal 764, 174 P 654, *Perkins v Trueblood* 180 Cal 437, 181 P 642." And even where a physician admits that he was in error in the treatment administered (*Donahoo v Lovas*, 105 Cal App 705, 288 P 698) or that he performed the wrong operation (*Markart v Zeimer* supra), it is held that such admissions are not sufficient to establish liability, where the admissions are not of negligence. As said in the latter case [67 Cal App 363, 227 P 686]

These admissions therefore are not admissions that the operation complained of was not performed with reasonable care or that the defendants did not possess and use that reasonable degree of learning and skill which was ordinarily possessed by the members of their profession in good standing practicing in their vicinity. As a consequence while they were competent as evidence of such facts as they admitted, they did not supply the absence of expert testimony in such particulars as expert testimony was otherwise required.

Here the alleged admission pertained only to the failure of the defendant to obtain x-rays of the broken finger, and, at most, the uncontradicted evidence shows that x-rays would merely have enabled him to obtain more positive evidence of the nature of the injury sustained, in confirmation of facts with which he was already familiar by observation and palpation. They would not have affected his method of treatment in the least nor is there any evidence to show that the result would have been any different.

The plaintiff in support of the contention just discussed cited *Scott v Sciaroni*, 66 Cal App 577, 226 P 827, and *Walter v England* 133 Cal App 676, 24 P 2d 930. In both of these cases, the court said, the admissions were of negligence, not of mere mistake, and therefore those cases are not controlling here. In *Scott v Sciaroni*, supra, the defendant was reported to have said that he left the radium on too long that it was his fault that the plaintiff was in her present condition. In distinguishing that case, it was said in *Donahoo v Lovas* 105 Cal App 705 288 P 701 "In that case the physician admitted that the condition of the plaintiff was due to his negligence." In *Walter v England*, 133 Cal App 676, 24 P 2d 934, the defendant stated that he had made a mistake in inserting a hypodermic needle, and it was held "We are satisfied that, as used by the defendant, the word 'mistake' was synonymous with the word 'negligence'."

The appellate court accordingly affirmed the judgment of non suit entered by the trial court—*Lashley v Koerber*, 150 P (2d) 272 (Calif, 1944).

## Society Proceedings

### COMING MEETINGS

- American Academy of Pediatrics St Louis Nov 9 11 Dr Clifford G Grulee 636 Church St Evanston Ill Secretary
- Annual Conference of State Secretaries and Editors, Chicago Nov 17 18 Dr Olin West 535 N Dearborn St Chicago Secretary
- Association of American Medical Colleges Detroit Oct 23 25 Dr Fred C Zapffe 5 S Wabash Ave Chicago Secretary
- Association of Military Surgeons of the United States New York Nov 24 Col James M Phalen Army Medical Museum Washington 25 D C Secretary
- Central Neuropsychiatric Association Chicago October 31 Dr Ernest M Hammes 1124 Lowry Medical Arts Bldg St Paul 2 Minn President
- Inter State Postgraduate Medical Association of North America Chicago Oct 17 20 Dr Arthur G Sullivan, 16 N Carroll St Madison Wis Managing Director
- Midwestern Section of American Federation for Clinical Research Chicago Nov 2 Dr Richard H Lyons University Hospital Ann Arbor Mich Secretary
- Oklahoma City Clinical Society Oklahoma City Oct 23 26 Dr L C McHenry 512 Medical Arts Bldg Oklahoma City Secretary
- Omaha Mid West Clinical Society Omaha Nebraska Oct 23 27 Dr J D McCarthy 1036 Medical Arts Bldg Omaha 2 Secretary
- Southern Medical Association St Louis Mo Nov 13 16 Mr C P Loranz Empire Building Birmingham 3 Ala Secretary
- Virginia Medical Society of Richmond Oct 23 25 Miss Agnes V Edwards 1200 E Clay St Richmond 19 Secretary
- Western Surgical Association Chicago Dec 1 2 Dr Arthur R Metz 250 East Superior St Chicago Secretary

## Current Medical Literature

### AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1934 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (\*) are abstracted below.

### American Heart Journal, St. Louis

28 1-132 (July) 1944

- \*Heart in Rheumatoid Arthritis—Study of 38 Autopsy Cases. D. Young and J. B. Schwedel—p. 1
- \*Coarctation of Aorta—Clinical and Roentgenologic Analysis of 13 Cases. L. Perlman—p. 24
- Electrocardiographic Study of Lateral Infarction Proved at Autopsy. C. I. Saffer—p. 39
- Effect of Drugs on Surface Capillaries of Macacus Rhesus. R. H. Felzer and W. Redisch—p. 46
- Electrocardiographic Changes of Impending Infarction and Ischemia Injury Pattern Produced in Dog by Total and Subtotal Occlusion of Coronary Artery. R. H. Bayley and J. S. La Due—p. 54
- Observations on Heart Size of Natives Living at High Altitudes. A. J. Herwin—p. 69
- \*Myocardial Infarction Indicated by Angina Pectoris of Effort or by Brief Attacks of Angina of Rest with Remarks on Premonitory Pain. W. Dressler—p. 81
- \*Continuous Recording Electrocardiography. W. B. Likoff, M. B. Rappaport and S. A. Levine—p. 98

**Heart in Rheumatoid Arthritis**—Young and Schwedel point out that in Europe a common etiologic background for chronic rheumatoid arthritis and rheumatic heart disease has been widely accepted. The prevailing opinion in this country has been that, when chronic structural joint changes and evidence of rheumatic carditis coexist, it is a rare combination of two distinct clinical entities. This concept of an etiologic difference persists because of a lack of postmortem studies on a sufficiently large number of patients with rheumatoid arthritis. The authors report postmortem and clinical data on 38 adults with rheumatoid arthritis. Thirty-three of the patients had cardiac lesions which were not the result of hypertension or coronary artery disease. In 25 of the 33 the process was rheumatic in origin and in the remaining 8 of a nonspecific infectious nature. An active rheumatic process was present in only 6. A history of rheumatic fever was obtained in only 3 cases and of probable rheumatic fever in 2 others. The arthritis was insidious and progressive in 18 cases, and acute attacks of polyarthritis occurred in 15 during the course of the disease. The extremely high incidence of rheumatic heart disease in rheumatoid arthritis which was found in this and previous pathologic studies suggests an extremely close relationship which should lead to consideration of the possibility that they may be manifestations of the same underlying disease process.

**Coarctation of Aorta**—Perlman found the incidence of coarctation of the aorta in adults to be 1 in 10,000, as contrasted with 1 in 1,500 in reports of other investigators. He reports 13 cases detected in the course of routine physical examinations for army service of an unselected group of men between the ages of 18 and 35 years. In only 3 of the 13 cases were pulsations of the femoral artery present. In only 1 of the 3 was the femoral impulse of moderate intensity, and even in this instance the impulse did not approach the intensity of the radial artery pulsation. In the remaining 2 cases the femoral artery pulsation might be classed as slight. The basal diastolic was the predominant cardiac murmur. Although the diagnosis of coarctation of the aorta may be made clinically, the roentgenogram is a valuable diagnostic aid. In some cases confirmatory evidence from the roentgenogram is essential for the diagnosis. The characteristic radiologic syndrome consists of (1) absence of the aortic knob, (2) dilatation of the ascending and transverse portions of the arch of the aorta, (3) erosion of the lower margin of the posterior portions of the ribs and (4) roundness or enlargement of the left ventricle. The only constant radiologic signs in this series were absence of the aortic knob and erosion of the ribs.

**Myocardial Infarction Indicated by Angina Pectoris**—Dressler reports 16 cases in which there was clinical and laboratory evidence suggestive of myocardial infarction in the absence of characteristic severe and protracted anginal attack. In 9 cases myocardial infarction was indicated by the sudden onset or aggravation of angina of effort. In 7 it was clinically signalized by brief attacks of angina of rest lasting up to twenty minutes. The seriousness of such atypical anginal manifestations is often unrecognized and proper management of the patient is neglected. Sudden death is frequent in this group. A painstaking history, including an accurate estimate of the functional capacity of the heart and a comparison of present and past performances, furnishes the most significant diagnostic data. An increase in the sedimentation rate is often a more sensitive index of myocardial necrosis than the electrocardiographic changes. Lack of the latter should never be considered as conclusive evidence against serious myocardial involvement. Anginal pain of the type described has often been designated as 'premonitory pain' which precedes the development of actual myocardial infarction. The author's experience as well as reports in the literature proves that premonitory pain is not invariably followed by typical anginal attacks signifying myocardial infarction. Premonitory pain is often by itself associated with evidence of myocardial necrosis. The distinction between 'premonitory pain' and actual myocardial infarction is inappropriate. A sudden onset or aggravation of angina of effort, or brief attacks of angina of rest, indicates progressive coronary insufficiency and is in the majority of cases associated with ischemic myocardial necrosis.

**Continuous Recording Electrocardiography**—Likoff and his collaborators present a description of a continuous recording electrocardiograph. The apparatus is capable of taking a miniature record one-twentieth normal size on ordinary moving picture film and of functioning for 267 hours without the attention of an operator. A simple enlarger was devised to view the miniature record at normal size and to make suitable photographic reproductions. The apparatus is as accurate and sturdy as the ordinary portable electrocardiograph. Several interesting observations have been noted thus far. Ventricular fibrillation has been found to follow rather than precede death in some cases. Electrocardiographic curve generally regarded as indicative of ventricular fibrillation have been observed to occur while heart beats were audible and therefore are better designated as ventricular flutter.

### American Journal of Clinical Pathology, Baltimore

14 307-362 (June) 1944

- Qualitative and Quantitative Studies on Antithrombic Activity of Blood Serum and Plasma. S. J. Wilson—p. 307
- Simple Method of Staining Malaria Protozoa and Other Parasites in Paraffin Sections. W. J. Tomlinson and R. G. Grocott—p. 316
- Serum Proteins in Diseases of Heart and Kidneys. B. M. Kargin—p. 327
- Effect of Small Doses of Alcohol on Central Nervous System. A. Enzer, E. Simonson and Grace Ballard—p. 333
- Salmonella Pneumonia. M. G. Levine and E. B. Plattner—p. 342
- Attempt to Desensitize Against Tuberculo bacillary Allergy. H. J. Corper and M. L. Cohn—p. 344
- Evaluation of Clinical Laboratory Tests for Pathogenic Staphylococci Based on Histologic Examinations of Lesions in Tissue. P. R. Beamer, I. I. Goodof and E. B. Smith—p. 350
- \*Use of Buffy Layer in Rapid Diagnosis of Septicemia. A. A. Humphrey—p. 358

**Buffy Layer in Rapid Diagnosis of Septicemia**—Smears from the 'buffy layer' or 'leukocytic cream' have been employed to facilitate leukocytic differential counts in leukopenic conditions. Malarial parasites are more numerous in the red cells in this layer, owing to their decreased mass. Humphrey describes demonstration of the causative organism of septicemia in this layer in the following manner. At the time of withdrawing blood for culture, 4 to 7 cc of blood is placed in a narrow tube which contains some dry oxalate crystals. After mixing the blood and the oxalate by shaking the tube is centrifuged at high speed for thirty minutes. The plasma is gently removed from the packed erythrocytes and overlying buffy layer with a capillary pipet care being taken not to disturb the latter. The layer is then gently scraped off the underlying red cell strata with a small loop or is sucked up with a

capillary pipet and smeared over slides, which are stained with Gram's stain in the usual manner. It is advisable to stain one slide with Wright's blood stain, as it was found that gram negative diplococci were more readily found in such preparations and their gram staining characteristics could later be checked. While in some cases several intracellular and extracellular bacteria were observed in one field, others required close examination for almost an hour before definite bacterial forms could be seen. The author describes 6 cases in which this method was employed. The advantage of this procedure is that rational therapy can be instituted within an hour after the clinical diagnosis of septicemia is made, making it unnecessary to wait forty-eight or seventy-two hours until a blood culture becomes positive. The procedure is intended to supplement the blood culture.

### American J Obstetrics and Gynecology, St Louis

48 1-148 (July) 1944 Partial Index

- Chemistry of Ovarian Cysts Ruth M Watts and F L Adair—p 1  
 Cesarean Section Morbidity and Septic Mortality in Relation to Type of Operation C C Briscoe—p 16  
 Zondek's Simplified Treatment of Secondary Amenorrhea Rita S Finkler—p 26  
 \*Cord Transfusions in Newborn Infants H W Mayes—p 36  
 Prognosis and Management of Premature Rupture of Membranes E H Bishop—p 45  
 Clinical Significance of Midplane Pelvic Contraction H Thoms and P C Schumacher—p 52  
 Study of Endometrial Pattern Before and After Treatment for Amenorrhea W Bickers—p 58  
 Genital Tuberculosis in Female R L Hras—p 69  
 \*Frequency of Anovulatory Menstruation as Determined by Endometrial Biopsy A B Levan and P B Szanto—p 75  
 Analgesia and Anesthesia for Obstetrics Inhalation Methods W A Conroy—p 81  
 Local Anesthesia H Bunbaum—p 90  
 Continuous Caudal Anesthesia with Pontocaine Obstetrician's View point J E Fitzgerald J M Thomson and H O Brown—p 94  
 Continuous Caudal Anesthesia with Procaine Hydrochloride in 240 Obstetric Patients W F Mengert—p 100  
 Continuous Caudal Analgesia in Obstetrics Commentary A Baptista Jr—p 103  
 Cyclopropane Pituitrin Incompatibility S Belinkoff—p 109

**Chemistry of Ovarian Cysts**—Watts and Adair determined the sodium, potassium, chloride, nitrogen, nonprotein nitrogen, protein, glucose, total solid, water, ash and specific gravity of 29 ovarian cyst fluids from 15 ovarian tumors (9 benign and 6 malignant), fluids from 3 parovarian cysts have been examined. Values vary greatly not only among the fluids of different types of cysts but also between the fluids of the different cavities of the same tumor. The composition of the fluid seems to vary with the secretory activity of the lining of the cyst. In general, fluids from cysts with actively secreting epithelium and a cellular basal layer are high in nitrogen and protein, high in potassium and low in chloride, those with less actively secreting epithelium, or a cyst wall which is denuded or attenuated and in which the basal layer is avascular or hyalinized, show low nitrogen and protein, low potassium and high chloride.

**Cord Transfusions in Newborn Infants**—Mayes made 34 cord transfusions in newborn infants. 18 in infants weighing less than 5½ pounds, gestation from 23 to 39 weeks, 16 in infants weighing 5½ pounds and over, 13 full term, 3 with gestation of 36 weeks or under. There were 4 deaths, 3 in the smaller weight group, 1 in the larger. The citrated blood to be given should be in readiness before the baby is delivered. A 50 cc syringe is used in which is 5 cc of a 2 per cent solution of sodium citrate. The blood is withdrawn and the syringe tilted several times to mix the citrate solution with it. If the mother is toxic or if for any other reason her blood is not desirable, blood from the father, from some other donor or from the bank may be used. As soon as the baby is born and before cutting the cord, the umbilical vein may be entered with the same needle used to withdraw the blood. If preferred a cannula may be placed in the vein. The transfusion should be started as far from the baby as possible. This serves two purposes. If the vein is not easily entered, another attempt can be made nearer the baby, if the baby should move, the needle will not be disturbed. As soon as the transfusion is started the cord should be clamped between the needle and the placenta.

If it is decided to cut the cord before giving the transfusion, the cord may be gently compressed near the umbilicus, so that the veins remain distended. The transfusion should be given slowly, 30 or 40 cc in about five minutes. About 10 cc per pound of baby is sufficient. Premature infants and particularly those usually considered nonviable are benefited. In infants suffering from difficult delivery and those in doubtful condition, a small transfusion of 20 cc of mother's blood acts as a direct stimulation to the respiratory center and tends to overcome a tendency toward hemorrhage. If the mother gives a history of previous stillbirths or if hemorrhagic disease or erythroblastosis is suspected, cord transfusion may be of benefit.

**Frequency of Anovulatory Menstruation as Determined by Endometrial Biopsy**—Levan and Szanto took endometrial biopsies from 103 women at the Kankakee State Hospital. All had regular menstrual periods. Biopsies were taken twenty days or more following the last menstrual period. The specimens were stained with hematoxylin and eosin. In doubtful cases Best's carmine stain for glycogen and the thionin stain for mucin were used. The authors obtained 261 endometrial biopsies during the last third of the menstrual cycle from 103 women. Fourteen anovulatory cycles were found in 9 patients. Two patients showed successive anovulatory cycles, 7 patients showed both anovulatory and ovulatory cycles. The incidence of anovulatory cycles was 5.36 per cent, the patients with anovulatory cycles amounted to 8.7 per cent of the total number examined. Parity was not found to be a factor, but women past 40 years of age showed a higher incidence of anovulatory menstruation. While all the women in this group are psychotic, the incidence of anovulatory menstruation in them compares quite closely with that found in normal, healthy women.

### American Journal of Surgery, New York

65 1-152 (July) 1944

- Adenoma of Kidney Report of 6 Cases C C Higgins—p 3  
 Pilonidal Cysts Subcutaneous Excision Beneath Definitely Placed Flaps G L Carrington—p 15  
 Reconstructive Surgery of Nose in Congenital Deformity Injury and Disease E S Linmont—p 17  
 Nontuberculous Lung Abscesses Survey of 417 Cases V D Ingianni—p 46  
 Congenital Hemolytic Icterus Surgical Treatment of Complications with Report of 2 Cases E O Horne—p 56  
 Salpingitis and Tubal Patency F L Schwartz—p 65  
 \*Plasma Fixation of Skin Grafts J E Sheehan—p 74  
 Surgical Relief of Hypoglycemic State Probably Due to Organic Hyperinsulinism G E Pfeiffer and L H Eisendorf—p 79  
 Hemorrhoids Surgical versus Injection Treatment D N Yaker—p 88  
 Some Uses for Heavy Anesthetic Oils H M Kirschbaum—p 91  
 X-Ray Treatment of Sinusitis F T Munson and H T Munson—p 95  
 Mar Scarpia An Unusual Surgical Complication M U Prescott and R W Zollinger—p 98  
 Gastric Ulcer Benign or Malignant Review of Recent Literature H M Wiley—p 104  
 \*Peptic Ulcer Perforating Into Anterior Abdominal Wall C G Morlock and W Walters—p 133

**Plasma Fixation of Skin Grafts**—Sheehan directs attention to the change in the technique of skin grafts introduced by Sano of Temple University (abstract in THE JOURNAL, Dec 25, 1943, p 1143). Painting the host site with the patient's own plasma and the graft with leukocyte cell extract makes the adhesion perfect, sutures are unnecessary, the degree of pressure is no longer a problem and the circulation within the graft is established so rapidly that overlapping edges bleed when cut on the second day. On the fourteenth day definite recovery is achieved and in two months the graft is indistinguishable in coloration or by its boundaries from the neighboring skin. It is not good practice to have the skin edges overlap the defect. In cutting it away an unsatisfactory apposition at the defect, skin edges is inevitable. Stretching by roller pressure on the contrary, banks the graft edges accurately against those of the defect, a little cardboard and hand pressure is added and the approximation is maintained sufficiently by means of a few clamps. Adhesion is immediate and complete. The compound was able to seal wounded liver tissues in which suturing leads only to bleeding and to be of equal effect when employed on wounds of the spleen. It is invaluable in facial injuries in which there are flaps of torn skin whose immediate return is

of high importance and in the elimination of disfiguring scar. It should make possible the closure of many not too large wounds without sutures. It offers great hope of application in many situations, as in the face and hands.

**Peptic Ulcer Perforating into Abdominal Wall**—Morlock and Walters observed a jejunal ulcer which had perforated into the anterior abdominal wall. Two similar cases were found in the files of the Mayo Clinic. All of the 3 patients had had a previous anterior gastrojejunostomy. In each instance the offending lesion was an ulcer arising in the anterior rim of the anterior gastrojejunal stoma. In order that a peptic ulcer may attach itself to the anterior abdominal wall and penetrate into it the ulcer must have its origin from a part of the stomach wall which is adjacent to the abdominal wall. A gastrojejunal ulcer arising on the anterior rim of an anterior gastrojejunal stoma is therefore peculiarly likely to penetrate in such a way as to result in this complication. In the surgical treatment of duodenal ulcer, posterior anastomosis is always done in preference to the anterior anastomosis. A better functional result is achieved by the former procedure. Anterior gastrojejunostomy is done only when posterior anastomosis is not technically feasible, and this is uncommon. For these reasons few gastrojejunal ulcers are situated in a location which makes penetration of the ulcer into the anterior abdominal wall anatomically possible. Although it is possible for a gastric ulcer having its origin in a part of the anterior gastric wall adjacent to the anterior abdominal wall to penetrate into the abdominal wall, this complication must be exceedingly rare in a stomach which has not been previously disturbed by operation. In 1 case 2 ulcers were found to penetrate into the anterior abdominal wall, 1 had its origin in the gastric wall, the other arose from the jejunum. Peptic ulcer which perforates into the anterior abdominal wall must be treated surgically.

### Annals of Otol, Rhin and Laryngology, St Louis

53 207-380 (June) 1944 Partial Index

- Critical Review of Patients Subjected to Labyrinth Operations H I Lillie—p 207  
Teaching Otolaryngology in Wartime H P Schenck—p 221  
Local Use of Sulfadiazine Solution Radon Tyrothricin and Penicillin in Otolaryngology S J Crowe—p 227  
Mucocoele in Frontal and Ethmoid Sinuses Simplified Surgical Treatment H M Goodyear—p 242  
Histologic Otosclerosis S R Guild—p 246  
Vitamins in Otolaryngology H B Perlman—p 267  
Traumatic Deformities of Nasal Septum S Salinger—p 274  
Intranasal Vaccine for Prevention of Colds D W Cowan and H S Diehl—p 286  
Aeromoniasis—Its Cause Course and Treatment P A Campbell—p 291  
Extralaryngeal Surgical Approach for Arytenoidectomy Bilateral Abductor Paralysis of Larynx H B Orton—p 303  
Temporal Arteritis H J Profant—p 308

### Archives of Ophthalmology, Chicago

32 1-88 (July) 1944

- \*Pathogenesis of Intermittent Exophthalmos F B Walsh and W E Dandy—p 1  
\*Keratomes for Treatment of Corneal Opacities R Castroviejo—p 11  
Treatment of Glaucoma P A Chandler—p 23  
Industrial Injuries of Eye E S Sherman—p 33  
Lipemia Retinalis in Nondiabetic Patient C W Leppard—p 37  
Juvenile Amaurotic Familial Idiocy Its Ocular Pathology I Givner and L Roizin—p 39  
Intracapsular Extraction of Senile Cataract M D Pahwa—p 48  
Intraocular Pressure and Its Relation to Retinal Extravasation J Jgersheimer—p 50  
Defects in Visual Fields Produced by Hyaline Bodies in Optic Disks C W Rucker—p 56  
Tuberous Sclerosis Associated with Tumor of Optic Disk (Phacoma) E A Glicklich A Schultz and J E Benjamin—p 60  
Chalcosis Lentis Associated with Traumatic Ectropion Posterior E Rosen—p 63

**Pathogenesis of Intermittent Exophthalmos**—According to Walsh and Dandy, intermittent exophthalmos is characterized by rapid protrusion of one eye when venous stasis is induced by bending the head forward, by lowering the head, by turning the head forcibly, by hyperextension of the neck, by coughing, by forced expiration with or without compression of the nostrils and by pressure on the jugular veins. The ocular protrusion disappears immediately when the head is erect and when arti-

ficially induced venous congestion is relieved. Usually there is enophthalmos when venous congestion does not exist. Pulsation of the eyeball may or may not be present, and vision may or may not be affected. The condition is progressive and may be productive of unbearable pain and troublesome diplopia. The authors report a case in which the quick protrusion and sinking of the eyeball with the postural changes and the rapid protrusion induced by coughing, sneezing and jugular compression could mean only the filling of a large venous bed. The pulsation of the eyeball indicated an arterial component. The lesion was considered to be an arteriovenous aneurysm. The enophthalmos (with the patient, a girl aged 18, sitting or standing) was thought to be due to atrophy of the orbital fat from long continued pressure. A transcranial approach disclosed an intracranial arteriovenous aneurysm lying in and behind the sphenoid fissure. The case is the only one in the literature in which a cause for this rare syndrome has been disclosed. An arteriovenous aneurysm of similar type is probably responsible in all cases for pulsation of the eyeball. In most recorded cases pulsation was absent or missed. Whether or not there are two types of this syndrome, one with and the other without pulsation, cannot be determined without subsequent pathologic studies. The intermittent exophthalmos was cured by obliterating the aneurysm with the electrocautery, but blindness of the affected eye and ophthalmoplegia resulted.

**Keratomes for Treatment of Corneal Opacities**—Castroviejo states that among the corneal opacities covering the pupillary area there are some susceptible of treatment by corneal transplantation, which gives the best results as far as improvement of vision is concerned. There are other superficial opacities in the pupillary area which, although lending themselves to treatment by corneal transplantation, are best handled by other surgical procedures which expose the eye to fewer complications. For some of these conditions superficial keratectomy is the preferred procedure. Keratectomy may be partial, when only a limited area of the external lamella of the cornea is excised, or total, when the excision extends over the whole area of the cornea. The author performs a partial superficial keratectomy for band keratitis, for dystrophia adiposa corneae and for leukoma. He employs total superficial keratectomy for vascularized leukoma. Total superficial keratectomy together with corneconjunctival plastic surgery is carried out in vascularized leukoma and symblepharon. Occasionally in cases of severe symblepharon the author combines partial superficial keratectomy, corneconjunctivoplasty and graft of the buccal mucous membrane. He employs partial superficial keratectomy and graft of the buccal mucous membrane for the treatment of recurrent pterygium. In selected cases superficial keratectomy offers the ideal method of improving visual acuity. Penicillin ointment has been found to shorten the period of healing and reduce the occurrence of infection.

### Connecticut State Medical Journal, Hartford

8 483 580 (Aug) 1944

- Common Industrial Solvents and Their Systemic Effects W F von Oettingen—p 485  
Development of Psychiatric Service and Its Relation to Returned Veterans J M Cunningham—p 493  
Erythroblastosis Fetalis Its Etiology and Diagnosis H C Miller—p 499  
Rh Factor in General Medicine R D Johnson—p 502  
Practical Importance of Rh Blood Type and Project for Collection and Preparation of Rh Typing Serum L K Diamond—p 505  
Hartford Circus Fire Disaster Organization of State F M S of War Council at State Armory Hartford July 6—July 9 1944 During Crisis G M Smith—p 507  
Id Report of Hartford Catastrophe Fire at Barnum and Bailey Circus Grounds July 6 1944 Between 2 25 and 2 30 p m J J Bourke—p 509  
\*Id Hartford Circus Fire Patients in Hospitals S B Weld—p 511

**Hartford Circus Fire Patients in Hospitals**—Because of its proximity to the scene of the disaster, the Municipal Hospital received the first and, in the end, the largest number of patients. During the following eight minutes 143 patients were admitted. Of this number 5 were dead on arrival, 6 others were so severely burned that they died within an hour after admission, 42 were treated in the outpatient department and 76 were receiving treatment up till 8 p m, when 22 of the least seriously burned were transferred in U S Army ambulances to



Hartford and St Francis hospitals. The procedure at the Municipal Hospital was similar to that followed in the other hospitals. All patients were given morphine subcutaneously on admission. Plasma was administered intravenously under considerable difficulty, owing to the badly burned condition of the skin on the extremities and to destruction or collapse of superficial veins. It was often necessary to cut down on the femoral veins. The dressing teams applied petrolatum impregnated gauze to all burned areas without debridement. These dressings were covered with light plaster casts for even pressure and changed the following day to Ace bandages. A tetanus detail tested patients for reactors and gave prophylactic injections. Sulfonamides were administered during the first twenty-four hours together with forced fluids by mouth, if tolerated. Parenteral fluids were necessary in many instances because of nausea. Patients developing fever on the second day were given penicillin in liberal doses. This major disaster found Hartford ready to meet the task imposed. When the facts are tabulated and analyzed there will be on record not only data of inestimable value to medical science but evidence of the necessity for a permanent comprehensive emergency organization.

### Diseases of Chest, Chicago

10 277-390 (July-Aug) 1944

- New Growths of Chest C W Tempel—p 277  
Lung Resection for Chronic Pulmonary Infection R Davison—p 313  
Relative Importance of Anatomic and Physiologic Concept in Tuberculosis J D Riley—p 317  
Treatment of Tuberculous Cervical Adenitis with Vitamin A and D Ointment W Raab—p 326  
Chest Diseases in Aged A S Anderson—p 329  
Treatment of Pneumonia with Sulfonamide Drugs J Reiss and A C Cohen—p 337

### Gastroenterology, Baltimore

2 385-470 (June) 1944

- Benign Diseases of Small Intestine B B Crohn—p 385  
Diseases in Tropical War Zones IV Diseases of Middle East India Assam and Burma E C Faust—p 395  
Pancreas Contributions of Clinical Interest Made in 1943 R Elman and J T Akin Jr—p 412  
Indigestion Due to Constipation W C Alvarez—p 427  
\*Role of Liver and Gallbladder in Excretion in Dog of Some of Newer Sulfonamides H Shay S A Komarov H Siple and S S Fels—p 432  
Effect of Prolonged Administration of Enterogastrone on Gastric Secretion in Normal and Mann-Williamson Dogs M I Grossman H Greengard D F Dutton and J R Woolley—p 437

**Liver and Gallbladder in Excretion of Sulfonamides**—Shay and his associates investigated sulfaguanidine, succinylsulfathiazole, phthalylsulfathiazole and sulfathiazole. Experiments carried out on 30 dogs demonstrated that sulfathiazole is concentrated by the dog's liver in a constant relationship to the blood level, the ratio being independent of the blood concentration. The introduction of the succinyl radical into the sulfathiazole molecule at N<sup>4</sup> resulted in a considerable increase in the hepatic bile/blood concentration ratio, while the introduction of the phthalyl radical in the same position increased the ratio many times more so that the removal from the blood of the latter compound by the liver reaches a high degree of selectivity. Sulfaguanidine appears to be excreted by the liver at approximately the blood level. Phthalylsulfathiazole appears to be partially broken down in the dog's liver with the liberation of a free sulfonamide, presumably sulfathiazole. The normal dog's gallbladder concentrates sulfathiazole, succinylsulfathiazole and phthalylsulfathiazole in proportion to water absorbed from the bile. It neither excretes nor absorbs any of these drugs but is able to absorb sulfaguanidine.

### Indiana State Medical Assn Journal, Indianapolis

37 342-386 (July) 1944

- Primary Tuberculosis E W Custer—p 341  
Modern Treatment of Cyanide Poisoning K K Chen C L Rose G H A Clowes—p 344  
Clinical Symptoms of Typhoid Fever in 9 Cases V C Miller—p 351  
Medical Records and Record Keeping in Industry S L Ranlin—p 352  
T Stack for Artery Forceps F E Hagie—p 359

### Journal of Experimental Medicine, New York

80 1-76 (July) 1944

- Significance of Antigenic Differences Among Strains of A Group of Influenza Viruses T P Magill and J Y Sugg—p 1  
\*Histopathology of Progressive Muscular Dystrophy as Revealed by Ultraviolet Photomicrography C L Hoagland R E Shank and G I Lavin—p 9  
Constitution of Mitochondria and Microsomes and Distribution of Nucleic Acid in Cytoplasm of Leukemic Cell A Claude—p 19  
Biliary Excretion of Radioactive Iron and Total Iron as Influenced by Red Cell Destruction W B Hawkins and P F Hahn—p 31  
Polymyelitis in *Cynomolgus* Monkey III Infection by Inhalation of Droplet Nuclei and Nasopharyngeal Portal of Entry with Note on This Mode of Infection in Rhesus H K Faber Rosalie J Silverberg and L Dong—p 39  
Experimental Streptococcal Moniliformis Arthritis in Chick Embryo G J Buddingh—p 59  
Certain Conditions Determining Enhanced Infection with Rabbit Papilloma Virus W F Friedewald—p 65

**Histopathology of Progressive Muscular Dystrophy Revealed by Ultraviolet Photomicrography**—According to Hoagland and his associates morphologic studies of diseased muscle have yielded little information concerning the fundamental defect responsible for the extensive atrophy and dystrophy in the primary muscle disorders. The recent development of a simplified quartz microscope with the 2,537 angstrom line of mercury as the light source has made it possible to obtain ultraviolet photomicrographs of tissues fixed, embedded and sectioned by routine methods. Differences in the absorptive capacity of the organic components of tissue may be expected to result when photographed with the 2,537 angstrom line of mercury. The proteins have a maximum absorption at 2,800 angstroms and the nucleoproteins in the region 2,600 to 2,700 angstroms. Nucleic acid has a maximum absorption at 2,600 angstroms with an extinction coefficient from thirty to sixty times that of the proteins. Changes in tissue structure which result from differences in distribution or concentration should be readily detected by this method. Results, therefore, which are quite different from those obtained with conventional staining technique may be expected, since the ultraviolet photomicrographs are a reflection principally of the chemical nature of the material, while photomicrographs of stained sections reflect merely the absorptive capacity of the dyes used in staining. The authors report a histopathologic study of material obtained from fifteen biopsies of muscle of patients with progressive muscular dystrophy. An exact description of the microscopic changes occurring in this syndrome as revealed by photomicrographs in ultraviolet light is difficult at this time because of lack of an adequate system of nomenclature. Attention has been drawn to lesions of consistent character found in sections of muscle removed at biopsy which appear to be specific for the disease.

### Journal of Lab and Clinical Medicine, St Louis

29 673-784 (July) 1944

- Coronary Disease Associated with Short PR Interval and Prolonged QRS Case Report S A Leader—p 673  
Vertigo and Related Conditions New Therapeutic Concept M Elaser Jr—p 680  
Reversibility of Sensitization of Erythrocytes G M Kalmanson and J J Bronfenbrenner—p 684  
Note on Digestion of Metal in Stomach H Necheles and W H Olson—p 687  
Adjuvant Effect of Aerosol on Germicidal Action of Cadmium Chloride A F Coca—p 689  
\*Treatment and Control of Epidermophytosis and Bromidrosis in State School with Cadmium Chloride Aerosol Solution G W T Watts—p 692  
Manual and Mechanical Resuscitation in Experimental Asphyxia B Steinberg and A Dietz—p 695  
Botulism from Home Canned Beets Betty L Hall—p 702  
Waterhouse-Friderichsen Syndrome Report of Case Terminating in Recovery H W Potter and L H Bronstein—p 703  
Therapy of Migraine by Electrolytes Affecting Blood Volume C Pfeiffer R H Dreisbach and C C Roby—p 709  
Cardiotoxic Substances in Blood and Heart Muscle in Uremia (Their Nature and Action) W Raab—p 715

**Cadmium Chloride-Aerosol Solution in Treatment of Epidermophytosis and Bromidrosis**—Watts administered cadmium chloride-aerosol solution to 70 patients with intertriginous epidermophytosis. The treatment was continued daily for from two to four weeks, the itching was controlled and the drying effect of the solution was observed after a few days.



All patients were cured under this regimen. The 14 patients with hyperkeratotic type of epidermophytosis were required to soak their feet in the cadmium chloride-aerosol solution ten minutes daily, after which the feet were massaged vigorously, thereby removing much of the infected epidermis. To date none of these patients have been cured but they show improvement. The solution was nonirritating. Two cases of epidermophytosis of the hands and 1 case of tinea circinata were successfully treated. Sixteen female patients who suffered severely from bromidrosis, manifested as odorous underarm perspiration, were treated by bathing and applying the solution under the arm with the finger tips. The results have been highly satisfactory in all. Treatment with cadmium chloride-aerosol solution completely controlled the objectionable odor in 6 cases of bromidrosis of the feet.

### Journal of Neurosurgery, Springfield, Ill

1 227-298 (July) 1944

- \*Repair of Cranial Defects with Tantalum. R C L Robertson—p 227
- Swivel Connection for Brain Suction Tip to Relieve Torsion Strain of Rubber Tubing. H C Dahle—p 237
- Experimental Study on Use of Tantalum in Subdural Space. A C Delarue, E A Linell and K G McKenzie—p 239
- Dark Adaptation Negative After Images. Tachistoscopic Examinations and Reaction Time in Head Injuries. J Ruesch—p 243
- Cerebellar Medulloblastoma with Verification Nineteen Years After Onset of Symptoms. I D Ingraham and O T Bailey—p 252
- Paralysis in Flexion and Tremor in Monkey Following Cortical Ablations. W K Welch and Margaret A Kennard—p 258
- Microcephalus Secondary to Birth Trauma. E F Fincher—p 265
- \*Differential Diagnosis of Intraspinal Tumors and Protruded Intervertebral Disks and Their Surgical Treatment. J G Love—p 275
- \*Intelligence Following Prefrontal Lobotomy in Obsessive Tension States. J W Watts and W Freeman—p 291

**Repair of Cranial Defects with Tantalum.**—According to Robertson, tantalum is a heavy metal with a density about twice that of steel. Its chemical inertia obviates reactions to body fluids. Tantalum is workable when cold but cannot be cast. Strength and thermal conductivity are approximately those of steel. Tantalum sheet metal from 0.015 to 0.02 inch thick has been used to repair skull defects at Brooke General Hospital, Fort Sam Houston, Texas. Two methods of cranioplasty with tantalum have been used: a two stage operation and a one stage procedure. In the former the bed for the plate is prepared by mortising the periphery of the bone defect. A shelf is made in the outer table by chisel or burr 2 to 3 mm beyond the limit of the defect. An impression of the defect and details of the margin of bone is obtained. A wax model is made duplicating the contour of the portion of the skull to be replaced. From this positive a die and counter die are made to swage the metal to conform to size, shape and contour of the missing bone. At a secondary operation the plate is placed in the previously prepared bed and fixed in position. The more frequently employed and highly satisfactory method is a one stage procedure. The bed is prepared as described. The approximate size segment of tantalum is molded by bending and shaping or more frequently by beating to contour. Then the exact outline is cut with heavy scissors to conform to the outline of the mortised defect. One border of the plate is engaged into the shoulder of the mortise and, by slight bending and forcing the opposite border into its corresponding shoulder the plate will fit so well when it has flattened out as a result of its inherent spring that it will lock itself into position. Fixation of the tantalum replacement may be accomplished by wire suture or by using small triangular trimmings of the tantalum sheet, utilizing the principle of glazier's points. Tantalum cranioplasty has been done on 26 service men. The author stresses the ease with which the cranial repair has been made, the efficiency of the repair and the cosmetic results. Four illustrative cases are reported in detail. The chief advantages of tantalum from a surgical point of view are its chemical and electrical inertia and ductility.

**Differential Diagnosis of Intraspinal Tumors and Protruded Intervertebral Disks.**—Love argues that if diagnostic errors are to be kept at a minimum the mistake should not be made of considering every intractable low back and sciatic pain as being due to a protruded intervertebral disk. Trauma

may initiate symptoms of intraspinal neoplasm as well as those of a protruded intravertebral disk. It is important in planning and executing the operation for relief of intraspinal pressure to know which of the following is indicated: relatively extensive laminectomy for removal of a tumor or a relatively short operation, with little or no sacrifice of bone for removal of a protruded intervertebral disk. The author and his colleagues at the Mayo Clinic encountered many intraspinal neoplasms masquerading as protruded intervertebral disks. In some cases the mimicry was so close that the differential diagnosis could not be made until the space taking lesion had been uncovered at the operating table in spite of the fact that every patient suspected of having a protruded intervertebral disk is subjected in addition to a general physical, orthopedic and neurologic examination. In an analysis of the records of 26 cases of tumor of the spinal canal in which symptoms of root pain suggested irritation or compression of the spinal cord or nerve roots by a protruded intervertebral disk it was found that diagnostic spinal puncture, with or without visualization of the spinal canal was essential to diagnosis and to localization of the intraspinal lesion. In 15 cases of tumor of the spinal canal it was found that in 8 the symptoms were misleading in that they suggested a protruded intervertebral disk. Also during the period when these 15 patients came to operation 100 other patients were subjected to operation for protruded intervertebral disks. In any case of unexplained, intractable root pain and in almost every case in which a protruded intervertebral disk is suspected diagnostic lumbar puncture should be performed and the protein content of the cerebrospinal fluid should be determined. A value for spinal fluid protein of more than 100 mg per hundred cubic centimeters usually means a neoplasm rather than a protruded intervertebral disk.

**Intelligence Following Prefrontal Lobotomy.**—Watts and Freeman base their conclusions regarding prefrontal lobotomy on 45 patients observed from six months to seven years after operation. In the patients under discussion it was the emotional charge rather than the peculiar ideas themselves that caused the disability. Before operation only 17 per cent were leading useful lives. At the present time 67 per cent are leading useful lives. The authors present the histories of 2 patients with obsessive compulsive states and of 2 patients with tension states who underwent prefrontal lobotomy. They conclude that pragmatic intelligence is improved by prefrontal lobotomy in persons disabled by obsessive tension states.

### Missouri State Medical Assn Journal, St Louis

41 131-158 (July) 1944

- Acute Cor Pulmonale Complicating Typhemia. Report of Case. F A Osman and J DeA Guvot—p 131

41 159-178 (Aug) 1944

- Hematuria: Its Diagnosis and Treatment. D K Roef—p 159
- Saunders Theory on Etiology of Poliomyelitis. J Zahner—p 165
- Neurotic Uterine Fibromyoma Complicating Pregnancy. Case Report. A A Schneider—p 164

### Nebraska State Medical Journal, Lincoln

29 233-264 (Aug) 1944

- Gallbladder and Duct Disease. Surgical Indications and Results. J L Sanders—p 236
- Remarks on Incidence, Manifestations and Treatment of Nutritional Deficiency Diseases. W B Beau—p 241
- Rupture of Bladder. P Adam—p 245
- Virus Diseases. L O Rose—p 247

### Ohio State Medical Journal, Columbus

40 613-708 (July) 1944

- Some Phases of Prevention Program for Foot and Mouth Disease. Goldman—p 629
- Vagaries in Diagnosis and Treatment of Pernicious Anemia. E M Jones—p 635
- Postoperative Care and Complications of Gastrointestinal Surgery. J L Faulkner and E A Riemenschneider—p 640
- New Methods of Anesthesia and Their Application to the Anesthetist. E Lenahan—p 643
- Plastic Shelf Operation for Duodenal Ulcer. F J Zoller—p 645
- Bilateral Renal Carcinoma. M Leifer—p 647

**Psychosomatic Medicine, Baltimore**

6 191-280 (July) 1944

- Psychosomatic Study of Hypoglycemic Fatigue F Alexander and S A Portu —p 191
- Rheumatic Disease with Special Reference to Psychosomatic Diagnosis and Treatment F Dunbar —p 206
- Narcolepsy as Type of Response to Emotional Conflicts O R Langworthy and Barbara J Betz —p 211
- Psychologic Aspects of Electroshock Therapy J A P Millet and E P Mosse —p 226
- Psychogalvanometric Investigations in Psychoses and Other Abnormal Mental States P Hoch J F Kubis and F L Rouke —p 237
- Studies on Palmar Sweating III Palmar Sweating in Army General Hospital J J Silverman and V E Powell —p 243

**Public Health Reports, Washington, D C**

59 857-896 (July 7) 1944

- National Inventory of Needs for Sanitation Facilities III Sewerage and Water Pollution Abatement Prepared by Sanitary Engineering Division L S Public Health Service —p 857

59 897-932 (July 14) 1944

- Planning for Health Education in War and Postwar Periods—National Program E R Coffey —p 897
- Planning for Health Education in War and Postwar Periods—School Program J W Studebaker —p 904

59 933-968 (July 21) 1944

- Planning for Health Education in War and Postwar Periods—State Program J C Knox —p 933
- Planning for Health Education in War and Postwar Periods—Local Program H B Robins —p 938
- Tuberculosis Mortality Among Residents of 92 Cities of 100 000 or More Population United States 1939-1941 Dorothy J Liveright —p 942

59 969-1008 (Jul 28) 1944

- National Inventory of Needs for Sanitation Facilities IV Rural Sanitation C H Atkins —p 969
- Pathology of Experimental Poisoning in Cats Rabbits and Rats with 2,2-Bis(4-chlorophenyl)-1,1,1-Trichloroethane R D Lillie and M I Smith —p 979
- Pharmacologic Action of 2,2-Bis(4-Chlorophenyl)-1,1,1-Trichloroethane and Its Estimation in Tissues and Body Fluids M I Smith and E F Stohman —p 984

**Experimental Poisoning with DDT**—Lillie and Smith report microscopic studies on cats, rabbits and rats that had been used to test the toxicologic properties of 1,1,1-trichloro-2,2-diparachlorophenyl-ethane referred to as DDT. They found that in spite of pronounced neurologic symptoms microscopic alterations in the central nervous system have been relatively slight. Vacuolation around large nerve cells in cord and cerebral motor nuclei has been seen in cats, rats and rabbits, tigrolisis and cell vacuolation in cats and rats. The most striking pathologic alterations are seen in the liver. Here there is a hyaline degeneration similar to that described in poisoning by azobenzene and some of its derivatives. Hyaline oxyphil masses are formed in the central part of the cytoplasm and are surrounded by vacuoles. This change has been seen in rats and rabbits. A variable amount of fatty degeneration of liver cells, often centrolobular, is observed in cats, rats and rabbits. Midzonal and centrolobular areas of coagulation necrosis are found in cats, rats and rabbits, which in rats and rabbits is accompanied by an interstitial and peripheral proliferative reaction leading to replacement by a new vascular granulation tissue. With more extensive and confluent necrosis this replacement process leads to trabeculation. Finally there is seen also a focal hydropic degeneration of liver cells in rats and rabbits in which the affected cells may reach two to three times their normal diameter. Nelson reports lesions similar to these in his rabbits, rats and guinea pigs. Muscle necrosis with proliferative reaction was seen in 1 rabbit and has been noted also by Nelson in this species and in guinea pigs. He has noted also necrosis of heart muscle in occasional rabbits and guinea pigs.

**Pharmacologic Action of DDT**—Smith and Stohman say that the toxicity of DDT, its cumulative action and its absorbability through the skin under a variety of conditions of external application have made it desirable to devise a method for its identification in the tissue and body fluids. The authors describe a method which appears suitable for the estimation of DDT in the tissues, body fluids and excreta. The method is based on the extraction of the substance by suitable solvents and the

determination of the organically bound chlorine after reduction with metallic sodium in absolute alcohol. With this method DDT has been found in the urine, bile, blood, liver, kidney and central nervous system in experimental poisoning with the substance. The authors stress that knowledge of the mode of action of this substance in the body and its distribution, elimination and detoxification will be helpful in guarding against accidental poisoning. Adequate means of detecting incipient poisoning are needed. The test which the authors described for estimating DDT in biologic material is based on its chlorine content and assumes that the compound is in its original and unchanged form. For this there is no proof at present, and it is not at all impossible that it does undergo some degradation in the body. Until more information on its metabolic fate in the body becomes available, such an assumption is permissible, and it is believed that the test should serve a useful purpose.

**Quarterly J Studies on Alcohol, New Haven, Conn**

5 1-184 (June) 1944

- Effect of Ethyl Alcohol on Volume of Extracellular Water G Lohl Miriam Rubin and L A Greenberg —p 1
- Institutional Facilities for Treatment of Alcoholism Foreword E M Bluestone —p 5
- Institutional Facilities for Treatment of Alcoholism Report of study by Committee on Hospital Treatment of Alcoholism of American Hospital Association E H L Corwin and Elizabeth V Cunningham —p 9
- Inherently Social Integration and Marriage S D Bacon —p 86
- Alcohol Problem and Law II Common Law Bases of Modern Liquor Controls E G Baird Jr —p 126

**Rhode Island Medical Journal, Providence**

27 257-316 (June) 1944

- Forecast by Numbers R Fitz —p 265
- Changing Aspect of Medical Organization M H Sullivan —p 272

27 317-372 (July) 1944

- Malaria J B Rice —p 325
- Planning for Medical Care J R Miller —p 329
- Carbon Tetrachloride Polyneuritis Case Report C L Farrell and I A Sensenman —p 334

**Surgery, Gynecology and Obstetrics, Chicago**

79 115-224 (Aug) 1944

- Neck Dissections for Metastatic Carcinoma J B Brown and F McDowell —p 115
- Malignant Tumors Arising from Synovial Membrane with Report of 4 Cases W H Moretz —p 125
- Use of Discontinuity of Strength Duration Curves in Muscle in Diagnosis of Peripheral Nerve Lesions L J Pollock J G Golseth and A J Arrieff —p 133
- Use of Radioactive Sodium in Studies of Circulation in Patients with Peripheral Vascular Disease Preliminary Report Beverly C Smith and Edith H Quimby —p 142
- Closure of Open Chest Following Schede Operation for Tuberculous Empyema M Weinstein —p 148
- Hyperactivity of Vasoconstrictor Nerves in Relation to Shock Experimental and Clinical Study P W Schafer —p 163
- Renal Agenesis Study of Thirty Cases E F Naton —p 175
- Management of Uterine Myomas Study Based on 1 000 Consecutive Personal Cases and Illustrating the Technique of Panhysterectomy L E Phaneuf —p 182
- Biologic Changes in Squamous Epithelium Transplanted to Pelvic Connective Tissue F E Whitacre and Y Y Wang —p 192
- Anatomic Study and Clinical Consideration of Fasciae Limiting Urinary Extravasation from Penile Urethra C E Tobin and J A Benjamin —p 195
- Value of New Compound Used in Soap to Reduce Bacterial Flora of Human Skin E F Traub C A Newhall and J R Fuller —p 205

**Renal Agenesis**—According to Naton the differential diagnosis of renal agenesis, aplasia, hypoplasia and pyelonephritic contracture becomes more important with the realization that an aplastic kidney or a blind ureter may cause pain, a hypoplastic kidney may be subject to recurrent infections and an atrophic kidney may cause hypertension. The literature is confused by the failure of many authors to distinguish properly between renal agenesis and aplasia. Agenesis denotes the complete lack of development of the metanephros on one or both sides. The presence of a vestige of renal tissue should classify a case as one of aplasia, not agenesis. Three instances of bilateral renal agenesis from a series of 27,000 necropsies are reported. The patients were male infants, 1 was a stillbirth and the other 2 lived less than two hours. Twenty-seven cases of unilateral

renal agenesis are reported. Fourteen of these occurred in a series of 27,000 necropsies at the Los Angeles County Hospital, a ratio of 1 to 1,929. Five were found in a series of 1,831 necropsies at the Huntington Memorial Hospital, an incidence of 1 to 366 necropsies. The ratio for the combined series is 1 case to 1,517 necropsies. Eight clinical cases are reported. In analyzing the 27 unilateral cases the 19 necropsy and 8 clinical cases are considered together. The right and left kidneys were absent with equal frequency. The adrenal gland was present in 17 cases and recorded as absent in none. In 21 cases the ureter and half of the trigone were entirely absent. The solitary kidney was always enlarged unless shrunken by disease. Eleven of the 19 necropsy cases showed congenital defects of the single kidney. In 6 (4 females and 2 males) developmental defects of the genital organs existed. Renal failure was the cause of death in 6 cases. Hypertension had existed in only 3 of the necropsy cases. The study of all kinds of anomalies of the upper urinary tract reveals that there is little hope of distinguishing renal agenesis from renal aplasia clinically with any degree of certainty. Absence of half of the trigone is much more indicative of agenesis than of aplasia. Absence of one ureteral orifice, representation of the orifice by a mere dimple or termination of the ureter just beyond the bladder wall occurs more commonly with renal agenesis than with renal aplasia. However, there are all degrees of ureteral aplasia with renal aplasia.

**Management of Uterine Myomas**—According to Phaneuf the treatment of uterine myomas depends on their size, their location in the uterus, their symptomatology and the age of their host. The author reviews the records of 1,000 consecutive cases which he treated. The youngest patient was 20 and the oldest 76 years of age. The incidence of myoma was highest between 30 and 49 years, this observation agrees with other statistics. Women with small myomas which are not productive of symptoms do not require treatment, but they should be kept under observation and examined every six months to a year. Myomectomy, while more difficult of execution than ablation of the uterus, offers a reward in the fact that it prevents castration and also permits many women in the childbearing age, to which it is almost entirely applicable, to gratify their desire for maternity. Even in some who are approaching the menopause, prevention of castration has a salutary influence. For patients to whom myomectomy is not feasible, for those who are the hosts of large tumors and for those who have reached or passed the menopause hysterectomy has to be considered. A choice must be made from three types of operation—fundic hysterectomy, supracervical or supravaginal hysterectomy and panhysterectomy. The importance of preoperative preparation, of the liberal use of blood and blood plasma transfusions and of postoperative care is stressed. The author reserves radium and x-ray treatment for cases in which surgery is contraindicated because of impaired physical condition and disease of the vital organs, such as the heart, kidneys, liver and lungs, and because of severe hypertension. The mortality in the author's 1,000 cases was 28 per cent. No deaths occurred in the last 386 cases. The author prefers surgery to irradiation when the former can be used safely.

**Compound Used in Soap to Reduce the Bacterial Flora of Human Skin**—Traub and his collaborators investigated the germicidal action on the skin of hands and forearms of a new synthetic phenol, 2,2' dihydroxy 3,5,6,3',5',6'-hexachloro diphenyl-methane, also designated as 'G-11'. Preliminary studies were made to determine the effect of G-11 on the growth of certain micro organisms, the sensitivity of the human skin to it and its effect on the bacterial flora of the hands and forearms. Compound G-11 was found to be nonirritating to the skin as judged by more than two hundred patch tests. These were repeated on the same subjects after ten to fourteen days and were again negative. Subjects using 2 per cent G-11 soap regularly for one year have shown no evidence of irritation. The regular use of toilet soap containing compound G-11 in a concentration of 2 per cent reduces the resident bacterial flora of the skin. A person using this soap regularly has a lower resident count after two minutes of washing than a person who washes for twenty minutes with ordinary toilet soap. Thus the

daily use of a soap containing compound G-11 would enable a surgeon or operating room attendant to maintain an extremely low bacterial population on his skin and might permit shortening the routine preoperative scrub-up procedures and perhaps the elimination of irritating germicides without sacrifice of skin cleanliness. The economy suggested by the omission of the alcohol and iodine rinse may be an important factor, especially now when they are not readily obtainable. Regular use of soap containing compound G-11 should reduce the probability of infection following skin abrasions and superficial wounds. This point might be of value in the hygienic care of members of the armed forces. The authors suggest the use of G-11 also in soap or in other vehicles for protection against skin infections from barber shops or beauty parlors, hair follicle infections from cutting oils and the like.

### Texas State Journal of Medicine, Fort Worth

40 43-166 (June) 1944

- Socialized Medicine Shall Not Pass C S Venable—p 49  
Progress in Cancer Research I Animal Experimentation in Solution of Cancer Problems W A Selle—p 52  
Public Health—Past Present and Future W B Russ—p 56  
Medical Education and Postwar World M Fishbein—p 58  
New Plans Regarding Medical Care for Public J T Richardson—p 60

40 167-216 (July) 1944

- Antibiotics C D Leake—p 175  
Clinical Significance of Rh Factor I Its Importance in Transfusion Reactions J M Hill and S Haberman—p 177  
Id II Its Importance in Erythroblastosis Fetalis S Haberman and J M Hill—p 182  
\*Practical Applications of Rh Factor to Obstetrics J J Andujar—p 188  
Sternal Marrow Aspiration as Aid in Diagnosis P L Cope—p 191  
Lymphangitis of Mucosa of Paranasal Sinuses J M Robinson—p 193  
Recent Developments in Problem of Spotted Fevers L Amstein—p 199

**Rh Factor in Obstetrics**—According to Andujar, routine Rh typing is as essential in an obstetric service as A and B determination. Ordinary cross matching, even at 37 C, will not always determine Rh incompatibility. Rh—pregnant or recently delivered women and all newborn infants should be given Rh—blood only. In expected or actual erythroblastosis the infant should receive frequent small transfusions of Rh—group O blood. If any transfusion raises the icterus index, causes "pyrogen" reaction or does not raise the hemoglobin level the Rh factor must be considered as a possible etiologic agent. Every institution should keep an up to date list of Rh—universal (group O) donors available for Rh emergencies.

### Western J Surg, Obst & Gynecology, Portland, Ore

52 287-324 (July) 1944

- Gonadotropic Hormones with Special Reference to Their Action on Female Reproductive Mechanism Miriam F Simpson—p 287  
Sterility Problem W T Pommerenke—p 295  
Cornual Rejection for Treatment of Salpingitis H C Falk—p 309  
Menopausal Therapy in Clinic Practice Comparative Study F E Lane—p 313

52 325-358 (Aug) 1944

- Micromoving Pictures and Electrocardiographic Records of Age Changes in Embryonic Heart Action B M Patten—p 325  
Reasons for Recent Increase of Bronchogenic Carcinoma W Boyd—p 330  
Conception Control by Plastic Cervix Cap E Grafenberg and R I Dickson—p 335  
General Indications for Radiation Therapy of Cancer F Buchter—p 341  
Vitamin Therapy B Zimmerman—p 352

### Yale Journal of Biology and Medicine, New Haven

16 613-764 (July) 1944

- Historical Note on Concept of Arterial Hypertension M Baehler—p 613  
Suggestion for Production of Therapeutic Fever in Cerebral Lesion L H Cohen and Virginia Hale—p 619  
Effect of Sex Hormones on Nebrutic Vaginitis in R P M Le Compte—p 627  
Bacterial Variation Influence of Environment on Disinfection Pattern of Klebsiella pneumoniae J C Humphreys—p 639  
Vaccin in Mice P R Burkholder, Ida McVeigh and Dorothy McFar—p 659  
Studies on Relation Ship of Dermatomyces to Ulceration of Extremities A W Thayer—p 66

**Psychosomatic Medicine, Baltimore**

6 191-280 (July) 1944

- Psychosomatic Study of Hypoglycemic Fatigue F Alexander and S A Portis—p 191
- Rheumatic Disease with Special Reference to Psychosomatic Diagnosis and Treatment F Dunbar—p 206
- Narcosis as Type of Response to Emotional Conflicts O R Lang Orth and Barbara J Betz—p 211
- Psychologic Aspects of Electroshock Therapy J A P Millet and E P Mosse—p 226
- Psychogalvanometric Investigations in Psychoses and Other Abnormal Mental States P Hoch J F Kubis and F L Rouke—p 237
- Studies on Palmar Sweating III Palmar Sweating in Army General Hospital J J Silverman and V E Powell—p 243

**Public Health Reports, Washington, D C**

59 857-896 (July 7) 1944

- National Inventory of Needs for Sanitation Facilities III Sewerage and Water Pollution Abatement Prepared by Sanitary Engineering Division U S Public Health Service—p 857

59 897-932 (July 14) 1944

- Planning for Health Education in War and Postwar Periods—National Program E R Coffey—p 897
- Planning for Health Education in War and Postwar Periods—School Program J W Studebaker—p 904

59 933-968 (July 21) 1944

- Planning for Health Education in War and Postwar Periods—State Program J C Knox—p 933
- Planning for Health Education in War and Postwar Periods—Local Program H B Robins—p 938
- Tuberculosis Mortality Among Residents of 92 Cities of 100 000 or More Population United States 1939-1941 Dorothy J Liveright—p 942

59 969-1008 (July 28) 1944

- National Inventory of Needs for Sanitation Facilities IV Rural Sanitation C H Atkins—p 969

\*Pathology of Experimental Poisoning in Cats Rabbits and Rats with 2,2-Bis (4-Chlorophenyl) 1,1,1-Trichloroethane R D Lillie and M I Smith—p 979

\*Pharmacologic Action of 2,2-Bis (4-Chlorophenyl) 1,1,1-Trichloroethane and Its Estimation in Tissues and Body Fluids M I Smith and E F Stohlman—p 984

**Experimental Poisoning with DDT**—Lillie and Smith report microscopic studies on cats, rabbits and rats that had been used to test the toxicologic properties of 1,1,1-trichloro-, 2,2-diparachlorophenyl-ethane referred to as DDT. They found that in spite of pronounced neurologic symptoms microscopic alterations in the central nervous system have been relatively slight. Vacuolation around large nerve cells in cord and cerebral motor nuclei has been seen in cats, rats and rabbits, tigrolysis and cell vacuolation in cats and rats. The most striking pathologic alterations are seen in the liver. Here there is a hyaline degeneration similar to that described in poisoning by azobenzene and some of its derivatives. Hyaline oxophil masses are formed in the central part of the cytoplasm and are surrounded by vacuoles. This change has been seen in rats and rabbits. A variable amount of fatty degeneration of liver cells, often centrolubular, is observed in cats, rats and rabbits. Midzonal and centrolubular areas of coagulation necrosis are found in cats, rats and rabbits, which in rats and rabbits is accompanied by an interstitial and peripheral proliferative reaction leading to replacement by a new vascular granulation tissue. With more extensive and confluent necrosis this replacement process leads to trabeculation. Finally there is seen also a focal hydropic degeneration of liver cells in rats and rabbits in which the affected cells may reach two to three times their normal diameter. Nelson reports lesions similar to these in his rabbits, rats and guinea pigs. Muscle necrosis with proliferative reaction was seen in 1 rabbit and has been noted also by Nelson in this species and in guinea pigs. He has noted also necrosis of heart muscle in occasional rabbits and guinea pigs.

**Pharmacologic Action of DDT**—Smith and Stohlman say that the toxicity of DDT, its cumulative action and its absorbability through the skin under a variety of conditions of external application have made it desirable to devise a method for its identification in the tissue and body fluids. The authors describe a method which appears suitable for the estimation of DDT in the tissues, body fluids and excreta. The method is based on the extraction of the substance by suitable solvents and the

determination of the organically bound chlorine after reduction with metallic sodium in absolute alcohol. With this method DDT has been found in the urine, bile, blood, liver, kidney and central nervous system in experimental poisoning with the substance. The authors stress that knowledge of the mode of action of this substance in the body and its distribution, elimination and detoxification will be helpful in guarding against accidental poisoning. Adequate means of detecting incipient poisoning are needed. The test which the authors described for estimating DDT in biologic material is based on its chlorine content and assumes that the compound is in its original and unchanged form. For this there is no proof at present, and it is not at all impossible that it does undergo some degradation in the body. Until more information on its metabolic fate in the body becomes available, such an assumption is permissible, and it is believed that the test should serve a useful purpose.

**Quarterly J Studies on Alcohol, New Haven, Conn**

5 1-184 (June) 1944

- Effect of Ethyl Alcohol on Volume of Extracellular Water G Lohr, Miriam Rubin and L A Greenberg—p 1
- Institutional Facilities for Treatment of Alcoholism Foreword E M Bluesone—p 5
- Institutional Facilities for Treatment of Alcoholism Report of study by Committee on Hospital Treatment of Alcoholism of American Hospital Association E H L Corwin and Elizabeth V Cunningham—p 9
- Inebriety, Social Integration and Marriage S D Bacon—p 86
- Alcohol Problem and Law II Common Law Bases of Modern Liquor Controls E G Baird Jr—p 126

**Rhode Island Medical Journal, Providence**

27 257-316 (June) 1944

- Forecast by Numbers R Fitz—p 265
- Changing Aspect of Medical Organization M H Sullivan—p 277

27 317-372 (July) 1944

- Malaria J D Rice—p 325
- Planning for Medical Care J R Miller—p 329
- Carbon Tetrachloride Polyneuritis Case Report, C L Farrell and I A Sen emm—p 334

**Surgery, Gynecology and Obstetrics, Chicago**

79 115-224 (Aug) 1944

- Neck Dissections for Metastatic Carcinoma J B Brown and F McDowell—p 115
- Malignant Tumors Arising from Synovial Membrane with Report of 4 Cases W H Moretz—p 125
- Use of Discontinuity of Strength Duration Curves in Muscle in Diagnosis of Peripheral Nerve Lesions L J Pollock J G Golseth and A J Arieff—p 133
- Use of Radioactive Sodium in Studies of Circulation in Patients with Peripheral Vascular Disease Preliminary Report Beverly C Smith and Edith H Quimby—p 142
- Closure of Open Chest Following Schede Operation for Tuberculous Empyema M Weinstein—p 148
- Hyperactivity of Vasoconstrictor Nerves in Relation to Shock Experimental and Clinical Study P W Schafer—p 165
- \*Renal Agenesis Study of Thirty Cases E F Nation—p 175
- \*Management of Uterine Myomas Study Based on 1000 Consecutive Personal Cases and Illustrating the Technique of Panhysterectomy L E Phaneuf—p 182
- Biologic Changes in Squamous Epithelium Transplanted to Pelvic Connective Tissue F E Whitacre and Y Y Wang—p 192
- Anatomic Study and Clinical Consideration of Fasciae Limiting Urinary Extravasation from Penile Urethra C E Tobin and J A Benjamin—p 195
- \*Value of New Compound Used in Soap to Reduce Bacterial Flora of Human Skin E F Traub C A Newhall and J R Fuller—p 205

**Renal Agenesis**—According to Nation the differential diagnosis of renal agenesis, aplasia, hypoplasia and pyelonephritic contracture becomes more important with the realization that an aplastic kidney or a blind ureter may cause pain, a hypoplastic kidney may be subject to recurrent infections and an atrophic kidney may cause hypertension. The literature is confused by the failure of many authors to distinguish properly between renal agenesis and aplasia. Agenesis denotes the complete lack of development of the metanephros on one or both sides. The presence of a vestige of renal tissue should classify a case as one of aplasia, not agenesis. Three instances of bilateral renal agenesis from a series of 27,000 necropsies are reported. The patients were male infants, 1 was a stillbirth and the other 2 lived less than two hours. Twenty-seven cases of unilateral

renal agenesis are reported. Fourteen of these occurred in a series of 27,000 necropsies at the Los Angeles County Hospital, a ratio of 1 to 1929. Five were found in a series of 1,331 necropsies at the Huntington Memorial Hospital, an incidence of 1 to 366 necropsies. The ratio for the combined series is 1 case to 1,517 necropsies. Eight clinical cases are reported. In analyzing the 27 unilateral cases the 19 necropsy and 8 clinical cases are considered together. The right and left kidneys were absent with equal frequency. The adrenal gland was present in 17 cases and recorded as absent in none. In 21 cases the ureter and half of the trigone were entirely absent. The solitary kidney was always enlarged unless shrunk by disease. Eleven of the 19 necropsy cases showed congenital defects of the single kidney. In 6 (4 females and 2 males) developmental defects of the genital organs existed. Renal failure was the cause of death in 6 cases. Hypertension had existed in only 3 of the necropsy cases. The study of all kinds of anomalies of the upper urinary tract reveals that there is little hope of distinguishing renal agenesis from renal aplasia clinically with any degree of certainty. Absence of half of the trigone is much more indicative of agenesis than of aplasia. Absence of one ureteral orifice, representation of the orifice by a mere dimple or termination of the ureter just beyond the bladder wall occurs more commonly with renal agenesis than with renal aplasia. However, there are all degrees of ureteral aplasia with renal aplasia.

**Management of Uterine Myomas**—According to Phaneuf the treatment of uterine myomas depends on their size, their location in the uterus, their symptomatology and the age of their host. The author reviews the records of 1,000 consecutive cases which he treated. The youngest patient was 20 and the oldest 76 years of age. The incidence of myoma was highest between 30 and 49 years, this observation agrees with other statistics. Women with small myomas which are not productive of symptoms do not require treatment, but they should be kept under observation and examined every six months to a year. Myomectomy, while more difficult of execution than ablation of the uterus, offers a reward in the fact that it prevents castration and also permits many women in the childbearing age, to which it is almost entirely applicable, to gratify their desire for maternity. Even in some who are approaching the menopause, prevention of castration has a salutary influence. For patients to whom myomectomy is not feasible, for those who are the hosts of large tumors and for those who have reached or passed the menopause, hysterectomy has to be considered. A choice must be made from three types of operation—fundic hysterectomy, supracervical or supravaginal hysterectomy and panhysterectomy. The importance of preoperative preparation, of the liberal use of blood and blood plasma transfusions and of postoperative care is stressed. The author reserves radium and x-ray treatment for cases in which surgery is contraindicated because of impaired physical condition and disease of the vital organs, such as the heart, kidneys, liver and lungs, and because of severe hypertension. The mortality in the author's 1,000 cases was 2.8 per cent. No deaths occurred in the last 386 cases. The author prefers surgery to irradiation when the former can be used safely.

**Compound Used in Soap to Reduce the Bacterial Flora of Human Skin**—Traub and his collaborators investigated the germicidal action on the skin of hands and forearms of a new synthetic phenol, 2,2'-dihydroxy-3,5,6-tri-5',6'-hexachloro diphenyl-methane, also designated as "G-11". Preliminary studies were made to determine the effect of G-11 on the growth of certain microorganisms, the sensitivity of the human skin to it and its effect on the bacterial flora of the hands and forearms. Compound G-11 was found to be nonirritating to the skin as judged by more than two hundred patch tests. These were repeated on the same subjects after ten to fourteen days and were again negative. Subjects using 2 per cent G-11 soap regularly for one year have shown no evidence of irritation. The regular use of toilet soap containing compound G-11 in a concentration of 2 per cent reduces the resident bacterial flora of the skin. A person using this soap regularly has a lower resident count after two minutes of washing than a person who washes for twenty minutes with ordinary toilet soap. Thus the

daily use of a soap containing compound G-11 would enable a surgeon or operating room attendant to maintain an extremely low bacterial population on his skin and might permit shortening the routine preoperative scrub procedures and perhaps the elimination of irritating germicides without sacrifice of skin cleanliness. The economy suggested by the omission of the alcohol and iodine rinse may be an important factor, especially now when they are not readily obtainable. Regular use of soap containing compound G-11 should reduce the probability of infection following skin abrasions and superficial wounds. This point might be of value in the hygienic care of members of the armed forces. The authors suggest the use of G-11 also in soap or in other vehicles for protection against skin infections from barber shops or beauty parlors, hair follicle infections from cutting oils and the like.

### Texas State Journal of Medicine, Fort Worth

40 43-166 (June) 1944

- Socialized Medicine Shall Not Pass—C. S. Venable—p. 49  
Progress in Cancer Research—I. Animal Experimentation in Solution of Cancer Problems—W. A. Seale—p. 52  
Public Health—Past, Present and Future—W. B. Russ—p. 56  
Medical Education and Postwar World—M. Fishbein—p. 58  
New Plans Regarding Medical Care for Public—J. T. Richardon—p. 60

40 167-216 (July) 1944

- Antibiotics—C. D. Leake—p. 175  
Clinical Significance of Rh Factor—I. Its Importance in Transfusion Reactions—J. M. Hill and S. Haberman—p. 177  
Id. II. Its Importance in Erythroblastosis Fetalis—S. Haberman and J. M. Hill—p. 182  
\*Practical Applications of Rh Factor to Obstetrics—J. T. Andujar—p. 183  
Sternal Marrow Aspiration as Aid in Diagnosis—P. I. Cope—p. 191  
Lymphangitis of Mucosa of Paranasal Sinuses—J. M. Robinson—p. 193  
Recent Developments in Problem of Spotted Fevers—L. Augstein—p. 199

**Ph Factor in Obstetrics**—According to Andujar routine Rh typing is as essential in an obstetric service as A and B determination. Ordinary cross matching even at 37 C will not always determine Rh incompatibility. Rh—pregnant or recently delivered women and all newborn infants should be given Rh—blood only. In expected or actual erythroblastosis the infant should receive frequent small transfusions of Rh—group O blood. If any transfusion raises the icterus index, causes "pyrogen" reaction or does not raise the hemoglobin level the Rh factor must be considered as a possible etiologic agent. Every institution should keep an up to date list of Rh—universal (group O) donors available for Rh emergencies.

### Western J. Surg., Obst. & Gynecology, Portland, Ore

52 287-324 (July) 1944

- Gonadotropic Hormones with Special Reference to Their Action on Female Reproductive Mechanism—Miriam E. Simpson—p. 287  
Sterility Problem—W. T. Pommerenke—p. 295  
Cornual Resection for Treatment of Salpingitis—H. C. Falk—p. 309  
Menopausal Therapy in Clinic Practice—Comparative Study—F. E. Lane—p. 313

52 325-358 (Aug) 1944

- Micromoving Pictures and Electrocardiographic Records of the Chorus in Embryonic Heart Action—B. M. Patten—p. 325  
Reasons for Recent Increase of Bronchogenic Carcinoma—W. Boyd—p. 330  
Conception Control by Plastic Cervix Cap—E. Grafenberg and R. I. Dicken—p. 335  
General Indications for Radiation Therapy of Cancer—F. Buchke—p. 341  
Vitamin Therapy—B. Zimmerman—p. 352

### Yale Journal of Biology and Medicine, New Haven

16 613-764 (July) 1944

- Historical Note on Concept of Arterial Hypertension—M. Backer—p. 613  
Suggestion for Production of Therapeutic Fever in General Paresis—J. H. Cohen and Virginia Hale—p. 619  
Effect of Sex Hormones on Nephrotic Nephritis in Rat—P. M. Le Compte—p. 627  
Bacterial Variation—Influence of Environment on Dissociation Pattern of Klebsiella Pneumoniae—J. C. Humphreys—p. 639  
Niacin in Maize—P. R. Burkholder, Hilda McVeigh and Dorothy Moyer—p. 649  
Studies on Relationship of Dermatomycosis to Ulceration and Carcinoma of Extremities—K. W. Thompson—p. 665

## FOREIGN

An asterisk (\*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

## British Journal of Ophthalmology, London

28 317-372 (July) 1944

- Lacrimation Reflex J R Mutch—p 317  
 \*Vitamin P in Ophthalmology W R Mathewson—p 336  
 Desiccation Keratitis J E M Ayoub—p 347  
 Secretion Diffusion Theory of Intraocular Fluid Dynamics V E Kinsey and W M Grant—p 355  
 Late Results of Removal of Intraocular Foreign Bodies with Magnet P D Trevor Roper—p 361

**Vitamin P in Ophthalmology**—Mathewson used vitamin P with satisfactory results in 2 cases of ocular hemorrhage. The first patient had extensive retinal hemorrhages and nasal and bladder hemorrhages, but on giving vitamin P the nasal and bladder hemorrhages ceased, no fresh retinal hemorrhages occurred, and those present became absorbed. He suffered from myelomas, and the nasal hemorrhage was characterized by large blood clots and serum. The second patient had recurrent hemorrhage into the anterior chamber after extraction of a cataract, but on receiving vitamin P there was no recurrence, and the iris which had become muddy, rapidly cleared. The eye rapidly took on a healthy tone and the patient improved greatly in general appearance and mental agility. It has been suggested (*Am J Ophth* 21 1058 [Sept] 1938) that deficiency in vitamin C, with consequent defective lens respiration, may be the real cause of cataract, the whole vitamin C metabolism of the body being deranged in this condition. The record does not show that steps were taken to exclude vitamin P, which is apparently often found along with vitamin C in the various natural sources. The evidence in these 2 cases suggests that vitamin P is of value in ophthalmology.

## British Medical Journal, London

1 833-862 (June 24) 1944

- Experimental Study of Different Methods of Artificial Respiration A Hemmingsway and E Neil—p 833  
 Improved Dentition of 5 Year Old London School Children Comparison Between 1943 and 1929 May Mellanby and Helen Coumoulos—p 837  
 \*Polio-myelitis in British and American Troops in Middle East Isolation of Virus from Human Feces J R Paul W P Havens and C E Van Rooyen—p 841  
 Sympathectomy and Sterility N C Lake—p 843  
 Case of March Hemoglobinuria M Makin—p 844

**Polio-myelitis in Troops in Middle East Isolation of Virus from Feces**—Paul and his associates state that polio-myelitis among British troops in the Middle East has not been uncommon since 1940. There were severe and many fatal cases. The virus of polio-myelitis has been isolated from the central nervous system in several of the fatal cases. Attempts were made to isolate polio-myelitis virus from the stools of the patients. The tests attempted to determine (1) their value as a confirmatory diagnostic procedure and (2) whether in these adult cases (which have occurred for the most part sporadically) the virus is harbored in the intestinal tract. The authors examined stool specimens from 35 patients and contacts. 17 of these were American and 18 British. There were 15 cases of typical polio-myelitis, 17 atypical cases and 3 contact cases. From the 10 fatal cases of polio-myelitis the isolation of virus from stools was accomplished in 9 instances. Negative findings have been encountered in the remaining 5 nonfatal cases and in 20 "atypical" cases and contacts. Of the latter 5 were cases of polio-encephalitis, 6 of "acute benign lymphocytic meningitis," 6 of neuritis and 3 polio-myelitis contacts. The negative virus findings do not wholly exclude the possibility of polio-myelitis. These results suggest that the amount of virus present in the intestinal tract was greater in the more severe than in the milder cases, an observation which has not received comment before, and one which may not hold true for juvenile cases. The high percentage of positive results from the fatal cases was probably due to the fact that most of the stools were collected earlier in the disease than in the other polio-myelitis cases. The chances of obtaining positive results are greater during the first than during the later weeks of the disease.

## Journal Obst &amp; Gynaec of Brit Empire, Manchester

51 181-276 (June) 1944

- \*Effect of Posterior Lobe Pituitary Gland Fractions on Intact Human Uterus C Moir—p 181  
 Anemias of Pregnancy Report on Hematologic Study of 48 Cases of Pregnancy with Review of Literature G A Elliott—p 198  
 Human Ovum Nine to Ten Days Old F Davies and H E Harding—p 225  
 Leukemia and Pregnancy A Hochman—p 231  
 Consideration of White Paper A National Health Service in so far as It Affects Maternity and Child Welfare Services D Baird—p 240  
 Oxytocic Drugs and Their Use C Moir—p 247

**Effect of Posterior Pituitary Fractions on Human Uterus**—Moir points out that, of the two active principles obtainable from the extract of the posterior lobe of the pituitary, one has the property of stimulating the plain muscle of the arteries and certain abdominal viscera, the other is exclusively concerned with the stimulation of the plain muscle of the uterus. It is still a moot point whether these principles exist in the body as separate entities or whether they become these as the result of manipulation of the extract. The vasopressor and oxytocic fractions are sometimes referred to as pitressin and pitocin or as vasopressin and oxytocin. In pitocin and pitressin a substantial separation of the two principles has been effected, but the differentiation is not complete and each contains approximately 10 per cent of the other reckoned in units of respective activity. The author found that the muscular activity of the human uterus varies according to the physiologic state of the organ. In the case of the nonpregnant uterus this is true also with regard to the phase of the menstrual cycle. The response of the uterus to posterior pituitary injection also varies according to the physiologic state of the uterus at the time of the test. Contrary to Knaus's observations, it was found that the nonpregnant uterus responds to posterior pituitary injection at every phase of the menstrual cycle, although response is most powerful immediately before, during or soon after menstruation. The response to posterior pituitary injection during early pregnancy is weak, but it becomes strong if the uterus is already actively aborting its contents. Given in the usual clinical dosage the vasopressor fraction is sometimes a powerful stimulant of the uterus. Conversely, the oxytocic fraction is sometimes without action. The nature of the response to these fractions is governed by the physiologic state of the uterus at the time of the test. The response to posterior pituitary injection by an isolated muscle strip suspended in a saline bath does not necessarily reflect the behavior of the intact uterus to these substances. In particular, an isolated strip of human uterus at term reacts in a substantially different manner toward pitocin and pitressin than does the intact human uterus. The cause of the anomalous behavior is unknown.

## Lancet, London

1 777-808 (June 17) 1944

- Substances Chemotherapeutically Active Against Typhus Rickettsiae C H Andrews H King M van den Ende and J Walker—p 777  
 Wounds of Neck and Larynx R S Lewis—p 781  
 \*Comparative Effects of Sulfonamide Drugs in Mild Bacillary Dysentery J G Scadding—p 784  
 Treatment of Fractures of Femoral and Tibial Shafts in Same Limb V H Ellis H H Langston and J S Ellis—p 786  
 Further Observations on Use of Cetavlon in Surgery R E O Williams Barbara Clayton Cooper H C Faulkner and H E Thomas—p 787  
 Blast Injury Nonfatal Case with Neurologic Signs O Garai—p 788  
 Dislocation of Sesamoid of Hallux G M Muller—p 789  
 Abscess in Thyroid Gland Report of 2 Cases T E Stock—p 789

**Comparative Effects of Sulfonamides in Mild Bacillary Dysentery**—Scadding records observations during the summer of 1943 at a large desert base hospital on the relative efficacy of sulfaguandine, sulfapyridine and sulfanilamide. Sulfanilamide in heavy doses for forty-eight hours was tried as a routine treatment with results that seemed comparable with those previously obtained with sulfaguandine. Observations in 358 cases of mild bacillary dysentery demonstrated that sulfanilamide, sulfapyridine and sulfaguandine in adequate doses are equally beneficial. The only advantage of sulfaguandine, which has made it the drug of choice, is that it hardly ever has unpleasant side effects. The grave defect of sulfapyridine is its liability to cause serious renal disorders, a special danger in a dehydrating disease, though with adequate



care about water intake this danger should be avoidable. A lesser defect is that it is apt to cause nausea and vomiting. Sulfanilamide in this series had no serious side effects and its therapeutic possibilities in bacillary dysentery seem to have been unduly neglected.

1 809 840 (June 24) 1944

- Epidemiology of Wound Infection. A. A. Miles—p. 809  
\*Hepatitis Following Injection of Mumps Convalescent Plasma. I. Use of Plasma in Mumps Epidemic. P. B. Beeson, G. Chesney and A. M. McFarlan—p. 814  
\*Id. II. Epidemiology of Hepatitis. A. M. McFarlan and G. Chesney—p. 816  
\*Id. III. Clinical and Laboratory Study with Liver Biopsy Studies. W. L. Hawley, A. M. McFarlan, A. J. Steigman, J. McMichael and J. H. Dible—p. 818  
Impaction of Prostatic Stone in Urethral Stricture. J. B. Kinmonth and J. L. Pinniger—p. 821  
Pentothal Sodium in North Africa. 2,500 Administrations at Base Hospital. E. S. Curtis—p. 822  
Gunshot Wound of Colon. Recovery Without Immediate Operation. W. W. Wilson—p. 824

**Plasma in Mumps Epidemic. Hepatitis Following Its Injection.**—Beeson and his associates made an attempt to control an epidemic of mumps by passive immunization of susceptible persons. The camp in which their studies were made had a permanent military staff of 500, few of whom had mumps. The epidemic concerned 900 volunteers in training who made up a "young soldiers" regiment and whose average age was 19. New trainees arrived in groups of 70 to 80 each fortnight. Each new group of arrivals was designated as a "troop." The January peak of cases of mumps was due largely to troop 19 (arrived December 11). A member of this troop developed mumps on Dec. 16 and must have been infected before arrival. For the first lot of convalescent plasma (A) 11 convalescents were bled an average of 450 cc each. All plasma was pooled. For the second lot of plasma (B) 11 other mumps convalescents were bled. The inoculations were given by vein, the A plasma in doses of 4, 5 or 6 cc to 266 susceptible volunteers at the camp on March 12, and the B plasma in doses of 8 cc on March 28 to 204 men who had already received the A plasma. There were no reactions. The epidemic was not immediately cut short but declined rapidly. Its decline may have been due to causes other than passive immunization. Cases occurred in inoculated men in the period when they should have been protected, and attack rates on the inoculated men and a control group were not significantly different. Hepatitis developed in 44.7 per cent of the men inoculated. This unfortunate sequel should not of itself condemn the use of passive immunization in the control of epidemics of mumps.

**Epidemiology of Hepatitis Following Injection of Mumps Convalescent Plasma.**—McFarlan and Chesney state that when 20 cases of jaundice developed among the men who had received mumps convalescent plasma a field survey was made of all the men in training at the camp. Hepatitis developed in 101 of 266 men inoculated with mumps convalescent plasma. In the great majority the onset was between fifty-nine and ninety-four days after inoculation. The authors think it unlikely that syringe transmission was the cause of this outbreak. There was no aggregation of cases in the men of any one troop such as would have indicated that an agent had been introduced from one recipient and diluted out as the inoculations proceeded. All the 11 donors of the A lot of plasma, which apparently contained the hepatotoxic agent, were questioned. None had ever had jaundice. There was no reason to suppose that the agent was introduced during the processing of the plasma. Two observations indicated that the hepatotoxic agent was probably not the virus of infective hepatitis. First the interval between the inoculation and the development of symptoms was fifty-nine to ninety-four days in the vast majority of cases, whereas the incubation period of infective hepatitis is from twenty-one to thirty-five days. Second, in attack of infective hepatitis usually confers immunity, but of 11 inoculated men who had had jaundice in childhood 8 developed hepatitis in this outbreak. The incidence in them was higher than the incidence in inoculated men who had not previously had jaundice. The infectivity of cases

of plasma hepatitis was low. A few of the uninoculated men might have been infected by inoculated men who developed hepatitis a month previously but none of them admitted close contact with a possible infecting case. The most probable explanation of the cases in uninoculated men seemed to be that they were sporadic cases of infective hepatitis. Two late cases in uninoculated men might possibly have been infected by inoculated men who had developed hepatitis at least fifty-seven or forty-nine days previously.

**Study of Hepatitis Following Injection of Mumps Convalescent Plasma.**—Hawley and his associates made clinical and laboratory observations on 47 patients at the American Red Cross Harvard hospital and on 23 patients never requiring medical attention discovered during a survey of the camp. Data were also obtained on 16 more patients who had been admitted to other hospitals before the study was contemplated. The hepatitis was mild and except for the common skin manifestations and arthralgias resembled epidemic infective hepatitis as seen among children and young adults in Britain. On the basis of nausea, lassitude, fever and depth of coloration 40 cases were classed as mild, 6 as moderately severe and 1 as severe. The severely involved patient remained in the hospital forty-five days. For comparison with the plasma inoculation hepatitis a table gives the findings in 39 patients with infective hepatitis admitted to the same hospital in 1941-1942. The two groups were fairly similar. The patients with hepatitis from convalescent mumps plasma showed a greater lag in reporting ill, a lower incidence of vomiting and a higher incidence of severe arthralgias and rashes. Laboratory studies which included white cell counts, blood bilirubin determinations and examinations to exclude bacterial infections, Weil's disease and infectious mononucleosis furnished no evidence of a known etiologic agent. Routine cultures of feces, blood and the throat were negative for pathogenic bacteria. Serum agglutinins for *Leptospira icterohaemorrhagiae* and *Leptospira canicola* were absent in 23 persons tested. Heterophil agglutinins (Paul-Bunnell test) were present in only 1 of 38 persons tested in titers above 1:4. This case was diagnosed as infectious mononucleosis. Routine urine examination showed biliruria in all hospital cases. Erythrocyte sedimentation rate was raised in 23 of 39 cases. The leukocyte counts revealed no appreciable differences in the two groups. Liver biopsy material was obtained from 5 patients. The histologic sections in all cases showed varying degrees of hepatitis.

2 1 32 (July 1) 1944

- Teaching and Practice in Preventive Medicine. J. M. McKim—p. 1  
Retroposterior Cast. G. E. Parker—p. 5  
\*Prevention of Jaundice Resulting from Antisyphilitic Treatment. M. H. Salaman, A. J. King, D. I. Williams, C. S. Nicol—p. 7  
\*Epidemiology of Infective Hepatitis. H. I. Sheehan—p. 8  
Evacuation of Fractured Femur. Tobruk Plaster and Other Methods Used in Middle East. E. A. Jack—p. 11

**Prevention of Jaundice Resulting from Antisyphilitic Treatment.**—Salaman and his associates investigated the hypothesis that jaundice is spread by syringes. A technique of intravenous injection was devised which would exclude the possibility of cross infection. In 67 men treated by the ordinary technique for 120 days the incidence of jaundice was 37 per cent and in 56 of those treated for 180 days it was 68 per cent. Of 36 men treated by the new technique for 120 days only 1 developed jaundice. Similarly of 18 treated for 180 days only 1 was affected. These results strongly suggest that a causative agent of postarsenical jaundice can be transferred by improperly sterilized syringes and that this transference can be prevented by attention to the technique of injection. It is not implied that infection transferred in this way is the sole cause of the condition; arsenic or deficiencies of SH (sulphydryl) containing amino acids in a wartime diet may still be predisposing factors. Boiling syringes will not necessarily suffice without other precautions. In a busy clinic there are other possibilities of transference of infection again, in which their technique was designed to guard. Syringes which have been boiled in tap water have to be rinsed in distilled water before use. The gallipot in which the drug is dissolved stands on the bench for long periods and is used over and

over again the lip of the bottle of sterile water from which it is filled is likely to become contaminated. All these manipulations have to be carried out by attendants who are handling patients and blood stained syringes. There is danger of transference of infection in the course of this procedure even if the syringes are boiled between injections. A closed method obviates these dangers and once it is organized, is considerably easier and quicker in use than the old open method. There will be occasional cases of jaundice even if the best regulated technic is followed. Some cases of the epidemic type are always likely to occur; moreover the possibility cannot be excluded that arsenic may activate an otherwise healthy carrier.

**Epidemiology of Infective Hepatitis**—According to Sheehan it appears fairly clear that jaundice following the injection of neoarsphenamine is not due to the arsenical treatment but is purely due to the transmission of minute quantities of infected blood by unsterilized syringes. The only part played by the neoarsphenamine seems to be that it produces some impairment of liver function in a patient who already has an active hepatitis. The author reviews observations on several groups of syphilitic patients which indicate that sterilized syringes and proper precaution against other contaminations with blood will prevent the development of jaundice which has been observed in high percentages of patients when syringes were merely washed and not sterilized. Further evidence that the neoarsphenamine is not the significant factor comes from the incidence of hepatitis in personnel handling the blood of syphilitic patients in a clinic where many of these patients were incubating hepatitis. Of 85 cases of hepatitis occurring in a sanatorium, the records of 56 were studied in detail. A certain number had been given calcium or gold preparations intravenously, but half of those who developed hepatitis had had no therapy of this kind. None of the patients were given neoarsphenamine, so that this factor can be excluded. The common factor was that every patient had had blood taken from an arm vein for sedimentation rate estimation on admission to the sanatorium and at monthly intervals thereafter. The syringes used for these blood collections were well washed out but not sterilized between 1 patient and the next. The cases of jaundice tended to occur in a ward at monthly intervals corresponding to the monthly intervals between the collection of blood samples. Hepatitis following the administration of neoarsphenamine and that resulting from unsterile syringes used for merely collecting blood appear to be identical with an incubation period of about three months. This is a similar incubation period to that seen in homologous serum jaundice. It is suggested that infective hepatitis in England and in the army in the Mediterranean theater is also the same type of disease and that it could well be transmitted by biting insects.

### Schweizerische medizinische Wochenschrift, Basel

73 1149-1220 (Sept. 24) 1943 Partial Index

- Cushing's Disease W. Berlinger—p. 1159
- \*Thyrogenous Cirrhosis of Liver G. Bickel—p. 1160
- Adrenal Cortex and Thyroid F. Verzar—p. 1163
- Intradrural Cervical Division of Spinal Posterior Roots in Spasmodic Torticollis C. Henschen and L. Jeker—p. 1166
- Neurofibromatosis in Children M. Pehu—p. 1173
- Presumptive Importance of Combination of Sugars and Phosphates with Vitamins E. Burgi—p. 1176
- Attack of Gout an Allergic Phenomenon W. Löffler—p. 1179
- Telangiecta in Growths of Skin and Diseases of Liver A. Schubach—p. 1186
- Origin of Hyperproteinemia C. Wegelin—p. 1189
- Results of Experimental Study on Animals with Carbonyl Chloride and Dichloroethylsulfide Poisoning E. Rothlin—p. 1205

**Thyrogenous Cirrhosis of Liver**—Bickel demonstrated moderate enlargement of the liver in 20 out of 50 patients with hyperthyroidism. The liver edge was smooth, hard and tender. Myocardial insufficiency was present in two thirds of the cases with hyperthyroidism and enlarged liver, while one third did not have any signs of insufficiency. Treatment of hyperthyroidism caused disappearance of liver tenderness and enlargement. These are not instances of a latent cardiac insufficiency but of an active hyperemia. Lesions of the hepatic parenchyma in the course of a thyrotoxicosis are manifested

by a high incidence of functional changes, by icterus of various severity and frequently by a chronic and prolonged course. The stage of hypertrophy of the liver passes into one of cirrhosis, which is often masked by the more evident symptoms of hyperthyroidism and particularly by cardiac insufficiency. The course of this thyroigenous cirrhosis may be a slow one and it may be years before it becomes clinically manifest. Cardiac insufficiency may play a more prominent role in the symptomatology, but the hepatic disorder influences the clinical picture.

### Archivos Argentinos de Pediatría, Buenos Aires

15 385 484 (May) 1944 Partial Index

- \*Ganglioneuroma of Thorax and Abdomen Two Cases G. Allende, A. A. Ferraris and C. C. Lugones—p. 385
- Spontaneous Volvulus Pyopneumothorax in Children Cases J. M. Pelliza—p. 420

**Ganglioneuroma**—According to Allende and his collaborators ganglioneuroma of either the abdomen or the thorax is rare in children. The prognosis is favorable if the tumor is removed. They report 2 cases in children of 3 and 9 years respectively. The tumor was located on the left paravertebral region of the abdomen in the first case and on the same side of the thorax in the second case. An erroneous clinical and x-ray diagnosis of sarcoma of the kidney in the first case and of a hydatid cyst of the lung was made. The patients recovered after surgical removal of the tumor, which on microscopic examination proved to be ganglioneuroma. The tumor is made up of differentiated ganglion cells. It may contain either juvenile or embryonal cells, which first are grouped in areas and later assume malignant characteristics. The advisability of an early operation is obvious.

### Revista Medica de Rosario, Rosario

34 401-504 (May) 1944 Partial Index

- Roentgen Therapy in Schüller-Christmann's Syndrome F. P. Cifarelli and A. A. Pujadas—p. 401
- Potassium Thiocyanate in Arterial Hypertension J. M. Gonzalez and J. Dornig Muñoz—p. 424
- \*Syndrome of Renal Anaphylaxis J. S. Dotta and T. Delporte—p. 436

**Renal Anaphylaxis**—The subject of Dotta and Delporte's report was given a small dose of sulfanilamide, to which he reacted with anuria and urticaria. The urine (after thirty six hours of anuria) contained a large amount of hyaline casts but neither blood nor sulfanilamide crystals. The patient had a subcutaneous abscess, which was open late during convalescence. Ten days after he had been discharged from the hospital a new urticarial reaction occurred. This time diuresis was normal. It was found that sulfanilamide powder was applied for the first time to the healing abscess the day on which urticaria reappeared. The authors believe that this case is one of renal anaphylaxis of the Tzank type. This is the first case in the literature in which this form of anaphylaxis was caused by sulfanilamide.

### Semana Medica, Buenos Aires

51 1165-1216 (June 8) 1944 Partial Index

- Purulent Pleurisy in Children J. M. Pelliza—p. 1171
- Mucocombraneous Colitis L. Herruz Ballesterio—p. 1179
- \*Fulminant Hemoptysis in Bronchopulmonary Cancer C. A. Crivellari and D. G. Giordano—p. 1185

**Fulminant Hemoptysis in Bronchopulmonary Cancer**—According to Crivellari and Giordano fulminant hemoptysis without pulmonary tuberculosis is rare. The authors' patient was a man aged 49 who was normal up to seven months before consultation. The disease began with general debility, cough and occasional small hemoptysis. A tumor appeared at a later date in the right supraclavicular fossa. There were progressive cachexia, loss of voice and dysphagia. Tubercle bacilli were not demonstrated. A clinical and roentgen diagnosis of bronchopulmonary cancer was made. The patient had an acute hemoptysis on the tenth day of hospitalization and died immediately. Necropsy showed bronchopulmonary cancer with metastases to the lungs, paratracheal, intertracheo-bronchial and hilar lymph nodes, thyroid, liver, adrenals and kidneys.

## Book Notices

**War Neuroses in North Africa The Tunisian Campaign (January May 1943)** By Lt Colonel Roy R Grinler M C Army Air Forces and Captain John P Spiegel M C Army Air Forces Prepared and Distributed for the Air Surgeon Army Air Forces by the Josiah Macy Jr Foundation Paper Pp 300 New York 1943

This preliminary report of the neuropsychiatric casualties encountered during the Tunisian campaign was reproduced and distributed through aid from the Josiah Macy Jr Foundation. It was written in the theater of operations. In the foreword this fact is given in explanation of the obvious need for careful editing which exists throughout the work.

The material is made up primarily of actual battle casualties which occurred during the difficult campaigns of this period. The authors were stationed from 300 to 500 miles behind the front lines and from 150 to 200 miles behind the active air bases. Patients when evacuated by air arrived for treatment in from two to five days after the breakdown, and others arrived from seven to ten days after the clinical onset. The authors set up a classification scheme of ten clinical syndromes manifested by specific symptoms depending on the manner in which the individual handles the anxiety engendered by his situation. These syndromes are described as "free floating anxiety, severe and mild," "somatic regression," "psychosomatic visceral disturbances," "conversion symptoms," "depression," "neuroses complicating cerebral concussion," "exhaustion states," "fatigue," "psychoses" and "malingerers." Each of these groups is described in some detail and is amply illustrated by case histories. The case histories are interesting and excellently done. One sometimes wishes, however, that the authors had been more complete in their discussion of the conclusion of the case, so that the reader might be more clear concerning the treatment procedures and the outcome. Particularly emphasized is the process of narcosynthesis which is described as a new type of treatment. It is in essence a new name for a treatment which had been used in a number of psychiatric clinics before the war. This treatment involves the use of short acting barbiturates (sodium pentothal) during which the patient is stimulated to relieve his traumatic experience. Some suggestions are made which could well be utilized, however, by civilian psychiatric clinics. Psychotherapy, convulsive shock therapy, continuous sleep treatment, general convalescent care, occupational therapy, group therapy and less discussed methods of treatment are described. The authors give a table and make a general statement concerning the number of patients treated. This is broken down into the number returned to active duty and of those evacuated to the United States and the United Kingdom. This gives the reader a good general overall picture of the value of the treatments utilized but does not answer the question of results in specific cases described in the report. In general the book is very well done, certainly worth while, and has made a genuine contribution to psychiatric war literature. It contains much of value for all psychiatrists, military or otherwise.

**Medical Diagnosis Applied Physical Diagnosis** Edited by Roscoe L Pullen A B M D Instructor in Medicine Tulane University of Louisiana School of Medicine New Orleans. With a foreword by John H Nusser B S M D F A C P Professor of Medicine Tulane University of Louisiana School of Medicine. Cloth Price \$10 Pp 1106 with 596 Illustrations Philadelphia & London W B Saunders Company 1944

According to the editor, Medical Diagnosis emphasizes the methods utilized in the determination of expressions of disease states, these include the history physical examination and various accessory procedures in the form of endoscopic, roentgenographic and microscopic studies. To accomplish this heroic task 1,042 pages are required. It is evident, therefore, that a thorough inquiry into the subject of medical diagnosis as defined cannot possibly be accomplished between the covers of this book. By and large what is presented is done so in an admirable fashion and will be a real aid to the practicing physician. Worth of particular mention are the chapters on oral diagnosis, examination of the breast, examination of the chest, examination of the heart, the neurologic examination, and the chapter on determination of prognosis. The electrocardiographic diagnosis is worthy of particular praise but the reviewer

wonders how well it will be appreciated by the student of physical diagnosis and one wonders why 58 pages are devoted to this aspect of cardiac diagnosis and only some 8 pages to roentgenologic examination, certainly the two are of at least equal value in the diagnosis of heart disease.

It is surprising to find that the various diagnostic procedures indicated in the study of gastrointestinal disease are almost completely ignored, while a total of 39 pages is devoted to urologic diagnosis. The rather important diagnostic value of allergic surveys and of hematologic and feces examinations is not mentioned while some 10 pages are devoted to a sterility survey and 4 to clinical electroencephalography. The differential diagnosis of coma which is a problem even for the seasoned clinician is accomplished in 13 pages. The reviewer feels that this book although far beyond the grasp of the medical student studying physical diagnosis, will prove of interest to practicing physicians.

**A Century of Butler Hospital 1844 1944** Paper 1p 49 with 10 illustrations Providence Rhode Island 1944

The present volume written in commemoration of a century of service, is a history of the Butler Hospital Providence R I, from the time of its establishment in 1844. The history is written in three parts dealing with the physical and administrative development, the medical service from 1844 to 1922 and the hospital work under the present medical superintendent. The first section gives an excellent description of the founding of the hospital, its early growth and development, the problems of construction, finance and administration expansion of services, community interests, humanitarian motives, the loyalty and devotion of administrative and hospital personnel and their constant efforts to enhance the quality of institutional care. Professional service is emphasized in the second part, which describes the work and contribution of the medical superintendents who served Butler Hospital prior to 1922. The final chapter reflects the progress of psychiatric service in the last two decades and gives a clear indication of the role of the modern psychiatric hospital in the expanding fields of mental hygiene, individual health and community health. This volume will be of interest not only to the immediate friends of the institution but to all who are concerned in the problems of psychiatric care.

**Experimental Basis for Neurotic Behavior Origin and Development of Artificially Produced Disturbances of Behavior in Dogs** By W Horsley Gantt M D Associate in Psychiatry and Head of the Pavlovian Laboratory Johns Hopkins University Baltimore Psychosomatic Medicine Monographs Volume III Nos III and IV Published with the Sponsorship of the American Society for Research in Psychosomatic Problems Cloth Price \$4.50 Pp 209 with 52 Illustrations New York & London Paul B Hoeber Inc 1944

This monograph is a detailed report of prolonged experiments and observations (in the case of 1 dog twelve years) on some 4 dogs in which disturbance of behavior or neurosis was induced by the conflict and strain method of Pavlov. The report is factual, clear and remarkably free from premature generalizations. The author, a pupil of Pavlov, finds striking and consistent individual variations in the ease of induction in the extent and in the persistence of the experimentally induced neurosis, including unusual or pathologic sex behavior (erection) in dogs. That the latter should appear under intense or general stimulation of the involuntary nervous system is not surprising for it has been shown that intense hunger and thirst may induce cooing even in decerebrated pigeons. Experimental neurosis has now been reported in dogs, rats, sheep, hogs and cats. The significant difference in nervous stability of individual dogs will provide useful material for objective and controlled investigation of the complex hereditary factors in nervous instability.

**The Analysis and Interpretation of Symptoms** Edited by Cyril V MacBryde M D [Reprinted from Clinics Vol II No 6 April 1944] Fabrikoid Price \$4 Pp 1243 1644 with Illustrations Philadelphia London & Montreal J B Lippincott Company 1944

This book consists of ten articles by ten different authors and an introduction by Dr MacBryde. The subjects discussed are thoracic pain cough, abdominal pain hematemesis and melena, jaundice, joint pains and obesity. From the title of the book one would expect to find a far greater discussion of the underlying causes of the symptoms such as physiologic and

pathologic data, rather than an outline of simple differential diagnosis. Not that as far as the latter is concerned it has not served its purpose, but so far as strict analysis is concerned it could be improved on in some places. The most important articles are the ones on headaches, mechanisms and differential diagnosis by Harold G Wolff, abdominal pain by Sara M Jordan, hematemesis and melena by Leon Schiff, and obesity by Cyril M MacBryde. Some of the others are fairly good and some are mediocre. It would not be fair to criticize the ability or knowledge of any of the authors, but it is certainly fair to point out the defect of trying to cover too much ground in a limited space. It would be far better to emphasize the commonest cause producing symptoms and indicate them as such than to try to spread oneself over everything pertaining to the subject. The printing is excellent and the index fairly complete.

**Health and Medical Care Washington County New York.** A Study of Resources and Needs for Health and Medical Care in Washington County New York. Study made by New York State Health Preparedness Commission in Cooperation with Washington County Health Preparedness Committee. Walter S Bennett MD Chairman. Paper. Pp 41 with illustrations. New York 1944.

**Health and Medical Care Ontario County New York.** Resources and Needs for Health and Medical Care in Ontario County New York. Study made by New York State Health Preparedness Commission in Cooperation with Ontario County Health Preparedness Committee. James S Allen MD Chairman. Paper. Pp 48 with illustrations. New York 1944.

**Health and Medical Care Seneca County New York.** Resources and Needs for Health and Medical Care in Seneca County New York. Study made by New York State Health Preparedness Commission in Cooperation with Seneca County Health Preparedness Committee. Walter Pamphillan MD Chairman. Paper. Pp 42 with illustrations. New York 1944.

These surveys, made by the New York State Health Preparedness Commission, cover three rural and semirural counties. Two (Seneca and Ontario) are in the Finger Lake District, and one (Washington) is on the boundary with Vermont. Much the same picture appears in all three. Allowing for the war arrangements there are adequate physicians but insufficient dentists to provide proper dental care and a pressing shortage of nurses. Where there is a local lack of hospital facilities there are usually additional facilities in nearby counties that can be used.

The indigent are cared for by county arrangements with physicians. Nearly all have some hospital insurance and industrial plans with a variety of coverage, and all consider expenditures for public health too small to provide needed services. The percentage of vaccinations is below the level of the rest of the state and in all three counties immunization for diphtheria is decidedly deficient. School examinations and treatment of defects found are somewhat inadequate but improving. There is a general lack of adequate laboratory services.

The population of these counties contains a larger percentage of persons in the older age groups than the rest of the state. Everywhere there is complaint of a lack of facilities for the chronically ill. The suggestions offered include the development of medical care plans for the indigent, better health education and further study of the localities. Nearly all of the conditions described are highly typical of probably a majority of the counties in the United States not including large cities. The same sort of survey might well be made in other counties as a guide to medical planning.

**Electronics Today and Tomorrow.** By John Mills. Cloth. Price \$2.25. Pp 178 with illustrations. New York: D Van Nostrand Company Inc. 1944.

This is a singularly fine example of popular scientific writing. The nature and properties of the electron are explained, starting from first principles. Electronic phenomena in nature are described with lucidity. The basic experimental studies and types of apparatus underlying the science and applied art of electronics are explained in sequence of development. Finally the means are described through which electronics has grown into the practical arts of television, electron microscopy, communications and control of process and power and finally of transmutation of matter and energy. The author is experienced both in the science of electronics and in its exposition to lay readers. The volume is a fascinating introduction to a field the applications of which in war and in peace are numerous and superlatively important.

**Your Eyes.** By Sidney A Fox. A B Sc M (Ophth) MD Instructor in Ophthalmology. New York University College of Medicine. Cloth. Price \$2.75. Pp 181 with illustrations. New York: Alfred A Knopf. 1944.

The author has attempted to give in simple language, for the benefit of the layman, a brief description of the eyes and how they function. He discusses the refractive errors and shows how glasses improve vision, clarifies the 'bogy man' astigmatism and explains why far sighted persons cannot read without glasses after 'old sight' develops. His discussion of color blindness, eye muscles and illumination and his chapter on the eyes in traffic explain why not only vision but good fields, dark adaptation and night vision are important. He attempts to clarify the terms and explain the difference between ophthalmologist, optician and optometrist. The chapter on quacks and panaceas should be given wide publicity. The author explodes for the layman the use of eyedrops to cleanse the eyes or to make them feel better. The chapter on 'Young Eyes' stresses the need of an early check on vision and especially the need for early treatment of cross eyes. In the final chapter he discusses chiefly cataracts and glaucoma and devotes much space to the latter. On the whole, the book will serve a useful purpose in acquainting the public with information about the eyes and the need for proper care.

**Intracranial Arterial Aneurysms.** By Walter E Dandy. Adjunct Professor of Surgery in The Johns Hopkins University. Baltimore. Cloth. Price \$2.00. Pp 147 with 55 illustrations. Ithaca N Y: Comstock Publishing Company Inc. 1944.

In this monograph Dr Dandy presents his surgical experience with 64 intracranial aneurysms and a study of the records in 44 other cases in which the lesions were disclosed at necropsy. The pertinent data in 108 cases are presented in the detailed charts appended at the back of the book. The symptomatology, diagnostic details and surgical procedures are clearly and concisely discussed. Each significant point is beautifully and profusely illustrated. The press work is excellent and the publisher is to be congratulated on so spendid a monograph at such a small cost. Every one interested in the diagnosis and treatment of intracranial disease will wish to avail himself of this book. One word of caution: this is not a complete presentation of the subject of intracranial aneurysms. The monograph is written from the surgical point of view. The many patients who develop symptoms either of spontaneous subarachnoid hemorrhage or of local pressure as the result of one of these aneurysms and then recover without surgical intervention have not been presented.

**The Neurosurgical Patient. His Problems of Diagnosis and Care.** By Corti W Rand. Clinical Professor of Neurological Surgery, University of Southern California School of Medicine. Los Angeles. California. Cloth. Price \$4. Pp 576 with 121 illustrations. Springfield Illinois & Baltimore: Charles C Thomas. 1944.

This is an interesting presentation of neurologic surgery by one of the foremost neurologic surgeons of the Pacific Coast. It has been prepared for students and is in the form of clinic or classroom presentations. It is largely an expression of the personal views and experiences of Dr Rand rather than a survey of the various opinions held by the neurosurgical profession. Students and practitioners alike will find this a valuable book in which a sound conservative point of view is presented. Dr Rand's neurosurgical colleagues will welcome this opportunity to share in his views and experience.

**Toxicity and Potential Dangers of Penta Erythritol Tetranitrate (PETN).** By W F von Oettingen. Principal Industrial Toxicologist and others. From the Industrial Hygiene Research Laboratory National Institute of Health. Prepared by direction of the Surgeon General Federal Security Agency U S Public Health Service. Public Health Bulletin No 282. Paper. Price 10 cents. Pp 39 with 9 illustrations. Washington D C: Supt of Doc Government Printing Office. 1944.

These statements, originally made as confidential reports to the Ordnance Department of the U S Army are now issued for general information. It is concluded that penta erythritol tetranitrate otherwise known as penthrite, is relatively nontoxic. Nitrite effects are produced by large doses, but unusual exposure can be readily controlled by ordinary good housekeeping and personal hygiene. The pamphlet contains much useful information about the chemistry and toxicology of the aliphatic nitrate esters.

## Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS BUT THESE WILL BE OMITTED ON REQUEST.

### TESTOSTERONE PROPIONATE FOR ANGINA PECTORIS

**To the Editor**—I am interested in testosterone propionate for its effect on angina pectoris. There was an article in *The Journal* not long ago that discussed this treatment but I should like to have further information regarding not only its effectiveness but also its contraindications more specifically than was given in the article. Information as to its beneficial effects on senility would be welcome of course but the thing that I am particularly interested in would be the possibility of dilatation of the coronary vessels and their increased supply of blood to the heart. What would be the effect of the use of this hormone on becoming easily fatigued and on insomnia?

Charles J. Adams MD Kokomo Ind

**ANSWER**—The consensus of recent clinical reports seems to be that sex hormone therapy exerts a favorable effect on symptoms if not on the course of angina pectoris. Thus Strong and Wallace (*Canad M A J* 50:30 [Jan] 1944) report great improvement in 6 slight to moderate improvement in 11 and no effect on 3 patients with angina pectoris. Walker (*J Clin Endocrinol* 2:9 [Sept] 1942) noted definite improvement in 7 of 9 patients with coronary disease when treated with testosterone propionate. The response was manifested by an increase in tolerance to all precipitating factors, an increase in strength and in some cases considerable decrease in the severity of pain when attacks occurred. Sigler and Tulgan (*New York State J Med* 43:1424 [Aug 1] 1943) report symptomatic relief in 11, less pronounced relief in 5 and no relief in 4. Lesser (*New England J Med* 228:185 [Feb 11] 1943), in reporting the results of treating 46 patients with angina pectoris states that no untoward effects from the use of testosterone propionate were noted and that its beneficial effects continued from two to twelve months after treatment was withdrawn. In the majority of cases there was a lowering of blood pressure levels during the therapy. All his patients showed improvement. Four were studied by means of the exercise tolerance test before and during the course of therapy to obtain quantitative measurements of improvement. In each the amount of exercise tolerated before the development of anginal attack was increased under testosterone therapy, and the severity of the attacks, as measured by the duration of pain, was correspondingly diminished. When sesame was substituted for testosterone these results could not be duplicated. Hamm (*J Clin Endocrinol* 2:325 [May] 1942) did not note unfavorable effects from sex hormone therapy. Average dosage consisted of thirty injections of 25 mg doses of testosterone propionate in twelve months. There was a general improvement in mental and physical endurance and relief from angina pectoris in all of his 7 patients. This symptom free state lasted for six months in some cases and for eleven and a half months in others. Bonnell and his co-workers (*Ohio State M J* 37:554 [June] 1941) recorded clinical improvement in 22 of 23 patients. They believe that the improvement is due to a vasodilating property of sex hormones acting on the coronary circulation. They review the experimental evidence that estrogens and androgens in some manner cause vasodilatation. Thus there seems to be a unanimity of opinion as to the beneficial effects on the subjective symptoms of coronary disease. Although it is difficult to eliminate the psychic effect of the treatment it would appear that the pharmacodynamic effect of the sex hormone cannot be ruled out. The only dissenting report is that of Levine and Likoff (*New England J Med* 229:770 [Nov 18] 1943). Of 18 patients treated by them 5 showed improvement, 11 were not improved and 2 were only questionably improved. These authors were unable to conclude that testosterone propionate had any beneficial effect.

### CARE OF PATIENTS AFTER REMOVAL OF CATARACTS

**To the Editor**—What is the accepted postoperative treatment of cataracts particularly the nursing care? Do cataracts require special aid by nurses or attendants? What should the procedure be in a government institution? The question has arisen for discussion from the administrative point of view.

M.D. Florida

**ANSWER**—Every ophthalmic surgeon of experience has his own views on the postoperative care of cataract patients with the result that there is no established uniformity of procedure. Before the present shortage of nurses existed it was thought

that each patient should have private nursing care when possible but now it appears that the eyes are just as good under general floor nursing care, a procedure that can be utilized in governmental institutions as well as in private hospitals.

In general the following orders cover the after-care recommended by the majority of ophthalmic surgeons. 1 Absolute bed rest for three to five days for the first twelve hours the patient should be on his back but then may be turned to the unoperated side and propped with pillows. The back rest may be up one two or three notches according to desire. A head pillow is permitted. The prone position should be avoided unless requested by the patient. According to the surgeon and the progress of wound healing the patient may be assisted into a chair on the third to the fifth day and stay up as long as desired. No walking should be permitted before the seventh day. The average stay in the hospital is ten to fourteen days. 2 A liquid diet is advised for the first forty eight hours, a soft diet for the next five days and a nonchewy diet for the remainder. 3 An enema may be given on the third day if necessary. The patient must be fed by nurses while both eyes are bandaged. Subsequently liquid petrolatum or enemas may be used as necessary. 4 No bathing for three days then sponge baths in bed. 5 No visitors for three days. 6 Sedatives at bedtime for three days—after that as required. 7 Dressing of the eyes is performed only by the surgeon. A protective mask is to be worn and kept in position at all times. In general these orders cover the requirements for postcataract care but have to be modified according to the exigencies of each case.

### PROTECTION AGAINST HARMFUL SUNLIGHT

**To the Editor**—For the past two years I have been afflicted with a sensitivity to sunlight which causes a rash on my face diagnosed as a potential lupus erythematosus. On exposure to ultraviolet rays the rash did not appear so it can be assumed that those wavelengths are not responsible. Porphyrin bodies have not been found in the urine. I have been experimenting with a mask of cellophane and with protective ointments. Would you please inform me as to the various ointments used and of any similar mask which has proved effective and how the latter could be obtained?

Captain M C A U S

**ANSWER**—Information on cellophane or other masks has not been obtained. Most plastics have no value for the exclusion of light. The claims made for various invisible oils or ointments as protection against light have not been substantiated by careful experiment. Strakosch for instance (*The Role of Bases in Ointments Used for Protection Against Sunlight J Invest Dermat* 5:1 [Feb] 1942), found that neither petrolatum nor lanolin gave any protection in thin layers. He thinks that Raabes' claim for yellow petrolatum was based on the use of a thick layer. The addition of quinine or tannic acid to these bases added no protective effect but with aquaphor and Abbott's Ninol base they did add to the protective action. Epstein (*Studies in Abnormal Human Sensitivity to Light J Invest Dermat* 5:187 [Aug] 1942) reports that some of his patients obtained benefit from ointments containing tannic acid or resorcinol.

The best protection from light should be obtained from preparations impervious to light such as zinc paste or modifications of it. Fantus and Dyniewicz (*Cuticolar Preparations J Am Pharm A* 27:878 [Oct] 1938) proposed an improvement on calamine powder consisting of zinc oxide or better titanium dioxide, colored with a mixture of the red and yellow oxides of iron with blood charcoal to darken it to correspond to brunette complexions. They used red ferric oxide 3 Gm, yellow ferric oxide 4 Gm and zinc oxide 93 Gm or for a better covering preparation, red ferric oxide 6 Gm, yellow ferric oxide 8 Gm and titanium dioxide 86 Gm. They remark: "Should clinical trial justify the greater expense it may become desirable to employ the titanium dioxide instead of the zinc oxide in all these preparations. We find the titanium dioxide a necessary ingredient of the cuticolar cream salve that may be used for covering skin blemishes. The formula of this is cuticolar titanium dioxide 30 Gm, glycerin 15 cc and vanishing cream 70 Gm. Mix thoroughly. With different lots of the pigments the proportions must be varied and of course are variable to suit different complexions. If desired, the cuticolar powder may be used in a lotion, suspending 15 Gm in 100 cc of rose water in which 25 Gm of bentonite has been suspended. The bentonite suspension should stand for several hours and the supernatant fluid be decanted to get rid of any larger particles. Then add the cuticolar powder to the decanted portion. A greaseless paste may be made by rubbing up cuticolar powder 15 Gm and bentonite (sifted) 10 Gm with rose water 75 cc."

Epstein mentions a case of prurigo estivalis that cleared after a course of histaminase while others did not and quotes O'Leary, who also had good results from histamine desensitization and from histaminase. Epstein remarks that tarantula



a preparation of histaminase, varies in strength, which may account for the discrepancies in results

Cnatte, Tzanck and Sidu (*Bull Soc franç de dermat et syph* 46 1344 [Sept-Oct] 1939), whose article is abstracted in the *Archives of Dermatology and Syphilology* 43 855 (May) 1941, obtained benefit in cases of lupus erythematosus by medication with niacin amide apparently causing a suspension of sensitivity Keining (Untersuchungen über das Indikationsgebiet des PP-Faktors [Nikotinsäureamid] bei Hautkrankheiten *Dermat Wchenschr* 112 302 [April 12] 1941) reports success in the treatment of some cases of lupus erythematosus-like eruptions evidently sensitive to light, for they recurred early in spring, by a few daily injections of niacin amide In 1 case a slight recurrence in the fall yielded again to the injections In a case of "summer eruption" the action was slower, and in some cases of lupus erythematosus there was no benefit

It is suggested that, if resorcinol or quinine is tried, the skin be patch tested first to guard against the possibility of sensitization to these drugs, both of which are notorious allergens

### VARICOSE ULCERS

To the Editor—A woman aged 49 who weighs about 250 pounds (113 Kg) has had considerable trouble with varicose veins and ulcers on her legs from the knee to the ankle since her last confinement thirteen years ago She has had various treatments with intravenous sclerosing agents but not the McPheeters operation of opening the vein in Scarpas triangle Now the leg from the knee to the ankle is a deep purple and has the feeling of dead tissue When she bumps it there is an open sore which is slow in healing Her urine and blood pressure are normal She has consulted me in regard to the use of the new drug tyrothricin in her case

M D Missouri

ANSWER—The state of venous circulation must be first investigated by suitable tests These have been described and illustrated by a pamphlet on varicose veins published by the American Medical Association and reprinted in 1941 If the deep venous circulation is impaired, neither ligation nor sclerosing injections can help, in fact, such procedures may aggravate the circulatory insufficiency Thrombophlebitic ulcerations heal slowly, not only because of venous stasis, but because they are often surrounded by a collar of fibrous, avascular tissue which interferes with tissue repair Secondary infection with aerobic and anaerobic bacteria often aggravates the picture

Tyrothricin is the name applied by Hotchkiss and Dubos to an alcohol soluble and water insoluble fraction which is obtained from a culture of aerobic sporulating bacilli found in soil This is not a pure substance and two crystalline materials, tyrocidin and gramicidin, have been separated out Tyrocidin is essentially ineffective in the living tissue, since serum and tissue juice inhibit its action to a considerable degree Gramicidin on the other hand, is highly effective when applied locally against gram positive organisms such as pneumococci, streptococci, staphylococci and diphtheria bacilli It is not particularly valuable in mixed infections and cannot exert much effect when the circulation is poor

In the case under consideration if a bacteriologic study yields gram positive organisms and if the circulation can be improved by adequate elevation and fomentation, a local application of gramicidin might be of help It will combat only the superimposed infection of a thrombophlebitic ulcer and will not remove its cause or inhibit its recurrence

### SULFONAMIDE THERAPY FOR PATIENTS ON RESTRICTED SODIUM DIETS

To the Editor—When using sulfonamides it is frequently necessary to administer alkalis This raises a problem in connection with patients who are on restricted sodium diets for example those with cardiac edema and toxemias of pregnancy What is the solution to this complication?

Robert C Tavlin MD Chicago

ANSWER—The prevention of kidney complications in patients receiving the sulfonamides is greatly aided by alkalization of the urine and the maintenance of an adequate fluid balance In patients with edema, particularly those whose edema is due to cardiac failure or renal dysfunction associated with nitrogen retention, the problem is not readily solved In cardiac failure it is often necessary to restrict fluids unless the patient can be maintained on a dietary regimen in which the intake of sodium is restricted to less than 1 Gm of sodium chloride a day In addition, sodium salts should not be given to alkalize the urine While potassium salts may be used, they must be given with due caution to patients having renal dysfunction, and especially to persons having uremia However, this is one solution to the problem Another possibility is to reduce the total dose of the sulfonamides to a minimum In other words relatively small doses of a sulfonamide are necessary for the treatment of a

urinary tract infection It should be remembered that sulfamidamide rarely if at all causes kidney complications, and several types of pyogenic infections may be treated with this drug With more and more penicillin being made available for civilian distribution, this material may be used instead of the sulfonamides in conditions in which it is indicated

### ALKALIZATION BY PARENTERAL ROUTE

To the Editor—Can you give me a plan for administering alkalis parenterally? Specifically how much (and at which preparation) should be given intravenously to render the urine alkaline when the oral route is not available—particularly when sulfonamides are being used?

Robert C Tavlin MD Chicago

ANSWER—Alkalization of the urine by parenteral administration is accomplished by supplying an excess of basic ions This can be accomplished with sodium lactate or sodium bicarbonate the lactate or bicarbonate radical being metabolized in the body, thus leaving an excess of sodium ion Sodium lactate is usually preferred, as it is less strongly alkaline than sodium bicarbonate Sodium lactate can be obtained in a sixth molar concentration commercially for intravenous use The concentration is isotonic Gilligan, Garb and Wheeler reported that during administration of sulfadiazine 15.6 Gm of sodium bicarbonate orally was adequate to render the urine consistently alkaline With a dosage of 13.7 Gm of sodium bicarbonate 15 per cent of the patients had acid urine One hundred cc of sixth molar sodium lactate is equivalent to 14 Gm of sodium bicarbonate Therefore 1,100 cc of sixth molar sodium lactate solution is equivalent to 15.6 Gm of sodium bicarbonate In 2 of the cases reported by Gilligan, Garb and Wheeler 1,000 cc of sixth molar sodium lactate was given intravenously in divided doses daily, and the urine remained alkaline They advised continuing the alkali for one day after discontinuing the sulfonamide

### Reference

Gilligan Dorothy Rourke Garb Solomon and Wheeler Norman. Adjuvant Alkali Therapy in the Prevention of Renal Complications from Sulfadiazine *THE JOURNAL* Aug 21, 1943 p 1160

### DRUGS CAUSING APLASTIC ANEMIA

To the Editor—At present in our hospital there is a soldier with aplastic anemia The only medication prior to the discovery of this condition was elixir of terpin hydrate with codeine (0.008 Gm in 4 cc) acetylsalicylic acid and castor oil (15 cc) The question is Can this medication cause a depression in the function of the bone marrow? If so which one and can authorities be cited?

Captain M C A U S

ANSWER—Although it is well known that certain drugs may so depress the function of the bone marrow as to produce aplastic anemia, this drug has never been mentioned in the elixir of terpin hydrate There is no evidence that codeine, acetyl salicylic or castor oil is capable of this effect According to present knowledge, the only drugs capable of depressing the function of the bone marrow include those that have the benzene ring as their central structure

### COITUS RESERVATUS

To the Editor—There seems to be some controversy as to the merits and demerits of the practice of coitus reservatus I cannot find any agreement on the matter in fact there seems to be little of a reliable nature published on the subject I wish to know especially whether the practice is harmful from the point of view of possible harm to the prostate gland or would it tend over a long period to produce chronic congestion and resultant troubles? What effect would age be apt to have on such a practice? Anything of a scientific nature or anything in the way of opinion even if given by a qualified person will be greatly appreciated

M D Moine

ANSWER—It is thought that the practice of coitus reservatus produces a congestion in the region of the posterior urethra which may possibly predispose to a prostatitis There is no evidence that age would have any effect on such a practice except as coitus itself is limited by the two extremes of life

### PINWORMS AND TAPEWORMS IN DOGS

To the Editor—I am writing for information concerning dogs and pinworms Can and do human beings have the same type and strain of pinworms as dogs? Are there any injections that can be given to dogs to immunize against pinworms? Can human beings be infected by contact with dogs or their excreta?

S T Rogers MD New Albany Ind

ANSWER—Dogs do not suffer from pinworm infection The tapeworm segments which dogs pass simulate pinworms, but on close inspection of a fresh specimen the difference will be readily noted According to published opinions the chances for infecting human beings with tapeworm segments are remote



# The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

Vol. 126, No. 8

CHICAGO, ILLINOIS  
COPYRIGHT 1944 BY AMERICAN MEDICAL ASSOCIATION

OCTOBER 21 1944

## HYPOGLYCEMIA AND RESTORATION WITH GLUCOSE

CHAIRMAN'S ADDRESS

FRANK C. MANN, M.D.  
ROCHESTER, MINN.

It has been known for almost a century that the concentration of the sugar in the blood might under certain conditions decrease to a very low value, but it has been only a little more than two decades since it was learned that a characteristic group of symptoms followed by death developed in hypoglycemia and that the administration of suitable amounts of glucose would restore the moribund organism in hypoglycemia to normal. The concomitant development of the characteristic symptoms associated with hypoglycemia and the restoration of the dying organism to a quick and complete recovery by glucose are not only among the most dramatic but also some of the most constant biologic phenomena noted in the higher forms of animals. It is my purpose in this paper to present briefly the current knowledge concerning these two physiologic processes which has been obtained from a review and evaluation of the results of a large number of investigations.

It has been conclusively demonstrated that a constant supply of glucose is essential for life in the higher organisms. If the glucose content of the blood decreases below a minimal value, death invariably occurs. Since the sources of glucose available in nature are many, varied and usually not in the form of the substance itself, elaborate physiologic mechanisms are necessary to insure a constant supply of this vital substance to the tissues of the body. The gastrointestinal tract affords the means by which glucose is obtained for the organism from the crude substances in which the sugar occurs or from which it can be made. The rate at which glucose enters the body from the intestinal tract is variable. There is a plethora of glucose during the time of absorption from the alimentary tract and a deficiency between periods of feeding. In order to maintain a life sustaining amount of glucose in the blood a regulatory mechanism within the body is absolutely essential. The maintenance of the sugar content of the blood is a physiologic responsibility of the liver.

The exact mechanisms involved in the maintenance of the blood sugar values under the varying physiologic requirements for glucose are not fully understood but

it has been definitely proved that the liver is essential. The liver has been removed from a large number of animals including representatives of several species. In no instance has the blood sugar failed to decrease in the dehepatized animal and in no instance has there been a restoration of the blood sugar after removal of the liver except as a result of the administration of glucose or substances from which glucose could readily be made within the liverless body. The liver is necessary for maintaining the concentration of sugar of the blood, and compensation for loss of this hepatic function can be made only by the artificial administration of glucose. The evidence would indicate conclusively that the liver is always either directly or indirectly involved in hypoglycemia.

The function of the liver of supplying glucose to the blood depends on the ability and capacity of the hepatic tissue for storing and making glucose. Glucose is stored in the liver in the form of glycogen and made by the hepatic cells from a large number of substances. It has been shown that glycogen is made from glucose when the concentration of the sugar in the blood reaching the liver is above the physiologic level being maintained at that particular time. The liver makes glucose and glycogen from the other carbohydrate substances that are absorbed from the intestine. The liver also makes glucose from noncarbohydrate foodstuffs. Carbohydrate can be derived from both protein and the glycerol fraction of fat. The processes whereby these noncarbohydrate substances are made into glucose and glycogen occur mainly if not wholly, in the liver. Certain intermediary metabolites of extrahepatic tissues are converted into glycogen by the hepatic tissue.

Glycogen is found in many tissues of the body besides the liver. The total amount of glycogen in the muscle tissue exceeds the amount in the liver. Tissues other than the liver and muscle normally contain only small amounts of glycogen. The evidence would indicate that the enzymes in the extrahepatic tissues which contain glycogen convert it into substances other than glucose. It has been proved that glycogen in the muscle does not give origin to blood sugar and it has not been proved that the sugar of the blood can originate from the glycogen found in tissues other than the liver. Likewise the existing evidence indicates that only small amounts of glucose can be made from other substances in tissues outside the liver. While it cannot be stated that extrahepatic tissues do not aid the liver in the maintenance of the blood sugar either by a glycogen stage or by the direct formation of glucose, such aid must be very feeble. The fact that fatal hypoglycemia always follows removal of the liver is sufficient proof that, if extrahepatic sources of blood sugar exist, they

From the Division of Experimental Medicine Mayo Foundation.  
Read before the Section on Pathology and Physiology at the Ninety  
Fourth Annual Session of the American Medical Association, Chicago,  
June 15, 1944.

are totally incapable of supplying the needs of the body for glucose.

Restoration in hypoglycemia is specific for glucose. Conclusive proof for this statement is derived from observations on the dehepatized animal because, when the liver is present, partial restoration of the blood sugar in hypoglycemia can be brought about by the administration of substances which stimulate the liver to secrete sugar into the blood. A very large number of substances have been injected into dehepatized animals in hypoglycemia for the purpose of resuscitation. The results of these experiments are very definite and conclusive. The dehepatized animal in hypoglycemia is restored to normal only by glucose or substances from which glucose can be made in the tissues of the body outside the liver. All substances used to date, with the exception of glucose and those substances that can be converted to glucose extrahepatically, have proved to be ineffectual in the prevention of death of the hypoglycemic, liverless animal. These two facts, (1) that a lack of glucose in the blood causes death and (2) that glucose alone is specific for restoration in hypoglycemia, prove conclusively that a minimal amount of glucose is required and is constantly being utilized in some manner by the animal organism during life.

A decrease of the concentration of blood sugar to values which are followed by symptoms and death may be due to many causes. Hypoglycemia may be due to the following general causes: (1) utilization of glucose faster than it can be supplied, (2) dearth of glucose and substances from which glucose can be made, (3) failure of the intrinsic hepatic mechanisms for storage, synthesis or secretion of glucose or (4) primary hepatic insufficiency. Since most of the glucose supplied to the body is utilized in the extrahepatic tissues, anhepatic processes may profoundly alter the rate at which glucose is withdrawn from the blood. Certain anhepatic processes are also essential for providing the hepatic tissues with some of the substances from which glucose is made within the liver. The intrinsic hepatic mechanism for providing glucose for the body is affected by substances produced in extrahepatic tissues. Primary hepatic insufficiency may cause hypoglycemia, but it should be noted that only a small percentage of the normal amount of hepatic tissue is required for the maintenance of the normal blood sugar values.

There are numerous anhepatic substances and processes which are of fundamental importance in regard to the maintenance of the concentration of glucose in the blood. Among these, certain endocrine substances and types of metabolism are of great significance. In most instances, in spite of a vast amount of creditable research, agreement is lacking in regard to the mechanisms whereby the various hormones affect the blood sugar. An interesting chapter in physiology will have been written when the various phases of these mechanisms have been conclusively demonstrated. There is a considerable bulk of evidence which indicates that the type of food being utilized in preponderance in the extrahepatic tissues greatly alters the mechanism for control of the blood sugar.

Several interesting hypotheses have been developed in explanation of the cause of the symptoms in hypoglycemia. The data obtained for the support of these hypotheses have been of considerable value in clarifying certain phases of the phenomenon. Since the major symptoms of hypoglycemia indicate that the functions

of the nervous system are primarily affected and since glucose is very important in metabolism, the more pertinent investigations on the cause of the symptoms of hypoglycemia have dealt with the metabolism of the brain.

A considerable amount of evidence has been accumulated from various sources which indicates that glucose is the main if not the only source of energy for the brain. The results of a number of investigations on the oxygen consumption and carbon dioxide production of brain tissue *in vivo* agree in general that the oxygen consumption is high and that the respiratory quotient is usually about unity. The results of studies on the metabolism of slices of brain tissue are in accord with those of the studies of the brain tissue *in vivo*. While the results of none of these investigations, because of the possibility of error owing to the methods that had to be used, should be accepted without qualification and in spite of the fact that a serious error was made in regarding glucose as the only source of energy for muscular contraction, it would appear highly probable that the brain obtains, at the least, most of its energy from the combustion of carbohydrate.

The results of investigation of the metabolism of the brain in hypoglycemia as well as the results of studies on the interrelation between anoxia, asphyxia and hypoglycemia indicate that the oxidative metabolism of the brain is diminished in hypoglycemia. This finding provides an explanation for the sequence of the development of the symptoms of hypoglycemia. The decrease of blood sugar affects various regions of the brain successively, beginning with the cerebral hemispheres and ending with the vital centers in the medulla. This definite order of the symptoms is predicated on the basis that the lack of glucose affects the brain cells having the highest rate of metabolism first. In this connection it should be noted that other factors are also involved because the symptoms of hypoglycemia may develop, under certain conditions, at a blood sugar value which, though decreased from its immediate previous value, is above the normal level.

The mechanism whereby hypoglycemia causes death and the action of glucose in producing restoration remain as important and only partially solved problems. It was noted in the first experiments on the dehepatized animal in which hypoglycemia was recognized as a cause of death that the respiration always stopped before the heart. It is usually possible to restore the animal in hypoglycemia after respiration has ceased by the application of artificial respiration while injecting glucose. As previously mentioned, all the major symptoms that appear in hypoglycemia can be referred to functional alterations in the central nervous system. The discernible effect of glucose is to restore the functional activity of the brain. These facts would appear to prove that the central nervous system constantly requires the presence of glucose in order to function. It is not so evident that other tissues also require glucose to maintain life. In this connection it should be noted that isolated organs as well as isolated tissues are often studied under a condition of hypoglycemia. Some of the functions of perfused organs appear to be performed normally in the absence of glucose in the perfusate or the organ itself. It would appear that life and function can be maintained in some tissues without glucose.

While the discovery that a certain concentration of glucose in the blood is essential for life was made on the dehepatized animal, most of the facts that are known about the effects of a low blood sugar on the various physiologic activities of the body have been learned through the use of insulin because it is easier to produce hypoglycemia with insulin than by any other known method. The results of studies on hypoglycemia produced by removal of the liver and the injection of insulin have been mutually corroborative. It would appear that the cause of the symptoms and death in hypoglycemia is the same regardless of the mechanism producing the decrease of blood sugar. However, there is one great difference between the restoration of the organism in hypoglycemia due to removal of the liver and in that due to other causes. While glucose is effective in restoring the hypoglycemic organism to normal, provided the lack of glucose has not persisted for too long a period, regardless of the cause of the hypoglycemia, in the absence of the liver the period of restoration is only temporary while in the presence of the liver it is permanent or persists until the causative agent is again active. A permanent recovery from hypoglycemia always depends on hepatic activity.

Since the presence of the liver has remained as a possible source of error in the interpretation of the results of studies on hypoglycemia produced by extrahepatic causes, my colleagues and I have recently attempted to develop a method for the study of a preparation which not only is practically glucose free but also is incapable of receiving glucose except by administration. The objective of the research was to attempt to maintain artificially those functions of the body loss of which, owing to the hypoglycemia, appeared to be the cause of death and thus determine the physiologic activities that would persist in the absence of glucose.

Briefly the method is as follows. The liver is removed in the usual manner. When the animal exhibits the first symptoms of hypoglycemia, the trachea is intubated and respiration is maintained artificially after spontaneous respiratory movements cease. Transfusions of whole blood are given to aid in supporting blood pressure.

While progress has not been made toward our major objectives, some pertinent findings have been noted. Blood pressure progressively decreases as the animal becomes flaccid in hypoglycemia, and the central vasomotor mechanism ceases to function shortly after respiratory movements stop. While it is easy to substitute for the lost respiratory function, it has so far been impossible to restore blood pressure, although we have been able to maintain it at a very low level for a few hours. The transfusion of whole blood will increase blood pressure for short periods, but even the injection of very large amounts of blood, more than the estimated total amount of the animal's blood volume, will restore blood pressure for only a short period. The very small amount of glucose in the blood appears to be more effective in increasing the blood pressure than the increase of blood volume.

Cardiac action and a low blood pressure have been maintained for several hours after respiratory movements had ceased. The reducible substances in the blood were at very low values, indicating that the organism was practically glucose free. No evidence of

activity of the central nervous system could be detected. The injection of glucose restored respiration and partially restored blood pressure, many of the reflexes returned and uncoordinated movements occurred. However there was no evidence of return of cerebral function.

#### SUMMARY

The maintenance of a definite concentration of glucose in the blood is a physiologic constant. If the blood sugar decreases below a certain critical level definite and characteristic symptoms appear followed by death. The physiologic responsibility for maintaining a life supporting amount of glucose in the blood belongs to the liver, but many extrahepatic factors and mechanisms cause variations of the blood sugar to occur. The major symptoms and death in hypoglycemia are due to the effect of the lack of an adequate amount of glucose for the central nervous system, which requires the presence of glucose in order to function. Glucose is essential for life in the higher organisms and appears to be as irreplaceable as oxygen.

## FIBRIN FOAM AS A HEMOSTATIC AGENT IN REHABILITATION NEUROSURGERY

MAJOR BARNES WOODHALL

MEDICAL CORPS, ARMY OF THE UNITED STATES

The introduction by Ingraham and Bailey<sup>1</sup> of fibrin foam as a hemostatic agent in neurologic surgery marks a technical advance as significant as the earlier introductions of the silver clip and the electrocautery. The control of hemorrhage from small or moderate sized vessels in the brain or spinal neuraxis by electrocoagulation or clipping is relatively standardized and has been proved satisfactory. The control of capillary bleeding from the substance of the brain or spinal cord from small vessels over the surface of the medulla or spinal cord or from the vascular supply of peripheral nerves cannot be accomplished by these destructive measures. Nor is it feasible to control gross hemorrhage from tumor beds or lacerated venous sinuses by these techniques. For these purposes cotton patties soaked in warm saline solution or muscle strips have been used. As Ingraham has pointed out, everyday experience has indicated that these methods may be both time consuming and ineffectual in securing complete hemostasis and, in addition, the use of muscle may be followed by considerable tissue reaction.

Ingraham has recounted the history of the search for an adsorbable hemostatic agent culminating in that prepared from material entirely of human origin by Bering.<sup>2</sup> In the same paper microscopic studies in

From the Neurosurgical Section of the Walter Reed General Hospital, Washington, D. C.

<sup>1</sup> Ingraham, F. D. and Bailey, O. T. The Use of Products Prepared from Human Fibrinogen and Human Thrombin in Neurosurgery. Fibrin Foams as Hemostatic Agents. Fibrin Films in Repair of Dural Defects and in Prevention of Meningocerebral Adhesions. *J. Neurosurg.* 1: 25-39 (Jan.) 1944. Ingraham, F. D., Bailey, O. T. and Nulsen, F. F. Studies on Fibrin Foam as a Hemostatic Agent in Neurosurgery, with Special Reference to Its Comparison with Muscle and Blood. *J. Neurosurg.* 1: 171-181 (May) 1944.

<sup>2</sup> This substance was developed under a contract recommended by the Committee on Medical Research between the Office of Scientific Research and Harvard University.

<sup>3</sup> Bering, E. A. Jr. Chemical, Clinical and Immunological Studies on the Products of Human Plasma Fractionation. VIII. The Development of Fibrin Foam as a Hemostatic Agent for Use in Conjunction with Human Thrombin. *J. Clin. Investigation* to be published.

animals and further clinical and microscopic studies in 95 neurosurgical procedures in man have established the present hemostatic value of fibrin foam and the negligible tissue reaction incident to its use. Through the courtesy of Dr. Franc Ingraham and the members of the Department of Physical Chemistry of Harvard Medical School, fibrin foam was made available to the Neurosurgical Section of the Walter Reed General Hospital in the fall of 1943. Since Jan. 1, 1944, increased production of this substance has allowed its use in a total number of 226 neurosurgical operations. The general character of the diagnoses for which these operations were performed are listed in the accompanying table.

These cases do not represent a valid numerical cross section of material commonly treated in an Army Neurosurgical Center, nor do they indicate necessarily procedures in which there exists a definite need for fibrin foam as a hemostatic agent. They do represent a group of neurosurgical operations in which the value of fibrin foam was explored or in which it was used for some specific technical purpose in which complete hemostasis was desirable. The field of rehabilitation or reparative military neurosurgery is a restricted one. Its paramount task lies in the treatment of nerve injuries.

#### *Neurosurgical Operations in Which Fibrin Foam Was Used*

|                                  | Number    |
|----------------------------------|-----------|
| Rupture of intervertebral disk   | 102       |
| Peripheral nerve injury          | 86        |
| Tantalum plating of skull defect | 23        |
| Craniotomy for brain tumor       | 9         |
| Laminectomy                      | 5         |
| Acute cerebral laceration        | 1         |
|                                  | <hr/> 226 |

by the procedures of neurolysis, neurolysis, or nerve grafting. Next in importance is the evaluation of the sequelae of head injuries and, in particular, the repair of skull defects and associated pathologic changes in the dura and brain. In addition to actual war casualties, the military neurosurgeon in the zone of the interior must treat casual illness and injury among military personnel, and of these the most important from the point of view of numbers is that of rupture of an intervertebral disk. Finally, to the Neurosurgical Center gravitate cerebral and spinal cord tumors. Acute cerebral injuries are comparatively rare.

It is apparent then that specific problems in hemostasis may arise in this restricted but, at the moment, important field of neurosurgery. They may be listed as the control of hemorrhage from extrinsic nerve scar, from nerve ends prepared for suture or grafting, from repair of dural or cerebral cicatrices, from extradural spinal veins and finally from tumor beds. It seems obvious that such experience may be transposed readily to the neurosurgery of more active theaters. The characteristics and clinical usage of fibrin foam may be illustrated best by comment on individual cases.

#### *CASE 1—Rupture of an intervertebral disk. Hemilaminectomy. Reexploration.*

E. D. B., T/5, aged 31, developed the classic symptoms and signs of a rupture of the intervertebral disk at the fifth lumbar interspace on the left side, and the diagnosis was confirmed by pantopaque myelography.

On March 1, 1944, after resection of the ligamentum flavum at the fifth lumbar interspace on the left side, a large herniated nucleus pulposus was removed. Prior to removal the extradural veins had been collapsed by cotton patties. When these patties were lifted from the operative field a vigorous venous hemorrhage ensued. After the point of bleeding had been cleared with suction, a small, irregular mass of fibrin foam was applied over the bleeding area and gently compressed with a moist saline pledget. The hemorrhage ceased at once. The nerve root was allowed to assume its normal position and was covered with several additional masses of fibrin foam filling the interlaminar defect. A severe contralateral sciatica developed and on March 21 the operative area was reexplored in the course of its relief. The fibrin foam had degenerated or had been adsorbed to some extent and remained as irregular, friable fragments. The spinal root of the first sacral was freely movable and not adherent to adjacent structures. The sciatica subsided after decompression of the first sacral root on the left.

The control of this relatively uncomplicated type of hemorrhage justifies a brief description of fibrin foam for those who are unfamiliar with its characteristics and usage. Fibrin foam is prepared from human fibrinogen and human thrombin and in the dry state appears dull white, dry and brittle. A fairly large mass of fibrin foam is packaged sterile in a dry state with a vial of dried human thrombin. A third vial contains 30 cc of sterile isotonic solution of sodium chloride. At the operating table the thrombin is dissolved in the saline solution by means of vigorous stirring. Rather large fragments of fibrin foam are dropped into the thrombin solution. Further stirring will cause fragmentation of the fibrin foam into pieces too small for practical use. Fragments of the foam may then be cut or formed as the technical situation demands. As prepared at present the amount is sufficient for craniotomy. It may be used economically for successive disk or nerve cases by removal of a single fragment of foam prior to operation and by aspiration of sufficient thrombin solution to penetrate the fibrin matrix of this fragment.

The use of fibrin foam for the control of venous hemorrhage incidental to removal of a herniated nucleus pulposus appears to be a distinct contribution to more refined disk surgery. Such hemorrhage may be controlled by pressure of a warm saline pledget of cotton or by a muscle stamp. It is vastly simplified by the use of fibrin foam. From the single observation made twenty-one days after hemilaminectomy, it likewise appears that fibrin foam may prevent adherence of the nerve root to adjacent tissues and may prevent as well scar tissue formation from a resolving post-operative hematoma in the region of the laminal interspace. Both sequelae of disk surgery may account for residual or recurrent postoperative sciatic pain.

#### *CASE 2—Mortar shell injury to peroneal and tibial nerves. Neurolysis. Neurolysis.*

C. G. H., 2d lieutenant, aged 31, received multiple wounds from mortar shell fragments on Jan. 21, 1944, including one in the right popliteal space. Neurologic examination suggested a complete section of the common peroneal nerve and an incomplete lesion of the tibial nerve. On April 17 the injured area was explored. An end to end tantalum wire suture of the common peroneal nerve and a neurolysis of the tibial nerve were performed. Regeneration has proceeded at a normal rate since operation.

The methods for the control of hemorrhage from the involved peripheral nerves in this case by the use of fibrin foam were identical with those followed in the

remaining cases of this series. It is not an uncommon accident during neurolysis or transposition of a peripheral nerve to divide a longitudinal or entering epineural artery or vein. Such hemorrhage closely adjacent to living axons cannot be controlled by the application of a silver clip or by the use of the electrocautery. The application of a 3 to 4 millimeter fragment of fibrin foam, followed by pressure exerted on a moist cotton pad, controls such hemorrhage completely and should not be followed by tissue reaction seen after the use of a muscle stamp. The fibrin foam mass should be left in place. Excessive hemorrhage from nerve ends transected for nerve suture or nerve grafting may militate against the success of the intended procedure. The patient, successive application of foam fragments with firm pressure conducted through moist cotton pledgets will eventually control this troublesome hemorrhage. No resultant edema or other changes in the structure of the nerve ends have been observed. No opportunity has developed to study foam fragments at secondary operation in such injuries.

*CASE 3—Resection of cerebral cicatrix. Tantalum plating of skull defect*

A J L, 2d lieutenant, aged 25, sustained a mortar shell injury of the right parietal region of the skull on Dec 23, 1943 with involvement of scalp, skull, dura and cerebral tissue. Debridement was done within ten hours of the injury and the convalescence was uneventful. On admission to the Walter Reed General Hospital on March 25, 1944 he showed a residual and rapidly clearing left hemiplegia and an oval pulsating defect in the right parietal area. Electroencephalography revealed high voltage 2 to 3 second waves with slow wave, out of phase focus over the site of injury. On May 10 a shallow cortical scar was resected and the skull defect repaired with tantalum. Postoperative study of electrical activity of the cortex showed much improvement with abnormal waves appearing only with hyperventilation.

In this instance the area of cortical resection was filled with broad, thin sheets of fibrin foam, approximately 2 to 5 mm thick, with prompt cessation of hemorrhage. This procedure has been followed in other scar resections with equal success. In all cases requiring skull defect repair the extradural bleeding that may follow revision of the dura has been controlled by small fragments placed between dura and bone, insuring complete hemostasis beneath the plate.

*CASE 4—Resection of occipital lobe and glioblastoma*

W L B, private, aged 23, a Negro, developed headache, vomiting, diminished visual acuity and mental confusion over a period of three months. On admission, neurologic examination noted irrationality and confusion with cervical rigidity, minimal papilledema and no localizing signs of import. Ventriculography disclosed a cyst with ragged, irregular contours in the right occipital lobe. On May 12, 1944 the right occipital lobe was resected through the confluence of the body and posterior horn of the lateral ventricle. During this procedure a large posterior cerebral vein tore away from the longitudinal sinus. The ensuing venous hemorrhage was promptly and permanently controlled by a thick stamp of fibrin foam, held in place by firm pressure over a moist cotton strip. Convalescence from craniotomy was uneventful.

In eight more or less similar cerebral resections for tumor, either oozing from cerebral tissue or massive arterial and venous hemorrhage from tumor bed or sinus apertures have been controlled effectively. A striking example of the effectiveness of this hemostatic agent is afforded by a perusal of the following case.

*CASE 5—Complete removal of acoustic neuroma, right*

S K, T/3, aged 26, was operated on in an overseas theater for cerebellar tumor. The procedure was terminated prematurely because of excessive hemorrhage from the right lateral recess. The neurologic findings were typical of a cerebello-pontine angle tumor on the right. On April 20, 1944 a right acoustic neuroma was resected completely. Diffuse, moderately severe hemorrhage from poorly visualized vessels lying along the lateral and anterior borders of the pons was controlled readily by the application of narrow strips of fibrin foam. On April 28 the craniotomy wound was reexplored because of hyperpyrexia and increased intracranial pressure. The lateral recess was clear and the fibrin foam could be seen as an irregular, reddish brown granular mass without significant tissue reaction. The operative area was sterile. Following spinofacial anastomosis the patient was sent on a therapeutic furlough.

*CASE 6—Bifrontal, compound depressed skull fracture with cerebral laceration*

B L, corporal, aged 24, was engaged in welding a 50 gallon steel drum when an explosion of unknown origin occurred. A fragment of steel penetrated above the nose, its removal was followed by drainage of brain tissue and cerebrospinal fluid from the laceration and from the nose. A debridement was carried out twenty-four hours after the injury through a transverse, midfrontal laceration 9 cm long. The medial and inferior surfaces of both frontal lobes were extensively lacerated. After electrocauterization of moderate sized arteries and veins diffuse hemorrhage persisted in spite of warm saline cotton packs. This bleeding was controlled instantly by the application of thin round disks of fibrin foam. Bilateral dural grafts were sutured in place and the soldier has returned to duty.

This experience, although an isolated one, justifies a thorough clinical trial of this hemostatic agent in the field of acute cerebral injuries.

SUMMARY

Fibrin foam has been used as a hemostatic agent in 226 neurosurgical operations completed in an Army Neurosurgical Center. The technical procedures have consisted of peripheral nerve neurolysis, neuroorrhaphy and nerve graft, excision of cerebral scar with tantalum plating of skull defects, hemilaminectomy for rupture of an intervertebral disk, craniotomy for tumor, laminectomy and debridement for acute cerebral injury. In each instance the desired hemostatic effect has been secured promptly and has contributed in large measure to the execution of the particular operation. No clinical untoward reactions that could have been attributed to the use of fibrin foam have been observed. There were but two opportunities to observe a possible tissue reaction to fibrin foam, and these negative observations were consistent with those previously reported. The application of this method of hemostasis to war injuries of the brain seems most promising.

**Hypochondriasis**—Hypochondriasis may be found as a mental habit in a fairly large group of individuals of medium intelligence who have led narrow lives without many interests and who have been prone to accept the statements found in newspapers relative to medicine and advertisements in good faith. They are prone to interpret mild physical discomforts due to fatigue position or unhygienic living as symptoms of serious physical illness and to react accordingly. It is often most difficult to change their delusions about themselves. They will not even accept the reassurances of the family doctor that they do not show any symptoms of the disease of which they complain as he cannot tell how they feel. They know they have heart disease because they are so short of breath when they go upstairs, etc.—Davis, John E. *Principles and Practice of Rehabilitation*, New York, A. S. Barnes & Co. Inc., 1943.

## THE MALE CLIMACTERIC, ITS SYMPTOMATOLOGY, DIAGNOSIS AND TREATMENT

USE OF URINARY GONADOTROPINS, THERAPEUTIC TEST WITH TESTOSTERONE PROPIONATE AND TESTICULAR BIOPSIES IN DELINEATING THE MALE CLIMACTERIC FROM PSYCHONEUROSIS AND PSYCHOGENIC IMPOTENCE

CARL G. HELLER, MD, PhD

VANCOUVER, WASH

AND

GORDON B. MYERS, MD

DETROIT

During the past few years several articles<sup>1</sup> have been published in medical journals about a syndrome occurring in middle aged men which has been termed the male climacteric. The syndrome has been characterized principally by nervousness, psychic depression, impaired memory, the inability to concentrate, easy fatigability, insomnia, hot flashes, periodic sweating and loss of sexual vigor. The chief basis for the diagnosis of male climacteric in published reports has been the similarity of the symptoms to those of the female menopause and the relief sometimes afforded by androgenic therapy. The claim has been made<sup>2</sup> that most men and all women pass through the climacteric during the fifth decade and that the diagnosis of male climacteric is frequently missed. Quite recently this concept has been popularized by Paul de Kruif in the July 1944 issue of *Reader's Digest*, and physicians are deluged with requests for treatment by hopeful readers.

No objective evidence has been brought forward to prove that the male climacteric is an actual clinical entity or to differentiate it conclusively from psychoneurosis or psychogenic impotence. In fact, ordinary clinical experience arouses considerable skepticism as to the existence of the male climacteric because of (a) the similarity between symptoms attributed to this syndrome and those referable to psychoneurosis, (b) the retention of fertility by most men well into old age, (c) the absence of regressive changes in secondary sexual characteristics of most elderly men comparable to those which customarily occur in women after the menopause. In most elderly women there are unmistakable signs of ovarian failure namely atrophy of the uterus, vagina external genitalia and breasts, a deepening of the voice, a tendency toward hirsutism and a loss of femi-

nine bodily contours. In contrast, most elderly men exhibit no physical signs of testicular failure genitalia and secondary sexual characteristics show no regressive changes, beard and bodily hair remain intact, and bodily contours remain masculine. Skepticism toward the existence of the male climacteric is clearly expressed in a recent editorial in *THE JOURNAL*.<sup>3</sup>

Our purpose in this communication is to present evidence which will provide answers to the following questions: 1. Is there an organic basis for justifying the claim that the male climacteric is a true clinical entity? 2. Is it possible to distinguish between the male climacteric and psychoneurosis or psychogenic impotence either clinically, by laboratory methods or both? 3. If the syndrome exists, what therapy is advisable? 4. Is the male climacteric a normal accompaniment of the aging process or is it a pathologic problem?

To answer the foregoing questions we needed some objective criterion of testicular function. It seemed likely that the titer of urinary gonadotropins might reflect gonadal function in the male as well as in the female.

An elevation in the titer of gonadotropins excreted in the urine has proved to be an accurate index of ovarian failure. This invariably accompanies the naturally occurring female menopause<sup>4</sup> and follows bilateral oophorectomy within one to four weeks. The elevated titers of urinary gonadotropins persist for the remainder of the patient's life.<sup>4</sup> There is considerable evidence to suggest that the abnormally great excretion of gonadotropins is due to failure of utilization of this hormone by the nonfunctioning ovaries.<sup>5</sup> Therefore it was decided to perform gonadotropic assays in the male.

Before gonadotropic assays could be used for the differentiation between the male climacteric and psychoneurosis, it was necessary to determine whether elevations truly reflected testicular insufficiency. Therefore determinations were made in a series of normal controls ranging from 22 to 98 years of age and in a group of men with known failure of testicular function. The assays were performed in an identical manner on patients complaining of symptoms claimed to be associated with the male climacteric. In addition, microscopic examination of testicular biopsy specimens was made in some of the cases.

### METHODS

Urinary gonadotropic excretion was determined on specimens collected during a twelve hour overnight period. These were concentrated by precipitating the protein gonadotropins with 95 per cent ethyl alcohol, subsequently dialysing off toxic substances and reprecipitating with 95 per cent ethyl alcohol. The final precipitate evolving from this procedure was dissolved in 6 cc of tap water and injected into an immature (22-24 day old) female albino rat in 1 cc portions twice

Editorial comment on this article appeared in *THE JOURNAL* Sept 30 1944 page 300

Read in part before the annual meeting of the American Society for Clinical Investigation Atlantic City N J May 10 1942

From the Department of Medicine Wayne University College of Medicine and the Endocrinological Clinic of the City of Detroit Receiving Hospital

The study was supported in part by grants from the Schering Corporation Bloomfield N J through the courtesy of Dr. Max Gilbert and from Frederick Stearns & Co. Detroit through the courtesy of Dr. Richard M. Johnson

1. Werner A. A. The Male Climacteric. Additional Observations of 37 Patients. *J Urol* 49: 872-882 (June) 1943. Dunn C. W. Diagnosis and Treatment of Testicular Deficiency—Male Hormone Therapy. *M Clin North America* 26: 1876-1895 (Nov.) 1942. Lamar C. P. Clinical Endocrinology of the Male with Especial Reference to the Male Climacteric. *J Florida M A* 26: 398-404 (Feb.) 1940. Donald H. R. Observations on the Male Climacteric. *Clin J* 67: 323-330 (Aug.) 1938. Werner A. A. The Male Climacteric. *J A M A* 112: 1441-1443 (April 15) 1939. Thomas H. B. and Hill R. T. Testosterone Propionate and the Male Climacteric. *Endocrinology* 26: 953-954 (June) 1940.

2. Douglas R. J. The Male Climacteric. Its Diagnosis and Treatment. *J Urol* 45: 404-410 (March) 1941.

3. Climacteric in Aging Men. editorial. *J A M A* 118: 48-460 (Feb. 7) 1942.

4. Heller C. G. and Heller E. J. Gonadotropic Hormone Urine Assays of Normally Cycling Menopausal Castrated and Estrin Treated Human Females. *J Clin Investigation* 18: 171-178 (Oct.) 1939.

5. Heller C. G. Farney J. P. Morgan D. N. and Myers G. B. The Development and Correlation of Menopausal Symptoms. Vaginal Smear and Urinary Gonadotropin Changes Following Castration in 27 Women. *J Clin Endocrinol* 4: 101-116 (March) 1944.

6. Heller C. G. Heller E. J. and Sevringhaus E. L. Does Estrogen Substitution Materially Inhibit Pituitary Gonadotropic Potency? *Endocrinology* 30: 309-316 (Feb.) 1942.



daily for three days. The amount of the gonadotropic hormone in the concentrate was determined biologically from the increase in weight of ovaries and uterus at autopsy performed sixteen to twenty-four hours after the last injection was made. It was found expedient to express gonadotropic activity in terms of actual ovarian weights elicited by the concentrate of each twelve hour specimen. Normal ovarian weights for the strain of rats used ranged from 8 to 162 mg and averaged 12 mg.

Histologic techniques used on the biopsy specimens of the testes were routine hematoxylin and eosin stains, Masson's trichrome stain and Giemsa's stain.

#### RESULTS IN MEN WHOSE TESTICULAR FUNCTION HAD BEEN DEFINITELY ESTABLISHED

Urinary gonadotropic titers of 25 normal men are contrasted with those of 12 surgical castrates and 8 functional prepuberal castrates in chart 1 and table 1.

**Normal Men**—Among the normals all decades were represented from the third through the tenth. All the normal men gave histories of normal sexual function and none had symptoms suggestive of the climacteric. The presence of normal testes was confirmed by biopsy in 10 men, 7 of whom were in the sixth decade or beyond. The 17-ketosteroid excretion was considered normal in 12 cases in which this assay was performed. None of the normals excreted sufficient gonadotropins to cause detectable stimulation of the ovaries of the assay rats. This was evident by the fact that the average ovarian weight after injection with concentrates of the urine of the normal men was only 12.3 mg,<sup>8</sup> which is similar to the ovarian weights in uninjected control rats.

**Castrated Men**—In contrast, all 12 castrates excreted large amounts of gonadotropins, as shown by the fact that urinary concentrates caused a fivefold increase in

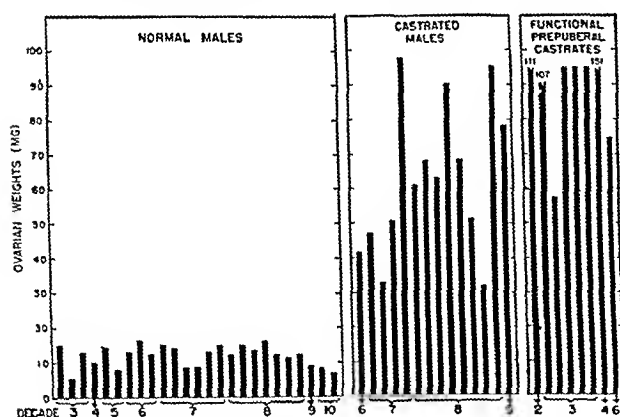


Chart 1—Urinary gonadotropic titers

the weight of the ovaries of the assay rats (table 1). The average ovarian weight of rats injected with concentrates of urine from castrate males was 62.6 mg.

<sup>8</sup> Heller, C. G. and Chandler, R. E. Gonadotropic Hormone Modification of the Alcohol Precipitation Assay Method. *J. Clin. Endocrinol.* 2: 252-253 (April) 1942. Heller, C. G., Lauson, H. and Sevringhaus, E. L. The Immature Rat Uterus as an Assay End Point for Gonadotropic Substances. *Am. J. Physiol.* 121: 364-378 (Feb.) 1938.

<sup>9</sup> The titers for the normal males in this series compare favorably with the low titers established for normal males by Heller, E. J., Heller, C. C. and Sevringhaus, E. I. Gonadotropic Hormone Assays of Human Male Urine. *Endocrinology* 29: 17 (July) 1941.

as compared with 12.3 mg for rats injected with concentrates of urine from normal males. The striking increase in ovarian weight was due partly to follicular maturation and partly to corpus luteum formation. This indicated that the urine of castrate men contained excessive quantities of either of two separate gonado-

TABLE 1—Gonadotropic Hormone Titers in Cases of Known and Unknown Testicular Function

|   | Clinical Category               | No. of Cases | No. of Assays | Ovarian Weight Mg |
|---|---------------------------------|--------------|---------------|-------------------|
| Normal controls   | Normal male                     | 25           | 47            | 12                |
| Controls consisting of cases of proved testicular failure | Castrated male                  | 1            | 30            | 62.6              |
|   | Functional prepuberal castrates | 8            | 30            | 62.6              |
|   | Seminiferous tubule failure     | 90           | 74            | 58                |
| Experimental groups                                       | Pituitary neurotic males        | 15           | 7             | 100               |
|   | Male climacterics               | 25           | 100           | 62.6              |

\* All these subjects were proved to have testicular failure by microscopic examination of a testicular biopsy specimen taken in each instance.

tropic hormones, one capable of stimulating the growth of ovarian follicles in the female or seminiferous tubules in the male (follicle stimulating hormone), the other capable of producing luteinization in the female or of stimulating the interstitial cells of the male (luteinizing hormone).

Further evidence for the direct correlation between gonadotropic titers and testicular function was obtained in 6 patients on whom gonadotropic assays were performed before castration and one month or more after castration. The preoperative titers were normal, the average ovarian weight of assay rats being 12 mg. This was interpreted as indicating normal testicular function. Microscopic examination of the ablated testes showed them to have normal structure, which confirmed the impression that these men had normal testicular function preoperatively. The gonadotropic titers after castration were high, the average ovarian weight of assay rats being 58 mg. The elevation of gonadotropins is probably due to failure of utilization by the ablated testes, which normally metabolize this hormone. Therefore the rise of gonadotropins is interpreted as a reflection of testicular failure.

**Functional Prepuberal Castration in Men**—Elevated gonadotropins were also observed in cases of spontaneous prepuberal destruction of the testes. This was seen in 8 cases in which operation revealed either the absence or the complete atrophy of the testes associated with Wolffian duct derivatives in the scrotum (chart 1 and table 1).

**Hyalization of Seminiferous Tubules and Clumping of Leydig Cells**—From a third type of primary failure of the testes we obtained additional corroboration of the fact that when the testis fails, in the absence of pituitary disease there is always a compensatory rise in urinary gonadotropins. In this syndrome, only recently described by Klinefelter, Reifenstein and Albright<sup>10</sup>

<sup>9</sup> Heller, C. G., Nelson, W. O. and Roth, A. A. Functional Leydig Cell Castration in Males. *J. Clin. Endocrinol.* 3: 573-588 (Nov.) 1943.

<sup>10</sup> Klinefelter, H. F. Jr., Reifenstein, E. C. Jr. and Albright, F. Syndrome Characterized by Gynecomastia, Aspermatogenesis Without A Leydigism and Increased Excretion of Follicle Stimulating Hormone. *J. Clin. Endocrinol.* 2: 615-627 (Nov.) 1942.

and by Heller and Nelson,<sup>11</sup> a definite correlation has been established between the hyalinization of the seminiferous tubules, Leydig cell failure and elevated gonadotropins. The elevation of gonadotropins can be seen for 20 of our cases in table 1.

Thus, in every proved case of primary gonadal failure, impaired or absent gonadal function was accompanied by a rise in urinary gonadotropic excretion. The high concentrations of gonadotropins in the urine were in striking contrast to the low titers encountered in normal men of the same age. Therefore it was felt the gonadotropic titer could be safely utilized as a measure of gonadal failure in cases showing symptoms suggestive of the male climacteric.

#### RESULTS IN MEN WHOSE TESTICULAR FUNCTION WAS UNDER INVESTIGATION

Urinary gonadotropic assays were performed on a series of 38 men, all of whom complained of constitutional and psychic symptoms more or less resembling those of the female menopause. In addition, 32 of the 38 patients complained of impotence. On the basis of the results of the assays, the cases could be sharply

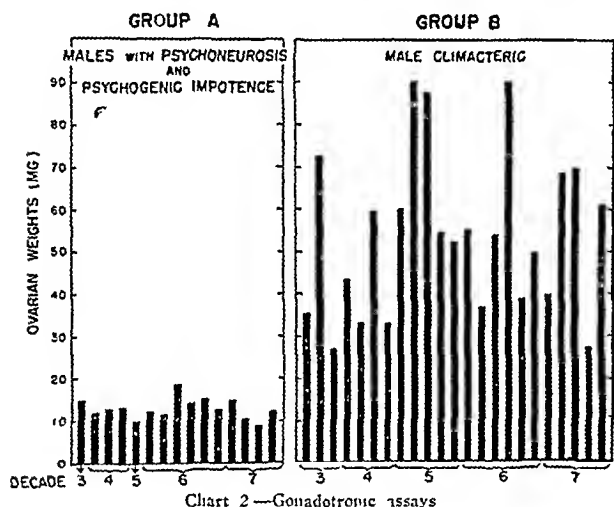


Chart 2—Gonadotropic assays

subdivided into two groups designated temporarily as groups A and B.

A. Normal gonadotropic assays were obtained in 15 of the 38 patients. The average assay ovarian weight was 13.3 mg for this group of 15 and compared very closely with the figure of 12.3 mg, which was the average assay ovarian weight for the 25 normal males. The striking uniformity of individual cases in the two groups is evident from a comparison of charts 1 and 2. From the fact that the gonadotropic titers of the cases in group A corresponded with those of normal males it was concluded that testicular failure had not occurred.

B. High gonadotropic assays were obtained in 23 of the 38 patients. The titer of each of the 23 cases was unequivocally higher than any titer obtained in the 15 cases in group A or any titer in the 25 normal control cases, as is evident from studying charts 1 and 2. The amount of gonadotropic hormone excreted in these 23 cases corresponded closely to that excreted by the castrated controls. The average assay ovarian weight of the 23 cases in group B was 52.8 mg as compared with 62.6 mg for the castrated controls and contrasted

with 12.3 mg and 13.3 mg for the normal controls and the 15 cases in group A, respectively. It was concluded that these 23 men in group B had testicular failure.

Testicular biopsies were performed in 8 of the 23 cases in group B as a check on the reliability of gonadotropic assays in predicting testicular failure. Histologic evidence corroborating the presence of testicular failure was obtained in all 8 cases. In 5 instances the biopsies revealed reduction in size and in activity of the seminiferous tubules and reduction in the size and number of Leydig cells. The latter were abnormal in granulation and lipid content. In 3 cases the biopsy findings simulated those of Klinefelter's syndrome<sup>12</sup> and are described in detail by Nelson.<sup>12</sup>

Therapeutic test was applied in 29 cases, including 9 from group A and 20 from group B. The therapeutic test consisted in an evaluation of the clinical response to testosterone propionate<sup>13</sup> given intramuscularly in doses of 25 mg five times weekly for two to four weeks.

*Results of the Therapeutic Test in the Patients with High Gonadotropins (Group B).*—Definite improvement in the symptomatology was noted by the end of the second week in all of the 20 cases treated. Complete abolition of all vasomotor, psychic, constitutional and urinary symptoms (table 2) was accomplished by the end of the third week in 17 of the 20 cases treated. In the remaining 3 cases vasomotor and urinary symptoms were abolished but the psychic and constitutional symptoms persisted despite continuation of treatment for several months and doubling the dosage for brief periods. It was concluded that these three persons were suffering from involutional melancholia. Sexual potency was restored to normal with these doses in all but 2 cases, in 1 of which involutional melancholia was present. With an increase in dosage of testosterone propionate to 50 mg five times weekly, sexual vigor in both previously refractory cases exceeded that of normal men.

In 14 cases therapy was subsequently withheld for from four to fifteen weeks and in all instances the symptoms returned and sexual potency was again lost. On resumption of the therapy with testosterone propionate relief from symptoms was again afforded and sexual potency returned. Thus the specificity of therapy was established. To investigate further the possibility that the improvement might have been due to suggestion, placebo injections were administered. Ampules containing 1 cc of sesame oil, packaged similarly to the original testosterone propionate, were substituted without the patient's knowledge in several cases. No improvement was noted in any case.

In chart 3 a case is presented to illustrate the abolition of symptoms and restoration of potentia by testosterone propionate, the recurrence of symptoms and loss of potency after discontinuance of therapy, the failure of sesame oil placebo and the subsequent control by resumption of androgenic therapy. The results of the therapeutic test provide confirmatory evidence that the symptoms and loss of potentia in the group with elevated gonadotropins (group B) were due to testicular failure.

*Results of the Therapeutic Test in the Patients with Normal Gonadotropins (Group A).*—Of the 9 men subjected to the therapeutic test 7 had loss of sexual

11 Heller C. G. and Nelson W. O. Hyalinization of the Seminiferous Tubules Associated with Normal or Failing Leydig Cell Function. Discussion of Relationship to Eunuchoidism, Gynecomastia, Elevated Gonadotropins, Depressed 17 Keto Steroids and Estrogens. *J. Clin. Endocrinol.* to be published.

12 Nelson W. O. and Heller C. G. Hyalinization of Seminiferous Tubules and Clumping of Leydig Cells. Microscopic Picture in the Testis and Associated Changes in the Breast. *J. Clin. Endocrinol.* to be published.

13 The testosterone propionate free testosterone pellets, solution of methyl testosterone for sublingual use and the methyl testosterone tablets for oral use were furnished by Dr. Max Gilbert of the Schering Corporation, Bloomfield, N. J.

potency and 8 had some of the other symptoms listed in table 2. In 3 instances there was evanescent improvement in symptomatology noted during the first week of therapy. However, by the end of the second to fourth weeks none of the 9 patients demonstrated any improvement whatever in either the general symptomatology or the sexual vigor.

The results of the therapeutic test in the group with normal gonadotropins (group A) provide confirmatory evidence that loss of potentia and symptoms in these patients were not due to testicular failure. This conclusion was corroborated by the fact that normal men experience little, if any, increase in sexual potency or in well being by taking the male sex hormone.

**Symptomatology**—By the foregoing objective tests the 38 cases could be sharply separated into two groups: A, consisting of 15 patients having normal testicular function as evidenced by normal gonadotropic excretion and failure to respond to the therapeutic test; B, consisting of 23 patients having testicular failure as evidenced by high gonadotropin output, comparable to castrates; histologic evidence of testicular degeneration and specific response to the therapeutic test.

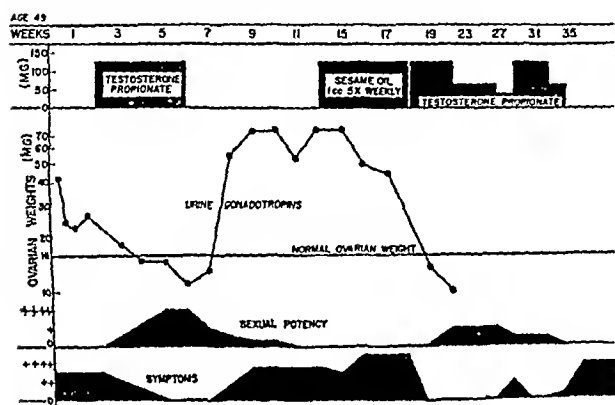


Chart 3—Therapeutic test

**Symptoms Encountered in the Group with Testicular Failure**—After the symptoms of the group with elevated gonadotropins were analyzed it was evident that they fell into five categories: (1) vasomotor, (2) psychic, (3) constitutional, (4) urinary and (5) sexual. The various symptoms classified in this manner are listed in table 2.

The urinary frequency and hesitancy and decrease in size and force of the stream are undoubtedly related to enlargement of the prostate and decreased bladder tonus which accompany testicular failure. The urinary symptoms are relieved by testosterone, in all probability, because of improvement of bladder tonus, not because of any direct effect on the prostate.

The vasomotor, psychic and constitutional symptoms are identical with those encountered in the female menopause. Of course, no patient exhibited all of the symptoms listed. The most constant symptom was the loss of sexual potency, which was a complaint of all 23 patients. This was usually but not invariably accompanied by loss of libido. Psychic and constitutional symptoms, particularly nervousness and fatigability, were also invariably present. A somewhat less frequent but more characteristic symptom was hot flashes identical with those described by menopausal women. A significant feature from a diagnostic standpoint was

the tendency for loss of sexual potency, hot flashes and nervousness to make their appearance concurrently. While the onset was never fulminant, the patient could usually tell the month or season the symptoms began. The etiologic relationship between the symptoms in table 2 and the testicular failure was borne out by the specific relief afforded by androgens, the recurrence after cessation of androgenic therapy and unresponsiveness to placebos.

**Symptoms Encountered in the Group with Normal Testicular Function**—The majority of the men in group A also complained of loss of potency usually accompanied by psychic and constitutional symptoms resembling those of group B and occasionally by vasomotor and urinary symptoms listed in table 2. A notable

TABLE 2—Symptoms According to Categories

|                  |  |
|------------------|--|
| 1 Vasomotor      | hot flashes<br>chilliness<br>sweating<br>palpitation<br>increased pulse rate<br>headache   |
| 2 Psychic        | nervousness<br>irritability<br>insomnia<br>depression<br>self depreciation<br>antisocial tendencies<br>crying spells<br>suicidal tendencies<br>paresthesia<br>pruritus<br>inability to concentrate |
| 3 Constitutional | weakness<br>fatigue<br>muscle pains<br>muscle cramps<br>arthralgia<br>anorexia<br>nausea and vomiting<br>abdominal pain<br>constipation<br>weight loss   |
| 4 Urinary        | decreased force<br>decreased size<br>frequency<br>hesitancy  |
| 5 Sexual         | diminution of libido<br>decreased erections  |

difference was the rarity of true hot flashes in group A. Often the symptoms had been present for most of the patient's adult life or occasionally had been very abrupt in onset, coincident with some psychic trauma.

#### COMMENT

At the conception of this investigation four questions were postulated. On the basis of the data presented, an attempt will now be made to answer each question.

1 *Is there an organic basis for justifying the claim that the male climacteric is a true clinical entity?* This is answered in the affirmative by the finding of testicular failure in 23 of the patients studied. The objective evidence for the testicular failure consisted of (a) elevation in gonadotropic excretion, comparable quantitatively with that occurring in castrated males and men with primary gonadal failure, (b) histologic signs of testicular atrophy or degeneration in all eight cases subjected to testicular biopsy. The etiologic relationship between the demonstrated testicular failure and the

clinical picture was borne out by (a) the resemblance of the symptoms of this group of cases to that of the definitely established pattern of the female menopause with the addition of occasional urinary symptoms and the invariable association of decrease in sexual potency, (b) the specific restoration of potency and alleviation of the menopausal-like symptoms by applying the therapeutic test of substitution therapy with androgens, (c) the reappearance of symptoms after withdrawal of androgens, and (d) the complete failure of placebos.

It was therefore concluded that these 23 patients were true examples of the male climacteric!

2 *Is it possible to distinguish between the male climacteric and psychoneurosis and psychogenic impotence, either clinically or by laboratory methods?* Presumptive differentiation may be made by a careful history combined with a therapeutic test. For a positive differentiation, however, laboratory tests are necessary. The assay of urinary gonadotropins provided a sharp distinction between known normal and known castrated men and an equally clearcut distinction between group A and the male climacterics (group B). By this means it was established that the climacteric patients had testicular failure and that group A did not.

This was further supported by the failure of the patients in group A to respond to the therapeutic test. It was therefore concluded that the symptoms of the patients in group A were not due to testicular failure and that the probable basis for the symptoms was psychoneurosis or psychogenic impotence!

On the basis of clinical symptomatology alone a tentative but not an absolute differentiation can be made. The most important diagnostic points are: 1 Character of the symptoms. The symptom complex of the male climacteric corresponded much more closely to the female menopause than did the symptom complex of the average psychoneurotic. Typical hot flashes identical with those occurring in the female menopause, are strongly suggestive of the male climacteric but occasionally may occur in psychoneurosis. On the other hand the absence of hot flashes by no means excludes the diagnosis of the male climacteric. In fact, this symptom was absent in about 40 per cent of our cases. 2 The mode of onset. The diagnosis of male climacteric is strongly suggested when a past history is obtained of normal sexual function up until a definite month or season at which time loss of potency, hot flashes and nervousness appear simultaneously. A diagnosis of psychoneurosis is suggested when the symptoms have been present throughout adult life or are abruptly precipitated by psychic trauma. Often a careful history will uncover the emotional factors responsible for the impotence and symptoms of the neurotic. 3 The therapeutic test will aid in separating the two groups since the climacterics can be expected to make a striking improvement, whereas the psychoneurotic usually do not show a specific response.

As the study progressed and the differences in the clinical pattern between the climacteric and the psychoneurotic became evident a large number of the psychoneurotic were eliminated on a clinical basis. This accounts for the fact that 23 of the 38 patients in the series proved to be examples of the male climacteric and that only 15 psychoneurotic patients were investigated by laboratory methods.

3 *What therapy is advisable?* Before instituting treatment it is necessary to establish the diagnosis of the male climacteric and to exclude the following contraindications to androgens: (1) the presence or suspicion of carcinoma of the prostate in particular and any carcinoma in general, since the steroids have a carcinogenic action, (2) the presence of edema, since testosterone tends to produce sodium, and hence water, retention, (3) any case showing normal testicular function, since testosterone will inhibit spermatogenesis in normal males and may, in addition, cause disuse atrophy of the normal Leydig cells. In this connection we have followed the gonadotropic excretion in a normal man given a long course of testosterone propionate therapy and found that after discontinuance of the androgen the gonadotropins rose to levels corresponding to those following castration. Whether these changes are permanent or not is still uncertain but it is entirely possible that ill advised treatment with testosterone may cause permanent sterility.

*Therapeutic Test Suggested for Establishing the Diagnosis of Male Climacteric*—In clinical practice laboratory procedures that will positively differentiate climacteric from psychoneurotic patients may not be available. Although the testicular biopsy is a simple surgical procedure, it may not always be feasible. Under such circumstances it may be necessary to resort to the following therapeutic test. Administer 25 mg of testosterone propionate by intramuscular injection five days weekly for a period of two weeks. Evaluate the clinical status at that time, noting the effect on symptoms and sexual potency. If, at the end of the two week trial of therapy, the patient has shown no improvement either of two conclusions may be justifiable: (1) The patient does not have the male climacteric or (2) he will need such an excessively large daily dosage of testosterone that treatment is financially impractical. If the patient does respond it may be necessary to determine whether the improvement is actually due to specific relief of testicular failure or whether it is merely due to suggestion. Withdrawal of therapy until symptoms return and then reinstitution of therapy with placebos may be required to settle the question.

If the diagnosis of the climacteric is positively established by these procedures and the response to the therapeutic test is satisfactory, the minimal dosage for control can next be determined by trial and error. In cases of complete testicular failure, satisfactory control will usually be obtained by administering 25 mg of testosterone propionate three times weekly. In some cases injection of 25 mg once a week will suffice. Rarely 10 mg once or twice weekly may maintain a patient satisfactorily.

In our experience with cases in which a diagnosis of testicular failure has been clearly established eunuchoids as well as climacteric patients, the use of methyl testosterone has been disappointing both by the oral and by the sublingual routes. The recommended oral dose of four to six times the injection dose was inadequate for satisfactory maintenance. Larger doses often caused nausea and vomiting and were too expensive to be practical. The sublingual use of methyl testosterone, either in solution or in tablet form, is not recommended because it has either been ineffective or

has produced undesirable reactions such as burning of the mouth, swelling of the gums, nausea, vomiting, heartburn, weakness of the legs, tinnitus, vertigo and headache.

If more than two intramuscular injections of testosterone propionate are necessary per week for maintenance effects, it is suggested that pellets of free testosterone be implanted subcutaneously in the thighs through a pellet injector. The implantation of 4 to 8 pellets weighing 75 mg each will provide excellent control for periods of six to ten months.

4. *Can the average male expect to experience the male climacteric?* We believe not. Our conviction comes from observations of gonadotropic excretion in normal males, examination of testicular tissue removed at orchiectomy for carcinoma of the prostate in aged men, the sexual history of elderly normal men and the bodily configuration and physical examination of elderly men. All indicate that both the germinal and the hormonal function of the testes is preserved well into senility in the average man. Reduction of function is admitted, but fairly adequate maintenance occurs in most cases studied. In addition, it should be noted from chart 2 that the male climacteric is not confined to middle and old age but may occur as early as the third decade. The youngest patient in this series of male climacterics was 25 years of age.

Thus we conclude that whereas in the female the menopause is an invariable and physiologic accompaniment of the aging process, in the male the climacteric is an infrequent and pathologic accompaniment of the aging process.

The demonstration that testicular failure is responsible for the male climacteric, a syndrome whose clinical manifestations are entirely subjective and easily confused with psychoneurosis, establishes an organic basis and physiologic treatment for a small segment of the large field encompassed by the term psychoneurosis.

#### SUMMARY

The diagnosis of the male climacteric was established in 23 cases by the finding of pronounced elevation in gonadotropic hormone excretion comparable quantitatively to that occurring in castrates. This was corroborated in all 8 cases subjected to biopsy by histologic evidence of testicular atrophy and degeneration. The diagnosis was further supported in all 20 cases treated by specific response to a therapeutic test with androgens.

A clearcut differentiation of the male climacteric from psychogenic impotence was made by urine gonadotropic assays which were decidedly elevated in the former group and normal in the latter. A simple therapeutic test is helpful in distinguishing between these two conditions.

The symptomatology of the male climacteric is different from that of psychoneurosis and psychogenic impotence. Satisfactory therapeutic results were obtained by intramuscular injections of testosterone propionate and by implantation of testosterone pellets, but not by the oral or sublingual administration of methyl testosterone.

Although the male climacteric may occur as early as the third decade, it is a relatively rare syndrome, probably affecting only a small proportion of men who live into old age.

## RECURRENCE RATES IN RHEUMATIC FEVER

THE EVALUATION OF ETIOLOGIC CONCEPTS AND  
CONSEQUENT PREVENTIVE THERAPY

MAY G WILSON, MD

AND

ROSE LUBSCHEZ

NEW YORK

The clinical course of rheumatic fever is characterized by frequent recurrence of manifestations of the disease and a varying number of intercurrent years of freedom from symptoms. The average risk for a recurrence of rheumatic fever has never been defined. Current etiologic concepts and consequent preventive therapy are based in large measure on a comparison of the number of recurrences of rheumatic fever among experimental and control groups of rheumatic patients.

The majority of reported studies have been made on small groups of patients. It is rarely possible for any one investigator to assemble a representative series of sufficient size for adequate analysis. Conclusions are frequently drawn from the summated observations of several small but apparently comparable studies.

The pooling of experience is an acceptable practice provided each study which is included represents a random selection in which experimental and control subjects have been selected alternately. This is essential in order to minimize the possibility of chance being responsible for any observed difference in the two groups. In addition diagnostic criteria and observations must be uniform, environmental conditions and age constitution comparable. The published studies which have been summated in rheumatic fever do not appear to meet these basic requirements.<sup>1</sup>

To obtain a measure of the expected risk of overt recurrence of rheumatic fever, a series of 549 records of a representative group of rheumatic patients was selected for analysis. These patients were under continuous uniform medical supervision in the cardiac clinic.<sup>2</sup>

#### METHOD OF ANALYSIS

The usual procedure for constructing a life table was followed, using one person-year of life experience as the unit for study.<sup>3</sup> To obtain the rate of recurrence

These studies were assisted by a grant from the Commonwealth Fund and from the New York Hospital and the Department of Pediatrics, Cornell University Medical College.

Dr. Lowell J. Reed has shown continued interest and given constructive criticism during the progress of these studies.

Read in a symposium on Rheumatic Fever, before the Section on Pediatrics at the Ninety-Fourth Annual Session of the American Medical Association, Chicago, June 16, 1944.

1. Thomas C. B. The Prophylactic Treatment of Rheumatic Fever by Sulfadiazine. *Bull. New York Acad. Med.* 18: 508, 1942. Paul.<sup>3</sup>

2. Only the records of patients whose onset and course of disease were accurately documented were included. In 50 patients the only recurrent attacks were growing and joint pains. These were not included in this presentation. Of the remaining 499 patients, 256 experienced one or more attacks of arthritis or chorea alone or combined and in 243 active carditis with or without chorea and arthritis characterized the course. The duration of disease for the age group 4 to 16 years averaged eight years. Within this period 10 per cent died. In 46.9 per cent mitral insufficiency, in 38.4 per cent mitral insufficiency and stenosis, and in 14.8 per cent mitral and aortic lesions were present. Additional analyses were made for those 345 patients reaching the ages of 17 to 25 years for whom the average duration was an additional six years and 104 records of rheumatic families including 182 rheumatic individuals were included for the analysis of the influence of environment. (Wilson, May, C. Rheumatic Fever. New York: Commonwealth Fund, 1940, pp. 225-175.)

3. Frost W. H. Papers of Wade Hampton Frost. A Contribution to Epidemiological Method, edited by K. I. Maxcy. New York: Commonwealth Fund, 1941, p. 586.

the ratio of the number of recurrences to the person-years of life experience at each age from 4 to 25 years was calculated. For 499 patients experiencing a major recurrence (arthritis, chorea and active carditis alone or combined) age specific rates for different patterns and degrees of severity of the disease were made. In

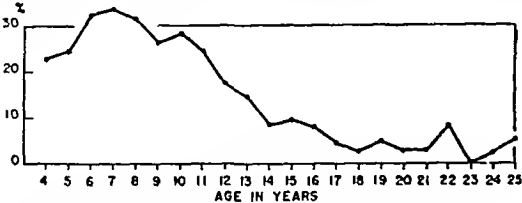


Chart 1—Age specific recurrence rates for 499 rheumatic individuals comprising 5,677 person-years

addition comparison of the recurrence rates in twelve consecutive calendar years from 1924 to 1935 and the rate of recurrence for patients living under relatively favorable and unfavorable environmental conditions were determined.

OBSERVATIONS

Among 499 patients between the ages of 4 and 16 years, representing 3,957.0 person-years of life experience, 31 per cent did not have a recurrent major attack. There were 817 recurrent manifestations of arthritis, chorea and active carditis alone or combined. Among 345 of these patients who reached the ages of 17 to 25 years, representing 1,720.0 person-years of life experience, there were 64 major recurrent attacks. Eighty-seven per cent did not have a major recurrence.

AGE SPECIFIC RATES OF RECURRENCE DURING 5,677 PERSON-YEARS OF LIFE EXPERIENCE

In table 1 and chart 1 it may be noted that the age specific recurrence rates reflect the natural history of the disease. The rates are highest between the ages of 4 and 13 years, having a peak incidence at about the age of 7 years. After the age of 13 years there is a significant downward trend, which reaches its lowest sustained level after the age of 17 years. The average recurrence rate from 4 to 13 years is 25.0 per cent, from 14 to 16 years the average rate drops to 8.7 per cent and from 17 to 25 years the average recurrence rate is 3.7 per cent. For a random sample between the ages of 4 and 16 years the average risk of recurrence is 20.6 per cent.

The variation in the risk of recurrence at different ages must be considered in selecting patients for study. It is obvious that the age constitution must be com-

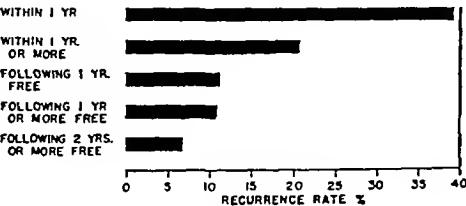


Chart 2—The risk of recurrence in relation to the last rheumatic attack

parable in control and experimental groups. In a small series the presence of only a few patients of a different age in one of the groups might well account for any difference observed.

The interval of time elapsing between recurrent attacks for patients between the ages of 4 and 16 years

was also found to be an important influential factor in the risk of future recurrence. The risk of recurrence during the year immediately following a major episode is 38.7 per cent compared to 11.2 per cent in the year immediately following one year of freedom from recurrence. The average rate of recurrence within one year or more after a major rheumatic episode was twice as great as that following at least one year of freedom and three times as great as that following at least two years of freedom from symptoms, 20.6 per cent, 10.7 per cent and 6.6 per cent, respectively (chart 2 and table 2).

It is generally believed that the incidence of rheumatic fever varies in different years. Analysis of the rate of recurrence in twelve consecutive calendar years from 1924 to 1935 did not reveal any significant difference which could be attributed to epidemiologic factors.

TABLE 1—Age Specific Recurrence Rates for 499 Rheumatic Individuals Comprising 5,677 Person-Years

| Age         | No. of Recurrences | Average Person Years | Rate per Cent |
|-------------|--------------------|----------------------|---------------|
| 4           | 16                 | 70.5                 | 22.7          |
| 5           | 20                 | 123.0                | 24.4          |
| 6           | 61                 | 188.0                | 32.4          |
| 7           | 85                 | 202.0                | 33.7          |
| 8           | 95                 | 300.5                | 31.4          |
| 9           | 94                 | 306.0                | 26.4          |
| 10          | 112                | 304.5                | 23.4          |
| 11          | 102                | 411.0                | 24.8          |
| 12          | 72                 | 410.0                | 17.0          |
| 13          | 69                 | 397.0                | 14.9          |
| Total 4-13  | 727                | 2909.0               | 25.0          |
| 14          | 31                 | 370.0                | 8.3           |
| 15          | 33                 | 300.0                | 9.6           |
| 16          | 20                 | 373.0                | 8.0           |
| Total 14-16 | 90                 | 1043.0               | 8.6           |
| Total 4-16  | 817                | 3957.0               | 20.6          |
| 17          | 13                 | 296.0                | 4.4           |
| 18          | 7                  | 270.0                | 2.6           |
| 19          | 12                 | 200.5                | 4.0           |
| 20          | 6                  | 220.0                | 2.7           |
| 21          | 6                  | 190.0                | 3.0           |
| 22          | 14                 | 168.0                | 8.3           |
| 23          |                    | 137.0                |               |
| 24          | 3                  | 120.0                | 2.5           |
| 25          | 3                  | 20.5                 | 5.3           |
| Total 17-25 | 64                 | 1720.0               | 3.7           |

There is a sharp drop in the rates from 1928 to 1931, which reflects the addition to the clinic of a large group of children in whom rheumatic heart disease had been discovered on routine school examination. The elevation in 1932 was due to the transfer to the clinic of patients discharged from the wards following an acute attack of rheumatic fever. It is obvious that in a growing clinic population the different sources from which patients are drawn will influence the average rate of recurrence in the clinic population in any specific year. To prevent erroneous conclusions, it is apparent that data must be inspected for inadvertent bias (chart 3).

It might be expected that the risk of recurrence would vary with the number of previous attacks and the severity of the disease. The rate for the first recurrence after onset was 20.6 per cent. The rate for the second recurrence for those patients who had experienced one recurrence was 18.6 per cent. For those patients who experienced two recurrences the rate for



the third recurrence was 22.1 per cent. It is apparent that the risk for future attacks is not affected by the number of previous recurrences. It was also found that for patients who experienced only arthritis or chorea, alone or combined, the rates were not significantly lower than those observed for children who in

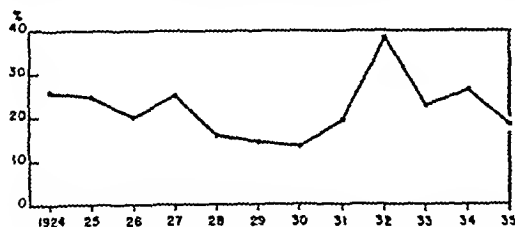


Chart 3—The rate of recurrence in twelve calendar years (4 to 16)

addition had active carditis, 18.9 per cent and 24.6 per cent, respectively (chart 4).

Unfavorable living conditions are considered to increase the risk of recurrence. It was found that among 59 children living under relatively favorable environmental conditions the rate of recurrence, 22.3 per cent, was not significantly lower than that observed

TABLE 2—Risk of Recurrence in Relation to Last Rheumatic Attack

| Ages  | Within 1 Year or More |                      |               | Following 1+ Years Free |                      |               | Following 2+ Years Free |                      |               |
|-------|-----------------------|----------------------|---------------|-------------------------|----------------------|---------------|-------------------------|----------------------|---------------|
|       | No of Recurrences     | Average Person Years | Rate per Cent | No of Recurrences       | Average Person Years | Rate per Cent | No of Recurrences       | Average Person Years | Rate per Cent |
| 4-13  | 727                   | 2009.0               | 22.0          | 287                     | 2106.5               | 11.8          | 144                     | 2144.5               | 6.7           |
| 14-16 | 90                    | 1048.0               | 8.6           | 63                      | 830.5                | 7.8           | 48                      | 759.0                | 6.3           |
| 4-16  | 817                   | 3057.0               | 20.6          | 350                     | 2937.0               | 10.7          | 192                     | 2903.5               | 6.6           |

| Ages  | Within 1 Year     |                      |               | Following 1 Year Free |                      |               |
|-------|-------------------|----------------------|---------------|-----------------------|----------------------|---------------|
|       | No of Recurrences | Average Person Years | Rate per Cent | No of Recurrences     | Average Person Years | Rate per Cent |
| 4-13  | 441               | 1105.5               | 23.9          | 142                   | 1274.5               | 11.1          |
| 14-16 | 24                | 97.0                 | 24.7          | 16                    | 160.0                | 11.3          |
| 4-16  | 465               | 1202.5               | 28.7          | 160                   | 1434.5               | 11.2          |

for 123 patients living in a more unfavorable environment, 26.0 per cent (chart 5).

The recurrence rates which have been presented may be used to determine the number of recurrences which should be expected in a random sample of rheumatic patients. It is to be emphasized that the two factors which were found to influence the risk of recurrence at any specific time are the age constitution of the group and the interval of time elapsing since the last attack.

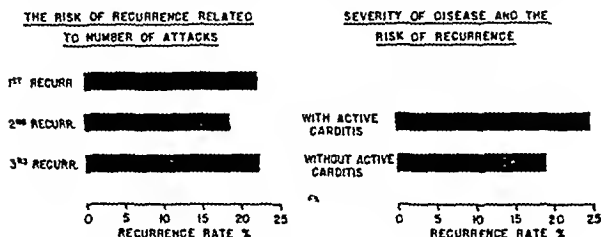


Chart 4—At left the risk of recurrence related to the number of attacks. At right severity of disease and the risk of recurrence.

#### RECURRENCE RATES IN THE EVALUATION OF PUBLISHED STUDIES

In the majority of recent studies of the relative frequency of rheumatic fever in special groups, attempts have been made to control the observations. However, rarely have alternate experimental and control patients

been selected. It is a common practice to introduce a selective bias by including patients in the control series who are uncooperative, refuse treatment or are dropped from the experimental group for various reasons. In some studies, patients are shifted back and forth from experimental group to control group. Frequently patients are matched for severity of disease or the number of previous attacks. The interval of time elapsing between attacks has not been considered. In many studies the experimental and control groups are not comparable because of differences in age constitution and number of patients. In the majority of the published reports the groups are too small, and conclusions have been based on summated observations.

Although selective factors and inadvertent bias were probably present in the published studies, an attempt was made to compare the number of recurrences expected and observed in the experimental and control groups of six published studies. It was not possible to apply our rates specifically for each age or for varying time intervals in every instance. As far as the data presented could be interpreted appropriate average rates were applied.<sup>4</sup> It would be expected that the number of recurrences observed in the control groups would be in close agreement with the number expected while in the treated groups the number expected would be significantly greater than the number observed. It was found that in the five experimental groups receiving chemotherapy the observed number of recurrences was not significantly lower than expected, with one exception. In four studies the observed incidence in the control groups was significantly higher than expected indicating selective or inadvertent bias. The results of this analysis indicate that conclusions as to the efficacy of chemotherapy cannot be drawn from any of these individual studies nor can the results of several studies be summated.

The reported frequency of rheumatic recurrences following hemolytic streptococcus infection is the basis for the prophylactic administration of sulfonamide drugs to rheumatic individuals. The incidence of rheumatic recurrences following hemolytic streptococcus infection ranges from 0 to 82 per cent in the various published studies.<sup>5</sup> In Kuttner's<sup>6</sup> large series of rheumatic patients who were under careful observation in a closed colony, only 28 per cent of the children who experienced hemolytic streptococcus respiratory infection had a subsequent rheumatic recurrence.

It is probable that in a clinic population the majority of the children experience hemolytic streptococcus infec-

4. Feldt R. H. Sulfanilamide as a Prophylactic Measure in Recurrent Rheumatic Infection. A Controlled Study Involving 131 Patients. *Am J Med Sci* 207:483, 1944. Hansen A. E. Platon R. V. and Dwan, P. F. Prolonged Use of Sulfonamide Compound in Prevention of Rheumatic Recurrences. Evaluation Based on 1 Year Study on Sixty Four Children. *Am J Dis Child* 64:963 (Dec.) 1942. Kuttner A. G. and Rejersbach G. Prevention of Streptococcal Upper Respiratory Infections and Rheumatic Recurrences in Rheumatic Children by Prophylactic Use of Sulfanilamide. *J Clin Investigation* 22:77, 1943. Thomas C. B., France R. and Reichman F. Prophylactic Use of Sulfanilamide in Patients Susceptible to Rheumatic Fever. *J A M A* 116:551 (Feb. 15) 1941. Dodge K. G., Baldwin J. S. and Weber M. W. The Prophylactic Use of Sulfanilamide in Children with Inactive Rheumatic Fever. *J Pediatr* 24:483, 1944. Kuttner A. G. 5. Paul J. R. The Epidemiology of Rheumatic Fever. ed. 2. New York: Metropolitan Life Insurance Company, 1943. p. 35. 6. Kuttner A. G. Prevention of Rheumatic Recurrences. A Discussion of Various Measures Now Being Used. *New York State J Med* 43:1941-194.

tion during the season of maximum prevalence of rheumatic fever. If it is assumed that rheumatic recurrences are always preceded by a hemolytic streptococcus infection, our recurrence rates may be considered to reflect this hypothesis. When these recurrence rates are applied to a group of rheumatic patients all of whom

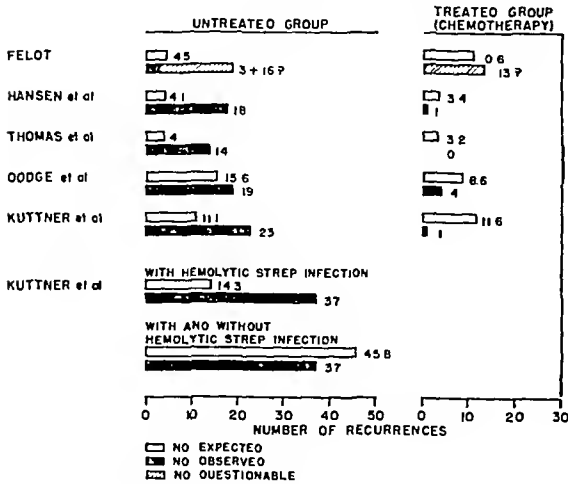


Chart 6—Evaluation of published studies on the frequency of rheumatic recurrences

had hemolytic streptococcus infections, there should be close agreement between the number of recurrences expected and observed. However, it was found in Kuttner's series of patients, all of whom had hemolytic streptococcus infections, that the number of recurrences observed was significantly greater than the number expected. It is significant that when the rates were applied to Kuttner's total series, in which two thirds

TABLE 3—Recurrence Rates in the Evaluation of Published Studies

|   | Control      |              |                    |          | Treated      |              |                    |          |
|---|--------------|--------------|--------------------|----------|--------------|--------------|--------------------|----------|
|   | No. of Cases | Rate Applied | No. of Recurrences |          | No. of Cases | Rate Applied | No. of Recurrences |          |
|   |              |              | Expected           | Observed |              |              | Expected           | Observed |
| Feldt   | 42           | 10.7         | 4.5                | 3+16?    | 99           | 10.7         | 10.6               | 13?      |
| Hansen et al  | 48           | 10.7         | 4.1                | 18       | 32           | 10.7         | 3.4                | 1        |
| Thomas et al  |              |              |                    |          |              |              |                    |          |
| 7-13 years  | 3            | 20.0         | 0.7                |          | 2            | 20.0         | 0.0                |          |
| 14-19 years   | 39           | 6.3          | 2.4                | 7        | 99           | 6.3          | 1.8                |          |
| 20-29 years   | 12           | 3.7          | 0.4                | 2        | 10           | 3.7          | 0.6                |          |
| 30-37 years   | 13           | 3.7          | 0.0                | 5        | 9            | 3.7          | 0.3                |          |
| Total   | 67           |              | 4.0                | 14       | 55           |              | 3.2                | (1)      |
| Dodge et al   |              |              |                    |          |              |              |                    |          |
| Under 14 years  | 93.9         | 11.8         | 11.1               |          | 56.3         | 11.8         | 6.6                |          |
| 14-20 years   | 7.1          | 6.3          | 4.5                |          | 31.7         | 6.3          | 2.0                |          |
| Total   | 101          |              | 15.6               | 19       | 88           |              | 8.6                | 4        |
| Kuttner et al   | 104          | 10.7         | 11.1               | 23       | 108          | 10.7         | 11.6               | 1        |
| Kuttner et al (with and without hemolytic streptococcus infections) | 428          | 10.7         | 45.8               | 37       |              |              |                    |          |
| Kuttner et al (with hemolytic streptococcus infections)             | 134          | 10.7         | 14.3               | 38       |              |              |                    |          |

of the group did not have hemolytic streptococcus infections, there was close agreement between the number of recurrences expected and observed. Conclusions as to the role of hemolytic streptococcus infections in precipitating rheumatic recurrences cannot be drawn from these data.

COMMENT

The expected rate for a major manifest recurrence of rheumatic fever as defined in these studies should be useful in evaluating observations on comparable groups of rheumatic patients.

Of particular importance is the observation that the rate of recurrence varies significantly with age and the interval of time elapsing since the last attack.

The number of attacks or the severity of the disease did not seem to influence the risk of recurrence.

To avoid selective bias, alternate experimental and control cases should be included for study. To prevent inadvertent bias, the age distribution of experimental and control groups should be comparable and the periods between attacks for the two groups uniform. Such bias in a small series might be responsible for any difference observed.

SUMMARY

1 The average over all risk for a major recurrence of rheumatic fever is 25.0 per cent for patients between the ages of 4 and 13 years, 8.6 per cent for patients between the ages of 14 and 16 years and 3.7 per cent for patients between the ages of 17 and 25 years. The average over all risk for children from 4 to 16 years of age is 20.6 per cent for a major recurrent attack.

2 The over all risk for a major recurrence of rheumatic fever is two to three times greater in any year following an attack than the risk following one or two or more years of freedom from activity, i.e., 20.6 per cent, 10.7 per cent and 6.6 per cent respectively.

3 The risk for the year immediately following an attack is 38.7 per cent in comparison to 11.2 per cent in the year immediately following one year of freedom from a recurrence.

4 The recurrence rate is not significantly different for patients experiencing one, two or three recurrent attacks, i.e., 22.3 per cent, 18.6 per cent and 22.1 per cent respectively.

5 The recurrence rate is not significantly different in patients experiencing arthritis and chorea, with or without active carditis. The severity of the disease did not appear to influence the risk of recurrence.

6 The rate of recurrence in twelve consecutive calendar years, from 1924 to 1935, was not significantly different when sampling factors were not operative.

7 The risk of recurrence is not significantly different among children living under relatively favorable and unfavorable environmental conditions.

CONCLUSIONS

The expected risk for a major recurrence of rheumatic fever at specific ages from 4 to 25 years and for various patterns of disease was defined from the analysis of the records of 499 rheumatic individuals during 5,677 person-years of life experience.

The only factors which were found to influence the risk of future recurrences were age and the interval of time elapsing since the last attack.

Most published studies on the relative frequency of rheumatic fever in experimental and control groups do not appear to meet the basic requirements for adequate biostatistical analysis. Final judgment as to the validity of etiologic concepts and consequent preventive therapy, which are based on these studies, must be deferred.

THE DIAGNOSIS OF RHEUMATIC  
FEVERT. DUCKETT JONES, M.D.  
BOSTON

Numerous factors slowly accruing over the years have resulted in focusing our attention on the problem of rheumatic fever. This would seem logical in view of the fact that it remains one of the important soluble medical problems of our day. Increase in fundamental knowledge of the disease probably accounts for the major increase in interest, along with acceptance by an increasing number of physicians of the public health or community aspects of the disease. Recently small public programs of care have been developed in some states by the Children's Bureau of the U. S. Department of Labor. The legislative authority for such programs has been made possible by federal grants in aid to the states under title V of the Social Security Act. These carefully worked out care programs, along with extensive professional and lay education by many agencies, have played a pioneer role in the stimulation of general interest.

A more immediate stimulus has been the appearance of rheumatic fever among the armed forces in such volume as to constitute a serious medical problem. Epidemiologic data now beginning to appear in the literature indicate that rheumatic fever in the services would seem to be closely associated with epidemics of beta-hemolytic streptococcus infections. Thus, data in the literature on the recurrences of rheumatic fever, especially epidemics of recurrent rheumatic fever in known rheumatic fever and heart disease populations, are found to be pertinent and duplicated in populations of unknown rheumatic fever susceptibility, even in adult age groups. These data are based on reasonably sound observations, since clinical histories or observed illnesses, bacteriologic findings and the results of immunologic tests indicate a close association between rheumatic fever and preceding respiratory infection with beta-hemolytic streptococci, and with cognizance of the many unknown factors and varying elements of susceptibility on the part of the individual. This information offers a rational basis for the development of programs of prevention and care.

Programs of prevention and care (at least at study levels) are hence not only desirable but inevitable and will be insisted on by an informed public. It is therefore fitting that a National Rheumatic Fever Council is in the process of formation, the joint purpose of which is to advocate the extension of public programs of prevention and care, with essential private agency or individual stimulation of study programs and the conducting of studies designed to increase our basic scientific knowledge of the disease.

Despite our increase in knowledge of rheumatic fever, no specific diagnostic test has been forthcoming. This is a distinct deterrent to the advancement of the problem. From the study of the medical literature it is obvious that each observer has his own diagnostic criteria and that these may differ widely. For several reasons the importance of rather strict diagnostic criteria would seem essential at this time, and these may be enumerated as follows:

1 Otherwise the incidence of rheumatic fever may be interpreted as varying greatly whether the data are

collected by surveys, the development of a rheumatic fever register making the disease reportable or the study of hospital records.

2 The interpretation of study programs of prevention and care is obviously dependent on such diagnostic criteria.

3 The professional and lay educational programs to date have overemphasized the serious implications of such a diagnosis so that there is danger in producing often unnecessary and at times violent emotional and psychologic suffering among patients and parents if too liberal criteria are accepted. Granted incidence figures may be altered inadvisably. Nevertheless until diagnostic measures become more specific prognostic implications altered and reeducation conducted on this basis there seems little doubt but that we may produce a not inconsiderable number of psychologic cripples. This feature is of especial pertinence to the armed forces.

Hence it is not surprising that the Subcommittee on Cardiovascular Diseases of the National Research Council, interested in the varied aspects of heart disease in relation to the war, has requested a reiteration of the diagnostic criteria of rheumatic fever.

With the understanding that diagnostic criteria must be subject to change as knowledge increases and that for the present it is inadvisable to accept the diagnosis without reasonable assurance of certainty, the various features may be discussed briefly under two headings: the clinical syndrome and the development of rheumatic heart disease. Under these headings one may discuss any feature relative to rheumatic fever, past or present. Some additional features will be mentioned under differential diagnosis and comment.

## THE CLINICAL SYNDROME

*Major Manifestations*—These manifestations offer the least likelihood of an improper diagnosis. Disagreement would seem to exist largely in the relative importance of the individual manifestations. Few if any clinicians would disagree as to the diagnosis in an acutely ill person presenting a combination of these major manifestations. In only three clinical syndromes is there often any confusion with such a combination of findings. Two of these are relatively rare while the third is common. They are Still's disease (in children), disseminated lupus erythematosus and the acute form of rheumatoid arthritis. Occasionally long observation is necessary to differentiate these from rheumatic fever and one must constantly bear them in mind when seeing an acutely ill patient.

1 *Carditis*—Since active carditis is found in all fatal rheumatic fever cases<sup>1</sup> it may be listed as the first major manifestation. Numerous evidences may be found of definite structural or functional cardiac change during acute rheumatic fever. Knowledge of the heart findings prior to the onset is often of prime importance. Incontrovertible evidence of active carditis may be accepted if the patient develops definite cardiac enlargement, significant cardiac murmurs, pericarditis (friction rub) or congestive failure. This would seem to hold at any age if other major manifestations exist. They are at times overlooked in the older patient. In the young patient these findings are usually indicative of rheumatic fever despite the absence of polyarthritis, and, indeed, in children such a clinical picture is not unusual. Doubt will certainly be raised concerning what comprises a significant murmur. It is beyond the scope of this

From the House of the Good Samaritan.  
Read in a symposium on Rheumatic Fever before the Section on  
Pediatrics at the Ninety-Fourth Annual Session of the American Medical  
Association, Chicago, June 16, 1944.

1 Bland, E. F. and Jones, T. D. Fatal Rheumatic Fever. *Arch. Int. Med.* 61: 161 (Feb.) 1938.

report to present the subject in detail. However a loud long apical systolic murmur, widely heard and not varying with position, may be considered significant, as well as any type of diastolic murmur. It is entirely advisable to adhere to the classification and interpretation of heart findings as delineated in the "Nomenclature and Criteria for Diagnosis of Diseases of the Heart" (New York Heart Association, 1940).

Electrocardiographic changes may be demonstrated in many patients if repeated tracings are made. Prolongation of auriculoventricular conduction time (varying limits depending on the age of the patient) is the most frequent finding, but numerous other changes may be encountered (such as inversion of T waves, transient changes in electrical axis during failure, and so on). Cohn and Swift<sup>2</sup> state that as high as 95 per cent of these patients may show changes. Such changes are noted less frequently in children. While prolongation of the PR interval may be supracardiac in origin (Keith<sup>3</sup>), the presence of other symptoms make it highly suggestive of carditis, and it is often a diagnostic aid. Various arrhythmias (such as auricular fibrillation) may likewise be found during the acute illness. Sinus tachycardia is usually proportionate to other evidences of illness (carditis, fever and the like), and as a single manifestation it is rarely helpful. Struthers and Bacal<sup>4</sup> rightly point to the value of the sleeping pulse rate over that of the waking rate.

**2 Arthralgia.** Migrating polyarthritis is generally considered the classic feature of rheumatic fever. While it is common, especially in the young adult patient, no one symptom offers greater diagnostic difficulty, whether the joint changes are objective or mere subjective complaints. One must remain skeptical where this is the only real clinical finding aside from fever. The diseases are legion in which varying degrees of arthralgia are encountered. It is therefore advisable to search frequently for some evidence of carditis and other major and (as is common) minor rheumatic fever manifestations before accepting arthralgia as being proof of the existence of rheumatic fever. In my experience transient mild polyarthritis, without other diagnostic features suggestive of rheumatic fever or some other medical condition rarely proves to be a problem of serious import. One must accept, I feel, one exception to this. Knowledge of the epidemiologic disease pattern of the community in which the disease develops may present strong presumptive evidence of rheumatic fever. For instance, if the patient has been exposed to a known beta-hemolytic streptococcus or scarlet fever epidemic, any joint symptoms become more significant. If the patient has had tonsillitis, pharyngitis or even a cold in the past two or three weeks, and serologic tests (such as antistreptolysin determination) indicate a recent hemolytic streptococcus infection, the burden of proof rests with the physician who would not interpret such a syndrome as rheumatic fever, since this represents the usual epidemiologic pattern of the disease. However, in the absence of such findings and other rheumatic fever manifestations, arthritic symptoms should not be considered certain proof of the existence of the disease. Some of the medical diseases to be considered in such circumstances will be given later.

<sup>2</sup> Cohn A. E. and Swift H. E. Electrocardiographic Evidence of Myocardial Involvement in Rheumatic Fever. *J. Exper. Med.* 39: 1 (Jan.) 1924.

<sup>3</sup> Keith J. D. Overstimulation of the Vagus Nerve in Rheumatic Fever. *Quart. J. Med.* 7: 29 (Jan.) 1938.

<sup>4</sup> Struthers R. R. and Bacal H. L. Determination of the Activity of Rheumatic Infection in Childhood. *Canad. M. A. J.* 29: 470 (Nov.) 1933.

**3 Chorea.** While chorea is a symptom complex, it is closely related to rheumatic fever. In our experience<sup>5</sup> about one half of all rheumatic fever patients (young patients) have chorea at some time. Conversely, approximately three fourths of our young chorea patients in time develop other major manifestations of rheumatic fever. This would seem closely to associate the two, and it is a rather satisfying relationship from a diagnostic point of view. Since chorea is rarely seen after adolescence, it is not usually helpful with the diagnosis in adults. However, an occasional adult with questionable rheumatic fever findings give a history of childhood chorea. The presence of definite chorea associated with questionable signs and symptoms, helps establish a definite diagnosis of rheumatic fever.

**4 Subcutaneous Nodules.** While such nodules are characteristic, they rarely occur in the early stage of the acute illness, and in a large percentage of instances abundant evidence of carditis exists. Hence, only in rare patients are they helpful from a diagnostic point of view, but more often in the determination of the presence of active rheumatic fever in a person with known previous rheumatic fever or rheumatic heart disease.

**5 Recurrences of Rheumatic Fever.** Perhaps no feature of rheumatic fever is more striking or more important than the tendency of the disease to recur. Perhaps also no more serious aspect as to prognosis exists. A history of previous definite rheumatic fever or rheumatic heart disease is strong evidence of the existence of the active rheumatic fever in the presence of even mild signs and symptoms. In our experience<sup>6</sup> about 70 per cent of a series of young rheumatic fever patients had recurrences of the disease within ten years of the onset (the majority within five years), while Roth, Lingg and Whittemore<sup>7</sup> noted 68 per cent with recurrences in their series.

In summary, a combination of these major manifestations makes a diagnosis of rheumatic fever reasonably certain. One must realize that even with this criterion a statistically small number of cases will prove to have been incorrectly diagnosed, after long clinical observation.

**Minor Manifestations.**—Since the histologic changes are generalized, it is not surprising that the signs and symptoms are varied. Almost any complaint may be a part of the disease pattern, however, a limited number occur often enough and of such apparent significance as to warrant diagnostic consideration. These may be mentioned with varying degrees of emphasis.

**1 Fever.** A definite elevation of the body temperature is one of the most common and most variable findings in rheumatic fever. Fever alone, even in the presence of laboratory abnormalities, is insufficient to make a diagnosis of initial rheumatic fever. At the present time fever alone (or often in the presence of an extracardiac or so-called functional murmur) is a common erroneous basis for a diagnosis of rheumatic fever. While fever is helpful, it may be misleading, and other features are usually more important.

**2 Abdominal Pain.** A frequent occurrence is abdominal pain, the exact cause of which is yet undetermined. Many explanations have been offered. Its occurrence is frequent during evident active rheumatic fever. Of particular interest is the frequency with which it is the initial symptom. This is usually clinically indistinguish-

<sup>5</sup> Jones T. D. and Bland E. F. Clinical Significance of Chorea as a Manifestation of Rheumatic Fever. *J. A. M. A.* 105: 571 (Aug. 24) 1935.

<sup>6</sup> Bland E. F. and Jones T. D. To be published.  
<sup>7</sup> Roth I. R., Lingg C. and Whittemore A. *Heart Disease in Children.* Am. Heart J. 13: 36 (Jan.) 1937.

able from acute appendicitis. I know of no accurate differential feature at this time. It is not unusual for other rheumatic symptoms to occur shortly after the removal of a normal appendix. This may pose a difficult diagnostic problem in known rheumatic individuals. It may be well to state that since actual acute appendicitis may occur in rheumatic fever patients, decisions as to the need for operation are not easy.

3 **Precordial Pain.** While this is a common symptom, evidence of carditis is usually found when it is significant. At times precordial pain may suggest coronary involvement. One must remember, however, that mild or transient precordial pain is one of the commonest symptoms of neurocirculatory asthenia even in the presence of definite heart disease.

4 **Rashes.** While many rashes have been described in rheumatic fever, it has been my experience that erythema marginatum is by far the most significant cutaneous manifestation. The evidence at hand rather suggests that it might be more properly classified as a major manifestation of rheumatic fever. Further study is needed on this score. Various purpuric manifestations do occur but they are apparently less frequent than in the past.

5 **Epistaxis.** Nontraumatic nosebleeds are common in rheumatic fever. They appear to be less severe and less frequent than a decade ago. Their relationship to rheumatic fever is on a clinical basis as yet. In association with other findings they may be useful in the diagnosis.

6 **Pulmonary Findings.** During acute rheumatic fever various pulmonary changes are not unusual (even consolidation). The clinical and histologic patterns vary considerably. Without other evidence of rheumatic fever, pulmonary changes are rarely diagnostic. In view of their variability, it is advisable to list them as being of minor diagnostic significance.

7 **Laboratory Findings.** Since at the present time all laboratory abnormalities found in rheumatic fever are nonspecific in character, they are best listed as being of minor significance. The probable more pertinent implication of electrocardiographic abnormalities have been previously mentioned. The development of a microcytic anemia (severe in only a small percentage of patients), an elevated white blood count and an increase in the sedimentation rate of red blood cells are the most common abnormalities. The latter is perhaps the most useful. These tests are of more pertinence in evaluating the presence of active rheumatic fever (in a known rheumatic individual) than is a diagnostic aid. Occasionally rheumatic fever may be active without these laboratory abnormalities. Of especial interest is the frequent normal sedimentation rate in the presence of heart failure.

Numerous other signs and symptoms are encountered. They occur frequently in other diseases or conditions as well as in rheumatic fever. In my opinion they should not be considered as diagnostic aids in the absence of other abnormalities. The more common of these findings are fatigue, pallor, sweating, loss of weight, headache, vomiting (even cyclic), hematuria (more often microscopic than gross), bursitis and pleuritis (irritation).

In summary, it may be stated that even a combination of these minor manifestations may not be sufficient to make a certain diagnosis of rheumatic fever, although they may be suggestive. It is further suggested that any single major manifestation with at least two of the minor manifestations would seem to place the diagnosis

on reasonably safe grounds. The most common basis for a mistaken diagnosis with acceptance of this criterion would be the occurrence of some degree of arthralgia in the presence of fever and some laboratory abnormality. Here the history of a previous respiratory infection, exposure to a hemolytic streptococcus epidemic and/or the development of hemolytic streptococcus immune bodies would be a helpful and probably conclusive positive aid.

#### THE DEVELOPMENT OF RHEUMATIC HEART DISEASE

The presence of heart disease of the rheumatic type does not in itself indicate active but previous rheumatic fever. The indications of carditis listed previously are necessary for this interpretation. Rheumatic heart disease (especially mitral stenosis) often develops insidiously. Until we have a diagnostic test for rheumatic fever, the presence of rheumatic heart disease will continue to play an important role in evaluating the disease. The chief ways in which this is helpful may be listed as follows:

1 Minor manifestations of rheumatic fever in the absence of other causation are presumptive evidence of rheumatic fever (even initial) if the patient has rheumatic heart disease.

2 Knowledge of the period in which rheumatic heart disease develops (by previous known normal examination) would clearly indicate a diagnosis of rheumatic fever (mild and even subclinical) during that time. This is helpful in some epidemiologic studies and will doubtless aid in the more certain evaluation of diagnostic criteria.

In the absence of other causation the minor manifestations of rheumatic fever assume increased diagnostic importance in the presence of definite rheumatic heart disease.

#### DIFFERENTIAL DIAGNOSIS

Time and space do not permit extensive discussion of the differential diagnosis from other individual diseases. Both major and minor manifestations of rheumatic fever occur frequently in other diseases. One must constantly search for clinical and laboratory indications of other diagnoses. The diseases presenting confusion vary considerably. Experiences would differ between pediatricians and those caring for adults. The varied incidence of disease geographically alters the frequency with which some diseases may be confused with rheumatic fever. In a recent comparison of hospital admission and discharge diagnoses Hansen<sup>8</sup> pointed out that in a distinct majority there was a close agreement. In his group of children abdominal pain simulating appendicitis offered the most common difficulty. Other incorrect admission diagnoses were (in order of frequency) polyomyelitis, osteomyelitis, varicella, dermatoses and nephritis. It has been previously pointed out that Still's disease, disseminated lupus erythematosus and rheumatoid arthritis must constantly be borne in mind, the last named being the most frequent difficult differential condition in adult patients. It may be pointed out that rheumatic fever and rheumatoid arthritis coexist in a small number of patients. It is surprising that two such common diseases occur so rarely in the same patient. The possible relationship between these two diseases needs further clarification. Months or even years may be required for a definite differential diagnosis. Malingering may present a problem in diagnosis.

Other confusing diseases may be mentioned: tuberculosis, undulant fever, meningococcic septicemia, forms

<sup>8</sup> Hansen, A. E. Diagnosis of Rheumatic Fever. *J. A. M. A.* 121: 937 (March 27) 1943.

or arthritis other than rheumatoid (especially gonococcal arthritis) gout and even coccidioidomycosis (in limited areas). No attempt has been made to make this list exhaustive.

## COMMENT

As already noted it would seem logical to make a positive diagnosis on rather strict criteria. Until the etiology of rheumatic fever is known or there is a specific diagnostic test some confusion is inevitable. We may develop more intelligent criteria with careful clinical observations. For instance, the recent syndrome described by Kaiser<sup>9</sup> may prove to be rheumatic fever, though he has rightly warned against such definite acceptance as yet. The development of rheumatic heart disease by any appreciable percentage of members of the armed services having mild and even transient suggestive rheumatic fever symptoms may lead to the more liberal interpretation of possible rheumatic fever symptoms.

The problem of a hereditary susceptibility is also of importance. The high familial incidence of rheumatic fever and susceptibility on the basis of history may and should heavily weigh the interpretation of suggestive manifestations. One hesitates as yet to use this aid for general diagnostic purposes. Recently DeLee, Dodge and McEwen<sup>10</sup> using polyarthritis as the common clinical feature in comparing children and adult groups found that residual rheumatic heart disease at the time of hospital discharge was much lower in adults than in children. The elimination of all save one major manifestation as the basis of selection of cases for analysis may lead to false conclusions. It is difficult to evaluate such a varied clinical syndrome as rheumatic fever on the basis of a single sign or symptom. While many observers feel that heart disease is less common in adults with rheumatic fever than in children, it has been my experience that rheumatic heart disease is common to the two groups and without great discrepancy as to incidence.

There has been a strong tendency to consider a satisfactory response to salicylate as a diagnostic aid. The recent revival of interest in salicylate therapy with massive dosages (Coburn<sup>11</sup>) renews this possibility. One may state that the clinical course of various diseases may be altered to some degree by salicylates. Until additional evidence is forthcoming the amelioration of signs and symptoms by salicylates in questionable cases would not seem advisable to consider as more than suggestive evidence of a diagnosis of rheumatic fever. The evaluation of the effectiveness of salicylate therapy may be rendered impossible unless strict criteria are used in the selection of patients for such study.

In my experience it has been impossible to differentiate any prerheumatic state.

## SUMMARY

For the present it would seem advisable to limit the diagnosis of rheumatic fever to patients with rather distinct clinical manifestations. It is suggested that the following constitute reasonably certain diagnostic criteria:

1 Any combination of the major manifestations (carditis, arthralgia, chorea, nodules and a verified history of previous rheumatic fever).

2 The combination of at least one of the major manifestations with two of the minor manifestations (fever, abdominal or precordial pain, erythema marginatum, epistaxis, pulmonary changes and laboratory abnormalities).

3 The presence of rheumatic heart disease increases the diagnostic significance of the minor manifestations, when no other cause for these manifestations exists.

Small though probably insignificant errors may be found with these criteria. Numerous clinical entities as enumerated may be confused with rheumatic fever. Clinical observations and, wherever possible, specific diagnostic tests should be applied in any diagnostic problem.

25 Binney Street

THE ROLE OF THE CARDIAC CLINIC  
IN THE RHEUMATIC PROGRAM

DAVID D. RUTSTEIN, M.D.

NEW YORK

The need for the development of community rheumatic fever programs and the importance of the cardiac clinic in such programs has been supported by many clinical and epidemiologic facts. These include difficulties in the diagnosis of rheumatic disease, the chronic nature of rheumatic disease with its impact on family life, the low economic level in which the disease is most prevalent, the wide prevalence of the disease and the complexity of care necessary for the management of patients.

I should like to discuss these individual factors in more detail. The reasons for the difficulty of diagnosis of rheumatic fever have been adequately summarized in the paper by Dr. T. Duckett Jones.<sup>1</sup> I should like to reemphasize the unknown etiology of the disease, the lack of a specific diagnostic test and the fact that the diagnosis is frequently dependent on the physician's impression of a group of nonspecific symptoms and signs. I have selected these points since they emphasize the great possibility of error in falsely diagnosing the disease in normal persons and the failure to diagnose the disease in the rheumatic patient. Studies conducted by the Cardiac Bureau of the New York State Department of Health indicated clearly that there was a wide variation in the prevalence of the disease in the diagnosis of rheumatic disease by the general practitioner in comparable groups of children.<sup>2</sup> It is a serious matter not to diagnose rheumatic disease when it exists but it is to be emphasized that it is an even greater tragedy to apply the rheumatic label to a normal child. The symptoms and signs of rheumatic fever are for the most part nonspecific, and the disease is therefore easily confused with a host of other diseases including tuberculosis, anterior poliomyelitis, functional heart disease, influenza or the grip, undulant fever, acute appendicitis, sickle cell anemia and other febrile diseases and inflammatory joint diseases. Emphasizing the difficulty in diagnosis is the fact that initial examinations of suspected cardiac patients in excellent clinics by experts in rheumatic diseases result in one third of the individuals examined being classified as having pos-

9. Kaiser, A. D. A Clinical Syndrome in Children Resembling Rheumatic Fever. *New York State J. Med.* 43: 1937 (Oct. 15) 1943.

10. DeLee, E. M., Dodge, K. G. and McEwen, C. The Prognostic Significance of Age at Onset in Initial Attacks of Rheumatic Fever. *Am. Heart J.* 26: 681 (Nov.) 1943.

11. Coburn, A. F. Salicylate Therapy in Rheumatic Fever. *Bull. Johns Hopkins Hosp.* 73: 435 (Dec.) 1943.

From the Department of Health City of New York. Read in a symposium on Rheumatic Fever before the Section on Pediatrics at the Ninety-Fourth Annual Session of the American Medical Association, Chicago, June 16, 1944.

1. Jones, T. D. The Diagnosis of Rheumatic Fever. *this issue*, page 481.

2. Rutstein, D. D. and Parker, M. E. Unpublished observation.



sible or potential heart disease — i.e. it is not possible in one third of the cases to determine on one examination whether or not rheumatic disease is present. Therefore it is no surprise that the general practitioner with his many other responsibilities cannot be expected to make a final diagnosis of rheumatic disease in many cases.

The chronic nature of rheumatic disease and the familial prevalence of the disease place a great burden on the family. Patients are prone to have recurrent attacks of rheumatic fever and require special care between attacks. Finally the development of rheumatic heart disease imposes crippling and limitation of activity in a large percentage of cases. This indicates a need for vocational training in a sedentary occupation if the patient is to remain self supporting for a long time.

The fact that more than one person in the same family may become afflicted with the disease contributes to the low economic level in which the disease is most prevalent. The low economic level implies poor crowded and damp housing, poor nutrition and the frequent occurrence of other diseases in the family. If the rheumatic patient is to be properly handled at home it is obvious that financial support must be given to the family to improve the environment by obviating those factors which predispose to the disease.<sup>4</sup> In addition to the patient other members of the family will probably benefit from an improved environment since they are highly susceptible to rheumatic fever. In certain cases foster home and convalescent home services are necessary and such services must be supplied.

The magnitude of the problem is great. Where surveys have been conducted from 0.3 to 4 per cent of the childhood population and from 0.6 to 1 per cent of the young adult population have been found to be afflicted with rheumatic heart disease. This is similar to the prevalence of tuberculosis. Another index of the importance of rheumatic fever is the total mortality from rheumatic heart disease which, as determined by Hedley in Philadelphia, amounts to approximately 25 to 30 per hundred thousand annually. Swift<sup>5</sup> has shown that the reported deaths from rheumatic fever and rheumatic heart disease in New York City in 1938 were 1,105 as compared with a combined total of 247 for whooping cough, cerebrospinal meningitis, measles, diphtheria, scarlet fever and infantile paralysis. In other words in 1938 there were five times as many deaths from this one disease as from a combination of six common reportable diseases in New York City.

It is evident from the foregoing that the care of most rheumatic patients requires more than medical supervision by a physician. Indeed it involves the cooperation of the medical and nursing services, the hospitals, convalescent homes, foster homes, public and private welfare agencies, the school systems, housing authorities and public health agencies. It complete care is to be provided careful interrelated planning by all these agencies must be performed. In surveying this complicated problem it is evident that the focus for such an organization is the cardiac clinic.

I should like to stress the fact that such community organization is not new. The London County Council long before the present war developed the London

Rheumatic Scheme<sup>7</sup> which provides a model for such organization. In the so-called Rheumatism Section of the London County Council's Rheumatism Scheme two series of records are kept: first a register of all proved cases of rheumatic disease and second a file by agency of all the facilities that are available in the community for the care of such patients. Such an arrangement interrelates the activities of the agencies and makes possible the referral of the patient to those agencies which are necessary for his proper care. In upper New York State a survey has revealed that when there is no community program there is a great deal of waste and reduplication of effort on the part of many agencies caring for rheumatic patients.<sup>8</sup> This could be obviated by the establishment of a cooperative community program.

In the organization of such a program the cardiac clinic should provide the following services: diagnostic follow-up and case finding facilities, a rheumatic register and an educational program for physicians in the diagnosis and treatment of the disease and for nurses and medical social workers in the part they are expected to play in the management of the disease.

The clinic should serve as an aid to the physician by assisting him in the diagnosis and management of his patients. Clinics can be so established as to assure the physician-patient relationship at the same time providing the patient with adequate care and the physician with constant guidance in the care of his patient. The physician-patient relationship obtains only in a small percentage of the cases since most of the victims of this disease particularly in urban areas fall into the economic group which makes up the usual clinic population. The patients whose diagnoses are verified in the cardiac clinic would be listed in the cardiac register.

The registry system should not be confused with the usual system of reporting a disease. In the former case that is the registry system the diagnoses are verified prior to registration. In the case of a reporting system cases are filed as reported without verification. The difficulties in diagnosis are so great as to make it practically impossible to evaluate information derived from unverified reported cases. There are also practical difficulties in the institution of a requirement for the reporting of a disease which has previously been unreportable. Chief among these is the understandable objection of the practicing physician to the constant increase in the load of clerical work which expanding public health programs demand of him. This objection might be overcome if it could be shown that the information obtained would be of value and that practical benefits in the form of facilities for the care of patients reported would accrue to the practicing physician. The great amount of effort which would be involved in the institution and maintenance of this system of reporting would however have to be justified by the type of information obtained. In the light of past experience it is doubtful at present whether the information obtained by the reporting of rheumatic fever and rheumatic heart disease would justify the effort.

In contrast the collection of verified cases under the registry method offers an approach which will provide accurate information. When that information is complemented by a compilation of all available community

<sup>1</sup> Cardiac Clinication Service, Department of Health, City of New York. Unpublished data.

<sup>4</sup> Paul, J. R. and others. The Epidemiology of Rheumatic Fever and Some of Its Public Health Aspects. ed. 2. New York: Metropolitan Life Insurance Company, 1943.

<sup>5</sup> Hedley, O. F. Mortality from Rheumatic Heart Disease in Philadelphia During 1936. *Pub. Health Rep.* 52: 1907-19.

<sup>6</sup> Swift, H. F. Features Which Suggest Public Health Considerations in Rheumatic Fever. *Bull. New York Acad. Med.* 14: 61, 1940.

<sup>7</sup> Thornton, C. E. London Scheme for the Treatment and Supervision of Juvenile Rheumatism. *Acta rheumatol.* 9: 10, 1957. Annual Report of the Council for the Year 1937. London County Council 1938. Vol. 11. 2. Bach, T. Hill, N. C., Preston, T. W., and Thornton, C. E. Juvenile Rheumatism in London. *Ann. Rheumat. Dis.* 1: 210, 1939. Schlesinger, B. Public Health Aspects of Heart Disease in Childhood. *Lancet* 1: 59, and 649, 1935.

resources for the care of the patient practical results will accrue to the patient and to the private physician.

Studies such as those conducted at the Boston Lying-In Hospital<sup>7</sup> indicate that almost half of a group of adults with rheumatic heart disease had no recollection of preexisting rheumatic fever and most of this group did not know that they had heart disease. The results of such studies demonstrate the great need for a case finding service. It is one of the functions of the cardiac clinic to provide a case finding service. Such a service should be begun by an examination of siblings of known cases in the light of the familial prevalence of rheumatic disease recently emphasized by the studies of May Wilson.<sup>8</sup>

The clinic should provide follow-up services since the disease is a chronic one and because approximately one third of the patients referred to the clinic for diagnosis will require repeated examinations before diagnosis can be made. The follow-up facilities would be used for the establishment of the diagnosis in the questionable cases for the continued care of patients under treatment by the clinic and for continued consultation with the patients or private physicians.

The cardiac clinic should serve as an educational center for instruction in rheumatic fever and rheumatic heart disease for physicians, nurses and medical social workers. The professional education of physicians would be along two lines. A small group of properly qualified physicians should be trained intensively so that they may be able to assist in the clinic and extend clinic service elsewhere. The general practitioner should be trained primarily in the manifold symptomatology of the disease so that he may lower his threshold of suspicion to the presence of the disease. Since the general practitioner must act as the agency for the initial screening of the cases, he should suspect rheumatic fever in any patient with suggestive symptomatology and refer that patient to the clinic for diagnosis. Training in the nursing aspects of rheumatic fever should be provided to graduate nurses so that they may be able to handle their responsibilities in the management of the disease in an intelligent fashion. Medical social workers should also be trained to know their responsibilities when they are called on to direct the medical social aspects of care of the rheumatic patient.

Public educational programs at first should be limited to that necessary to obtain community support. After the program is well established, education of the public in the symptoms and signs of the disease should be carried on in order that patients may be brought under medical care at the earliest possible moment.

Adequate standards for cardiac clinics have been established. A cardiac clinic should meet standards similar to those established by the New York Heart Association and modified for national use by the American Heart Association.<sup>9</sup> An inspection of such standards reveals that the facilities of a cardiac clinic are much more than an examining physician and an electrocardiograph. The standards of the American Heart Association provide among others that the clinic have adequate space, be affiliated with the ward service of a hospital and be directed by a physician who has qualifications equivalent to those required by the American Board of Internal Medicine for certification as a spe-

cialist in internal medicine and the subspecialty of cardiovascular disease, or by those required by the American Board of Pediatrics. In children's clinics it is probably desirable to have the general pediatric care of the child supervised by the pediatrician and the cardiac aspects supervised by a qualified cardiologist. The standards also require that provision should be made for consultation service in required specialties, that adequate records be kept and that adjunct services be available which for the rheumatic patient would provide for fluoroscopy, electrocardiography and laboratory procedures such as leukocyte counts and sedimentation rates. Adequate nursing service should be available. A medical social worker should be attached to the clinic to work out individual problems concerned with utilization of community resources for the benefit of the patient. Indeed the effectiveness with which the medical social workers perform their jobs will in the final analysis determine the operating efficiency of the clinic.

In summary, then, a community rheumatic fever program is essential if complete care is to be given to patients suffering from rheumatic disease, and the cardiac clinic with an affiliated registry should serve as the focus around which the community rheumatic fever program should be built.

## THE GEOGRAPHIC DISTRIBUTION OF HEMOLYTIC STREPTOCOCCI

### RELATIONSHIP TO THE INCIDENCE OF RHEUMATIC FEVER

MAJOR ARIE C. VAN RAVENSWAAY

Medical Services Division, Office of the Air Surgeon, Washington, D. C.  
MEDICAL CORPS, ARMY OF THE UNITED STATES

Geographic variations in the distribution of hemolytic streptococci and in the incidence of acute rheumatic fever have been generally recognized.<sup>1</sup> Much use has been made of these observations, both as an approach for studying the etiology of rheumatic fever and as a therapeutic answer for those individuals found to be susceptible to this disease. Coburn<sup>2</sup> has described the results of sending a group of rheumatic children to Florida. This study is well known, but its application has been limited in civilian life by the lack of a nationwide organization to promote its utilization on a large scale.

The concept of a probable relationship between streptococcal infections and rheumatic fever is now widely accepted. The intimate study of this relationship from a bacteriologic standpoint has been made possible by the classification of the hemolytic streptococcus by Lancefield<sup>3</sup> and Griffith<sup>4</sup> into a system of

From the Army Air Forces Rheumatic Fever Control Program. Read in a symposium on Rheumatic Fever before the Section on Pediatrics at the Ninety-fourth Annual Session of the American Medical Association, Chicago, June 16, 1944.

The data used in preparing this report were gathered at a number of Army Air Forces installations under the direction of the following personnel: Lieut. Wendell C. Allen, Sn. C. Major Warren N. Christopher, Sn. C. Captain Edmund E. Felix, Sn. C. Captain Edward D. Lewis, Sn. C. Captain Joseph S. Cots, Sn. C. Major Leslie R. Grams, Sn. C. Captain Charles C. Jennings, Sn. C. Captain Arthur C. Jordan, Sn. C. Major Samuel Malcolm, Sn. C. and Captain Roland B. Mitchell, Sn. C.

<sup>1</sup> Paul, J. R. The Epidemiology of Rheumatic Fever and Some of Its Public Health Aspects, ed. 2. New York, Metropolitan Life Insurance Company, 1943.

<sup>2</sup> Coburn, A. F. Factor of Infection in the Rheumatic State, ed. 1. Baltimore, Williams & Wilkins Company, 1931.

<sup>3</sup> Lancefield, R. C. Antigenic Complexes of Streptococcus Hemolyticus. Demonstration of Type Specific Substances in Extracts of Streptococcus Hemolyticus. J. Exper. Med. 17:91-103 (Jan.) 1938. Serological Differentiation of Human and Other Groups of Hemolytic Streptococci. Ibid. 57:571-595 (April) 1933.

<sup>4</sup> Griffith, F. Serological Classification of Streptococcus Progenies. J. Hyg. 24:542-554 (Dec.) 1924.

<sup>7</sup> Hamilton, B. F. and Thomson, K. J. The Heart in Pregnancy and the Childbearing Age. Boston, Little Brown & Co., 1941, pp. 228-229.  
<sup>8</sup> May, W. L. and Wilson, M. D. and Lubsch, R. The Familial Epidemiology of Rheumatic Fever. Genetic and Epidemiologic Studies. J. Pediatr. 22:468-581, 1943.  
<sup>9</sup> Standard Requirements for a Cardiac Clinic, modified from those of the New York Heart Association by the American Heart Association, New York, 1941.

groups and types and the development of practical methods for their differentiation. The contribution which the Rockefeller Institute for Medical Research is making in serving as a source for the specific grouping and typing serums used in these methods cannot be overemphasized.

My purpose in this paper is to describe geographic variations in the distribution of the component types of group A hemolytic streptococci as observed in Army Air Forces installations and the relationship between these variations and the incidence of rheumatic fever. Reference is made to the use of this information in the management of acute rheumatic fever.

At eight Army Air Forces installations, laboratories for the grouping and typing of hemolytic streptococci are in operation. Credit for the accumulation of material reported in this paper belongs to the personnel responsible for the organization of these laboratories and the development of methods for handling the large amount of bacteriologic material involved in this study. These laboratories have been located so as to represent both areas of low incidence and areas of high incidence of rheumatic fever.

In general, an effort has been made to obtain information in four categories:

1. Hemolytic streptococcus post survey (carrier) rates.
2. Incidence of hemolytic streptococci in hospital admissions for upper respiratory disease.
3. The grouping and typing of hemolytic streptococci isolated from patients with scarlet fever.
4. The grouping and typing of hemolytic streptococci isolated from patients with rheumatic fever and from respiratory infections antecedent to rheumatic fever.

The results of these studies have been summarized in the accompanying tables.

#### GEOGRAPHIC DISTRIBUTION OF HEMOLYTIC STREPTOCOCCI AS DETERMINED BY POST SURVEY

Table 1 indicates the variations in incidence of hemolytic streptococci observed in samples of troops from posts at which the eight laboratories are located. These represent the averages of a series of surveys done at intervals during the period from Jan 1 to April 21, 1944. The number of cultures involved varies from 245 to 3,222 for the individual posts and total 8,992 for the group. This study indicates for the winter season involved and on a basis of the posts studied that the distribution of hemolytic streptococci throughout troop population is much greater in the Rocky Mountain area and adjacent parts of the country than at posts located in the southern parts of the country.

An analysis of table 1, while indicating great variations in percentage incidence of the hemolytic streptococcus and its component groups and types, shows in general a rather widespread distribution of those different components and no tendency for certain of the types to supplant completely all the others in certain areas. The latter state of affairs would of course be surprising in view of the constant to and fro movement of troops during the process of their training and is in contrast to the epidemic situations which at times arise in relatively isolated groups in civilian life due to a single type of hemolytic streptococcus. This situation is occasionally approached in small posts with relatively stable personnel but has not been observed in this experience in any of the large Air Forces installations engaged in the training of troops.

#### GEOGRAPHIC DISTRIBUTION OF HEMOLYTIC STREPTOCOCCI IN HOSPITAL ADMISSIONS FOR UPPER RESPIRATORY DISEASE

In table 2 are summarized the results of bacteriologic studies done on patients hospitalized for upper respiratory disease. While it appears that types 19, 17, 30, 3, 1, 36 and 6 are associated with the majority of these infections, at all posts with significant incidence rates a multiplicity of other types are involved.

TABLE 1—Geographic Distribution of Hemolytic Streptococci in Army Air Forces Installations as Determined by Post Survey

| Posts                  | Recorded as Percentage |        |             |             |          |      |             | Days<br>Non<br>than<br>100 | Total  |
|------------------------|------------------------|--------|-------------|-------------|----------|------|-------------|----------------------------|--------|
|                        | Buck<br>ley            | Kearns | Am<br>rillo | Lin<br>coln | S<br>ACC | Drew | Mon<br>than |                            |        |
| No. men surveyed       | 1,222                  | 425    | 805         | 41          | 5        | 151  | 100         |                            | 16,475 |
| No. of surveys         | 9                      | 12     | 5           | 1           | 1        | 2    | 2           |                            |        |
| Hemolytic streptococci | 204                    | 124    | 104         | 16          | 04       | 150  | 100         |                            | 100    |
| Group                  |                        |        |             |             |          |      |             |                            |        |
| B                      |                        |        | 21          |             | 0        | 15   |             | 1.9                        |        |
| C                      |                        |        | 05          |             |          |      | 07          | 0.5                        |        |
| D                      |                        |        | 001         |             |          | 06   |             | 0.0                        |        |
| E                      |                        | 32     | 046         |             |          |      | 100         | 0.1                        |        |
| F                      |                        |        | 07          |             |          | 17   |             | 0.2                        |        |
| G                      |                        |        | 001         |             |          | 01   |             | 0.0                        |        |
| H                      |                        |        | 11          |             |          | 15   |             | 0.0                        |        |
| L                      |                        |        | 02          |             |          |      |             | 0.0                        |        |
| Group                  |                        |        |             |             |          |      |             |                            |        |
| A                      | 70.2                   | 72     | 12.1        | 97          | 0.2      | 14   | 07          | 14.6                       |        |
| Type                   |                        |        |             |             |          |      |             |                            |        |
| 1                      | 4.5                    | 2.6    | 0.9         | 1.0         |          | 0.7  | 0.7         | 1.4                        |        |
| 2                      |                        |        | 0.0         |             |          |      |             | 0.0                        |        |
| 3                      | 0.2                    | 0.9    | 2.1         | 1.2         |          |      |             | 2.4                        |        |
| 4                      |                        |        | 0.0         |             |          |      |             | 0.0                        |        |
| 5                      |                        |        | 0.0         |             |          |      |             | 0.0                        |        |
| 6                      | 1.1                    | 0.2    | 1.0         | 0.1         |          |      |             | 0.7                        |        |
| 8                      | 0.2                    | 0.1    | 0.0         |             |          |      |             | 0.0                        |        |
| 9                      |                        |        | 0.0         |             |          |      |             | 0.0                        |        |
| 11                     |                        |        |             |             |          |      |             |                            |        |
| 12                     | 0.2                    | 0.7    | 0.7         |             |          | 0    |             | 0.2                        |        |
| 13                     |                        | 0.2    |             |             |          |      |             | 0.0                        |        |
| 14                     | 4.7                    |        | 0.0         |             |          |      |             | 0.5                        |        |
| 15                     |                        |        |             |             |          |      |             |                            |        |
| 17                     | 0.2                    | 1.2    | 1.5         |             | 0.1      |      |             | 1.0                        |        |
| 18                     | 0.0                    |        | 0.0         | 0.0         |          | 0    |             | 0.0                        |        |
| 19                     | 0.0                    | 1.9    | 2.2         | 2.4         | 0.1      |      |             | 2.7                        |        |
| 22                     |                        |        | 0.0         |             |          |      |             | 0.0                        |        |
| 23                     | 0.1                    |        | 0.0         |             |          | 0.0  |             | 0.0                        |        |
| 24                     | 0.1                    | 0.0    | 0.4         |             |          |      |             | 0.2                        |        |
| 26                     | 0.1                    |        | 0.2         |             |          |      |             | 0.1                        |        |
| 25                     |                        | 0.2    | 0.0         | 0.0         |          |      |             | 0.0                        |        |
| 29                     | 0.1                    |        | 0.0         | 0.0         |          |      |             | 0.2                        |        |
| 30                     | 1.1                    | 0.2    | 1.9         | 0.9         | 0.1      |      |             | 1.4                        |        |
| 31                     | 0.1                    |        |             |             |          |      |             | 0.0                        |        |
| 32                     |                        |        |             |             |          |      |             |                            |        |
| 33                     | 0.1                    |        |             | 0           |          | 0.0  |             | 0.0                        |        |
| 36                     | 7                      | 0      | 0.0         |             |          |      |             | 0.5                        |        |
| 37                     |                        |        |             |             |          |      |             |                            |        |
| 38                     |                        |        | 0.0         | 0           |          |      |             | 0.0                        |        |
| 39                     |                        | 0.7    | 0.0         |             |          |      |             | 0.0                        |        |
| 40                     |                        |        | 0.0         |             |          |      |             | 0.0                        |        |
| 41                     |                        |        | 0.0         |             |          | 0    |             | 0.0                        |        |
| 42                     | 0.1                    |        | 0.0         |             |          |      |             | 0.0                        |        |
| 44                     |                        |        | 0.0         | 1           |          | 0    |             | 0.0                        |        |
| 45                     |                        |        | 0.0         |             |          |      |             | 0.0                        |        |

#### GEOGRAPHIC DISTRIBUTION OF HEMOLYTIC STREPTOCOCCI IN HOSPITAL ADMISSIONS FOR SCARLET FEVER

Table 3 summarizes the results in 286 cases of scarlet fever. In 229 cases group A hemolytic streptococci were isolated representing some twelve types. Here again types 1, 3, 17, 19 and 30 are the common types.

#### THE GEOGRAPHIC DISTRIBUTION OF HEMOLYTIC STREPTOCOCCI ISOLATED FROM PATIENTS WITH RHEUMATIC FEVER

Approximately 1,600 throat cultures have been done on some 400 patients with rheumatic fever at various stages of their disease. The types obtained at individual posts paralleled closely the types observed with respiratory disease and scarlet fever. For the following

reasons these studies are felt to have little etiologic importance and are not presented in tabulated form. In 36 patients pharyngeal cultures were obtained during an upper respiratory infection which preceded by two to four weeks the onset of acute rheumatic fever. An

TABLE 2—Geographic Distribution of Hemolytic Streptococci in Patients Hospitalized for Upper Respiratory Infections in Army Air Forces Installations

| (Recorded in Percentage of Total Group Surveyed) |         |       |        |           |         |       |      |               |       |
|--|---------|-------|--------|-----------|---------|-------|------|---------------|-------|
| Post   | Buckley | Lowry | Kearns | Amarrillo | Lincoln | SAACG | Drew | Davis Monthan | Total |
| No. men surveyed                                 | 212     | 757   | 1,050  | 2,889     | 397     | 401   | 181  | 334           | 404   |
| No. of hemolytic streptococci                    | 6       | 9     | 1      | 11        | 2       | 2     | 17   |               |       |
| Group  |         |       |        |           |         |       |      |               |       |
| A  | 50.0    | 40.0  | 50.0   | 48.6      | 6.7     | 7.0   | 50.0 |               | 34.5  |
| B  |         |       |        | 0.6       |         |       | 0.3  |               | 0.0   |
| C  |         |       |        | 3.1       |         | 0.6   | 2.4  |               | 1.0   |
| D  |         |       |        | 4.3       |         |       | 0.6  |               | 1.5   |
| E  |         | 1.0   | 0.6    | 5.7       |         |       | 2.1  |               | 2.3   |
| F  |         | 0.4   |        | 0.0       |         | 1.1   | 0.3  |               | 0.4   |
| G  |         |       |        | 0.5       |         |       | 0.3  |               | 0.2   |
| H  |         |       |        | 4.5       |         | 0.6   |      |               | 1.5   |
| I  |         |       |        | 0.7       |         |       |      |               | 0.2   |
| Group A  | 50.0    | 40.0  | 50.0   | 48.6      | 6.7     | 7.0   | 50.0 |               | 34.5  |
| Group B  | 0.0     | 0.0   | 0.0    | 0.2       | 1.0     |       | 0.0  |               | 0.4   |
| Group C  | 0.1     | 0.0   | 0.0    | 0.2       | 1.0     |       | 0.0  |               | 0.4   |
| Group D  | 0.1     | 0.0   | 0.0    | 0.2       | 1.0     |       | 0.0  |               | 0.4   |
| Group E  | 0.1     | 0.0   | 0.0    | 0.2       | 1.0     |       | 0.0  |               | 0.4   |
| Group F  | 0.1     | 0.0   | 0.0    | 0.2       | 1.0     |       | 0.0  |               | 0.4   |
| Group G  | 0.1     | 0.0   | 0.0    | 0.2       | 1.0     |       | 0.0  |               | 0.4   |
| Group H  | 0.1     | 0.0   | 0.0    | 0.2       | 1.0     |       | 0.0  |               | 0.4   |
| Group I  | 0.1     | 0.0   | 0.0    | 0.2       | 1.0     |       | 0.0  |               | 0.4   |
| Group J  | 0.1     | 0.0   | 0.0    | 0.2       | 1.0     |       | 0.0  |               | 0.4   |
| Group K  | 0.1     | 0.0   | 0.0    | 0.2       | 1.0     |       | 0.0  |               | 0.4   |
| Group L  | 0.1     | 0.0   | 0.0    | 0.2       | 1.0     |       | 0.0  |               | 0.4   |
| Group M  | 0.1     | 0.0   | 0.0    | 0.2       | 1.0     |       | 0.0  |               | 0.4   |
| Group N  | 0.1     | 0.0   | 0.0    | 0.2       | 1.0     |       | 0.0  |               | 0.4   |
| Group O  | 0.1     | 0.0   | 0.0    | 0.2       | 1.0     |       | 0.0  |               | 0.4   |
| Group P  | 0.1     | 0.0   | 0.0    | 0.2       | 1.0     |       | 0.0  |               | 0.4   |
| Group Q  | 0.1     | 0.0   | 0.0    | 0.2       | 1.0     |       | 0.0  |               | 0.4   |
| Group R  | 0.1     | 0.0   | 0.0    | 0.2       | 1.0     |       | 0.0  |               | 0.4   |
| Group S  | 0.1     | 0.0   | 0.0    | 0.2       | 1.0     |       | 0.0  |               | 0.4   |
| Group T  | 0.1     | 0.0   | 0.0    | 0.2       | 1.0     |       | 0.0  |               | 0.4   |
| Group U  | 0.1     | 0.0   | 0.0    | 0.2       | 1.0     |       | 0.0  |               | 0.4   |
| Group V  | 0.1     | 0.0   | 0.0    | 0.2       | 1.0     |       | 0.0  |               | 0.4   |
| Group W  | 0.1     | 0.0   | 0.0    | 0.2       | 1.0     |       | 0.0  |               | 0.4   |
| Group X  | 0.1     | 0.0   | 0.0    | 0.2       | 1.0     |       | 0.0  |               | 0.4   |
| Group Y  | 0.1     | 0.0   | 0.0    | 0.2       | 1.0     |       | 0.0  |               | 0.4   |
| Group Z  | 0.1     | 0.0   | 0.0    | 0.2       | 1.0     |       | 0.0  |               | 0.4   |

analysis of the cultures taken after the onset of the latter disease shows that in 28 instances cultures at that time revealed a different type of hemolytic streptococcus. In 4 instances no organisms were recovered (when hemolytic streptococci had been found at the initial examination). In only 6 instances was the same Lancefield type of hemolytic streptococcus isolated at both examinations. Thirty-one strains representing nine Lancefield types were found at the initial culture. If it is assumed that the strains found at the original culture were in large part the organisms responsible for the infection which precipitated the episode of acute rheumatic fever, subsequent cultures must therefore in the majority of instances represent asymptomatic and unrelated cross infections. This thesis is elaborated in table 4. Serial throat cultures taken at intervals approximating seven days in 74 rheumatic fever patients at Buckley Field, Colorado (a post with a high incidence of rheumatic fever), are arranged in columns to

indicate whether the strains listed were isolated from the same individual at the preceding examination or whether they represent a change from this examination.

It happened that in only 1 instance was the same Lancefield type found at the second examination as was isolated at the first, while 37 new strains appeared. This ratio fell with succeeding cultures but further demonstrates the impossibility of obtaining information regarding the bacteriology of the precipitating infection from pharyngeal cultures done following the development of acute rheumatic fever under the conditions which exist at Army posts which have high incidence rates for streptococcal disease and rheumatic fever. A different situation may exist in small static and comparatively isolated groups in which a single type of hemolytic streptococcus may become epidemic.

A study from the Army Air Forces Regional Station Hospital at Davis Monthan Field at Tucson, Ariz., which is located in an area of low incidence of rheumatic fever and streptococcal disease and to which rheumatic

TABLE 3—Geographic Distribution of Hemolytic Streptococci Isolated from Patients Hospitalized for Scarlet Fever

| (Recorded in Percentage of Total Group Surveyed) |         |       |        |           |         |       |       |               |       |
|--|---------|-------|--------|-----------|---------|-------|-------|---------------|-------|
| Post   | Buckley | Lowry | Kearns | Amarrillo | Lincoln | SAACG | Drew  | Davis Monthan | Total |
| No. men surveyed                                 | 81      | 10    | 30     | 272       | 17      | 21    | 11    | 18            | 460   |
| No. of hemolytic streptococci                    | 3       | 1     | 1      | 11        | 7       | 2     | 2     | 17            |       |
| Group  |         |       |        |           |         |       |       |               |       |
| A  | 51.7    | 60.0  | 100.0  | 87.0      | 88.2    | 100.0 | 100.0 | 94.4          | 85.0  |
| B  |         |       |        | 0.4       |         |       |       |               | 0.1   |
| C  |         |       |        | 0.4       |         |       |       |               | 0.1   |
| D  |         |       |        | 0.4       |         |       |       |               | 0.1   |
| E  |         |       |        | 1.5       |         |       |       |               | 0.9   |
| F  |         |       |        | 0.4       |         |       |       |               | 0.2   |
| G  |         |       |        |           |         |       |       |               |       |
| H  |         |       |        | 2.2       |         |       |       |               | 1.5   |
| I  |         |       |        | 0.7       |         |       |       |               | 0.4   |
| Group A  | 51.7    | 60.0  | 100.0  | 87.0      | 88.2    | 100.0 | 100.0 | 94.4          | 85.0  |
| Group B  | 0.0     | 0.0   | 0.0    | 0.4       | 0.0     | 0.0   | 0.0   | 0.0           | 0.1   |
| Group C  | 0.0     | 0.0   | 0.0    | 0.4       | 0.0     | 0.0   | 0.0   | 0.0           | 0.1   |
| Group D  | 0.0     | 0.0   | 0.0    | 0.4       | 0.0     | 0.0   | 0.0   | 0.0           | 0.1   |
| Group E  | 0.0     | 0.0   | 0.0    | 1.5       | 0.0     | 0.0   | 0.0   | 0.0           | 0.9   |
| Group F  | 0.0     | 0.0   | 0.0    | 0.4       | 0.0     | 0.0   | 0.0   | 0.0           | 0.2   |
| Group G  | 0.0     | 0.0   | 0.0    |           |         |       |       |               |       |
| Group H  | 0.0     | 0.0   | 0.0    | 2.2       | 0.0     | 0.0   | 0.0   | 0.0           | 1.5   |
| Group I  | 0.0     | 0.0   | 0.0    | 0.7       | 0.0     | 0.0   | 0.0   | 0.0           | 0.4   |
| Group J  | 0.0     | 0.0   | 0.0    |           |         |       |       |               |       |
| Group K  | 0.0     | 0.0   | 0.0    |           |         |       |       |               |       |
| Group L  | 0.0     | 0.0   | 0.0    |           |         |       |       |               |       |
| Group M  | 0.0     | 0.0   | 0.0    |           |         |       |       |               |       |
| Group N  | 0.0     | 0.0   | 0.0    |           |         |       |       |               |       |
| Group O  | 0.0     | 0.0   | 0.0    |           |         |       |       |               |       |
| Group P  | 0.0     | 0.0   | 0.0    |           |         |       |       |               |       |
| Group Q  | 0.0     | 0.0   | 0.0    |           |         |       |       |               |       |
| Group R  | 0.0     | 0.0   | 0.0    |           |         |       |       |               |       |
| Group S  | 0.0     | 0.0   | 0.0    |           |         |       |       |               |       |
| Group T  | 0.0     | 0.0   | 0.0    |           |         |       |       |               |       |
| Group U  | 0.0     | 0.0   | 0.0    |           |         |       |       |               |       |
| Group V  | 0.0     | 0.0   | 0.0    |           |         |       |       |               |       |
| Group W  | 0.0     | 0.0   | 0.0    |           |         |       |       |               |       |
| Group X  | 0.0     | 0.0   | 0.0    |           |         |       |       |               |       |
| Group Y  | 0.0     | 0.0   | 0.0    |           |         |       |       |               |       |
| Group Z  | 0.0     | 0.0   | 0.0    |           |         |       |       |               |       |

fever patients are sent for convalescent care, is illustrated also in table 4 for comparison with that at Buckley Field. At this post the relative infrequency with which new strains of hemolytic streptococci were acquired is as impressive as is the tendency of the indi-

vidual strain to persist. Superficially it would appear that newly acquired strains have the ability to supplant those previously present and repetitive infestation to hasten the development of local tissue immunity.

#### SIGNIFICANCE OF SPECIFIC TYPES OF GROUP A HEMOLYTIC STREPTOCOCCI

It appears therefore that while the typing of group A hemolytic streptococci provides a valuable laboratory method for epidemiologic studies the ability to produce clinical disease is not a quality inherent or possibly restricted to certain types. Rather it seems to be a function of the invasiveness and virulence of the specific strain involved and subject to the usual variations encountered in these characteristics of bacteria. It is admitted that in this experience certain types were responsible for the majority of the clinical disease studied, but the fluctuation in incidence of the individual

TABLE 4—Types of Hemolytic Streptococci Isolated from Patients Developing Acute Rheumatic Fever Compared with Those Isolated from the Same Individuals at the Time of the Antecedent Streptococcal Infection

| Negative culture<br>Group<br>D<br>H<br>(Group)<br>A<br>Type | Antecedent Infection |          | After Onset of Rheumatic Fever |          |
|---|----------------------|----------|--------------------------------|----------|
|   | Unchanged*           | Changed† | Unchanged*                     | Changed† |
| 1   | 4                    | —        | —                              | 4        |
| 2   | 1                    | —        | —                              | —        |
| 3   | —                    | —        | —                              | —        |
| 4   | —                    | —        | —                              | 1        |
| 5   | —                    | —        | —                              | —        |
| 6   | 4                    | —        | 1                              | —        |
| 7   | —                    | —        | —                              | 1        |
| 8   | —                    | —        | —                              | —        |
| 9   | —                    | —        | —                              | 2        |
| 10  | 10                   | —        | 1                              | —        |
| 11  | 1                    | —        | —                              | —        |
| 12  | —                    | —        | —                              | —        |
| 13  | —                    | —        | —                              | —        |
| 14  | —                    | —        | —                              | —        |
| 15  | —                    | —        | —                              | —        |
| 16  | —                    | —        | —                              | —        |
| 17  | —                    | —        | —                              | —        |
| 18  | —                    | —        | —                              | —        |
| 19  | —                    | —        | —                              | —        |
| 20  | 2                    | —        | 1                              | —        |
| 21  | 4                    | —        | 1                              | —        |
| 22  | —                    | —        | —                              | —        |
| Total   | 2                    | —        | —                              | 2        |

\* Unchanged = number of strains unchanged since preceding examination same individual. Changed = number of strains differing from preceding examination same individual.

† Note—In 6 of 7 individuals the same Lancefield type was isolated at the two examinations.

types at different posts and at the same post at different portions of the winter season indicates the probability that in other seasons or other geographic areas, types which were of minimal importance in this survey may play predominant roles.

A summary of this bacteriologic experience is presented in table 6. Recognizing the inaccuracies that are inherent in studies of this type which negate the importance of minor differences in numerical values there is nevertheless a well defined tendency for streptococcal disease to occur with greater frequency at posts with high post survey rates than in those with low rates of this type. However even at posts with low post survey rates for hemolytic streptococci this organism may be found with frequency in the upper respiratory infection which does occur. A correlation also exists between post survey rates scarlet fever and rheumatic fever. A comparison of scarlet fever rates and rheumatic fever rates in over two hundred other Air Force installations confirms the point that rheumatic fever rarely occurs in areas of low frequency of scarlet fever. The thesis may be advanced that if the streptococcal etiology of rheumatic fever is correct even in areas of low incidence of streptococcal disease rheumatic fever

should occur with approximately the same order of relative frequency with which it is found in epidemic areas. This does not occur however and such mathe-

TABLE 5—Types of Lancefield Group A Hemolytic Streptococci Isolated from Patients with Rheumatic Fever—A Comparison of Observations at Posts of Low and of High Incidence of This Disease

| Cultur                          | Buckner Field (Deer) 4th |    |    |    |    |    |     |    |     |    |     |    |
|---------------------------------|--------------------------|----|----|----|----|----|-----|----|-----|----|-----|----|
|                                 | 1st                      |    | 2d |    | 3d |    | 4th |    | 5th |    | 6th |    |
| No. hemolytic strepto-<br>cocci | Un                       | Ch | Un | Ch | Un | Ch | Un  | Ch | Un  | Ch | Un  | Ch |
| Group A—Interpret               | 12                       | —  | 12 | —  | 12 | —  | 12  | —  | 12  | —  | 12  | —  |
| 1                               | —                        | —  | —  | —  | —  | —  | —   | —  | —   | —  | —   | —  |
| 2                               | —                        | —  | —  | —  | —  | —  | —   | —  | —   | —  | —   | —  |
| 3                               | —                        | —  | —  | —  | —  | —  | —   | —  | —   | —  | —   | —  |
| 4                               | —                        | —  | —  | —  | —  | —  | —   | —  | —   | —  | —   | —  |
| 5                               | —                        | —  | —  | —  | —  | —  | —   | —  | —   | —  | —   | —  |
| 6                               | —                        | —  | —  | —  | —  | —  | —   | —  | —   | —  | —   | —  |
| 7                               | —                        | —  | —  | —  | —  | —  | —   | —  | —   | —  | —   | —  |
| 8                               | —                        | —  | —  | —  | —  | —  | —   | —  | —   | —  | —   | —  |
| 9                               | —                        | —  | —  | —  | —  | —  | —   | —  | —   | —  | —   | —  |
| 10                              | —                        | —  | —  | —  | —  | —  | —   | —  | —   | —  | —   | —  |
| 11                              | —                        | —  | —  | —  | —  | —  | —   | —  | —   | —  | —   | —  |
| 12                              | —                        | —  | —  | —  | —  | —  | —   | —  | —   | —  | —   | —  |
| 13                              | —                        | —  | —  | —  | —  | —  | —   | —  | —   | —  | —   | —  |
| 14                              | —                        | —  | —  | —  | —  | —  | —   | —  | —   | —  | —   | —  |
| 15                              | —                        | —  | —  | —  | —  | —  | —   | —  | —   | —  | —   | —  |
| 16                              | —                        | —  | —  | —  | —  | —  | —   | —  | —   | —  | —   | —  |
| 17                              | —                        | —  | —  | —  | —  | —  | —   | —  | —   | —  | —   | —  |
| 18                              | —                        | —  | —  | —  | —  | —  | —   | —  | —   | —  | —   | —  |
| 19                              | —                        | —  | —  | —  | —  | —  | —   | —  | —   | —  | —   | —  |
| 20                              | —                        | —  | —  | —  | —  | —  | —   | —  | —   | —  | —   | —  |
| 21                              | —                        | —  | —  | —  | —  | —  | —   | —  | —   | —  | —   | —  |
| 22                              | —                        | —  | —  | —  | —  | —  | —   | —  | —   | —  | —   | —  |
| Total                           | 12                       | —  | 12 | —  | 12 | —  | 12  | —  | 12  | —  | 12  | —  |

Un = Number of strains unchanged since preceding examination same individual. Ch = Number of strains differing from preceding examination same individual.

† Two culture contained two types of hemolytic streptococci.

TABLE 6—A Comparison of Streptococcus Carriage Rates Streptococcus Disease and Rheumatic Fever at Geographically Separated Army Air Force Installations

| Post   | Buckner Field (Deer) |      | Kearney Field (Nebr) |      | Ancon Field (Calif) |      | Fort Huachuca (Ariz) |      |
|--|----------------------|------|----------------------|------|---------------------|------|----------------------|------|
|  | Rate                 | Rate | Rate                 | Rate | Rate                | Rate | Rate                 | Rate |
| 1 Post survey  | —                    | —    | —                    | —    | —                   | —    | —                    | —    |
| 2 Percent group A hemolytic streptococci in admissions for upper respiratory infection | —                    | —    | —                    | —    | —                   | —    | —                    | —    |
| 3 Rates upper respiratory infections   | —                    | —    | —                    | —    | —                   | —    | —                    | —    |
| 4 Rate group A hemolytic streptococci upper respiratory infection                      | —                    | —    | —                    | —    | —                   | —    | —                    | —    |
| 5 Rate scarlet fever   | —                    | —    | —                    | —    | —                   | —    | —                    | —    |
| 6 Rate rheumatic fever   | —                    | —    | —                    | —    | —                   | —    | —                    | —    |

The rate reported as rate of carriage rate is based on the number of strains isolated from the general population rather than actual rate of carriage rate.

Note: Line 1—11.4

actual expectations could be filled only if these organisms possessed fixed qualities of virulence and their potential hosts had fixed degrees of resistance.

#### THE SIGNIFICANCE OF THIS INFORMATION FROM THE STANDPOINT OF MILITARY MEDICINE

Ample evidence is at hand to indicate that a persistence or recurrence of rheumatic activity is related to a persistence or recurrence of the precipitating bacterial infection.<sup>5</sup> Jones<sup>6</sup> has clearly shown that an initial episode of rheumatic fever predisposes to further attacks of the disease.

For these reasons the Army Air Forces has adopted the plan of evacuating patients with rheumatic fever to suitable Army Air Forces Regional Station Hospitals, which are picked on the basis of low incidence of streptococcal disease, low incidence of rheumatic fever and suitability for the convalescent care of this disease. At the present time all Air Forces personnel developing rheumatic fever are being moved to such installations when conditions permit.

Whenever practicable this is done by air, which permits transfer by litter at a very early stage of the disease. Approximately 200 cases per month are being moved by air at the present time. In those situations in which air evacuation is not feasible, the movement is made by train at a suitable time in the course of the disease.

It may be appropriate to comment on the overall program for the care of rheumatic fever patients in the Army Air Forces. This disease produces permanent ineffectiveness in several ways. Approximately one third develop permanent cardiac lesions. A second group of significant size develop neuroses usually of a cardiac or neurocirculatory type. A third group are recurrently disabled because of further attacks of the disease.

It is hoped that early diagnosis and proper treatment with early transfer to areas of low incidence will limit the incidence of residual valvular disease. Great care is being taken during the period of activity of the disease not to alarm the patient about the cardiac aspects of the problem. He is then kept in the area of low incidence for a minimum period of six months. During the initial part of the period and following the cessation of the active phase of the disease he receives a suitable period of physical rehabilitation. By concentrating these patients in rather large groups it has been found possible to adapt the convalescent training program more effectually to their specific needs. Following rehabilitation they are given useful employment about the post as a phase of the convalescent program and under medical supervision.

At the termination of the six months period or any additional length of time considered desirable for maximum improvement, the patient is evaluated on the basis of his then existing physical condition and suitable disposition or further military assignment made.

#### CONCLUSIONS

1 Bacteriologic studies at eight Army Air Forces installations during the period Jan. 1 to April 21, 1944 reveal that group A hemolytic streptococci isolated from cases of upper respiratory disease, scarlet fever and acute rheumatic fever belonged to a multiplicity of Lancefield types.

2 At none of the posts studied was a single epidemic strain responsible for the streptococcal disease observed.

5 Swift H. F. Rheumatic Fever. In Cecil R. L. A Textbook of Medicine, ed. 6. Philadelphia: W. B. Saunders Company, 1943, pp. 435-450.

6 Jones T. D. and Mote J. R. The Clinical Importance of Infection of the Respiratory Tract in Rheumatic Fever. J. A. M. A. 113: 898-902 (Sept. 2) 1939.

3 At the posts studied bacteriologic data obtained after the development of acute rheumatic fever were not applicable to the preceding upper respiratory infections.

4 An apparent correlation was observed between post survey (carrier) rates from group A hemolytic streptococci, incidence rates for scarlet fever and the incidence of acute rheumatic fever.

#### THE PREVENTION OF RECURRENCES IN RHEUMATIC SUBJECTS

CAROLINE BEDELL THOMAS, M.D.

Associate in Medicine, Johns Hopkins University School of Medicine

BAI TIMORE

Rheumatic fever is a recurrent disease, and the danger of developing permanent organic heart disease increases with every recurrence. These considerations have stimulated a wide search for measures to prevent the recurrent attacks. For years it has been recognized that infections of the nasopharynx, especially sore throat and tonsillitis, frequently precede exacerbations of rheumatic fever. On this account it has been almost universal practice to perform tonsillectomy and adenoidectomy on rheumatic patients in the quiescent stage in the hope of decreasing the frequency and intensity of such infections of the upper respiratory tract and avoiding rheumatic flare ups. However, this hope has not been fulfilled, tonsillectomized patients continue to have rheumatic recurrences nearly as often as before, although Allan and Baylor<sup>1</sup> have shown that there seems to be less likelihood of rheumatic heart disease developing after tonsillectomy in those who had escaped it up to the time of the operation.

Since the publication of Coburn's<sup>2</sup> monograph "The Factor of Infection in the Rheumatic State" in 1931 the close etiologic relationship between the beta hemolytic streptococcus and rheumatic fever has become increasingly clear. It is not surprising, therefore, that tonsillectomy is relatively ineffective in forestalling rheumatic recurrences, since beta hemolytic streptococcus infections of the throat continue whether the tonsils and adenoids are present or not. In this regard Coburn<sup>2</sup> has emphasized the fact that rheumatic fever is most frequently preceded by rather superficial infections such as mild pharyngitis, in contrast to glomerulonephritis, in which "deeper" antecedent infections such as otitis media and sinusitis are more common.

Because the tropical and subtropical zones are relatively free from the hemolytic streptococcus and from rheumatic fever, Coburn sent a group of 10 rheumatic fever patients to Puerto Rico for six months and noted that no detectable evidence of fresh rheumatic activity occurred in the patients while in Puerto Rico but that definite recurrences followed shortly after their arrival in New York in the hot summer months. Since that time many physicians have sent their private patients to Florida or Arizona for the winter and spring months, when rheumatic fever is most prevalent in the

Read in a symposium on Rheumatic Fever before the Section on Pediatrics at the Ninety Fourth Annual Session of the American Medical Association, Chicago, June 16, 1944.

1 Allan W. B. and Baylor J. W. The Influence of Tonsillectomy upon the Course of Rheumatic Fever and Rheumatic Heart Disease. Bull. Johns Hopkins Hosp. 62: 111, 1938.

2 Coburn A. F. The Factor of Infection in the Rheumatic State. Baltimore: Williams & Wilkins Company, 1931.

3 Coburn A. F. Faulty Disposal of Streptococcus Hemolyticus in Relation to the Development of the Rheumatic Lesion. Tr. & Stud. Coll. Physicians, Philadelphia 8: 91, 1940.



North This method of prevention of rheumatic recurrences has been fairly effective, but its usefulness is greatly limited by the expense and inconvenience of the undertaking, which must be repeated yearly for five or more seasons if it is to accomplish its object.

In 1936 among the early reports published abroad on the therapeutic value of sulfanilamide was one<sup>4</sup> which showed that smaller than therapeutic doses of sulfanilamide, administered before the streptococcus had had an opportunity to invade and multiply in the tissues, were effective in preventing beta hemolytic streptococcus infections in mice. This discovery offered the opportunity my associates and I had been searching for, and we immediately embarked on the endeavor to prevent acute hemolytic streptococcus infections and subsequent rheumatic recurrences by giving small daily doses of sulfanilamide to a group of rheumatic subjects over a long period of time.

For four years, from October or November to June, we administered prophylactic sulfanilamide in doses of 1 to 1.2 Gm a day to a group of adolescents and young adults and compared the results with those observed in an untreated control group of similar rheumatic subjects. The results, both as regards inhibiting beta hemolytic streptococcus infections and preventing rheumatic recurrences, were strikingly favorable. During the four year study, not a single major attack of rheumatic fever occurred in any patient while taking sulfanilamide prophylactically. In contrast 15 major rheumatic episodes were observed among the control patients during the same period (an incidence of 10 per cent), and 5 more control patients suffered from acute illnesses which might have been rheumatic in character. None of the patients receiving sulfanilamide prophylactically suffered from any acute beta hemolytic streptococcus infection during the period of treatment in contrast to the control group, and throat cultures positive for the beta hemolytic streptococcus were three times less common among the treated subjects than among the controls.

Coburn and Moore<sup>6</sup> gave prophylactic sulfanilamide to a group of rheumatic children and observed only 1 rheumatic recurrence among 184 subjects. Other investigators, working chiefly with children undertook the same problem, and all have reported excellent results in that rheumatic recurrences have been rare or absent during the period of prophylactic treatment. These reports have now been published in detail, so that I will only summarize them briefly by saying that up to the present in civilian life prophylactic sulfanilamide has been administered to rheumatic subjects for a total of 815 patient seasons over a period of seven years.

4. Battle C A, H Gray W H and Stephenson D. Protection of Mice Against Streptococcal and Other Infections by P-Aminobenzenesulfonamide and Related Substances. *J. Infect. Dis.* 128:6 1936.

5. Thomas C B and France R A. Preliminary Report of the Prophylactic Use of Sulfanilamide in Patients Susceptible to Rheumatic Fever. *Bull. Johns Hopkins Hosp.* 64:67 1939. Thomas C B, France R and Reichman T. The Prophylactic Use of Sulfanilamide in Patients Susceptible to Rheumatic Fever. *J. A. M. A.* 116:551 (Feb. 15) 1941.

6. Coburn A I and Moore J A. Prophylactic Use of Sulfanilamide in Streptococcal Respiratory Infections with Especial Reference to Rheumatic Fever. *J. Clin. Investigation* 18:147 1939.

7. Stonell D D and Button W H Jr. Observations on the Prophylactic Use of Sulfanilamide on Rheumatic Patients. *J. A. M. A.* 117:2164 (Dec. 20) 1941. Thomas C B. The Prophylactic Treatment of Rheumatic Fever by Sulfanilamide. *Bull. New York Acad. Med.* 18:508 1942. Chandler C A and Tausig H B. Sulfanilamide as a Prophylactic Agent in Rheumatic Fever. *Bull. Johns Hopkins Hosp.* 72:42 1943. Kuttner A C and Reversbach G. Prevention of Streptococcal Upper Respiratory Infections and Rheumatic Recurrences in Rheumatic Children by Prophylactic Use of Sulfanilamide. *J. Clin. Investigation* 22:77 1943. Hansen A E, Platon R V and Dwan P F. Prolonged Use of a Sulfonamide Compound in Prevention of Rheumatic Recurrences in Children. *Am. J. Dis. Child.* 64:963 (Dec.) 1942. Feldt J H. Sulfanilamide as a Prophylactic Measure in Recurrent Rheumatic Infection. A Controlled Study Involving One Hundred and Thirty-One Patient Seasons. *Am. J. M. Sc.* 207:48 1944.

Only 8 have had recurrences, an incidence of less than 1 per cent, while the incidence among control groups ranged from 10 to 35 per cent.

During the past winter the United States Navy conducted the most extensive program of mass prophylaxis of respiratory disease and rheumatic fever which has even been undertaken. Capt T J Carter and Comdr Alvin F Coburn who have directed the program have kindly given me permission to read the detailed reports and to summarize their results. The program was inaugurated in the attempt to reduce the incidence of streptococcal infections which always account for much loss of time through illness during the late winter and early spring in any center where large groups of young men are living in close quarters and especially, to prevent acute rheumatic fever which had become quite prevalent in some of the training centers. Prophylactic sulfadiazine usually 1 Gm a day was administered to part of the personnel of several training centers from Dec 1, 1943 to March 1 1944 with other groups at the same centers serving as controls, about 250,000 men were taking the prophylactic medication and an equal number were observed as controls.

During this period hospitalization for severe respiratory disease was reduced 80 to 90 per cent. Streptococcal infections were reduced 85 per cent and the

*The Effect of Prophylactic Sulfadiazine on the Attack Rate of Rheumatic Fever and Scarlet Fever*

| Attack Rate     | Week of Prophylactic Sulfadiazine Administration |    |    |    |   |
|-----------------|--|----|----|----|---|
|                 | 1  | 2  | 3  | 4  | 5 |
| Rheumatic fever | 87   | 40 | 40 | 10 | 6 |
| Scarlet fever   | 70   | 40 | 0  | 0  | 0 |

incidence of rheumatic fever dropped equally sharply, so that in one center there was only 1 case among the treated group to every 14 cases among the controls. The attack rate of rheumatic fever decreased gradually over the course of several weeks, indicating that prophylactic sulfadiazine interferes with the development of acute rheumatic fever by preventing the antecedent streptococcal infection. If the drug is started during the latent period after the streptococcal infection has occurred but before the appearance of acute rheumatic fever, the acute rheumatic attack develops regardless of the medication.

The difference between the cause of acute rheumatic fever which we now conceive of as an allergic state analogous to serum sickness usually produced by sensitization to the beta hemolytic streptococcus and the cause of scarlet fever, which is directly produced by infection with the beta hemolytic streptococcus, is shown in the accompanying table.

Here is the incidence of rheumatic fever and scarlet fever week by week after sulfadiazine prophylaxis was started at one of the naval training centers. The lag shown in the tapering off of rheumatic fever as compared with scarlet fever corresponds very well to the conception of a latent period of one to four weeks following the original streptococcal infection before rheumatic fever appears.

During the mass prophylactic sulfadiazine program meningococcal meningitis practically disappeared and pneumococcal infections were reduced about 50 per cent. Virus infections were not definitely affected, although there was some drop in the incidence of catarrhal fever, probably indicating that some grippal

infections are actually caused by streptococci. The program was so efficacious that in March the entire personnel at eight naval training centers were placed on daily doses of sulfadiazine, with reversal of the rising incidence of respiratory diseases among the previously untreated personnel.

Evidence is being accumulated during this program as to the minimal effective prophylactic dose at present it appears that 0.5 Gm a day is slightly less effective than 1.0 Gm a day in adults. Mild drug reactions occurred in 0.3 to 0.6 per cent but severe reactions were exceedingly rare.

Two other preventive measures which I can only mention briefly are first, the attempt to minimize rheumatic children by repeated injections of a filtrate of *Streptococcus hemolyticus*. Earlier investigators<sup>8</sup> were unable to find any evidence that this form of immunization increased resistance to streptococcal infections or rheumatic recrudescences. Wasson<sup>9</sup> and Wasson and Brown<sup>10</sup> however, reported more than four times as many attacks among the control patients as in immunized subjects although 10 per cent of those treated still developed rheumatic recrudescences. The second method is that of giving salicylates prophylactically since it had been shown<sup>11</sup> that acetylsalicylic acid usually prevents the arthritis of serum sickness and that in patients so treated the production of precipitins against horse serum was inhibited. When doses of 20 to 30 grains (1.3 to 2 Gm) were given daily over a period of months, the incidence of recurrences did not seem to differ greatly between the treated and the control groups.<sup>1</sup> However, Schlesinger<sup>12</sup> and later Coburn and Moore<sup>13</sup> gave salicylates daily for one month after the onset of pharyngitis in rheumatic children and found it quite effective in reducing the incidence of rheumatic recrudescences. At present neither of these two prophylactic methods has been widely enough used to gain a clear statistical evaluation of their merits. Both are still in the experimental stage, but it seems probable that neither immunization to streptococcus filtrates nor prophylactic salicylates offers nearly the degree of protection against rheumatic recurrence that is afforded by sulfonamide prophylaxis.

Small daily doses of sulfonamides, therefore, seem to be the most effective method of preventing rheumatic recrudescences that has yet been found, and I believe that such prophylaxis should be given to all children and young adults who have had one or more unequivocal attacks of acute rheumatic fever. Sulfadiazine is probably the drug of choice although sulfanilamide affords just as efficient protection and is not significantly toxic when low doses are given. It may be that sulfamerazine will some day replace the other drugs on

account of its slower rate of excretion but no large scale study of sulfamerazine prophylaxis of rheumatic fever has yet been carried out.

Since the dose of 1 Gm daily of sulfadiazine used in the Navy program corresponds extremely closely with our dosage of sulfanilamide, in contrast to the 2 or 3 Gm daily used by some investigators and since excellent protection is afforded by this dosage there seems no reason to give more, and unless further evidence to the contrary is obtained it would usually be unwise to give less either to children or to adults. In the Navy, for purposes of convenience two 0.5 Gm tablets were given at once every twenty-four hours but since the drug is largely excreted in a few hours 0.5 Gm every twelve hours offers greater protection at least theoretically.

As soon as a patient has reached a satisfactory convalescent stage following acute rheumatic fever, that is when he is free from arthritis, fever and other symptoms in the absence of salicylates, prophylactic sulfonamide should be started. In my experience it is not necessary to wait until the sedimentation rate is entirely normal. It is important to start prophylaxis before the patient returns to his home environment from hospital or convalescent home, to avoid immediate reinvasion of the nasopharynx by the beta hemolytic streptococcus. In an effort to avoid toxic reactions I should like to suggest starting most patients on 0.5 Gm a day for three weeks during which time the patient should be protected from close contact with crowds after which the dose should be increased to 1 Gm a day.

The patient should then continue to take 1 Gm a day day in and day out, summer and winter year in and year out, for at least five years and probably longer in younger children, if the patient is to be safely steered through the period when recrudescences are most frequent. This seems a long time, but in my experience patients become thoroughly accustomed to taking it, and rightly or wrongly, ascribe an unusual state of well being to the drug so that they are loath to stop. They no longer suffer from most of the bacterial infections although they still may have the common cold in mild form, influenza and the virus diseases of childhood. Several of my patients have noticed the complete abatement of various minor ailments such as recurrent erysipeloid infections of the face or otitis media from which they formerly suffered. One of my patients has taken prophylactic sulfanilamide successfully for nearly eight years.<sup>1</sup>

How great is the danger of toxic reactions? Statistically it is very small, as has been convincingly shown by the United States Navy program. Mild reactions such as transient skin eruptions which were annoying but not dangerous developed in from 3 to 6 men out of 1,000 while serious reactions such as agranulocytosis and exfoliative dermatitis were exceedingly rare among the 500,000 men who have received prophylactic sulfadiazine at one time or another during the last six months. Since the risk of serious toxicity during treatment is much less than the chance of untreated rheumatic subjects developing recrudescences leading to serious rheumatic heart disease we should certainly treat the rheumatic patient to the best of our present therapeutic knowledge with prophylactic sulfonamide therapy.

What can the physician do to safeguard a patient to whom sulfonamide prophylaxis is given? First, he should see that the patient is in the best possible physical

<sup>8</sup> Wilson M. G., Joseph M. G. and Lang D. M. Intravenous Vaccination with Streptococci: Its Influence on Incidence of Recurrence of Rheumatic Fever in Children. *Am. J. Dis. Child.* 46:129 (Dec.) 1931. Coburn A. F. and Paul R. H. Studies on Immune Response of Rheumatic Subject and Its Relationship to Activity of Rheumatic Process. Active and Passive Immunization to Hemolytic Streptococcus in Relation to Rheumatic Process. *J. Clin. Investigation* 14:763 1935.

<sup>9</sup> Wasson A. P. Immunization Against Rheumatic Fever with Hemolytic Streptococcal Filtrate. *Am. Heart J.* 15:257 1938.

<sup>10</sup> Wasson A. P. and Brown E. E. Immunization Against Rheumatic Fever with Hemolytic Streptococcal Filtrate. *Am. Heart J.* 20:1 1940. Further Studies in Immunization Against Rheumatic Fever. *Ibid.* 23:291 1942.

<sup>11</sup> Derrick C. L., Hitchcock C. H. and Swift H. F. Effect of Anti-Rheumatic Drugs on the Arthritis and Immune Body Production in Serum Disease. *J. Clin. Investigation* 5:427 1928.

<sup>12</sup> Leech C. B. Value of Salicylates in Prevention of Rheumatic Manifestations. *J. A. M. A.* 95:932 (Sept. 27) 1930. Perry C. B. Value of Salicylates in Prevention of Rheumatic Relapse. *Lancet* 1:649 1938.

<sup>13</sup> Schlesinger B. Public Health Aspect of Heart Disease in Childhood. *Lancet* 1:649 1938.

<sup>14</sup> Coburn A. F. and Moore L. A. Salicylate Prophylaxis in Rheumatic Fever. *J. Pediatr.* 21:180 1942.

condition with adequate diet and without unusual factors affecting his health or environment during the early weeks of treatment. It was noted in the Navy that the number of mild toxic dermal reactions was nearly four times as great among new recruits who received prophylactic sulfadiazine while they were being immunized to typhoid tetanus and so on as among seasoned personnel. Second the dose may be started at 0.5 Gm a day, increasing to 1.0 Gm a day after three weeks. Third, parents or patient should be instructed to report any rash or sore throat immediately, without further dosing with sulfonamides by themselves or by any other physician. Fourth, total leukocyte counts should be made frequently during the early weeks of treatment since agranulocytosis rarely if ever develops after the first six weeks and usually occurs between the end of the second and the fourth week.

It is to be hoped that before the war is over studies conducted among large groups of men in the armed forces may point the way toward reducing toxic reactions to the vanishing point. In conclusion I should like to express the belief that in spite of the difficulties involved the increasingly widespread use of prophylactic sulfonamides will bring tremendous advance in the problems of rheumatic fever and rheumatic heart disease.

Johns Hopkins Hospital \_\_\_\_\_

#### ABSTRACT OF DISCUSSION

ON PAPERS OF DR WILSON AND ROSE LUBSCHETZ,  
DR JONES, DR RUTSTEIN, MAJOR VAN  
RAVENSWAAY AND DR THOMAS

DR JOHN R. PAUL, New Haven, Conn. In trying to determine where the hemolytic streptococcus belongs among the several factors responsible for rheumatic fever, one has the advantage of the experience of the Army during the last three years in which epidemics of rheumatic fever have been reported in this country for the first time. Such epidemics have put a new light on the subject. Although there have been plenty of isolated cases of rheumatic fever in which it has been difficult to trace any preceding evidence of hemolytic streptococcus infection, I think it is safe to say that there have been no records of epidemics without preceding epidemics of hemolytic streptococcus infection. Dr Wilson's analyses of recurrence rates are important to those who must try to plan postconvalescent therapy. A program such as Dr Thomas has outlined may be based, for instance, on the rates at which recurrences may be expected. Dr Jones has rightfully laid great stress on diagnosis of the acute disease. Is the patient rheumatic or not? This is a big decision if it determines whether or not to embark on four, five or six years of prophylactic sulfonamide therapy. The point that Dr Rutstein made about the role of the cardiac clinic in establishing the rheumatic register deserves comment. There has been much agitation lately to make rheumatic fever a reportable disease. It has been tried in various parts of the country with varying success. Difficulties are that if rheumatic fever is to be reportable one must first give reasons for making it reportable, one must define diagnostic criteria and one must have facilities for taking care of patients who are reported. If, however, there is a cardiac clinic and it maintains a register it can function as a local clearing house for cases of rheumatic fever and can be concerned with therapeutic facilities and data on prevalence as well. Major van Ravenswaay has shown what a tremendous opportunity the Army has to outline the geography of this disease. Standard methods can now be employed in attempting to determine how prevalent hemolytic streptococcus types are in various areas and what their correlation with rheumatic fever has been. I should like to ask him whether he has recorded the prevalence of another complication or manifestation of hemolytic streptococcus infection namely acute nephritis.

COLONEL W. PAUL HOLBROOK, M. C., U. S. The present knowledge regarding the etiology of acute rheumatic fever may be illustrated by describing certain observations made concerning this disease in the Army Air Forces. When a large number of men from all parts of the country are thoroughly mixed and then distributed by posts some will be located in areas of low incidence and some in areas of high incidence of acute rheumatic fever. Those in areas of low incidence will show a low rate of group A hemolytic streptococcus upper respiratory tract infections as contrasted to a high rate among those in areas of high incidence. Although the total numbers of cases in the two groups contrast sharply, it may be pointed out that upper respiratory disease associated with group A hemolytic streptococci does occur in areas of low incidence of rheumatic fever and proportional incidence rates of the latter disease are not found. As a further result of the shuffling of troops persons with a family history of rheumatic fever who perhaps are hereditarily susceptible are stationed as frequently in areas of low incidence as in areas with a high incidence of this disease. Since the susceptibles do not develop rheumatic fever in areas of low incidence it seems that susceptibility cannot be considered the sole explanation. There is evidence to suggest that climate and the invasiveness of the strains of hemolytic streptococci involved may also be important factors. I do not know what all the etiologic factors are nor do I know how they are interrelated. We can all agree that probably a combination of factors is required to produce acute rheumatic fever in an epidemic form.

DR STANLEY GIBSON, Chicago. Two years ago Dr Brown and I at the Children's Memorial Hospital undertook a study of sulfonamide prophylaxis in the recurrence of rheumatic fever. We selected 50 children who had been in the hospital during the previous year with a rheumatic episode. All these children were under the age of 12 so that if I understood Dr Wilson correctly I believe both as regards age and as regards the time of their previous episode they should be candidates for recurrence of rheumatic fever. About 44 of these children went through the experiment. The other 6 failed to cooperate. None had to be left out because of their inability to take the 1 Gm of sulfamidamide daily which was given to them. The drug was kept up from about the 1st of October until the 1st of July the following year. During that period we had no single recurrence of a rheumatic episode that we could recognize clinically. We had used up about all of our children who had had an episode during the preceding year so that we did not attempt a control group. At the end of the first year we checked over these children and found that only 3 out of our 50 children without sulfonamides had had a recurrence of rheumatic fever. However, 1 of these children had a severe recurrence and is much more crippled as a result of that rheumatic recurrence. The second year is almost up and the 1st of July we shall check over our children again. We haven't our figures complete now as to how many recurrences have occurred during the second year. I know this much. One who had had relatively little cardiac involvement previously came back into the hospital about two months ago with a fulminating carditis and promptly died. I do not know whether the statistical method is completely applicable or not in these instances. If the sulfonamides do protect it was terribly important for that child to have them. I should like to ask Dr Thomas in her closing discussion to state whether or not any instances of death have occurred from recurrent rheumatic infection in an individual receiving sulfonamides. I am sure I do not know from our small study whether they protect or whether they do not.

DR JOHN W. SCOTT, Lexington, Ky. Valuable as the cardiac clinic is there is, I think, danger of magnifying its function in this connection. Its function should be that of the counselor rather than of the arbiter. That the last word must be said by a specialist in cardiology or by a specialist in anything else is to overstandardize the profession and to contribute to the decay and not the upbuilding of the practice of medicine.

DR J. D. KEITH, Nova Scotia. I should like to ask Dr Thomas why she would not use the sulfonamides.

DR PAUL F. DWAN, Minneapolis. Because of the complex nature of this disease—complex mostly because of the chronicity and tendency to recurrence and because of the fact that

we are dealing with growing children—many ramifications in this matter have been discussed. We know that we must maintain proper environment for these children, that they must receive the best possible medical aid and that their education must be maintained during the convalescent period. The magnitude of this problem, in my mind, places it beyond the scope of any agency, whether governmental or private. It is becoming increasingly obvious that some aid must be given to the families of rheumatic children and to the physician who is trying to handle the cases, because of the expensive nature of any home or hospital care. The disease is difficult to handle in the home because it is almost impossible to maintain discipline and proper bed rest for the period of time necessary. It may be in this field that governmental or social aid would be of its greatest value. The various rheumatic fever programs which have been set up have proved to be of great value in the communities where they have been established. Most of them have worked on the basis of giving a temporary lift to the situation and maintain themselves only in a manner of assisting the patients over the period of his acute illness and convalescence and turning him back to his private physician. I feel that this is as it should be and that there is no need for a complete socialization of rheumatic fever cases to the extent that the private physician is eliminated from the picture, the problem is so great that any such management would be inefficient and might be deleterious to the patient and the patient-physician relationship.

DR MAY G. WILSON, New York. I think that perhaps I can answer Dr. Paul's question by using our rates on Dr. Gibson's study. We would have expected that between 4 and 8 patients in his group would have a recurrence during the time of treatment. I have analyzed every published study and this is the first one that would give me any reason to believe that chemotherapy prophylaxis is effective in preventing rheumatic recurrences. In the other studies to which we applied appropriate rates\* we found that there was no evidence of a significant difference between the treated and the control groups with the exception of one study, and in that study the control group showed bias. Our purpose in the paper we presented was not to discourage chemotherapeutic prophylaxis in rheumatic fever research but to point out that future studies must take into account the natural history of the disease. If studies are planned properly we should have our answer to the efficacy of chemotherapeutic prophylaxis in rheumatic fever in civilian life.

DR T. DUCKETT JONES, Boston. I think that Dr. Dwan is assuming that those interested in the development of rheumatic programs are trying to take the problem out of the hands of the physician. It is entirely a mistaken conception. It is high time that the medical profession in general assumed enough interest in the disease to develop community programs. We need not get into argument about whether or not we are going to take the thing out of the hands of local physicians; that is irrelevant. Perhaps the most pertinent of the armed services materials so far as evaluation is concerned has been presented today. I wish that Major van Ravenswaay had not compared the rheumatic fever incidence with scarlet fever as it is notoriously unreliable when compared with known incidences of streptococcal diseases in various parts of the country. I think there could have been a closer correlation. I can certainly agree with him in general. Until complete data of all these studies are available, I think it is foolhardy to accept the sulfonamides or any other means of prophylaxis as certain and sure. I feel that it is rather unsafe for the future of our knowledge of rheumatic fever to accept in as unequivocal a way as Dr. Thomas has data which are not completely analyzed and when she has not had an opportunity to go over everything. It may ultimately result in holding up knowledge of rheumatic fever for a good many years. I am not sure that the association between the hemolytic streptococcus index and rheumatic fever is the whole story and I think that we must keep open minds until such time as more evidence is available. I am not against prophylaxis with sulfonamides, but I believe that their use should be distinctly experimental at the present time and not be given to everybody in the country.

DR DAVID D. RUTSTEIN, New York. My paper was written from the point of view of the needs of the rheumatic patient. I did not say that the diagnosis could be made only by those

qualified by the specialty boards. I did state that the American Heart Association standards require the cardiac clinic director to have qualifications equivalent to those of the indicated specialty boards. Specialty board qualifications were not promulgated by public health agencies but were established under theegis of the American Medical Association. I also did not say that the general practitioner should transfer his patients to the clinic but I did say that the clinic should offer guidance to the general practitioner in the diagnosis and treatment of his patient. The inability of the general practitioner to diagnose this disease adequately is a matter of fact and not of opinion. The data presented resulted from an analysis of 21,293 school records divided among twenty-nine school systems. In eight of the twenty-nine not one diagnosis of rheumatic fever had been made, while there was one school in which 13.1 per cent, or 1 out of every 7 pupils, were labeled as rheumatic. Other experiences support these data. Dr. Thomas's recommendations would influence the nature of the community program, but Colonel Holbrook indicated that the military experience does not necessarily apply to civilians. I should like to make three points which support that statement. 1. The medical services in the armed forces have complete control over their patients, and by giving sulfonamides to all groups the initial attack of rheumatic fever may be prevented. The civilian program must be limited to the prevention of recurrences unless sulfonamides are given to every child. 2. The armed forces have facilities for the determination of the absence of rheumatic activity. This must be determined before sulfonamide prophylaxis is inaugurated. In many civilian communities such facilities are not easily available. 3. Constant supervision of patients receiving sulfonamides is necessary; this may be difficult to accomplish in the civilian population. I agree with Dr. Jones that there is an unquestionable relationship of the hemolytic streptococcus to rheumatic fever and that the exact relationship is not clear. The evidence for that relationship is based on post hoc ergo propter hoc reasoning and it is well to remember that thus far Koch's postulates have not been fulfilled.

MAJOR A. C. VAN RAVENSWAAY, M. C. A. U. S. Dr. Paul inquired about the incidence of acute glomerular nephritis at Army Air Force installations in relationship to the incidence of acute rheumatic fever. We have been surprised to observe that the incidence of acute glomerular nephritis has been extremely low, although it has been impossible to get any statistically significant information. Major Frank Foster of Buckley Field tells me that during the last winter season he saw over 350 cases of acute rheumatic fever and 4 cases of acute glomerular nephritis. In regard to Dr. Jones's comments about the controls which were used in the sulfadiazine prophylaxis studies both by the Army Air Forces and by the Navy, I hope that at some future time we shall have a chance to go over with Dr. Jones the exact nature of the controls which were used and which we and others believe were quite satisfactory. In regard to the relationship of the hemolytic streptococcus to the etiology of rheumatic fever the Army Air Forces have placed such emphasis on that because it offers one positive approach to the problem. Obviously it is much easier to do something about the hemolytic streptococcus than it is about the genetic background of individuals in high incidence areas of rheumatic fever.

DR CAROLINE BEDELL THOMAS, Baltimore. I think Dr. Dwan and Dr. Gibson will agree that it is difficult to set up a valid experiment when working with a small group of rheumatic patients. Dr. Wilson rightly assumes that the alternate case method is best when working with large groups. We divided the control and treated groups on the basis of age and previous numbers of rheumatic recurrences so that they would roughly approximate each other. Dr. Kuttner's study at Irvington House, to which Dr. Wilson referred certainly is the best clinical civilian study on this subject. She divided 108 children into two groups of 54 which were closely intermingled. One group was given sulfonamide prophylaxis and the other was not. Among the sulfonamide treated series, 1 developed streptococcal infection and none developed rheumatic fever. Among the controls, 37 developed streptococcal infection and 14 developed rheumatic recurrences. These results are significant and clearcut. In every such study carried out under any

circumstances, the incidence of rheumatic fever has decreased in the treated series. The studies which the armed forces are making will result in a more statistically valid series of controls than we have heretofore had. Dr. Jones I have carefully read the original reports of the United States Navy and the statements which I made today were based on the report of one of the largest stations, in which the controls were carried out company by company. Answering Dr. Gibson's question whether any deaths from rheumatic fever have occurred during sulfonamide therapy, 3 of the children studied in the Bellevue clinic died of advanced heart disease while receiving prophylaxis. Dr. Dodge always considered that they were given sulfonamides in a very advanced stage of the disease, whether or not there was progressive activity at the time sulfonamides were started is questionable. The patients were afebrile but had Aschoff bodies in the myocardium at autopsy. In answer to Dr. Keith, salicylates should be withdrawn during convalescence to be sure the rheumatic process has fully subsided. Later, when the condition of the patient is fully quiescent, if there is any virtue in giving salicylates together with sulfonamides I see nothing against it, although I have had no experience in that problem.

## Clinical Notes, Suggestions and New Instruments

### PERFORATION OF THE INTESTINE DUE TO TYPHOID

CAPTAIN AARON A. DUBROW  
MEDICAL CORPS ARMY OF THE UNITED STATES

A Negro soldier aged 25 was admitted to a battalion medical regiment hospital on Oct. 25, 1942 complaining of chills and chilly sensations, headache, abdominal pain, diarrhea alternating with constipation, nausea and vomiting, backache and general malaise. Abdominal pain was generalized. Headache was supraorbital and very severe. The patient stated that about ten days previously he had experienced an episode of diarrhea which was followed by an episode of constipation. At the time of admission he was again having a diarrhea, averaging four to eight watery stools each day, associated with some tenesmus. He denied the presence of bloody or tarry stools. He stated that he had had very little appetite the previous two weeks and on several occasions he had episodes of nausea and vomiting. He seemed to tire easily on the slightest exertion always seeming to be fatigued, and had experienced insomnia and restlessness.

The family history was essentially negative. The past history was also negative, the patient stating that he had always been in good health. His army immunization record showed that he had received all the required vaccinations and immunizations, including typhoid, smallpox and tetanus.

The patient at the time of admission appeared moderately ill, he was well developed, and was ambulatory. He was well oriented and cooperative. The temperature was 104 F by mouth, pulse rate 88 and respiratory rate 22 per minute. The skin was hot and dry and there was no evidence of any rashes or skin eruptions. The pupils were equal and reacted well to light and in accommodation. There was definite conjunctival injection but no icteric discoloration. The ears and nose were normal. The tongue was coated and thick and there was a very foul odor from the mouth. The teeth were in fairly good condition. The chest was clear on inspection, auscultation and percussion. On examination of the circulatory system the heart sounds were of good quality, no murmurs were elicited. The blood pressure was 114/80.

The abdomen was somewhat distended and tympanic. There was generalized tenderness with some increased tenderness in the right lower quadrant. No masses or fluid were present. There was some tenderness in the splenic area, but the spleen was only questionably palpable.

The extremities were normal. On neurologic examination the reflexes were found to be somewhat hyperactive but were otherwise normal.

The laboratory findings at the time of admission revealed a white blood cell count of 3,500 with 60 per cent polymorpho-

nuclear leukocytes and 40 per cent lymphocytes. The urinalysis revealed the presence of some albumin but the microscopic examination was negative.

The patient's stay in the hospital was rather stormy. His temperature rose daily to 104-105 F with no remissions to normal, the lowest temperature being 101 F. The pulse rate ranged from 80 to 100 beats per minute and the blood pressure ranged from 100-110 systolic to 60-80 diastolic. The chest was normal at various examinations except for occasional rales at the bases. Abdominal pain and distention continued. The tenderness continued to be generalized, although there was usually some increased tenderness in the right lower quadrant. The patient became very apprehensive. He had occasional periods when he appeared to be somewhat disoriented and confused. Anorexia became even more evident. In short, he presented the picture of an acutely ill patient who was showing no progress.

Because of the limited laboratory facilities no extensive laboratory work could be done in this forward area. His blood picture continued to show a leukopenia, the white blood cell count dropping as low as 2,000 with 50 to 55 per cent lymphocytes. The urinary picture remained essentially the same although he began to show positive tests for varying amounts of acetone and diacetic acid. A satisfactory stool examination could not be done.

The treatment was essentially symptomatic and palliative. Sulfaguanidine had no appreciable effect. However, the diarrhea subsided to be followed by a tendency to constipation. Quinine therapy also had no effect.

On November 2 the patient suddenly began to have very severe abdominal pain. On examination shortly after he appeared acutely ill, with hippocratic facies, he lay in bed with his knees drawn up. He was obviously in shock and

appeared to be very disoriented. The temperature had dropped to 97 F but soon began to go up again. The pulse was rapid and thready. The respirations were shallow and increased in rate. The abdomen was decidedly rigid and with extreme generalized tenderness. At this time the patient was considered to have an acute condition of the abdomen possibly due to typhoid or one of the dysentery group of organisms.

He was given 1,000 cc of 10 per cent dextrose in isotonic solution of sodium chloride preoperatively in an attempt to combat shock. A laparotomy was performed through a low midline incision, ether being used by the open method as the anesthesia. When the peritoneal cavity was opened free fluid of a serosanguineous nature as well as a pronounced injection of both the small and the large intestine were observed. This injection became increased as the terminal ileum was approached. The terminal ileum showed the presence of four perforations ranging from  $\frac{1}{2}$  to  $1\frac{1}{2}$  inches in diameter. The last perforation was about 1 inch from the ileocecal valve. About 10 inches of the ileum was resected. Because of the patient's poor condition it was thought inadvisable to perform any type of anastomosis at this time. A double barreled ileostomy was performed, a modified Mikulicz technique being used. Five grams of sulfamid powder was instilled intraperitoneally. The abdomen was closed tightly, no drains being used. The patient received plasma and fluids intravenously during and after the operation.

For the following three days he received 4,000 to 5,000 cc of fluids intravenously. He began to show slow but progressive improvement. The ileostomy functioned well. His temperature dropped considerably, ranging in the vicinity of 101 F. Owing to the inadequacy of proper nursing care evacuation to more suitable surroundings was considered advisable. On the fourth postoperative day he was evacuated to a rear zone hospital.

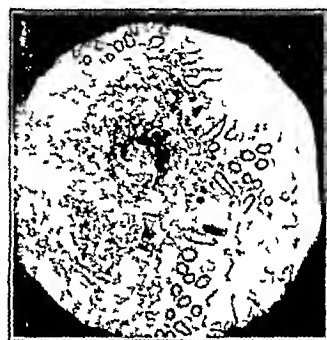


Fig. 1.—Section showing one of the ulcers with pronounced lymphocytic infiltration. This photomicrograph was taken through the eyepiece of the microscope.



Blood cultures Widal tests and other laboratory procedures could not be done in this locality. However, various cultures and blood specimens were sent to laboratories in less forward zones. A Widal test taken on the day of operation was negative. However, a Widal test taken three days later was positive in high dilutions. A blood culture was positive for *Eberthella typhosa*. A cultured specimen as well as a smear of the ulcers revealed a pure culture of *Eberthella typhosa*. Urinary specimens were not sent for bacterial examination.

The pathologic examination of the microscopic section revealed that it was of a segment of small intestine showing one margin of a deep perforated ulcer. The mucosa and ulcer margin was sharply demarcated. The ulceration extended through all coats of the intestine. The base of the ulcer consisted of necrotic tissue, debris, fibrin and neutrophils.

The submucosa showed hyperplastic lymphoid tissue consisting mainly of lymphocytes. Also present were many plasma cells, many large mononuclear cells and scattered eosinophils. The mononuclears showed pronounced phagocytosis of tissue debris, cells and erythrocytes. A few cells were in mitosis. The muscularis was edematous and was infiltrated with lymphocytes, eosinophils, large mononuclear cells and a few neutrophils. On the serosal surface there was evidence of peritonitis. The surface was covered with an exudate consisting of fibrin, neutrophils and a few mononuclear cells.

The microscopic appearance of this lesion was compatible with the diagnosis of perforated typhoid ulcer of the intestine with peritonitis.

The differential diagnosis prior to surgery was very difficult. At the time of his admission, dengue fever and bacillary dysentery were very prevalent in the immediate and surrounding areas. The confusing abdominal picture frequently presented by other fevers and sometimes by dengue fever could not be ruled out prior to surgical intervention. Amebic dysentery was also not too common. Botulism was also to be considered owing to the large amount of canned foods being used at that time. The acute and sometimes severe gastroenteritis and enterocolitis of undetermined etiology that were not too infrequently

The fact that the patient had received his three immunizing injections of typhoid vaccine also helped to complicate the case. Apparently the immunity accorded by the vaccines was only temporary or he had not been able to build up sufficient antibodies to afford him sufficient immunity. Had the infectious organisms been of a very virulent strain it seemed probable

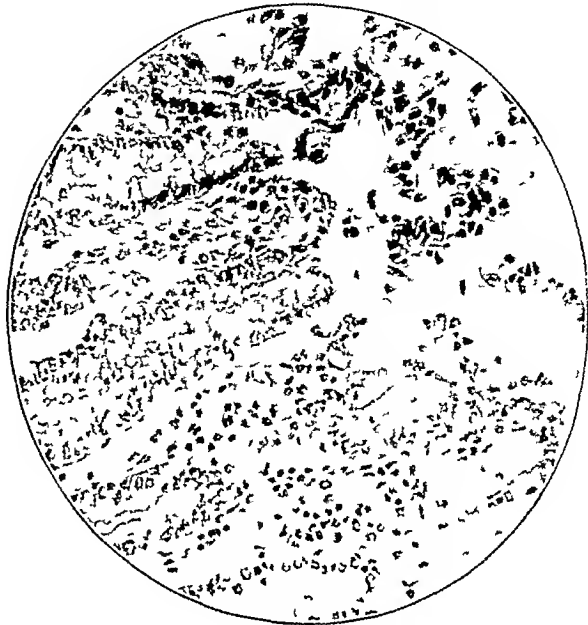


Fig. 1—Section showing the debris, necrotic tissue, fibrin and neutrophils at the base of the ulcer.



Fig. 2—Section showing the base of the ulcer with debris, necrotic tissue, fibrin and neutrophils. There is also present the pronounced lymphocytic infiltration of the submucosa as well as many plasma and mononuclear cells.

seen were also considered. No cases of typhoid or paratyphoid had been reported. There were no other similar cases in his organization or in any organization in the immediate area. As a result of all this a truly complicated picture presented itself and up until actual surgical operation no accurate diagnosis could be made. The entire picture was made doubly difficult by the limited laboratory facilities.

that other members of the same unit would also have contracted the disease. All the soldiers had been using the same water sources and no fresh milk or other fresh dairy products were available in this area. The water had been chlorinated in the usual army manner by means of a Lyster bag.

The follow-up of this case was rather interesting. Convalescence was further complicated by a bronchopneumonia. This was satisfactorily treated. The patient was transferred again to a general hospital where an operation for a secondary closure and anastomosis was subsequently performed. As far as is known now the patient has made a satisfactory recovery.

#### PENICILLIN TREATMENT OF A CASE OF TULAREMIA WITHOUT EFFECT

LIEUTENANT COLONEL ALLEN I. JOSEY  
MEDICAL CORPS, ARMY OF THE UNITED STATES

This case of apparently tick borne, pneumonic type of tularemia is reported with comments as to the effect of treatment with penicillin and sulfadiazine.

A soldier aged 28 years was admitted to O'Reilly General Hospital June 5, 1944, complaining of headache, malaise and fever of four days' duration. The patient's past history was entirely noncontributory. For two weeks prior to admission he had spent his furlough time on a farm in southeastern Missouri. There had been no contact with any wild animal, but he was bitten a number of times by ticks during the week prior to the onset of his present illness. On June 2 he first noticed generalized headache, weakness, chilly sensations and fever. During the following three days these persisted and he developed a slight amount of mucoid, blood-tinged discharge from the nasopharynx, a slight cough and generalized aching in the chest.

On examination he appeared acutely ill. His temperature was 105 F, the pulse rate was 108 and the respiratory rate was 26.

From the Medical Service, O'Reilly General Hospital.

The laboratory reports included in this communication were done in the Laboratory Service, O'Reilly General Hospital, Springfield, Mo., and in the Laboratory of the Seventh Service Command.



There was a superficial ulceration about 0.25 cm in diameter just above the inner portion of the right clavicle. On the interior pillar of the right tonsil there was a similar ulcer. Neither of these ulcers was indurated or painful and there was no associated lymph gland enlargement. Over a small area at the left lung base there were a moderate number of fine and medium rales without any change in breath sounds or percussion note.

During the next twenty-two days the condition of the patient was febrile, with temperature as high as 104.5 F, which then fell by lysis during the next four days to normal. During the first three weeks he remained acutely ill. The bloody mucoid discharge from the nasopharynx subsided within seventy-two hours. Dyspnea was persistent for about two weeks, but there was only slight cough and very little mucoid expectoration. The two small superficial ulcers remained unchanged for about ten days and then healed spontaneously. At no time were there any palpably enlarged lymph glands. There was a spread of the physical signs compatible with bronchopneumonia over the entire left lower lobe and part of the right lower lobe of the lungs. On the ninth day of the disease a pleural friction developed at the left lung base followed by an accumulation of a moderate amount of fluid in the left pleural space, which was tapped on the eleventh and sixteenth days with aspiration of 60 and 350 cc of serosanguineous fluid. As the temperature returned to a normal level there was symptomatic improvement, and by the thirtieth day of the disease the patient was gaining strength rapidly and the only apparent residual of the disease was evidence of moderate pleuritis at the left base.

The urine contained a slight amount of albumin and a few granular casts during the febrile period. There was no anemia of note at any time. The white blood cell count was 8,400 on admission and varied from 5,300 to 11,400, with a moderate increase in neutrophils during the febrile period. Repeated blood cultures were negative. Agglutination against *Pasteurella tularensis* was negative on the tenth day of the disease, but it became positive 1:40 on the eleventh day and positive 1:2,560 by the twenty-third day. It is of interest that there was an associated rise in his agglutination to *Brucella abortus* to 1:320. Fluid removed by thoracentesis on the eleventh day of the disease was injected into the peritoneal cavity of a rabbit. This rabbit died four days later and showed evidence of splenic enlargement with areas of focal necrosis. Material obtained from the spleen of the animal was injected into a second rabbit which died five days later. *Pasteurella tularensis* was cultured from the spleen of the second rabbit, and microscopic sections of the liver and spleen of the same rabbit showed findings typical of tularemia. X-ray examinations of the chest substantiated the physical findings of the pneumonia and serofibrinous pleuritis.

Effective treatment was symptomatic and supportive in nature. The patient had been given sulfonamide by his local physician before admission to the hospital. Owing to the obscurity of the diagnosis sulfadiazine which had been given for thirty-six hours following admission, was discontinued. On the eighth day of the disease penicillin was begun in doses of 20,000 Oxford units intramuscularly every three hours. This was continued for thirteen days with a total dosage of 1,900,000 Oxford units. Shortly thereafter the temperature curve, which had been spiked in character, became more level but the mean elevation was not reduced. There was no effect noted on the symptomatology or physical signs. On the ninth day of the disease it was decided to reinstitute sulfadiazine therapy, and sufficient drug was administered to maintain a blood level between 5 and 8 mg per hundred cubic centimeters in the circulating blood. This also was apparently ineffectual and was discontinued on the twenty-first day.

#### SUMMARY AND CONCLUSIONS

A case of apparently tick borne pneumonic type tularemia ran the usual course of the disease with fever for twenty-six days. The course of the disease was not affected by the intramuscular injection of 1,900,000 Oxford units of penicillin over a period of the eighth to the twenty-first day of the disease. Administration of sulfadiazine from the ninth to the twenty-second day of the disease was also ineffectual.

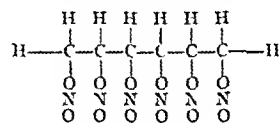
## Council on Pharmacy and Chemistry

### NEW AND NONOFFICIAL REMEDIES

The following additional articles have been accepted as conforming to the rules of the Council on Pharmacy and Chemistry of the American Medical Association for admission to New and Nonofficial Remedies. A copy of the rules on which the Council bases its action will be sent on application.

AUSTIN E. SMITH, M.D., Secretary

**MANNITOL HEXANITRATE**—Mannitol Nitrate—Nitromannite— $C_6H_5O_5N_3$  M. W. 452.17—An explosive compound formed by the nitration of mannitol, a sugar alcohol. Its stability at ordinary temperatures is such that it may be used commercially, but it is distinctly less stable than nitroglycerin at 75°C. Its use for pharmaceutical preparations is only in admixture with carbohydrate substances in dilutions corresponding to 1 part of mannitol hexanitrate to 9 or more parts of carbohydrate. In such dilutions mannitol hexanitrate is non-explosive. Mannitol hexanitrate has the following structural formula:



**Actions and Uses**—Mannitol hexanitrate exerts the vasodilator action of the nitrite ion ( $NO$ ), causing a relatively persistent relaxation of smooth muscle, especially that of the smaller blood vessels. This relaxation causes a fall in blood pressure occurring within fifteen to thirty minutes and lasting four to six hours. It also relaxes the coronary vessels and frequently provides relief from the pain of angina pectoris, although too frequent dosage may cause such a fall in blood pressure that the blood flow continues to be inadequate in spite of the vasodilatation. It has no direct effect on the myocardium.

Toxic effects include the formation of methemoglobin (which should constitute a warning concerning the use of nitrites by anemic persons), rise in intraocular tension, headache, increase in intracranial pressure and cardiovascular collapse. Treatment of severe untoward effects includes cessation of therapy with the drug, administration of oxygen, transfusions for shock, removal of drug from the stomach and other supportive measures such as lowering of the head and elevation of the limbs. Vasopressor agents should not be used in the presence of cardiovascular collapse, as they may aggravate the condition.

**Dosage**—Mannitol hexanitrate may be administered in 15 to 30 mg doses at intervals of four to six hours. Occasionally this dose may be exceeded, but careful watch of the blood pressure and the patient should be kept at all times so that the development of undesirable side effects and the patient's tolerance may be noted. The dosage should be kept at a minimum compatible with satisfactory results. Patients with extensive arteriosclerosis may not present reductions in blood pressure and in such instances, if no reduction occurs, medication with mannitol hexanitrate should be discontinued.

#### Tests and Standards

Mannitol hexanitrate tablets are partially soluble in alcohol and in ether (mannitol hexanitrate) and are partially soluble in water (a test).

To a powdered tablet of mannitol hexanitrate add one drop of diphenylamine test solution; a characteristic blue color is formed.

The residue obtained in the assay given below melts between 106 and 108°C. (Caution: The mannitol hexanitrate used in this test may explode on percussion. The operator must be protected by a glass screen while determining the melting point.) It is insoluble in water and soluble in alcohol and in ether. It may be recrystallized from hot alcohol in the form of characteristic long needles in regular clusters.

Transfer an accurately weighed portion of powdered tablets containing about 0.25 Gm of mannitol hexanitrate to a glass stoppered Erlenmeyer flask and extract the powder with 25 cc of ether; decant the extract through a dry filter paper into a tared dish and repeat the extraction five times; evaporate the combined filtrates to a cc at a temperature not exceeding 35°C and allow the remaining solution to evaporate spontaneously. Dry the residue over calcium chloride in a vacuum desiccator for eight hours and weigh the mannitol hexanitrate; the amount of mannitol hexanitrate found corresponds to not less than 93 per cent nor more than 107 per cent of the labeled amount.

ABBOTT LABORATORIES, NORTH CHICAGO, ILL.

Tablets Mannitol Nitrate 16 mg and 32 mg. Each tablet contains not less than 93 nor more than 107 per cent of the labeled amount of mannitol hexanitrate and also contains at least 9 parts of carbohydrate by weight.

# THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

535 NORTH DEARBORN STREET - CHICAGO 10, ILL.

Cable Address

Medic Chicago

Subscription price

Eight dollars per annum in advance

*Please send in promptly notice of change of address giving both old and new always state whether the change is temporary or permanent. Such notice should mention all journals received from this office. Important information regarding contributions will be found on second advertising page following reading matter.*

SATURDAY, OCTOBER 21, 1944

## SULFONAMIDE AND PENICILLIN THERAPY IN GAS GANGRENE

The present war has renewed interest in the therapy of gas gangrene, with special emphasis on the possible efficiency of the newer chemotherapeutic agents. Bliss and her associates<sup>1</sup> therefore inoculated mice intramuscularly with the specific organism and tested the therapeutic value of various sulfonamides given orally or by means of local injection. None of the sulfonamides showed a high degree of activity in combating experimental *Clostridium welchii* infection, but better results were obtained with local injections than with oral administration. Sewell and his associates<sup>2</sup> made similar experiments on dogs and were also unable to abort gas gangrene with sulfonamides but were able to prolong life.

About the same time McIntosh and Selbie<sup>3</sup> treated 24 mice within three hours after experimental infection with *Clostridium welchii* by local injection of 34 Oxford units of penicillin and reported 100 per cent survival. Following this encouraging lead, Hac<sup>4</sup> and her associates of the Department of Obstetrics, University of Chicago School of Medicine, made detailed therapeutic assays of tyrothricin, zinc peroxide, sulfanilamide, sulfapyridine, sulfathiazole, sulfadiazine and penicillin, tested either alone or in combination. Mice were inoculated intramuscularly with 0.25 cc of a 1:4 dilution of an eighteen hour brain-broth culture of highly virulent *Clostridium welchii*. With this dose most of the untreated mice showed evidence of a generalized reaction (chills, hematuria and so on) within six to eighteen hours, death occurring in about twenty-four hours in 85 per cent of the cases. Necropsy revealed an edematous hemorrhagic area frequently extending upward to

the axilla and downward to involve the entire leg. In practically all animals that survived, an extensive lesion which tended to slough persisted at the site of inoculation.

In the therapeutic test 0.25 cc of a solution of the chemotherapeutic agent was injected either subcutaneously into the sublingual region of the infected leg or into the opposite leg. The injection was made at varying times, such as half an hour before inoculation, at the time of inoculation or from one to three hours afterward. Of 404 untreated controls 85 per cent developed hematuria and 365 died, a survival rate of 9.7 per cent. In the parallel prophylactic test (therapy given half an hour before inoculation) the survival rate was increased to 96.6 per cent by a single 50 mg dose of sulfadiazine and to 88 per cent by a single injection of 250 Oxford units of penicillin. Sulfadiazine was thus apparently the prophylactic agent of choice.

When the therapy was delayed till one hour after inoculation, however, the condition was reversed. The survival rate was 9.2 per cent with 250 Oxford units of penicillin, as contrasted with only 4.3 per cent survival with 50 mg of sulfadiazine and 2.0 per cent survival with 50 mg of sulfathiazole. When the therapy was delayed till three hours after inoculation, the survival rates were reduced to 3.8 per cent for penicillin and to an average of 1.0 per cent for the two sulfonamides. Within the limits of the experimental error, the two sulfonamides were useless in this delayed therapy, the control survival being 9.7 per cent. As a result of immediate penicillin therapy the hematuria rate was reduced to zero. In penicillin therapy delayed for one hour the hematuria rate was 4.2 per cent, increasing to 6.0 per cent if delayed two hours and to 8.5 per cent if delayed three hours.

Hac treated groups of mice with a single subcutaneous injection, using varying doses of penicillin given at the time of inoculation. The 9.7 per cent survival rate in untreated controls was increased to 5.4 per cent survival as a result of 5 Oxford units of penicillin, 7.3 per cent survival with 15 Oxford units and a maximum of 9.8 per cent with 500 Oxford units. The smallest dose of penicillin (5 Oxford units) was thus superior to the optimal dose of sulfadiazine or sulfathiazole. This superiority was shown in other ways. When treated animals died the average period of survival was longer with penicillin than with the two sulfonamides. Penicillin was also much more effective than sulfadiazine or sulfathiazole in minimizing toxemia and tissue damage and in accelerating local tissue repair. After successful penicillin therapy the lesion at the site of the inoculation is usually healed in ten to eighteen days, as compared with twenty-two to thirty-six days after successful sulfonamide therapy. With small doses of penicillin, subcutaneous injection in the infected leg gives better results than injection into the

<sup>1</sup> Bliss, Eleanor A., Long, Perrin H. and Smith, Dorothy G. *Chemotherapy of Experimental Gas Gangrene and Tetanus Infections in Mice*. *War Med.* 1: 799 (Nov.) 1941.

<sup>2</sup> Sewell, R. L., Dowdy, A. H. and Vincent, J. G. *Chemotherapy and Roentgen Radiation in Clostridium Welchii Infection*. *Surg., Gynec. & Obst.* 74: 361 (Feb. number 2 A) 1942.

<sup>3</sup> McIntosh, James and Selbie, F. R. *Zinc Peroxide, Proflavine and Penicillin in Experimental Clostridium Welchii Infection*. *Lancet* 2: 750 (Dec. 26) 1942.

<sup>4</sup> Hac, Lucile R. *Experimental Clostridium Welchii Infection*. *J. Infect. Dis.* 74: 164 (March-April) 1944.

opposite leg With large doses of penicillin however, local and distant subcutaneous injections are equally effective

Encouraging as these results may be, Hac asserts that neither sulfonamides nor penicillin given alone or in combination will prove to be clinically effective in human cases unless combined with "adequate surgical procedure"

### REGIONAL ILEITIS

Regional ileitis has been receiving more attention ever since Crohn and his associates<sup>1</sup> first described it in 1932 In a recent system of gastroenterology by Bockus,<sup>2</sup> the whole chapter is brought up to date, aside from correlated statistical data, comparatively little has been added to the original description of the disease

Pathologists agree that the distinguishing features are 1 Hypertrophy and thickening of the bowel wall, usually confined to some one localized stretch of the mesenteric small intestine, most frequently the terminal ileum, and varying in extent from a few inches to several feet A bizarre feature of the disease is its occasional tendency to attack more than one segment of the bowel, leaving the intervening segments intact The process may involve the colon down to the sigmoid 2 Resultant narrowing of the bowel lumen 3 Hyperplasia of the mucosa, frequently with ulceration 4 Perforation with localized or general peritoneal involvement and the establishment of internal or external fistulas This train of events is usually preceded by hyperplasia of lymphatic tissue and an obstructive lymphedema Microscopically the appearance is highly mimetic of tuberculosis, but all attempts to demonstrate tubercle bacilli or any other causative organism, including the virus of lymphogranuloma venereum, have failed The counterpart of the disease has not been observed in animals

The diagnosis rests on symptoms so complex and varied as to create an almost invariable hazard Crohn's original classification of symptoms is valid today, and we shall always be on safer ground if we bear in mind that the course of the disease may follow any of four patterns (1) that of acute intra-abdominal disease, resembling most frequently acute appendicitis, (2) that of ileocolitic diarrheal disease, (3) that of chronic intestinal obstruction with supervening acute obstruction, (4) that of fistulous (external or internal) formation Differential diagnosis demands consideration of acute appendicitis bacillary dysentery, acute perforative peritonitis, intestinal obstruction and cancer of the bowel

Treatment is usually surgical If the patient is seen in the acute stage and the abdomen is mistakenly opened

for appendicitis, the consensus seems to be that the time-old maxim of "let a sleeping dog lie" should be followed and the abdomen closed without drainage In the chronic cases the methods of treatment are either resection of the diseased segment of bowel or of side-tracking it (by ileocolostomy or by some similar procedure) Search should always be made for so-called skip areas of bowel, distant from the region under immediate surgical attack, but even if these are found and cared for adequately there are, unfortunately an appreciable number of postoperative recurrences Since the etiology is not known, methods of prevention are not available In those cases in which it may be suitable to apply purely medical treatment this should follow, in general, the lines established for the treatment of ileocolitis

Such are the short and simple annals of a perplexingly interesting and on occasion, a fulminantly dangerous disease Before 1932 ileitis was unknown as a distinct entity, yet within the following seven years more than 500 cases had been reported This reminds us that appendicitis for all practical purposes, was unknown until after Fitz's work in 1886 and that duodenal ulcer likewise did not appear on the medico-surgical stage until the early nineteen hundreds Curiosity is no less aroused by the present day novelty of intervertebral disk displacement How long will regional enteritis baffle the search for its cause?

### FOUR YEARS OF WAR SURGERY

Some people, including some physicians, hold the notion that the calamity of war is offset, at least partly, by war's contribution to the advancement of medical science in general and of surgery in particular Improvements in the medical service to our wounded men in the present war are due chiefly to the principle of advanced surgical units, to more rapid ground and aerial transportation, to the use of sulfonamides, to more liberal recourse to blood and plasma transfusions and to plaster immobilization of soft tissue wounds Major General Mitchner<sup>1</sup> asserts that this improvement is not as great as one would like to believe, especially in the prevention and control of sepsis Mitchner says that "the self-congratulatory coma into which some of our 'specialist' colleagues have allowed themselves to lapse is almost without justification" He feels that the slightly wounded should be given precedence of treatment

These cases constitute 60 to 70 per cent of war wounds, if promptly and adequately treated near the battle front most of these men can be returned to the front line In World War I a large number of wounds

1 Crohn B B Cuzberg L and Oppenheimer, G D Regional Ileitis J A M A 99 1323 (Oct 15) 1932

2 Bockus H L Gastro-Enterology Philadelphia W B Saunders Company 1944 vol 2 p 158

1 Mitchner Philip H Thoughts on Four Years of War Surgery—1939 to 1943 Brit M J 2 57 (July 8) 1944

were from bullets whereas those seen in the present war are mainly lacerated wounds of a severe type, the mortality from which is much higher. In the bombing casualties of aerial warfare some 60 per cent of the patients die either as a result of the actual injury plus blast or soon after from hemorrhage and shock due to the severity of the wound inflicted.

While admitting the great part played by the Blood Transfusion Service, Lord Mitchiner feels that there is a tendency to overevaluate blood transfusion to the detriment of older and simpler methods of resuscitation and wound treatment such as hot sweet fluids by mouth, warmth and morphine. Furthermore, the risk of septic infection from administering blood transfusion on the field of battle and in the street during an air raid is considerable. Blood or serum should not be given intravenously farther forward than the advanced dressing station on the field of battle, the sick bay when this is functioning adequately in a ship, and the first aid post during an air raid. He also feels that there is a tendency to give large quantities of blood unnecessarily and wastefully. Secondary suture of war wounds is safer and is to be preferred to primary suture. Mitchiner stresses that these principles are not new, that all emanated from the practice of surgery of the war of 1914 to 1918 and from earlier wars. Even the closed plaster technic, for which credit is given to Fructa, was practiced in the Crimean War by Pirogoff.

Infection of wounds has been much modified and the danger greatly reduced by the use of sulfonamides. However, Mitchiner warns again that excessive and indiscriminate use of these drugs is not without risk. Many patients show an idiosyncrasy to drugs of this group, while certain organisms react only to certain types. He believes that the treatment should be carried out in close cooperation with a bacteriologist. Any dose over 15 Gm applied externally may produce toxic and even fatal results even in cases in which the fluid intake can be kept up by both intravenous and oral administration for the three days subsequent to the use of a sulfonamide. Sulfonamides, therefore, are not a panacea for all infections but may actually be deleterious and even dangerous. Their use, as a general rule, should be discontinued promptly in cases which show no constitutional improvement or fall of temperature in forty-eight hours. Penicillin, on the other hand, is not toxic and far surpasses all other antiseptics. Its action is most dramatic on the staphylococcus and gonococcus. Its use, however, may entail a drastic revision of surgery of wounds, for apparently it acts best in the presence of pus and in cases in which it is applied locally. Lord Mitchiner concludes that the surgical procedure has not altered greatly since World War I, although the type of wound has altered somewhat owing to the use of more lethal explosives and missiles.

This realistic evaluation by a competent authority is not to be construed as a confession of disappointment or failure but rather as a timely warning against the dangers of complacency and wishful thinking.

## Current Comment

### EFFECT OF TRAVEL ON THE INCIDENCE OF ABORTION

Diddle<sup>1</sup> reports a study on the incidence of abortion among a group of pregnant women who journeyed and a group who maintained a sedentary existence during the period of gestation. The particular naval hospital and dispensary from which the data were collected served all obstetric dependents of the Navy, Marine Corps, Coast Guards and Army personnel. The geographic position of the clinic was particularly favorable to this type of study. The area concerned is an island 127 miles away from the mainland of the Continental United States and is connected with the latter by means of a rough asphalt and coral highway and a system of bridges. The road in places is corrugated with transverse humps. In order to commute to and from the nearest railroad, 170 miles away, it was necessary for all women to go by bus or car over this course. For a period of observation limited to sixteen weeks there were 289 women who journeyed and 467 who did not. A smaller group in which 200 women did not journey and 110 did, permitted observation month by month for a longer period. Of the 289 travelers who toured before the end of the fourth month 16, or 5.6 per cent, had untimely births as contrasted to 84, or 17.9 per cent, occurring among the control or sedentary series. Based on the 179 protocols where the distances covered were known definitely, 46 (25.7 per cent) were multigravidas and 37 (20.6 per cent) parous. A careful analysis of all the factors involved suggested to the author that neither the distances covered and the method of travel nor the time of the month at which a journey was taken revealed any significant differences in the incidence of abortion. The results of these observations, although involving a small group, suggest that travel by car or bus over the rough stretch of highway covering the keys and over modern roads and by train in the states did not increase the incidence of abortions among travelers as opposed to nonjourneying women. Transportation alone probably did not predispose to abortion, except in 1 case in the series the woman had ridden a motorcycle a few hours previously. Journeying perhaps had facilitated an interruption of gestation where intrinsic and extrinsic factors were already in action. The principal argument against traveling is that it entails the possibility that an expectant mother may need medical care wherever trouble may arise and with such resources as are present.

1 Diddle, A. W. The Effect of Travel on the Incidence of Abortion. *Am J Obst & Gynec* 48: 354 (Sept) 1944.

# MEDICINE AND THE WAR

## ARMY

### BRIG GEN LEON A FOX RECEIVES TYPHUS COMMISSION MEDAL

Brig Gen Leon A Fox has been awarded the Typhus Commission Medal for his work as director and field director of the United States of America Typhus Commission in the Middle East and Mediterranean areas, and specifically for his direction of the Typhus Control Project of Naples in December 1943, which brought that epidemic under control within a month. The citation accompanying the award reads: For exceptionally meritorious service rendered first as director and later as field director of the United States of America Typhus Commission. In charge of the commission's activities in the Middle East and North Africa since March 1943, General Fox increased the extent and value of investigations and control of typhus fever in Egypt and in other Mediterranean countries. In positions of high responsibility his opinion and counsel had important influence on both medical affairs and international relationships. On missions to London he further cemented and strengthened British and American effort and policy for operation with civil affairs in this country and abroad. In December 1943 General Fox was placed in charge of the campaign against the outbreak of typhus fever at Naples, at a time when the disease had reached epidemic proportions and was a threat to military operations. Securing full cooperation from military and civilian agencies he organized a vigorous attack on the disease employing all the modern principles and methods for combating typhus. So effective was the work done under General Fox that the epidemic was brought under control within a month. The achievement in controlling this epidemic of typhus at Naples and in southern Italy ranks as one of the greatest triumphs of modern preventive medicine. Dr Fox graduated from the University of Cincinnati College of Medicine in 1912 and has been in the service since June 1917.

### THREE EGYPTIAN HEALTH OFFICIALS HONORED FOR TYPHUS WORK

The War Department announced recently the award of the United States of America Typhus Commission Medal to three Egyptian health officials for their cooperation with our scientists in the study of typhus fever. The citation of Dr Ali Towfik Shousha under secretary of state for health of the Egyptian government, reads:

'For meritorious service in connection with the work of the United States of America Typhus Commission. From the time of the arrival of the commission's group in Cairo early in 1943, Dr Shousha has taken great personal interest in the activities of the commission. He has entered wholeheartedly into the cooperative projects which have been established. Through his sound advice and administrative capacity he has furthered all the investigations and control work done by the commission in Egypt.'

The following is the citation of Dr Abdel Humid Sadek, director of the section for epidemic diseases of the Egyptian government health department:

'For meritorious service in connection with the work of the United States of America Typhus Commission. By his interest and tireless efforts Dr Sadek greatly facilitated the whole program of field investigations and the control of typhus fever in Egypt. From these activities, information and experience were gained for the improvement of epidemic typhus control in all years.'

The citation of Dr Mahmoud Abou Demerdash, director of the Egyptian government hospital for infectious diseases, is as follows:

For meritorious service in connection with the work of the United States of America Typhus Commission. Through the interest and cooperation of Dr Demerdash, wards and labora-

tory buildings were made available to the United States of America Typhus Commission at the Fever Hospital in Cairo in 1942. As the clinical and laboratory investigations increased with the encouragement and aid of Dr Demerdash improved facilities were provided at this hospital in 1944. Dr Demerdash has taken great personal interest in the work of the members of the commission with patients suffering from typhus fever. He has given expert advice and training based on his experience with the disease and has materially aided the commission's study of typhus fever in Egypt.

### LIMITED SERVICE OFFICERS EXAMINED FOR OVERSEAS DUTY

Because of the urgent need for Medical Corps officers for overseas assignment, a survey is being made of all those in the army service forces who are now on permanent limited service with a view to their possible reclassification. Now, it is felt can be assigned to communication zone installations overseas where they can perform duties similar to those in the zone of the interior. Medical Corps officers will not be considered disqualified for overseas service if they can be expected to render effective professional service without appreciable risk of aggravating physical defects or if they have histories of defects which are not demonstrable and have not resulted in hospitalization while in service.

### ARMY'S RECONDITIONING PROGRAM MAY INFLUENCE CIVILIAN HOSPITALS

Major Henry B Gwynn of the Reconditioning Division of the Office of the Surgeon General, recently stated that the strides being made in the operation of the Army reconditioning program will probably lead to radical changes in the civilian hospital of the future. Civilian hospitals capitalizing on the progress made by the Army's reconditioning program will probably include motion picture theaters, gymnasiums, public address systems and areas for physical and occupational therapy in their buildings of tomorrow. Anticipating the objection of increased costs in such a program, it was pointed out that the Army is finding that hospitalization time is curtailed from 10 to 33 1/3 per cent as a result of reconditioning. If this estimate holds true even to some extent in civilian practice, Major Gwynn stated, the lower incidence of complications and the shortened convalescence at home before resuming normal activities will more than pay the additional cost.

The prospects for the adoption of this reconditioning program by civilian hospitals will depend on public opinion and the attitude of the medical profession. Major Gwynn said, and ideas which have been in vogue for several hundred years will be changed only when the facts justify it.

### FIVE HUNDRED MEN COMMENDED FOR PART IN TESTS OF NEW GAS OINTMENT

Five hundred officers and enlisted men were recently commended by the Chemical Warfare Service of the Army Service Forces for voluntarily exposing themselves to lethal gases in order to test a new anti gas protective ointment. As a result of these tests, during which men entered gas filled chambers and contaminated areas, medical officers and research scientists have conclusive evidence that the M5 protective ointment or gasproof makeup kit will be effective in the event that the enemy resorts to gas warfare. The commendation stated that the men participated beyond the call to duty by subjecting themselves to pain, discomfort and possible permanent injury for the advancement of research in protection for our armed

forces" Among the volunteers were 40 soldiers of Japanese ancestry now serving with United States forces

The men subjected to the gas chamber tests were protected by gas masks and liberal quantities of the new ointment Others tested the substance by entering ground areas which had been contaminated with lethal agents In order to minimize the danger to the personnel, tests were made only after exhaustive experiments with the ointment None of the volunteers suffered any ill effects

### CIVILIAN NURSES NEEDED FOR ARMY HOSPITALS

Registered nurses who are professionally but not otherwise qualified for commissions in the Army Nurse Corps are needed for employment under Civil Service in army hospitals

Registered nurses more than 45 years of age who are not physically qualified for commissions or whose home responsibilities prevent them from applying for commissions are eligible for these positions

Urgent need for commissioned nurses in the overseas theaters, where their skill often means the difference between life and death for an American soldier, has resulted in a shortage of qualified nurses in hospitals in this country Simultaneously, increased numbers of patients are being sent back to this country from the battle fronts

Civilian nurses wishing to avail themselves of the opportunity for service in army hospitals may work in hospitals near their homes They may live in government quarters or may reside at their homes, provided adequate transportation is available to and from work Working hours for civilian nurses in army hospitals often are longer than the standard forty-eight hour week The salary is \$2,190 a year, on a forty-eight hour week basis, but, if circumstances require overtime employment, additional pay may be authorized

Qualified nurses interested in this type of employment can get full information at the army hospitals nearest their homes Employment will be completed through Civil Service channels

### SEVERAL HUNDRED DENTAL OFFICERS TO BE RELIEVED FROM ACTIVE DUTY

A recent announcement by the War Department stated that several hundred dental officers will be relieved from active duty with the Army shortly, permitting their return to private practice The following priority is established for the release of officers in replacement pools or elsewhere whose services can be spared

1 Officers not physically capable of doing a full day's duty operating at a dental chair

2 Limited service officers requiring special consideration as to climate, diet or type of work or who are qualified for assignment in the United States only

3 Officers whose relief from active duty can be accomplished under current War Department policies governing officer personnel generally

4 Officers selected by the Surgeon General who can be released with least detriment to the service This category will be used, after exhausting all others, to make up the number required to be released to reduce an existing surplus of dental officer personnel

### ARMY HOSPITALS MAY EMPLOY NURSES BEFORE COMMISSIONING

Graduates of the U S Cadet Nurse Corps who have taken their Senior Cadet period in army hospitals and who have applied for commissions in the Army Nurse Corps may be hired as civil service appointees by army hospitals subject to the law of the state in which each hospital is located Appointments will not exceed six months' duration This step has been taken because of the shortage of qualified nurses and of the delay in commissioning due to the fact that state board examinations, a prerequisite for a commission are frequently not given for some time after the graduation date

### MAJOR TEGTMEYER NAMED MOST CITED DOCTOR

Major Charles E Tegtmeier, formerly of Hamilton, N Y, five times decorated by the Army Medical Corps, has been named the most frequently cited former staff member of New York's voluntary hospitals In nearly three years of service Dr Tegtmeier has been in the North African, Sicilian and Italian campaigns Twice wounded in action, he is the recipient of the Purple Heart, Bronze Star, Silver Star, Legion of Merit and Distinguished Service Cross "for conspicuous gallantry in rescuing and saving the wounded" Dr Tegtmeier graduated from Columbia University College of Physicians and Surgeons, New York, in 1935

### FIRST PHYSICAL THERAPIST AWARDED LEGION OF MERIT

First Lieutenant Metta L Baxter, PT, of Los Angeles, now stationed with the 21st General Hospital in Italy, is the first physical therapist to be awarded the Legion of Merit Her citation reads "for exceptionally meritorious conduct in the performance of outstanding service" Lieutenant Baxter is a graduate of Kansas State College, Manhattan, and received her physical therapist certificate from the Army Medical Center, Washington D C

### CAPT ROBERT E WOLF MISSING IN ACTION

Capt Robert E Wolf, formerly of Shreveport, La, has been reported missing in action since August 10 Dr Wolf has been a battalion surgeon and has been in the army for two years He went overseas last October Dr Wolf graduated from the University of Arkansas School of Medicine, Little Rock, in 1940 and entered the service Aug 22, 1942

### FLIGHT SURGEONS' ASSISTANTS

A class of seventeen flight surgeons' assistants completed the six weeks course in aviation medicine at the School of Aviation Medicine, Randolph Field, Texas, September 15 These men are trained as specialists in assisting flight surgeons in the selection, care and maintenance of the flier Brig Gen Eugen G Reinartz, U S Army, is commandant of the school

### ARMY AWARDS AND COMMENDATIONS

#### Major Albert J Bajohr

The Bronze Star Medal was recently awarded to Major Albert J Bajohr, formerly of Flushing N Y His medal was won on Bougainville, where battle surgery was performed night and day in an underground hospital Dr Bajohr graduated from George Washington University School of Medicine, Washington D C in 1933 and entered the service April 2, 1941

#### Captain Vincent S Cunningham

For his gallant conduct in combat at Humboldt Bay Dutch New Guinea, Capt Vincent S Cunningham, formerly of Long Island, N Y, was awarded the Silver Star The citation accompanying the award read "As a result of enemy bombing an ammunition and supply dump was set afire. With utter disregard for his own personal safety, and constantly in danger of being hit by shrapnel from exploding ammunition Captain Cunningham set up an aid station near the fire and labored all night and until the next afternoon taking care of and gathering all casualties that could be collected" Dr Cunningham graduated from New York University College of Medicine in 1935 and entered the service in June 1942

#### Captain Fred A Dry

The Silver Star was recently awarded to Capt Fred A Dry formerly of Allentown, Pa His citation reads "During the initial days of combat, severe casualties were sustained from German fire During this time Captain Dry worked incessantly



to, ease the treatment and removal of the wounded. Refusing suggestions that he remove his first aid station to a place of safety, he performed his duties as close to the front lines as possible. On several occasions, although he had not slept for days and with utter disregard for his own safety, he evacuated wounded from exposed front line positions and entered dangerous areas rather than order his men into areas subjected to heavy enemy fire." Dr Dry graduated from the University of Pennsylvania School of Medicine Philadelphia, in 1941 and entered the service in July 1942.

#### Major Dalton C Hartnett

The Legion of Merit was recently awarded to Major Dalton C Hartnett. The citation accompanying the award reads "He performed outstanding services as Flight Surgeon, 3d Photographic Mapping Squadron, from Feb 20, 1943 to March 28, 1944. During this period, while serving the squadron on three continents in zones ranging from the arctic circle to the tropic of Capricorn, he maintained the health of the command at a very high level. He planned and personally conducted courses of instruction for the prevention of disease and the preservation of health. His untiring vigilance, initiative and personal check of all individuals of the command by day and by night resulted in maintaining 98.3 per cent of the unit available for duty." Dr Hartnett graduated from St Louis University School of Medicine in 1940 and entered the service June 30, 1941.

#### Major Jay Paul Roller

The Oak Leaf Cluster to the Silver Star was recently awarded to Major Jay Paul Roller, formerly of Luckey, Ohio. The citation accompanying the award reads "In Sicily in August 1943 a part of the Regimental Communications Section was sent forward to establish an advance communications switch. The leading vehicles of the convoy were hit by enemy artillery fire and mines, killing four and severely wounding eight of the

enlisted men riding in front vehicles. Major Roller was called and went forward to the area being subjected to heavy enemy artillery and mortar fire to administer medical aid to the eight wounded soldiers. During the course of this outstanding devotion to duty he lost several of his own medical personnel as the result of German S mines. Notwithstanding this he continued on to the completion of his tasks throughout the night. On this occasion and countless others he demonstrated such gallantry and disregard for self in the performance of hazardous missions that his courage and devotion to duty are a constant inspiration to the officers and men of his regiment." The citation accompanying the Silver Star award appeared in THE JOURNAL Dec 4, 1943 page 908. Dr Roller is a graduate of the University of Louisville School of Medicine, 1939. He entered the service Jan 5, 1941.

#### Captain Byrne M Daly

Capt Byrne M Daly, formerly of Jackson Mich, was recently awarded the Bronze Star for "meritorious service in actual combat while serving with the third (Marine) division on the Fifth Army front in Italy." The citation which accompanied the award read "Capt Daly served as battalion surgeon without an officer assistant and was further handicapped throughout the campaign by a shortage of technicians and litter bearers as well as by cold, rainy weather and difficult mountainous terrain. Although ill he refused to rest and continued to render invaluable service to his organization in the treatment and evacuation of many casualties. His accomplishments of difficult tasks was the result of his skill, initiative and devotion to duty." Dr Daly was previously awarded the Purple Heart for wounds received in September 1943 during action at Salerno. He has been overseas since October 1942 and took part in the North African campaign as well as the Italian fighting. Dr Daly graduated from Wayne University College of Medicine, Detroit, in 1942 and entered the service on July 1 of that year.

## MISCELLANEOUS

### THE RED CROSS HOME NURSING PROGRAM

Through its home nursing classes the Red Cross is attempting to develop self reliance in the homemaker in handling simple illnesses in the home and in understanding the need for expert medical and nursing assistance in cases of a more serious nature. The homemaker who has had only simple training in home nursing can help the doctor by learning to recognize early symptoms of illness, by observing and by recording for his information such details as the elevation of temperature, the appearance of a skin rash or the presence and intensity of pain. She learns to carry out his orders intelligently, how to keep the patient comfortable and clean, how to fill a hot water bottle and how to use it, how to give an enema, apply a compress, prepare a special diet and carry out communicable disease technique without time consuming questions. She learns to use the telephone intelligently, to report information clearly and calmly, to call as early in the day as possible so he can arrange his schedule of calls.

The Home Nursing course differs from the Volunteer Nurse's Aide course, which is designed to prepare women to assist professional nurses in caring for illness in hospitals, clinics and dispensaries. The course also should be distinguished from courses for "practical" nurses whose services are on a paid basis.

The standard Red Cross Home Nursing course is primarily a homemaker's course in simple nursing skills—intelligent homemaking applied to the care of the sick in the home and to family health. It gives information about a safe home environment, including the necessity for a pure and efficient water supply, safe milk and food, screening ventilation and waste disposal. It inculcates an interest in the general public health and its inevitable relationship to the health of the home. It awakens responsibility for supporting the health officer in his efforts to safeguard the community.

The course is taught, usually on a volunteer basis by nurses who meet Red Cross qualifications in both professional and

general education. Although based on the Red Cross Home Nursing textbook, the content of the standard course is flexible and easily adapted to various age groups and their needs. The four types of courses designed for men, women and school age young people are:

First, the standard course, which requires not less than twenty-four hours for adult community groups. It includes the various phases of home nursing care. Second, a new streamlined course titled "Six Lessons in Care of the Sick" requiring twelve hours. It is designed for very busy, hard to reach adult groups and covers only the basic procedures in home nursing. Only instructors who have been authorized through a special training course may teach the Six Lessons. Third, the School course, for high school students. This may be given to school or out of school groups. Fourth, a College Course in Home Nursing and Family Health, now in preparation. It is intended for college students or others prepared to work on the college level.

Nurse instructors spend approximately half of the class time on demonstrations and on supervising the practice of simple procedures, the other half on class discussions of problems. A small certificate in recognition of the satisfactory completion of the course, is given. This does not imply that the holder is qualified to work for pay outside her home. However in cases of emergency or when the home nurse has time for volunteer service she may assist community health agencies that need her and that are able to provide additional instruction and supervision.

The Red Cross Home Nursing textbook is the basic text for all adult courses and also serves as a permanent reference book in the home. The School Edition is used for the school course. The book has been translated into Spanish for the use of Spanish speaking people both in this country and in Latin America.

Home Nursing is one of the oldest programs of the American Red Cross. In 1908 three years after the Red Cross was chartered by Congress the idea was originated for this plan of health education for the homes of the country. The program

forces" Among the volunteers were 40 soldiers of Japanese ancestry now serving with United States forces

The men subjected to the gas chamber tests were protected by gas masks and liberal quantities of the new ointment Others tested the substance by entering ground areas which had been contaminated with lethal agents In order to minimize the danger to the personnel, tests were made only after exhaustive experiments with the ointment None of the volunteers suffered any ill effects

### CIVILIAN NURSES NEEDED FOR ARMY HOSPITALS

Registered nurses who are professionally but not otherwise qualified for commissions in the Army Nurse Corps are needed for employment under Civil Service in army hospitals

Registered nurses more than 45 years of age who are not physically qualified for commissions or whose home responsibilities prevent them from applying for commissions are eligible for these positions

Urgent need for commissioned nurses in the overseas theaters, where their skill often means the difference between life and death for an American soldier, has resulted in a shortage of qualified nurses in hospitals in this country Simultaneously, increased numbers of patients are being sent back to this country from the battle fronts

Civilian nurses wishing to avail themselves of the opportunity for service in army hospitals may work in hospitals near their homes They may live in government quarters or may reside at their homes, provided adequate transportation is available to and from work Working hours for civilian nurses in army hospitals often are longer than the standard forty-eight hour week The salary is \$2,190 a year, on a forty-eight hour week basis, but, if circumstances require overtime employment, additional pay may be authorized

Qualified nurses interested in this type of employment can get full information at the army hospitals nearest their homes Employment will be completed through Civil Service channels

### SEVERAL HUNDRED DENTAL OFFICERS TO BE RELIEVED FROM ACTIVE DUTY

A recent announcement by the War Department stated that several hundred dental officers will be relieved from active duty with the Army shortly, permitting their return to private practice The following priority is established for the release of officers in replacement pools or elsewhere whose services can be spared

1 Officers not physically capable of doing a full day's duty operating at a dental chair

2 Limited service officers requiring special consideration as to climate, diet or type of work or who are qualified for assignment in the United States only

3 Officers whose relief from active duty can be accomplished under current War Department policies governing officer personnel generally

4 Officers selected by the Surgeon General who can be released with least detriment to the service This category will be used, after exhausting all others, to make up the number required to be released to reduce an existing surplus of dental officer personnel

### ARMY HOSPITALS MAY EMPLOY NURSES BEFORE COMMISSIONING

Graduates of the U S Cadet Nurse Corps who have taken their Senior Cadet period in army hospitals and who have applied for commissions in the Army Nurse Corps may be hired as civil service appointees by army hospitals subject to the law of the state in which each hospital is located Appointments will not exceed six months' duration This step has been taken because of the shortage of qualified nurses and of the delay in commissioning due to the fact that state board examinations a prerequisite for a commission, are frequently not given for some time after the graduation date

### MAJOR TEGTMEYER NAMED MOST CITED DOCTOR

Major Charles E Tegtmeier, formerly of Hamilton, N Y, five times decorated by the Army Medical Corps, has been named the most frequently cited former staff member of New York's voluntary hospitals In nearly three years of service Dr Tegtmeier has been in the North African, Sicilian and Italian campaigns Twice wounded in action, he is the recipient of the Purple Heart, Bronze Star, Silver Star, Legion of Merit and Distinguished Service Cross "for conspicuous gallantry in rescuing and saving the wounded" Dr Tegtmeier graduated from Columbia University College of Physicians and Surgeons, New York, in 1935

### FIRST PHYSICAL THERAPIST AWARDED LEGION OF MERIT

First Lieutenant Metta L Baxter, PT, of Los Angeles, now stationed with the 21st General Hospital in Italy, is the first physical therapist to be awarded the Legion of Merit Her citation reads "for exceptionally meritorious conduct in the performance of outstanding service" Lieutenant Baxter is a graduate of Kansas State College, Manhattan, and received her physical therapist certificate from the Army Medical Center, Washington, D C

### CAPT ROBERT E WOLF MISSING IN ACTION

Capt Robert E Wolf, formerly of Shreveport, La, has been reported missing in action since August 10 Dr Wolf has been a battalion surgeon and has been in the army for two years He went overseas last October Dr Wolf graduated from the University of Arkansas School of Medicine, Little Rock, in 1940 and entered the service Aug 22, 1942

### FLIGHT SURGEONS' ASSISTANTS

A class of seventeen flight surgeons' assistants completed the six weeks course in aviation medicine at the School of Aviation Medicine, Randolph Field, Texas, September 15 These men are trained as specialists in assisting flight surgeons in the selection, care and maintenance of the flier Brig Gen Eugen G Reinartz, U S Army, is commandant of the school

### ARMY AWARDS AND COMMENDATIONS

#### Major Albert J Bajohr

The Bronze Star Medal was recently awarded to Major Albert J Bajohr, formerly of Flushing, N Y His medal was won on Bougainville, where battle surgery was performed night and day in an underground hospital Dr Bajohr graduated from George Washington University School of Medicine, Washington, D C, in 1933 and entered the service April 2, 1941

#### Captain Vincent S Cunningham

For his gallant conduct in combat at Humboldt Bay, Dutch New Guinea, Capt Vincent S Cunningham, formerly of Long Island N Y, was awarded the Silver Star The citation accompanying the award read "As a result of enemy bombing an ammunition and supply dump was set afire With utter disregard for his own personal safety, and constantly in danger of being hit by shrapnel from exploding ammunition Captain Cunningham set up an aid station near the fire and labored all night and until the next afternoon taking care of and gathering all casualties that could be collected" Dr Cunningham graduated from New York University College of Medicine in 1935 and entered the service in June 1942

#### Captain Fred A Dry

The Silver Star was recently awarded to Capt Fred A Dry, formerly of Allentown, Pa His citation reads "During the initial days of combat, severe casualties were sustained from German fire During this time Captain Dry worked incessantly

to ease the treatment and removal of the wounded. Refusing suggestions that he remove his first aid station to a place of safety, he performed his duties as close to the front lines as possible. On several occasions, although he had not slept for days and with utter disregard for his own safety, he evacuated wounded from exposed front line positions and entered dangerous areas rather than order his men into areas subjected to heavy enemy fire." Dr. Dry graduated from the University of Pennsylvania School of Medicine, Philadelphia, in 1941 and entered the service in July 1942.

#### Major Dalton C. Hartnett

The Legion of Merit was recently awarded to Major Dalton C. Hartnett. The citation accompanying the award reads: "He performed outstanding services as Flight Surgeon, 3d Photographic Mapping Squadron, from Feb. 20, 1943 to March 28, 1944. During this period, while serving the squadron on three continents in zones ranging from the arctic circle to the tropic of Capricorn, he maintained the health of the command at a very high level. He planned and personally conducted courses of instruction for the prevention of disease and the preservation of health. His untiring vigilance, initiative and personal check of all individuals of the command, by day and by night, resulted in maintaining 98.3 per cent of the unit available for duty." Dr. Hartnett graduated from St. Louis University School of Medicine in 1940 and entered the service June 30, 1941.

#### Major Jay Paul Roller

The Oak Leaf Cluster to the Silver Star was recently awarded to Major Jay Paul Roller, formerly of Luckey, Ohio. The citation accompanying the award reads: "In Sicily in August 1943 a part of the Regimental Communications Section was sent forward to establish an advance communications switch. The leading vehicles of the convoy were hit by enemy artillery fire and mines, killing four and severely wounding eight of the

enlisted men riding in front vehicles. Major Roller was called and went forward to the area being subjected to heavy enemy artillery and mortar fire to administer medical aid to the eight wounded soldiers. During the course of this outstanding devotion to duty he lost several of his own medical personnel as the result of German S mines. Notwithstanding this he continued on to the completion of his tasks throughout the night. On this occasion and countless others he demonstrated such gallantry and disregard for self in the performance of hazardous missions that his courage and devotion to duty are a constant inspiration to the officers and men of his regiment." The citation accompanying the Silver Star award appeared in THE JOURNAL Dec. 4, 1943, page 908. Dr. Roller is a graduate of the University of Louisville School of Medicine, 1939. He entered the service Jan. 5, 1941.

#### Captain Byrne M. Daly

Capt. Byrne M. Daly, formerly of Jackson, Mich., was recently awarded the Bronze Star for "meritorious service in actual combat while serving with the third (Marine) division on the Fifth Army front in Italy." The citation which accompanied the award read: "Capt. Daly served as battalion surgeon without an officer assistant and was further handicapped throughout the campaign by a shortage of technicians and litter bearers as well as by cold, rainy weather and difficult mountainous terrain. Although ill, he refused to rest and continued to render invaluable service to his organization in the treatment and evacuation of many casualties. His accomplishments of difficult tasks was the result of his skill, initiative and devotion to duty." Dr. Daly was previously awarded the Purple Heart for wounds received in September 1943 during action at Salerno. He has been overseas since October 1942 and took part in the North African campaign as well as the Italian fighting. Dr. Daly graduated from Wayne University College of Medicine, Detroit, in 1942 and entered the service on July 1 of that year.

## MISCELLANEOUS

### THE RED CROSS HOME NURSING PROGRAM

Through its home nursing classes the Red Cross is attempting to develop self reliance in the homemaker in handling simple illnesses in the home and in understanding the need for expert medical and nursing assistance in cases of a more serious nature. The homemaker who has had only simple training in home nursing can help the doctor by learning to recognize early symptoms of illness, by observing and by recording for his information such details as the elevation of temperature, the appearance of a skin rash or the presence and intensity of pain. She learns to carry out his orders intelligently, how to keep the patient comfortable and clean, how to fill a hot water bottle and how to use it, how to give an enema, apply a compress, prepare a special diet and carry out communicable disease technique without time consuming questions. She learns to use the telephone intelligently, to report information clearly and calmly, to call as early in the day as possible so he can arrange his schedule of calls.

The Home Nursing course differs from the Volunteer Nurse's Aide course, which is designed to prepare women to assist professional nurses in caring for illness in hospitals, clinics and dispensaries. The course also should be distinguished from courses for 'practical' nurses whose services are on a paid basis.

The standard Red Cross Home Nursing course is primarily a homemaker's course in simple nursing skills—intelligent homemaking applied to the care of the sick in the home and to family health. It gives information about a safe home environment, including the necessity for a pure and efficient water supply, safe milk and food, screening ventilation and waste disposal. It inculcates an interest in the general public health and its inevitable relationship to the health of the home. It awakens responsibility for supporting the health officer in his efforts to safeguard the community.

The course is taught, usually on a volunteer basis by nurses who meet Red Cross qualifications in both professional and

general education. Although based on the Red Cross Home Nursing textbook, the content of the standard course is flexible and easily adapted to various age groups and their needs. The four types of courses designed for men, women and school age young people are:

First, the standard course which requires not less than twenty-four hours for adult community groups. It includes the various phases of home nursing care. Second, a new streamlined course titled "Six Lessons in Care of the Sick," requiring twelve hours. It is designed for very busy, hard to reach adult groups and covers only the basic procedures in home nursing. Only instructors who have been authorized through a special training course may teach the Six Lessons. Third, the School course, for high school students. This may be given to school or out of school groups. Fourth, a College Course in Home Nursing and Family Health, now in preparation. It is intended for college students or others prepared to work on the college level.

Nurse instructors spend approximately half of the class time on demonstrations and on supervising the practice of simple procedures, the other half on class discussions of problems. A small certificate, in recognition of the satisfactory completion of the course, is given. This does not imply that the holder is qualified to work for pay outside her home. However, in cases of emergency, or when the home nurse has time for volunteer service, she may assist community health agencies that need her and that are able to provide additional instruction and supervision.

The Red Cross Home Nursing textbook is the basic text for all adult courses and also serves as a permanent reference book in the home. The School Edition is used for the school course. The book has been translated into Spanish for the use of Spanish speaking people both in this country and in Latin America.

Home Nursing is one of the oldest programs of the American Red Cross. In 1908, three years after the Red Cross was chartered by Congress, the idea was originated for this plan of health education for the homes of the country. The program

has gathered impetus with the years. Particularly during the period of war and rehabilitation it is important because of the continued decrease in medical facilities available to civilians. The large number of wounded and disabled men being returned to this country will continue to make the problem acute. In addition, the mass grouping of people, the shifting of large populations because of employment reasons, may lead to an increase of communicable disease and to epidemics that will require the assistance of a citizenry trained in simple skills in caring for the sick in the home.

The Red Cross Home Nursing program is aiming to reach 3,000,000 persons estimated as the minimum additional number who should be trained in these simple skills. That figure has been based on a careful study of the estimated number who may be ill at given times in the homes of America. It has been found that it is usually women between the ages of 15 and 59 who normally care for the sick at home. Excluding those who already have been trained in home nursing, as nurses' aides or as professional nurses, it is estimated that the number still needed to insure safe nursing care would be at least 3,000,000.

How can the doctor help the Red Cross to reach the right persons? By asking who in his patient's family has had a home nursing course and by expressing appreciation to those who have demonstrated the value of the course by directing prospective students to the Red Cross chapter for information about classes by urging professional nurses—including housewives and others inactive in nursing—to arrange time for teaching classes (26,000 nurses are needed this year as instructors), by participating in the institutes for nurse-instructors and making recordings for local radio programs by discussing home nursing at medical meetings, perhaps inviting a Red Cross Home Nursing committee member to explain the program, by speaking at closing class exercises (educational films on immunization or other appropriate subjects may be shown at such times), displaying the textbook, posters and dodgers on Red Cross Home Nursing in his office and including a dodger or statement on home nursing with his bills, urging the support of classes by various women's auxiliaries and other groups interested in health, calling attention to the Red Cross Nursing textbook as a valuable guide for the homemaker, even though she may not be able to attend the home nursing class.

The Red Cross is eager to help overworked doctors and professional nurses in these trying times by providing understanding people in the homes where sickness strikes. It asks the help of the medical profession in making a success of its home nursing program.

#### ARMY PSYCHIATRIST ASKS COOPERATION OF INDUSTRY

Lieut. Col. Malcolm J. Farrell, deputy director of the Neuropsychiatry Consultants Division of the Office of the Surgeon General, in speaking before the industrial relations conference of the American Management Association in New York City recently, stressed the need for industry to give employment whenever practicable to men disqualified for military service for psychiatric reasons. Dr. Farrell deplored the popular misunderstanding of psychiatric conditions and especially confusion over the meaning of the term psychoneurosis. Up to 80 per cent of the men who have become psychiatric casualties in combat, he said, have been cured when their cases were properly recognized and treated. Many others who cannot continue to perform some type of army duty and those who have been eliminated early in their training periods are capable of performing useful work as civilians.

#### FIRST NURSES TO SCHOOL OF MILITARY GOVERNMENT

Capt. Grace Alt, Fort Meade, Md., and Capt. Mildred Lucka, McCloskey General Hospital, Texas, both of the American Nurse Corps, have been selected as the first nurses to attend the School of Military Government at Charlottesville, Va., to qualify for assignment to the Civil Affairs Administration in the Far East.

#### MUSTERING-OUT PAYMENTS OF DISCHARGED ASTP STUDENTS

In reply to an inquiry concerning the discharge of premedical and medical students, the following was received from the Office of the Fiscal Director, September 21: "ASTP premedical and medical students, also pre-dental and dental students, are not to be regarded as discharged because of importance to the national health safety or interest so as to preclude payment of mustering-out payment where otherwise qualified."

#### CIVILIAN INSECT CONTROL PROGRAMS AFTER WAR

At the end of the war the United States will be in an extremely favorable position to wage a major campaign against disease-carrying insects as a result of the tremendous effort the Army has made to defeat them in combat areas throughout the world. Efficient methods of insect control have been worked out and thousands of men have been trained in the techniques developed. The men and the methods will be available for mosquito and other insect control programs once peace and victory are achieved. They will make possible renewal of civilian efforts to eliminate the nuisance of the mosquito and at the same time guard against the diseases the mosquito is known to transmit such as malaria, dengue and yellow fever and perhaps encephalitis. The Army also developed new insect repellants effective not only against mosquitoes but also against mites, fleas and other insects known to be disease carriers.

Among the new weapons to be available to civilians after the war will be DDT, the new chemical insect killer, with which the Army solved the problem of typhus in Italy by destroying the body lice which transmit the infection. DDT is used in the Army in heavy oil solution for spraying on water or in light oil solution for spraying on walls and furniture. It is as effective against mosquitoes as it is against lice.

#### WARTIME GRADUATE MEDICAL MEETINGS

The following subjects and speakers for Wartime Graduate Medical Meetings have just been announced:

Mayo General Hospital, Galesburg, Ill.: Laboratory Diagnosis and Its Relationship to Treatment, Drs. William S. Hoffman and Steven O. Schwartz, November 1.

Camp Ellis, Camp Ellis, Illinois: Symposium on Organic Neurology, Drs. Francis J. Gerty and Loren William Avery, November 1.

Chanute Field, Rantoul, Ill.: Chronic Chest Diseases and Diseases of the Larynx, Drs. Paul H. Holinger and Henry C. Sweany, November 1.

Schick General Hospital, Clinton, Iowa: Medical Rehabilitation, Dr. Frank H. Krusen, October 27.

#### HOSPITALS NEEDING INTERNS AND RESIDENTS

The following hospitals have indicated to the Council on Medical Education and Hospitals that they have not completed their house staff quota allotted by the Procurement and Assignment Service:

(Continuation of list in *THE JOURNAL*, October 14, p. 440)

##### COLORADO

Colorado General Hospital, Denver: Capacity 270, admissions 3,718. Dr. Maurice H. Rees, Medical Superintendent (interns).

##### IOWA

Mercy Hospital, Des Moines: Capacity 193, admissions 5,357. Sister M. Anita, Superintendent (interns, residents).

##### NEW YORK

St. John's Long Island City Hospital, Long Island City: Capacity 284, admissions 5,418. Sister Thomas Francis, Superintendent (interns).

##### WEST VIRGINIA

St. Mary's Hospital, Clarksburg: Capacity 192, admissions 4,201. Sister M. de Sales, Administrator (2 residents—mixed service).

# ORGANIZATION SECTION

## WASHINGTON LETTER

(From a Special Correspondent)

Oct 16, 1944

### Action to Limit Production of Opium

The Department of State reveals that U S government missions abroad have been instructed to urge on governments of the chief opium producing countries that steps be taken to limit opium growth and production. While this action is motivated from the point of view of international well-being the presence of American troops throughout the world makes the control problem a matter of concern in many American homes. The official move by the government was taken following passage by Congress early this summer of a resolution by Representative Walter H Judd (Republican, Minnesota) long time Far East medical missionary, which called on the President to ask action to limit production to medicinal and scientific requirements in the interest of protecting American citizens and those of our allies and of freeing the world of an age old evil. U S missions will transmit a copy of the Judd resolution to Afghanistan, China, Great Britain (for India and Burma), Iran, Russia, Turkey and Yugoslavia. So far Yugoslavia is the only country to receive the communication.

It is revealed here that United States ships carrying lend-lease goods for Russia and manned by American seamen are

touching port every day in Iran largest producer where 50 to 75 per cent of the police force is said to be addicted to the drug habit. Many American and United Nations citizens are in Iran, and American soldiers are also in India and Burma large producers of opium.

The United States is thus assuming leadership in opium control for the second time having called the first international commission in 1909. The Judd resolution is described as the first step in present plans. The nation can exert pressure at this time on opium producing countries which are dependent on the United States for money materials and men. National economies once dependent on opium production in some instances, are now looking to lend-lease for materials and money in development of railways highways and factories.

Representative Judd points out that when he proposed his resolution the opium revenue in British Dutch and French Far East possessions ranged from 2 per cent of income in the Dutch East Indies up to 20 per cent in the British Straits Settlement colony, including the island of Singapore. A hopeful development in the situation is the promise that was made by the British and Netherlands governments in November 1943 to prohibit the use of opium for smoking and to abolish opium monopolies in Far East territories when the Japs have been removed.

## MEDICAL ECONOMIC ABSTRACTS

### PROGRESS OF MEDICAL SERVICE PLANS

To form a basis for mutual comparison, the various medical society prepayment plans were asked by the Bureau of Medical Economics for as recent a financial report as it was possible to give. Some of the principal items of the reports received are given here. Copies of these reports in full are available for administrators of all existing and proposed plans.

*Colorado Medical Service, Inc*—This was organized May 1, 1942 to serve metropolitan Denver and offers only a surgical contract. On March 1, 1943 it had about 5,000 members. On Sept 30, 1943 it had received \$17,856.20 income from subscribers and had an operating expense of \$16,568.75. Its balance showed a surplus of \$10,914.72.

*Dallas County Medical Plan*—This was organized in 1940 to serve Dallas County and offers both medical and surgical contracts. On Jan 1, 1944 it had 167 medical contracts and 24 surgical contracts. Its income was \$6,951.25 and its total expense \$4,960.23, leaving a net gain of \$1,991.02. It had resources of \$9,713.98 and a surplus of \$1,991.02.

*Group Hospital Service, Inc*—This was organized in 1943 as a plan for medical care sponsored by Group Hospital Service and serves the state of Delaware. It offers its contracts only in the form of a surgical service rider, issued only to subscribers to a hospital service plan. On Dec 31, 1943 it had a total of 4,622 males and 6,166 females, including subscribers and dependents. On Dec 31, 1943 it had received as income from subscribers \$25,011.45, expended \$8,700.52 and has a reserve of \$16,310.93.

*Hospital Saving Association of North Carolina Inc*—This is a combination hospitalization and surgical plan and the financial figures cover the combined operation. The hospitalization contract covers 66,162 males and 90,886 females. The surgical plan covers 13,535 males and 16,638 females. The total income from all subscribers for the period from Dec 31, 1943 was \$932,587.38. The plan as a whole now has a surplus of \$311,703.30.

*Massachusetts Medical Service*—The plan was organized in July 1942 and serves the state of Massachusetts. It offers a contract covering surgery obstetrics x-ray and anesthesia. On Dec 31, 1943 it had a membership of 9,678 males and 11,306 females. During 1943 it received an income from subscribers of \$41,949.78, of which it expended \$12,045.36. On March 29, 1944 it had a surplus of \$37,045.36.

*Medical Service Association Inc*—This was organized in 1940 and serves fourteen counties in North Carolina. It is operated only jointly with the local hospital service plan, with the medical contract on an indemnity plan. The membership of Oct 30, 1943 was 13,031. Income to April 18, 1944 was \$53,317.16. Of this amount \$45,734.39 was spent for medical services and \$4,775.96 for operating expense, \$2,244.69 remains in the treasury. There is an operating reserve of \$562.12.

*Medical and Surgical Care, Inc*—This was organized in 1941. The original plan was changed somewhat in May 1942. It serves fifteen counties in central and northern New York. It offers its surgical contract with a medical rider operative only after the first two calls of any illness and allows credits on the patients bill. About 19,200 persons are now enrolled for the ten months ended Oct 31, 1943. There was a total income of \$111,851.14, disbursements amounted to \$94,906.09 and the plan has a surplus of \$15,320.71.

*Michigan Medical Service*—The first contract was issued March 15, 1940. The plan serves the state of Michigan, and at present its contracts are entirely surgical. On Dec 31, 1943 it had a total of 467,717 subscribers and dependents. Its income during 1943 was \$367,372.95. During that year the total disbursements were \$3,063,837.62, showing a total gain of \$303,535.33. It has now accumulated a reserve of \$136,242.71.

*Western New York Medical Plan Inc*—This was organized in March 1940 to serve six counties in western New York and offers medical surgical contracts. It has 7,602 male and 7,437 female medical-surgical contracts, and 2,339 male and 2,711 for female surgery only. Its total income up to Dec 31, 1943 was \$119,275.93. Of this it expended \$103,796.96 and has accumulated a surplus of \$8,286.88.

## Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS EDUCATION AND PUBLIC HEALTH)

### CALIFORNIA

**Personal**—Dr Jacob C Geiger, San Francisco, on October 14 received the honorary degree of doctor of science from Tulane University of Louisiana School of Medicine, New Orleans. Dr Geiger gave the commencement address on this occasion—Dr David E Smallhorst, Glendale, health officer for the San Fernando District, has retired under civil service rules. He has been connected with the Los Angeles County Health Department since 1926.

**Court Orders Restoration of Physician's License**—The state district court recently upheld a superior court verdict ordering restoration by the state board of medical examiners of the license of Dr Thomas D Wyatt, Redding newspapers reported August 10. The license had been revoked by the board when it charged Dr Wyatt with performing two illegal operations at a Redding hospital in March 1942, it was stated (THE JOURNAL, June 26, 1943 p 629). The women involved testified in superior court that the operations were legal.

**Position Open in San Diego**—The department of civil service and personnel of the County of San Diego announces a vacancy in the position of assistant director of public health of San Diego County. Applicants must be citizens of the United States, have a license to practice medicine in the state, have two years of successful experience in a recognized department of public health and present a certificate or degree from a recognized school of public health. The salary is between \$405 and \$422 a month. Additional information may be obtained from Room 212, Civic Center Building, San Diego 1.

### GEORGIA

**Personal**—Dr John P Kennedy recently retired as health officer of Atlanta, a position he held for forty-three years.

**New Professor of Pediatrics**—Dr Roger W Dickson was recently appointed professor and chairman of the department of pediatrics at Emory University School of Medicine, Atlanta. Dr Dickson was also made chief of the pediatric service in the Grady Hospital, Atlanta.

**Building Planned for Georgia Medical School**—A new building to cost approximately \$200,000 will be constructed for the University of Georgia School of Medicine, Augusta, when the war is over to take the place of the old college building, according to Dr G Lombard Kelly, dean. The old building will be converted into a student union, housing a swimming pool, gymnasium, restaurant and recreation rooms.

### INDIANA

**Changes in Health Personnel**—Dr Clarke Rogers, Indianapolis, has been appointed a member of the Indianapolis Board of Health to succeed Dr Arthur F Weyerbacher, resigned—Dr Stephen C Bradley has been placed in charge of the department of contagious diseases of the Terre Haute board of health, succeeding the late Dr Maurice B Van Cleave.

**Dr Page Goes to Cleveland Clinic**—Dr Irvine H Page for seven years director of the Eli Lilly Laboratory for Clinical Research and the Lilly Clinic, Indianapolis, has resigned to become director of research for the Cleveland Clinic, Cleveland effective January 1. Dr Kenneth G Kohlstaedt, assistant superintendent of the Indianapolis City Hospital, will succeed Dr Page.

### IOWA

**First Annual Meeting on Mental Hygiene**—The Iowa State Society for Mental Hygiene, which was organized during the past year with Dr Walter L Bierring, Des Moines, state health officer, as president, will hold its first annual session at the Hotel Kirkwood, Des Moines, October 28. Among the speakers will be Major S O Meisner on "Problem of the Constitutional Psychopath", Luther E Woodward, Ph.D., New York, "Social Adjustment of Returning Veterans," and Mr Everett S Elwood, president, American Occupational Therapy

Association, Philadelphia, "Occupational Therapy in War and Postwar." A panel discussion on "Mental Hygiene Postwar" will be conducted by Ralph H Ojemann, Ph.D., Iowa City, Dr Andrew H Woods, Iowa City, King Palmer, Iowa Board of Social Welfare, Des Moines, Marjorie O Lyford, R. N., Des Moines, and Dr Robert L Jackson, Iowa City.

### KENTUCKY

**Changes in Health Personnel**—Dr Don E Wilder, Grayson, has been named health officer of Breathitt County—Dr Wallace Byrd, Williamstown, has resigned as health officer of Grant County—Dr William L Wright, Louisville, has been placed in charge of the Bell County Health Department, Pineville—Dr Charles J Grubin, Arlington, Va., has been named health officer of Madison County with offices in Richmond.

**State Medical Election**—Dr J Watts Stovall, Grayson, was chosen president-elect of the Kentucky State Medical Association at its annual meeting in Lexington and Dr Oscar O Miller, Louisville, was inducted into the presidency. Other officers include Drs Kirby S McBee, Owenton, Clement V Hiestand, Campbellsville, and Walter I Hume, Louisville, vice presidents. Dr Philip E Blackerby, Louisville, state health officer, is the secretary. The next annual meeting will be held in Bowling Green.

**Visiting Professors Provided Under New Fund**—The Commonwealth Fund has established a fund to bring visiting professors to the University of Louisville School of Medicine. Dr Carl V Moore, associate professor of medicine, Washington University School of Medicine, St. Louis, was to start his residence October 9 to continue through October 21 and Dr William F Windle, professor of neurology and director of the institute of neurology, Northwestern University Medical School, Chicago, will be in residence for the month of November. Changes in the faculty at Louisville include the resignation effective November 15, of Dr Gerhard Lehmann, associate professor of pharmacology, to become pharmacologist of Hoffmann-La Roche, Inc., Nutley, N. J. Dr Richard C Porter, instructor in medicine, University of Buffalo School of Medicine, and associate director of laboratories in the Edward J Meyer Memorial Hospital, Buffalo, has been made assistant professor of pharmacology at Louisville. He has a medical service in the Louisville General Hospital and will teach applied pharmacology to the medical students.

### LOUISIANA

**New Tuberculosis Society**—A charter has been adopted and the organization completed of the Tuberculosis Association of New Orleans with Drs John H Musser as president and Julius L Wilson as medical consultant. The group formerly functioned as the Tuberculosis Committee of New Orleans.

**Personal**—Dr Marie-Louise M Pareti has resigned as acting chief of the section of maternal and child health of the Louisiana State Board of Health to become assistant to Dr James R Reinberger, Memphis, Tenn.—Dr Elvira A Corrales-Smith, Monroe, has been appointed director of the Acadia Parish Health Unit.

### MICHIGAN

**Bruce Testimonial Lecture**—Dr John W Hirshfeld, Detroit, will deliver the opening lecture in each of the nine centers sponsored by the committee on postgraduate medical education of the Michigan State Medical Society this fall. His subject will be "Penicillin" and the lecture has been designated the James D Bruce testimonial lecture in honor of Dr Bruce, who has been chairman of the committee on postgraduate medical education for a long period.

**Beaumont Gavel Given to State Society**—At special ceremonies recently the Mackinac Island State Park Commission Mackinac Island, presented the Beaumont gavel to the Council of the Michigan State Medical Society. The gavel was carved out of the only piece of timber which has ever been allowed to be taken from the Early House on Mackinac Island, where Dr William Beaumont cared for Alexis St Martin. The wood is pure white pine and was grown and cut on the island and used in the original structure of the Early House. The presentation was made by Wilfred F Doyle, chairman and resident commissioner of the Mackinac Island State Park Commission, who reported that the Early House had been purchased through a grant made by Parke, Davis & Company and outlined the plans to put the building into shape as a museum and memorial to Dr Beaumont. Mr Doyle recom-



pending the appointment of a permanent committee representing the Michigan State Medical Society, the Beaumont Foundation and the Mackinac Island State Park Commission to ensure maintenance of the Beaumont shrine

**Nutrition and Public Health**—'Implications of Nutrition and Public Health in the Postwar Period' will be the theme of a conference November 3 in the auditorium of the Horace Rackham Memorial Building, Detroit under the auspices of the Children's Fund of Michigan. The following will participate

Dr Frank G Boudreau New York The International Implications of Freedom from Want of Food  
Dr Paul R Cannon Chicago The Importance of Proteins in Resistance to Infection  
Dr L Emmett Holt Jr Baltimore Protein Deficiencies in Man  
Dr Philip C Jeans Iowa City Maintaining Dental Health  
Charles G King Ph D, New York Vitamins and the Health of the Nation  
Leonard A Maynard Ph D New York Food Production for Better Health and Longer Life  
Elmer V McCollum Sc D Baltimore Our National Diet and Future Health  
Roy C Newton, Ph D Chicago Role of Food Technology in Improving Nutrition  
Dr Harold C Stuart Boston, Nutritional Reconditioning of Children in Occupied Countries  
Group Captain Frederick F T dall R C A F Research and Nutrition for Human Health

### MINNESOTA

**Proposed Medical Foundation**—The merger of two funds within the Hennepin County Medical Society has been proposed to found the Hennepin County Medical Foundation. This plan, which would combine an existing trust fund in the society and the recently approved annuity-insurance setup, would finance medical research and laboratory projects, lectures, medical scholarships, awards for medical achievements, a medical library, the promotion of health education and loans without interest, to physicians who have served in the armed forces and who will be in need of assistance in reestablishing themselves. It is believed that the contributions to the existing trust fund or to the proposed new fund would increase if contributions could be considered tax exempt, and a ruling on the subject is now under consideration

### NEW JERSEY

**Dr Shangle Honored**—A dinner was held in Elizabeth recently in honor of Dr Milton A Shangle in recognition of his promotion to the position of senior attending surgeon at the Elizabeth General Hospital and Dispensary, where he has served successively as intern, dispensary physician, assistant surgeon, gynecologist, obstetrician and surgeon. A portrait of Dr Shangle, executed by Maxwell Stewart Simpson, Elizabeth, was presented to the physician by members of the staff. Dr Shangle graduated at the Columbia University College of Physicians and Surgeons in 1900 and came to Elizabeth the following year

**Industrial Health Study**—Dr Marie A Scna, Newark, has been engaged by the bureau of industrial health of the New Jersey Department of Health to conduct a study of industrial health of workers in the food processing and related agricultural industries. Information on the medical facilities and plant health programs of canneries and of fertilizer, flour, feed and other industries will be obtained. The health and sanitary facilities of workers will be observed, according to *Industrial Medicine*. The bureau is beginning the publication of an *Industrial Health Bulletin*, the first issue of which will be devoted to the prevention of heat illness

### NEW YORK

**New Executive Secretary of Westchester County**—Mr Boyden Roseberry, director of the medical department of the Children's Aid Society of New York, is the new executive secretary of the Medical Society of the County of Westchester

**Ninety Years of Age**—Dr Myron E Carner, who has been active in Lyons fifty-six years, celebrated his ninetieth birthday, September 17. The physician graduated at the University of Vermont College of Medicine, Burlington, in 1885

**Graduate Lectures**—Morton C Kahn, Ph D, associate professor of public health and preventive medicine, Cornell University Medical College, New York, will address the Memorial Hospital of Greene County and the Greene County Medical Society, October 26, Catskill, on "Transmission of Disease by Lice, Fleas, Ticks and Other Insects." On November 17 Dr Leo E Gibson, professor of clinical surgery (urology), Syracuse University College of Medicine, Syracuse will

discuss "Infections of the Genitourinary Tract" before the Cortland County Medical Society. Dr Albert G Swift, professor emeritus of surgery, Syracuse University College of Medicine, addressed the society, October 20, on "Surgical Lesions of the Biliary Tract"

### New York City

**Medical Alumni Honors Doorman**—Charles Costello, 75 year old doorman at Columbia University College of Physicians and Surgeons, was the guest of honor at a dinner September 26, given by the medical school alumni association in recognition of his completion of fifty years of service to the university. Guest speakers at the dinner, which was the annual fall meeting and dinner of the alumni association, included Comdr Gordon M Bruce (MC), John F Kieran and Dr Willard C Rappleve, dean of the college. Dr John J H Keating, president of the alumni association, presided

**First Achievement Award Goes to Robert Dickinson**—On September 28 Dr Robert L Dickinson in charge of a studio of medical art at the New York Academy of Medicine, received the first Alumni Achievement Award at the commencement exercises of Long Island College of Medicine, Brooklyn. Dr Dickinson graduated at the college in the class of 1882. The medallion which constitutes the award bears the head of Hygieia, goddess of health. It has been established to honor graduates of the college who have made notable contributions to American medicine. Eleven prize awards went to ten students in the graduating class who trained for the army medical corps and one who trained for the navy medical corps. Top honors in the class went to Lieut Hector Wright Benoit Jr, M C, who received the Mitchell prize awarded to the member of the class who in the judgment of the faculty is best qualified in all departments of medicine and Lieut Leonard Lincoln Madison M C, who received the Phi Delta Epsilon prize, awarded for the highest scholastic record. Lieutenant Benoit, who graduated at Cornell University, is serving his internship at Kings County Hospital and Lieutenant Madison, who graduated at Ohio State University, is serving his internship at Mount Sinai Hospital. Nine other prizes include

Lieut Raymond Saigh M C the Dudley Medal for the best clinical report of a case in the medical wards of the college

Lieut Grafton Edgar Burke M C the Dudley Memorial Medal for the best clinical report of a case in the surgical wards of the college

Lieut John Andrew Matheson M C the Ford Prize for the best dissection

Lieut Charles Mindell Plotz M C the Nathan H and Johanna Szerlip Medal for the best thesis on pneumonia

Lieut Leonard Castleman M C the Alumni Prize to the member best qualified in gynecology

Lieut Joseph Daniel Casolaro M C Prize of the Class of 1898 to the member whose scholastic average in the fourth year has shown the greatest improvement over that of previous years

Lieut Joseph John Lambert Jr (MC) the Obstetric Prize for the best thesis on a subject in obstetrics

Lieut Bernard Anatole Sachs M C the Robert R Benedict Jr Prize for the best report on a psychosomatic study

Lieut Herbert Jay Rosen M C the Joseph Howard Raymond Prize in physiology

### NORTH CAROLINA

**Officers of Examining Board**—Dr Charles W Armstrong, Salisbury, was chosen president of the North Carolina State Board of Medical Examiners at the board's semiannual meeting in Raleigh in September, succeeding Dr Lester A Crowell Jr, Lincolnton. Dr Ivan M Proctor, Raleigh is the new secretary of the board, succeeding Dr William D James Hamlet

**Dr Roger Baker Goes to Alabama**—Dr Roger D Baker, associate professor of pathology in charge of surgical pathology, Duke University School of Medicine, Durham has been appointed professor and chairman of the department of pathology in the Medical College of Alabama at Birmingham effective on December 1. Dr Baker requests that necropsy and surgical materials for the Fungus Disease Registry be sent to him at Birmingham 5 after that date. The mycologic and serologic materials of this registry should continue to be sent to the office of Dr David T Smith, Duke Hospital, Durham

**Personal**—Dr Yates S Palmer, Valdesce, has been appointed a member of the North Carolina Hospitals Board of Control.—Dr Harold C Whims, Newton health officer of Catawba County, has also been given the administrative direction of the unit in Iredell County.—James C Andrews, Ph D, professor of biologic chemistry and head of the department at the University of North Carolina School of Medicine, Chapel Hill is serving as exchange professor of biologic chem-

istry and nutrition at the National University of Guatemala Medical School, Guatemala City, for a period from September 1 to January 1. Granvil C. Kyker, Ph.D., is acting head of the department at the university.

## OREGON

**State Medical Election**—Dr. Lansford M. Spalding, Astoria, was chosen president-elect of the Oregon State Medical Society at its meeting in Portland, September 3, and Dr. Edward H. McLean, Oregon City, was installed as president. Other officers include Drs. James C. Hayes, Medford, Dean P. Crowell, Marshfield and Burton A. Myers, Salem, vice presidents. Dr. Thomas S. Saunders Jr., Portland, was named secretary and Dr. Richard Lloyd Tegart, Portland, treasurer. Portland was tentatively chosen as the place for the 1945 session sometime in September.

## PENNSYLVANIA

**State Medical Election**—Dr. William L. Estes Jr., Bethlehem, was named president-elect of the Medical Society of the State of Pennsylvania at its annual meeting, September 20, and Dr. William Bates, Philadelphia was inducted into the presidency. Dr. Walter F. Donaldson, Pittsburgh, is secretary. The next annual session will be held in Philadelphia about October 1.

### Philadelphia

**Lectures on Mental Hygiene**—The committee on nervous diseases and mental hygiene of the Philadelphia County Medical Society opened a series of lectures on mental hygiene September 25 with a talk by Dr. Frederick H. Aiken on "Mental Health from the Standpoint of Child Guidance" and one by Dr. Ralph M. Lyson on "The Relation of Mental Health to the Growth and Development of the Child." Others in the series include:

- Drs. Edward Weiss: Mental Health as Related to Internal Medicine and O. Spurgeon English: Psychosomatic Medicine. October 2.
- Drs. J. Inured B. Stewart: Delinquency in Minors as Seen at the Municipal Court and Gerald H. J. Pearson: Disturbances of Mental Health as Recognized in the Delinquency of Minors. October 9.
- Drs. Edward A. Steinhilber: Recognition of Disturbances of Mental Health and Joseph C. Yaskin: Aids to the General Practitioner in the Handling of Psychoneurosis. October 16.
- Dr. Bernard J. Alpers: Disturbed Mental Health from Head Injuries and as an Organic Pathologic Condition and Lieut. Comdr. Joseph F. Hughes (MC): Laboratory Methods Useful in the Study of Psychoses, Psychoneuroses and Convulsive States. October 23.
- Drs. Leroy M. A. Maeder: Rehabilitation of Psychoneurotic Service Men and Their Psychologic Adjustment to Civilian Life and Robert A. Matthews: Marital Situations in Which Mental Health Plays a Part. October 30.
- Drs. H. Craig Bell: Responsibility of the Medical Man in the Role of an Activator of Mental Disturbance and Samuel B. Hadden: Treatment of Psychoses. November 6.

**Care of Mentally Defective Children**—A committee appointed by Charles L. Brown, president judge of the Municipal Court of Philadelphia, to study the problem of the care and disposition of the feeble-minded, epileptic and the defective delinquent, has submitted a report. The committee has divided its recommendations into two groups, those concerned with institutional placement and those with extrainstitutional family placement. Concerning the former, it is urged that immediate provision should be made for an increase of at least 50 per cent in the bed capacity to be used largely for defective children of low earning and indigent families. For a long term program the bed capacity must be increased by at least 100 per cent. Specific recommendations pertain to certain institutions, one suggestion urging the establishment of a new institution for the feeble-minded outside of Philadelphia to serve the city and the surrounding counties, thereby with other additions helping to eliminate the disparity (estimated as 2 to 1) between the bed capacity for defectives in the western part of the state as compared with the eastern part of the state. The report emphasizes the immediate need for special provisions to care for the group requiring custodial care (about 800 low grade defectives for Philadelphia). Special accommodations should be made for cases with accompanying physical handicaps. It is pointed out that an institution for defective delinquent boys, both white and Negro, under the age of 15 years is urgently needed. This should be an institution of the cottage system type with provisions for manual training through trade and farm schooling. It should be state controlled and, with a capacity of about 200, should serve Philadelphia and adjacent counties. Added accommodations are needed for a similar group to meet the needs of boys 16 and 17 years of age who are now committed to the Huntingdon Reformatory. There is also a need for an institution for female defective delinquents, irrespective of age and color, and

one for the more seriously delinquent girls below 16 years of age. In its consideration of family placement facilities and extrainstitutional (community) care, the organization of a central agency, board of review, is urged for Philadelphia to register all mental defectives, epileptic persons and defective delinquent cases, to review all problem cases and to maintain follow-up records. This board should be established under the Philadelphia Department of Public Welfare and have available all data concerning changes in status and location of individual children. The expansion of the release and parole policy of institutions is treated in the report and the urgent need for special consideration in the family care in foster homes. Individual recommendations are made covering the systematic training, investigation and selection of the foster family.

## TENNESSEE

**Changes in Health Officers**—Dr. Joseph T. Nardo, Somerville, has resigned as director of the Fayette County Department of Health to reenter the U. S. Public Health Service. Dr. Rutherford O. Ingham, Johnson City, has resigned as director of the Washington County Health Department. He will be succeeded by Dr. Marion G. Fisher, Jonesboro. Dr. Robert B. Griffin has been named director of the Jackson and Madison County Health Department to succeed Dr. Lamar A. Byers, who accepted a similar position in Coos County, Oregon. Dr. Gray O. Pearson, director of the Chattanooga-Hamilton County Health Department, has resigned to enter private practice and become associated with the Earl Campbell Clinic, effective October 1. Dr. Paul M. Golley, director of the division of tuberculosis control, has been named director of the health unit. Dr. Pearson became head of the Hamilton County unit in 1939 and remained in the position when the city and county health departments were merged in 1941.

## UTAH

**Personal**—Dr. Ezra C. Rich, Ogden, was given a dinner by the Weber County Medical Society, August 23, in recognition of his completion of fifty years in the practice of medicine and of his eightieth birthday.

**University News**—Dr. James P. Kerby has resigned as associate clinical professor of medicine (radiology) at the University of Utah School of Medicine, Salt Lake City. He had been serving on a part time basis. On September 10 the first graduation exercises of the new four year medical school were held. Thirty-two men and three women were granted the degree of doctor of medicine. Honorary degrees of doctor of science were conferred on Thomas Parran, Surgeon General of the U. S. Public Health Service, who gave the commencement address, and Dr. Samuel C. Baldwin, one of the pioneer orthopedic surgeons in Utah.

## WISCONSIN

**State Medical Election**—Dr. Patrick R. Minahan, Green Bay, was named president-elect of the State Medical Society of Wisconsin at its annual meeting in Milwaukee, September 19. Dr. Charles Fidler, Milwaukee, was installed as president. Mr. Charles H. Crownhart, Madison, is the secretary.

**Meeting of Chest Physicians**—On September 17 the first annual meeting of the Wisconsin Chapter of the American College of Chest Physicians was held at the Hotel Schroeder, Milwaukee. The speakers included:

- Dr. Frederick M. F. Meixner: Peoria, Ill. Pregnancy in Tuberculosis.
- Dr. Minas Ioannides: Chicago. Tuberculosis Control in General Hospitals.
- Drs. Abraham R. Hollender and Paul B. Szanto: Chicago. Tuberculosis of the Nasopharynx.
- Dr. Richard M. Davison: Chicago. Surgical Management of Empyema.
- Dr. Jay Arthur Myers: Minneapolis. The Medical Profession and the Control of Tuberculosis.

Dr. Leon H. Hirsh, West Allis, is secretary-treasurer of the Wisconsin chapter.

**University Society Meetings**—The University of Wisconsin Medical Society, Madison, opened its regular meetings October 3 with a presentation by Merle S. Nichols, Ph.D., and Paul H. Phillips, Ph.D., on "Fluorine and Dental Caries." Subsequent lectures in the series will include:

- Dr. Charles J. Thill: Present Status of Penicillin Therapy, November 7.
- Staff of McArdle Memorial Laboratory: Current Research Problems in Cancer, December 5.
- Malcolm R. Irwin: Ph.D. Genetics and Resistance to Disease, January 2.
- John A. E. Eyster, Ph.D.: Recent Advance in Cardiac Physiology, February 6.
- Harland W. Mossman: Ph.D. and Roland K. Meyer: Ph.D. Some Special Structures and Functions of the Ovary, March 6.
- Dr. Philip P. Cohen: Some Aspects of Protein Metabolism in Disease, April 3.
- Dr. Raymond C. Herrin: Recent Advance in Kidney Physiology, May 1.

## GENERAL

**National Committee on Alcohol Organized**—The organization of a National Committee for Education on Alcoholism Inc. was announced October 2. Offices will be at 2 East 103d Street, New York. Elvin M. Jellinek, ScD, director of the Yale School of Alcohol Studies, New Haven Conn. (THE JOURNAL, June 12 1943, p 454) is chairman of the board of the new committee and Mrs. Marty Mann is executive director.

**Achievement Award Goes to Florence Seibert**—The National Achievement Award medal, sponsored by Chi Omega Sorority annually to honor "an American woman of notable accomplishments," was presented to Florence B. Seibert, Ph.D., associate professor of biochemistry at the Henry Phipps Institute in Philadelphia October 6 by Mrs. Roosevelt. The honor goes to Dr. Seibert for her work in tuberculosis research.

**Dr. Goodpasture Receives Sedgwick Medal**—The Sedgwick Memorial Medal of the American Public Health Association was presented to Dr. Ernest W. Goodpasture, professor of pathology, Vanderbilt University School of Medicine, Nashville, October 3. The medal is given for distinguished service in public health. Dr. Goodpasture among other achievements is recognized for his work on originating a method to cultivate microorganisms of typhus fever.

**Sage Foundation Creates Department of Studies in the Profession**—Esther Lucile Brown has been appointed director of the newly organized department of studies in the professions of the Russell Sage Foundation, New York. Miss Brown has been a member of the foundation's staff since 1933 and is the author of five volumes dealing respectively with the professions of engineering, law, medicine, nursing and social work. According to an announcement the department will continue to make studies or carry on research in the social aspects of the professions having completed five studies before its formal organization.

**Special Society Elections**—Major Barnes Woodhall, M.C., was elected president of the American Academy of Neurological Surgery at its recent meeting in White Sulphur Springs, W. Va. Dr. Arthur R. Elvidge, Montreal, vice president and Dr. Theodore C. Erickson, Madison, Wis., secretary-treasurer. —Capt. John C. Adams (MC) was chosen president-elect of the Aero Medical Association of the United States at its annual meeting in St. Louis, September 4, and Brig. Gen. Eugen I. G. Reinartz, M.C., was installed as president. Other officers include Dr. Delazon S. Bostwick, Ardmore, Pa., Major Gen. David N. W. Grant, M.C., Dr. William R. Stovall, Washington, D.C., Air Commodore James W. Tice, R.C.A.F., and Col. Arnold D. Tuttle, M.C., retired, vice presidents. Dr. James C. Braswell, Tulsa, Okla., business manager and Dr. David S. Brachman, Detroit, secretary-treasurer.

**Neuropsychiatric Meeting**—The Central Neuropsychiatric Association will hold its annual meeting at the Palmer House, Chicago, October 31. Among the speakers will be

Dr. Loren W. Avery, Chicago, The Neurologic Symptoms Associated with Porphyria  
Dr. Abram E. Bennett, Omaha, Meningitis of the Foramen Magnum  
Dr. John L. Garvey, Milwaukee, Cases of Serum Neuritis  
Dr. Ladislav J. Meduna, Chicago, The Common Factors in Shock Therapy  
Dr. Howard D. McIntyre, Cincinnati, The Prognosis and Treatment of Multiple Sclerosis  
Dr. Joseph C. Michael and Charlotte Buhler, Minneapolis, Comparative Diagnostic Studies with the Use of Rorschach, Murray, Apperception and Minnesota Multiphasic Tests  
Dr. Richard B. Richter, Chicago, Degeneration of the Basal Ganglia from Chronic Carbon Disulfide Poisoning in Monkeys  
Dr. Andrew L. Skoog, Kansas City, Mo., Nervous Complications of Sickle Cell Anemia  
Dr. Harold C. Voris, Chicago, Massive Extrusion of Lumbar Intervertebral Disks

Other sessions will be held at the University of Chicago, Northwestern University, University of Illinois and Loyola University medical schools.

**Maternal Mortality**—In 1942 there were twenty-nine states in which the maternal death rate was less than 25 per thousand live births, a record indicating the continued reduction in maternal mortality, according to statisticians of the Metropolitan Life Insurance Company. Two years earlier only two states recorded such a low figure. Of all the states, South Carolina alone in 1942 had a maternal death rate of more than 5 per thousand live births, while the number of states totaled thirty-one in 1936. The change is attributed chiefly to the widespread use of sulfonamide drugs in cases

of puerperal septicemia. In 1942 the leading cause of maternal deaths were septicemia which accounted for more than 2,800 deaths, puerperal toxemia which was responsible for 1,900 deaths and puerperal hemorrhage which caused about 1,100 deaths. One out of every 6 maternal deaths in the United States is due to abortion. This figure is an understatement; it was stated because many of the fatalities from illegal abortion are not reported as such and therefore are classified under other causes.

**Committee for Mental Hygiene**—The thirty-fifth annual meeting of the National Committee for Mental Hygiene will be held at the Hotel Pennsylvania, New York, November 8-9. The program has been divided into four sections: mental hygiene of industry and reconversion, rehabilitation and the returning veteran, race relations and services to the mentally ill today. Included among the speakers will be

Col. H. Edmund Bullis, The Hazards of Industrial Change Over  
Dr. Bruno Solby, Washington, D.C., The Meaning of Mental Hygiene in Industry  
Dr. Matthew Brody, Brooklyn, Dynamics of Mental Hygiene in Industry  
Dr. Samuel W. Hamilton, Washington, Needs and Opportunities in the Mental Hospital Field  
Capt. Wilson R. G. Bender, The Man as He Leaves the Service  
Dr. Solomon W. Ginsburg, New York, Community Responsibility for Neuropsychiatric Discharges  
Mrs. Ethel Ginsburg, New York, Veteran Into Civilian—The Process of Readjustment  
Dr. Thomas A. C. Rennie and Luther E. Woodward, Ph.D., New York, Rehabilitation of the Psychiatric Casualty  
H. Scudder Mekeel, Ph.D., Madison, Wis., Cultural Aids to Constructive Race Relations  
Robert L. Cooper, Esopus, N.Y., Frustrations of Being a Member of a Minority Group: What Does It Do to the Individual and to His Relationship with Other People?  
Harry C. Oppenheimer, New York, subject not announced  
Leonard Edelstein, Philadelphia, Dangers to Our Care of Patients  
Dr. Frank F. Tallman, Columbus, Ohio, What the Mental Hygiene Program of a State Might Be

Features of a luncheon session will be the presentation of the Lasker Award in Mental Hygiene and an address by Lyman Bryson of the Columbia Broadcasting System, New York, on "Effect of Peace Conditions on International Amity."

## Government Services

Medical Director of Public Health District  
Appointed

Dr. Otis L. Anderson, Washington, has been appointed medical director of district number 4 of the U.S. Public Health Service, with headquarters at New Orleans, to succeed Dr. Charles L. Williams, who recently went to Washington to become director of the Bureau of States Services (THE JOURNAL, September 9, p. 117).

## Rotating Internships and Residencies

Applications are now being accepted to fill positions as rotating interns and psychiatric residents at St. Elizabeths Hospital, the federal institution for the treatment of mental disorders in Washington, D.C. The positions pay \$2,433 a year including overtime pay. The internship consists of nine months of rotating service including medicine, surgery, pediatrics (affiliation), obstetrics (affiliation) and, as conditions permit, psychiatry and laboratory. Applicants must be third or fourth year students in an approved medical school. Psychiatric resident positions consist of nine months in psychiatry. Applicants must have successfully completed their fourth year of study in a medical school and they must have the degree of B.M. or M.D. In addition they must have completed an accredited rotating internship of at least nine months or be serving such internship at the time of making application. Persons who attain eligibility but who are still serving their internship may have their names submitted for appointment, but they cannot enter on duty until they have completed their internship. There are no age limits for this examination and no written test will be given. Applications will be accepted until the needs of the service have been met. Application forms may be secured at first and second class post offices from the commission's regional offices, or direct from the U.S. Civil Service Commission, Washington 25, D.C. Appointments to federal positions are made in accordance with War Manpower Commission policies and employment stabilization programs.

## Foreign Letters

### LONDON

(From Our Regular Correspondent)

Sept 23, 1944

#### Patulin for the Common Cold

In November 1943 a report was published on a clinical trial of patulin, a metabolic product of the mold *Penicillium patulum*, claiming that it had given significant results in the treatment of the common cold. The results in 95 cases were considered encouraging when compared with 85 controls. The discovery of an effective treatment for the common cold being thought desirable, the Medical Research Council decided to investigate. Definition of the common cold offered considerable difficulties. There is no reason to believe that the condition is always or even usually due to the same agent. A second difficulty is that the duration of colds is variable. Third, the objective signs are too variable to serve as criteria for the presence and progress of colds. To meet the first difficulty large numbers of patients at widely separated places were used. To meet the second difficulty alternate cases were given a spurious treatment and served as controls. Therapeutic trials were carried out in eleven factories with a total population of 90,000, and in three units of the post office with a population of 15,000. The test solution was instilled into the nostrils. In all, 668 patients were treated with patulin and 680 with a control solution. No evidence was found that patulin is effective in the treatment of the common cold.

#### The Casualties and Damage of the Second Battle of London

London has withstood two severe bombings from the air which were entirely indiscriminate. The first and more severe was in 1940 and was made by bombing planes. The second began on June 15 of the present year and was made with flying bombs. The first ten weeks were the period of greatest intensity. The number of persons evacuated from London amounted to 818,000. At the end of June 81,000 were sheltering in the stations of the underground tube railway, but this was an improvement compared to 123,000 in September 1940. In public shelters of all kinds there were 462,000, compared to 470,000 in November 1940. The intensity of the attack at the end of June was shown by the fact that nearly half of the 400,000 houses damaged in the first two weeks had not received even a "field dressing." Early in July London began to get into its stride, and the evacuation machinery was running smoothly. Apart from those who went at their own expense there went out under government plans no fewer than 818,000 persons—228,000 mothers and expectant mothers, 537,000 children and 53,000 old, invalid and blind. One hundred London hospitals were damaged. The growing loss of beds and the possibility of an increasing attack led to evacuation of over 14,000 patients to hospitals all over Britain. The number of flying bomb casualties admitted to London hospitals was 14,558. The work in the hospitals from the start was magnificent. The ambulance service carried 27,000 casualties, and the first aid posts with their mobile units attended to 40,000 minor cases. The special ambulance service for transferring patients from damaged hospitals to others and for the reception of overseas casualties carried 52,000 patients in the first ten weeks.

Each flying bomb destroyed or damaged an average of four hundred houses during the ten weeks. Some 51,000 people were rehoused in requisitioned houses and 57,000 were billeted. A labor force of 75,000 was engaged in repairs of houses and other buildings. Everything possible was done to see that as many homes as possible were created in the coming months. At the present time there are nearly 900,000 houses in London in need of repair from bomb damage.

#### National Scheme for the Diagnosis of Pulmonary Tuberculosis by Mass Radiography

The Medical Research Council's Committee on Tuberculosis in Wartime recommended that mass radiography should be under the general direction of the Ministry of Health and should not be lightly undertaken. A high standard of quality was necessary for correct interpretation, which required great radiologic skill. The Mass Radiography Subcommittee of the Minister of Health's Standing Advisory Committee on Tuberculosis laid down that, when mass miniature radiography is undertaken on a large scale, trustworthy and comparable results can be secured only from the use of carefully designed standard apparatus. The government therefore ensured that the standard apparatus which is arranged to be manufactured and supplied to selected local authorities should be of the highest quality and able to meet much greater stresses than ordinary x-ray machines.

As employers may be considering arrangements for the mass radiography of their employees, the Ministry of Health has issued a warning and pointed out that there are difficulties and dangers which may not be obvious. The primary purpose of mass radiography is not diagnosis in the ordinary sense. The object is to discover in a group of ostensibly healthy persons those who have signs indicating the possibility of incipient disease, which should be further investigated by more intensive methods. Persons who do not have ground to suspect that they are in any risk of illness must be ready to be examined. Anything that would weaken public confidence in mass radiography would therefore impair its usefulness. So also would anything that would lead the public to expect too much from this new method.

It is important to realize that mass radiography has not made the diagnosis of pulmonary tuberculosis easier, on the contrary, it brings to light many symptomless minimal cases. Recovery occurs spontaneously in numbers of these without treatment, and the prognosis in any case can be assessed only by the most careful clinical investigation and periodic supervision. As the diagnosis of tuberculosis may involve change or loss of work and may prejudice life insurance, it should be made only by experts with all the diagnostic procedures at their disposal. Provision for this is made in the national scheme operated by the health authorities. Another point is that the government's mass radiography scheme includes arrangements for collecting far more information on the incidence of tuberculosis than has ever been available before, which will be of great value in the campaign against tuberculosis. This can be assured only by a uniform scheme and a standardized system of records.

## Marriages

HARRY BELLACH, Brooklyn, to DR. ELIZABETH CORNFELD of New Haven Conn., in Brooklyn, September 10.

WILLIAM ANDREW DALE, Columbia, S. C., to Miss Corinne Craig Howell of Nashville, Tenn., September 11.

GEORGE SHERMAN RIPLEY JR., Mount Vernon, N. Y., to Miss Phyllis E. Walch of Torrington, Conn., June 28.

WILLIAM LYMAN HUFFMAN, Cleveland, to Miss Jane Elizabeth Mohr of Lakewood, Ohio, in September.

ROBERT JAMES BARNETT, Greenwood, Miss., to Miss Martha Ann Robinson in New Orleans, August 26.

WILLIAM C. CLYNE to Miss Kathryn Fitzgerald, both of New York in Katonah, N. Y., September 11.

RAYMOND F. GRENFELL, Pittsburgh, to Miss Maude Byrnes Chisholm of Columbia, S. C., August 19.

ALVIN J. BEECHER to Miss Violet Aurelia Dionca, both of Detroit, August 12.

M. BAYTER ASNIS New York, to Miss Elfreda M. LEONARD of Boston in May.

## Deaths

**Lieuen Moss Rogers** ♂ Senior Surgeon, U S Public Health Service, Fort Worth, Texas, University of Texas School of Medicine, Galveston, 1916, specialist certified by the American Board of Psychiatry and Neurology, Inc., member of the American Psychiatric Association served as vice president of the Kentucky Psychiatric Association entered the U S Public Health Service Reserve as an assistant surgeon in October 1921 and became a member of the regular corps April 5, 1922, serving at the Quarantine Station, New Orleans, accepted a commission as a first lieutenant in the U S Army in 1917 and served in that capacity at Kelly Field, San Antonio, Texas, went overseas in July 1918 and became battalion medical officer of a front line unit from 1922 to the time of his death he served as public health officer in New Orleans, Washington, D C, New Mexico, Colorado, Missouri, New York, Texas and at the American Consulate, Cobh, Irish Free State, had been associated with Dr Joseph Goldberger in the isolation of the pellagra preventive vitamin and the determination of the pellagra preventive values of various foods, from 1936 to 1940 had been medical officer in charge of field studies in mental hygiene at Lexington Ky, in 1940 detailed to Springfield, Mo, Medical Center for Federal Prisoners, transferred to the Federal Reformatory at Chillicothe, Ohio, in 1941 and at about the same time was promoted to senior surgeon, remained at the institution in Chillicothe until his most recent transfer, July 1, 1944, to the U S Public Health Service Hospital in Fort Worth where he died September 7, aged 53, of coronary thrombosis

**John Sinclair Dye** ♂ Waterbury, Conn, Vanderbilt University School of Medicine, Nashville, Tenn, 1900 Columbia University College of Physicians and Surgeons, New York 1915, fellow of the American College of Surgeons, past president of the New Haven County Medical Association and the Waterbury Medical Association first lieutenant Tennessee National Guard, Company B, Detached Cavalry, from 1901 to 1908, entered the medical corps of the U S Army during World War I as a captain and advanced to the rank of colonel after two years after the war worked for a time in the Surgeon General's Office, standardizing the surgical services of army base hospitals in this country, later served as chief of the division of surgery in the Surgeon General's Office, colonel, medical reserve corps, not on active duty, at one time member of the board of health in Chattanooga Tenn, where he was chief of staff of the Erlanger Hospital from 1908 to 1914, chief surgeon at the Chase Brass and Copper Company, on the staffs of St Mary's Hospital and the Waterbury Hospital, where he died August 9 aged 67, of coronary occlusion with pulmonary embolism and infarction

**Walter Hughson** ♂ Chestnut Hill, Pa Johns Hopkins University School of Medicine, Baltimore, 1918, specialist certified by the American Board of Otolaryngology, member of the American Academy of Ophthalmology and Otolaryngology, American Laryngological, Rhinological and Otolological Society, American Otolological Society, Inc and the American Association of Anatomists, formerly assistant and instructor in anatomy, associate in applied anatomy and surgery, associate professor of surgery and associate surgeon, associate in clinical surgery, associate in research otology and associate professor of otology at the Johns Hopkins University School of Medicine, Baltimore, served as assistant visiting surgeon to the Johns Hopkins Hospital, Baltimore instructor in otolaryngology at the University of Pennsylvania School of Medicine and associate in otology at the University of Pennsylvania Graduate School of Medicine, Philadelphia consultant to the Bureau of Child Hygiene, U S Public Health Service since 1935 director of the otologic research laboratory at the Abington Memorial Hospital, Abington, where he died September 13, aged 53, of pneumococcal meningitis

**Robert Bennett Bean**, Charlottesville Va, Johns Hopkins University School of Medicine Baltimore 1904 retired in 1942 as professor of anatomy at the University of Virginia Department of Medicine, where he had been since 1916, assistant in anatomy at his alma mater, 1904-1905 instructor of anatomy at the University of Michigan Ann Arbor, from 1905 to 1907 formerly director of the anatomic laboratory and associate professor of anatomy at the Philippine Medical School, Manila at one time associate professor of anatomy and professor of Gross anatomy at the Tulane University School of Medicine New Orleans served as president of the New Orleans Academy of Sciences, fellow of the American

Association for the Advancement of Science member of the American Association of Anatomists and the American Anthropological Association, corresponding member of the Societa Romana Antropologia author of *Racial Anatomy of the Philippine Islanders*, 1910 *Races of Man* 1932 and *Peopling of Virginia*, died in Staunton August 27, aged 70 of cerebral arteriosclerosis and cerebral hemorrhage

**John Borneman Ludy** ♂ Philadelphia University of Pennsylvania Department of Medicine, Philadelphia, 1906 specialist certified by the American Board of Dermatology and Syphilology, member of the American Academy of Dermatology and Syphilology demonstrator of dermatology at the Jefferson Medical College, served during World War I colonel, medical reserve corps, U S Army, not on active duty, author of *Atlas of Skin Disease*, received an honorary degree of doctor of science from the Franklin and Marshall College Lancaster Pa, consulting dermatologist to the Delaware County Hospital, Drexel Hill, and Norristown State Hospital Norristown dermatologist, American Oncologic Hospital Hospital of the Protestant Episcopal Church Lankenau Hospital Methodist Hospital, Philadelphia General Hospital Pennsylvania Hospital and the Abington Memorial Hospital Abington, Pa, where he died September 11, aged 64, of cardiovascular disease

**Hermann Bertram Gessner** ♂ New Orleans Medical Department of Tulane University of Louisiana, New Orleans, 1895, since 1936 professor of clinical surgery emeritus, at his alma mater, where he had been lecturer and demonstrator of operative surgery, professor of operative surgery and clinical surgery and professor of clinical surgery, president of the Louisiana State Medical Society 1930-1931, and the Orleans Medical Society in 1902 member of the Southern Medical Association and the Southern Surgical Association fellow of the American College of Surgeons acting assistant surgeon in the U S Public Health Service in 1897 and 1905 veteran of the Spanish-American War first lieutenant in the medical reserve corps of the U S Army from 1909 to 1917 served on the Mexican Border in 1916, for many years on the staffs of the Charity Hospital and the Touro Infirmary author of 'Laboratory Exercises in Operative Surgery', died August 31, aged 72, of coronary thrombosis

**Ned Rudolph Smith** ♂ Tulsa, Okla University of Michigan Medical School, Ann Arbor, 1921 member of the American Psychiatric Association and the Southern Medical Association past president and trustee of the Tulsa County Medical Society, president of the city board of health in 1926 joined the staff of the Hertzler Hospital and Clinic in Halstead Kan, where he had been in charge of the neurology and psychiatry work, medical director of the Oakwood Sanitarium served as psychiatrist at the Tulsa Induction Center for one year member of the chamber of commerce and the Kiwanis Club, on the editorial board of the *Journal of the Oklahoma State Medical Association* on the staffs of the Hillcrest Memorial Hospital and St John's Hospital, where he died August 18 aged 60 of coronary thrombosis

**Max Harold Hoffman** ♂ St Paul University of Minnesota Medical School, Minneapolis, 1921, since 1937 clinical assistant professor of medicine at his alma mater where he had been assistant in medicine from 1922 to 1924 and instructor from 1925 to 1936 specialist certified by the American Board of Internal Medicine, member of the Central Society for Clinical Research, Minnesota Academy of Medicine and the Minnesota Pathological Society, in 1941 president and formerly vice president and secretary-treasurer of the Minnesota Society of Internal Medicine, visiting physician to the Ancker Hospital, Charles T Miller Hospital and St Joseph's Hospital died August 22, aged 48, of coronary heart disease

**John Janney Lloyd** ♂ Rochester, N Y University of Virginia Department of Medicine Charlottesville 1903 specialist certified by the American Board of Internal Medicine member of the American College of Chest Physicians, National Tuberculosis Association and the American Clinical and Climatological Association for many years medical director of the Monroe County Tuberculosis Sanatorium at one time resident physician of Catawba Sanatorium, Catawba Sanatorium Va, consultant in tuberculosis to the Strong Memorial Hospital and consulting physician to the Rochester General Hospital consultant, silicosis board, state department of labor died September 22 aged 65, of cerebral thrombosis

**Edwin Dial Watkins**, Memphis, Tenn, Columbia University College of Physicians and Surgeons New York, 1906 served an internship at the Presbyterian Hospital, New York, specialist certified by the American Board of Ophthalmology,



fellow of the American College of Surgeons formerly associate professor of gynecology and clinical assistant and assistant in ophthalmology at the University of Tennessee College of Medicine, served during World War I, formerly on the staffs of the Baptist Memorial Hospital and Memphis Eye, Ear, Nose and Throat Hospital, died in the Veterans Administration Facility July 31, aged 62, of cirrhosis of the liver

**Benjamin Everett Reeves**, West Jefferson, N C College of Physicians and Surgeons, Baltimore, 1891, coroner of Ashe County, Ashe County physician for prison, poorhouse and state prison camp, member of the board of trustees for the North Carolina schools for the deaf and blind, medical examiner for the draft board of the county during World War I and II, assistant surgeon for the Norfolk and Western Railway president of the First National Bank served on the county road commission, town council and school committee and in the state legislature, died August 30, aged 77, of heart disease

**Claude Vernet Davis** • Pennsville, Ohio, Ohio State University College of Medicine Columbus 1917 served an internship at the St Luke's Hospital, Cleveland, president of the Ohio State Medical Board, serving at one time as vice president and member of the board, president of the Morgan County Medical Society member of the Morgan County Draft Board, served at Base Hospital number 123 near Mars, France, during World War I, on the staff of the Memorial Hospital, Marietta, where he died August 16, aged 57, of cerebral hemorrhage

**Moody Warren Arnold** • New York, Vanderbilt University School of Medicine, Nashville, Tenn, 1912 medical superintendent of the Home for Incurables died in the New York Post-Graduate Medical School and Hospital August 21, aged 56, following an operation for carcinoma of the duodenum and pancreas

**Jacob Axelrad**, New York, Columbia University College of Physicians and Surgeons, New York, 1908, died August 10, aged 63, of coronary thrombosis

**Webster A Becher**, North Industry, Ohio, University of Wooster Medical Department, Cleveland, 1902, member of the Ohio State Medical Association, served on the staff of the Mercy Hospital in Canton, died August 1, aged 76, of coronary infarction

**William Wheeler Bolster** • Lewiston Maine, Medical School of Maine, Portland, 1908, formerly assistant professor of physiology at his alma mater at one time a member of the school board in Auburn, for many years on the staff of the Central Maine General Hospital, where he died August 11, aged 70, of cerebral hemorrhage

**Albert James Bower** • Greenville, Mich, University of Michigan Department of Medicine and Surgery, Ann Arbor 1905 fellow of the American College of Surgeons served during World War I, on the staff of the United Memorial Hospital died August 15, aged 63, of coronary heart disease

**Robert Boyd**, Brooklyn, College of Physicians and Surgeons, New York, 1891, veteran of the Spanish-American War, died in the Cumberland Hospital August 1, aged 74, of coronary thrombosis

**Glenn Zimmerman Brant** • Berlin, Pa, Temple University School of Medicine, Philadelphia, 1936, served an internship at the Harrisburg Polyclinic Hospital, Harrisburg on the staff of the Somerset Community Hospital, Somerset, first lieutenant in the medical reserve corps of the U S Army from March 1 1941 to Jan 5 1943, died in Bristol Bay, Alaska, May 19, aged 34, of suffocation by smoke

**James Frank Brooke** • Colonel, U S Army, retired Greenville, N C, Kansas City Hahnemann Medical College, Kansas City, Mo, 1903 U S Army Medical School, 1921 commissioned a first lieutenant in the medical corps of the U S Army on Nov 22 1918 later promoted to captain major, lieutenant colonel and colonel, retired Feb 29 1944 formerly post surgeon at Bolling Field, Anacostia, D C, died August 9, aged 64, of coronary occlusion

**John Bernard Brown**, Paxton, Ill, Illinois Medical College, Chicago, 1902, died September 12, aged 68 of coronary occlusion

**Charles O Burgess**, Monmouth, Ill, College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois 1903, member of the Illinois State Medical Society, formerly deputy coroner for Warren County, served as a member of the pension examining board for veterans on the staff of the Monmouth Hospital, died August 24 aged 68 of carcinoma

**Aaron Fenton Burson**, Oakwood, Ohio Eclectic Medical College, Cincinnati, 1910, member of the Ohio State Medical Association, served during World War I, was killed August 8, aged 59, in an automobile accident

**George Barnes Case**, Syracuse, N Y, Syracuse University College of Medicine, 1909 member of the Medical Society of the State of New York, died August 11, aged 60, of probable coronary thrombosis

**Ferdinand Chenik** • Detroit, Detroit College of Medicine and Surgery, 1924, fellow of the American College of Chest Physicians, a founder and formerly medical superintendent of the Chenik Hospital, author of "White Plague", died near Westlake, Texas, August 15, aged 51

**Hiram Edward Cleveland** • Burlington, Wash, University of Minnesota College of Medicine and Surgery, Minneapolis, 1901, member of the North Pacific Surgical Association, fellow of the American College of Surgeons, past president of the Washington State Medical Association, served as chief of staff, Burlington General Hospital local surgeon for the Great Northern Railway, member of the chamber of commerce, died August 21, aged 69, of arteriosclerotic heart disease

**James William Craddock** • Louisville, Ky, Kentucky School of Medicine Louisville, 1904, died in the Kentucky Baptist Hospital August 1, aged 65, of bronchopneumonia

**William David Culin**, Philadelphia Hahnemann Medical College and Hospital of Philadelphia, 1894, associate professor emeritus of gynecology at his alma mater fellow of the American College of Surgeons, consulting gynecologist at the Women's Homeopathic Hospital, died August 24, aged 80, of coronary thrombosis

**Oscar H Damron** • Silex, Mo, Keokuk (Iowa) Medical College, 1896 died August 30, aged 74, of angina pectoris

**Edward Davenport**, Hopkinsville, Ky, University of Louisville Medical Department, 1901 member of the Kentucky State Medical Association clinical director of the Western State Hospital formerly superintendent of the Eastern State Hospital, Lexington, died August 22, aged 60 of coronary occlusion

**Harry Edward W Fenton**, Ancon C Z University of Louisville (Ky) School of Medicine 1929, served an internship at the Gorgas Hospital diplomate of the National Board of Medical Examiners member of the Medical Association of the Isthmian Canal Zone first lieutenant in the medical reserve corps of the U S Army, not on active duty since 1930 employed as physician by the health department of the Panama Canal Zone, died August 17, aged 37 of adrenal hemorrhage

**Howard Sinnickson Forman**, Lee, Mass, Columbia University College of Physicians and Surgeons New York 1896 served during World War I, formerly on the staff of the Christ Hospital Jersey City, N J, member of the Rotary clubs of Lee and Jersey City, died in the House of Mercy Hospital, Pittsfield, September 19, aged 73, of cerebral hemorrhage following an operation

**Clare Edwin Fraunfelter** • Canton, Ohio, Rush Medical College Chicago, 1904 past president of the Stark County Medical Society, for many years a member of the staff of the Aultman Hospital, serving as president for several terms, died September 5, aged 67 of cerebral thrombosis

**Abbott James Fuller** • Pemaquid, Maine University of Vermont College of Medicine, Burlington 1907, secretary of the Knox County Medical Society, served as an officer in the U S Army during World War I, member of the staffs of the Knox County General Hospital in Rockland and the Miles Memorial Hospital in Damariscotta, died August 18 aged 59, of cerebral hemorrhage

**Byron Edgar Giannini**, Shepherdsville, Ky University of Tennessee Medical Department, Nashville, 1905, member of the Kentucky State Medical Association, died August 4 aged 62, of heart disease

**Orla Hilliard Gillett** • Grand Rapids, Mich University of Michigan Medical School, Ann Arbor, 1923, fellow of the American College of Surgeons on the staffs of the Butterworth and Blodgett Memorial hospitals, served an internship a residency and as chief of surgery at St Mary's Hospital, where he died August 2, aged 51, of cerebral hemorrhage

**Gordon Parker Goodfellow** • East Orange, N J Detroit College of Medicine and Surgery, 1929, captain, medical corps, Army of the United States, from Aug 8, 1942 to Dec. 1, 1943, on the staff of the East Orange General Hospital,



where he died July 25 aged 40, of coronary thrombosis and vascular disease

**Mark Gordon**, Brooklyn Baltimore Medical College, 1900 for many years attending physician and chief of clinic at the Beth-El Hospital, died August 17, aged 70 of coronary thrombosis

**Theodosia S Fowler Johansen**, Morristown, N J, Eclectic Medical College of the City of New York 1901 died in the Muhlenberg Hospital Plainfield July 27, aged 73 of cerebral embolism and carcinoma of the uterus

**John Allen Johnston** Fort Lauderdale, Fla University of Georgia Medical Department Augusta 1908, president of the Broward County Medical Society, formerly assistant professor of anatomy at his alma mater at one time health officer of Bambridge and Lafayette, Ga, chief of obstetric staff Broward General Hospital, where he died August 21, aged 60, of cardiac asthma and pneumonia

**Wilbur Merriam Judd** Greystone Park N J University of Vermont College of Medicine, Burlington, 1927 resident physician at the New Jersey State Hospital died September 1 aged 42, of cerebral hemorrhage

**William George Martin** Columbus Ohio University of Toronto Faculty of Medicine, Toronto, Ont Canada 1911 for many years medical examiner for the Norfolk and Western Railroad Company, died in the White Cross Hospital August 30, aged 56, of cerebral hemorrhage

**Benjamin F Matheny** Parsons, W Va, Baltimore University School of Medicine, 1906 served as coroner of Harrison County, on the staff of the Tucker County Hospital, died September 8 aged 65, of coronary occlusion

**Aloysius Alphonsus Mulligan**, Harrison N J Baltimore Medical College, 1905, died July 9, aged 63, of cardiovascular renal disease

**Henry Alphonse Paradis** Sparks, Nev, Baltimore University School of Medicine, 1901, past president of the Nevada State Medical Association, member of the Pacific Association of Railway Surgeons, for many years division surgeon, Southern Pacific Company, served during World War I at one time health officer of Sparks member of the staffs of the St Marys and Washoe County General hospitals in Reno, died August 10, aged 66 of bronchiogenic carcinoma

**Harlow Orville Shockley**, Darlington, Wis Rush Medical College, Chicago 1899, served an internship at the Presbyterian Hospital, Chicago past president and secretary of the Lafayette County Medical Society mayor of Darlington for seven years, president of the First National Bank of Darlington, died August 16, aged 71, of coronary thrombosis and chronic nephritis

**Daniel Dewitt Van Voorhis**, Beecher Ill, Bennett College of Eclectic Medicine and Surgery, Chicago, 1893, for many years surgeon for the Chicago and Eastern Illinois Railroad killed September 12, aged 70, when the automobile in which he was driving was struck by a truck

**John T. Warford** Lansing, Mich, Medical Department of Tulane University, New Orleans, 1891, member of the staff of the Edward W Sparrow Hospital, died in Philadelphia July 30, aged 75, of acute cardiac failure

**Herbert Tiffany Weston**, West Hartford, Conn Baltimore Medical College, 1890 for many years connected with the professional liability division of the Aetna Life Insurance Company, died in Hartford July 28 aged 75, of heart disease

**Clarence Leon Wilson**, Chicago, University of Illinois College of Medicine, Chicago, 1920, member of the Illinois State Medical Society, specialist certified by the American Board of Obstetrics and Gynecology, field consultant, division of maternal and child hygiene, State of Illinois Department of Public Health senior associate attending obstetrician to the Provident Hospital, died August 28, aged 49 of carcinoma

**John Russell Woods**, Columbus, Ohio, Ohio Medical University Columbus, 1904, died July 10, aged 63, of cerebral hemorrhage

**Robert Elmore Wright** Dallas, Texas, Atlanta College of Physicians and Surgeons 1913 specialist certified by the American Board of Otolaryngology member of the American Academy of Ophthalmology and Otolaryngology, Texas Ophthalmological and Otolaryngological Society, Dallas Academy of Ophthalmology and Otolaryngology, Southern Clinical Society and the Southern Medical Association, served as president of the general staff of the Medical Arts Hospital died July 11, aged 57, of cardiovascular disease

## DIED IN MILITARY SERVICE

**Elmer Barney M Casey** St Louis National University of Arts and Sciences Medical Department St Louis 1917, served during World War I commissioned a captain in the medical reserve corps of the U S Army on Nov 28 1924 later promoted to major and lieutenant colonel began active duty on July 15 1941 died in the Walter Reed General Hospital Washington, D C, July 25 aged 51, of carcinoma of the intestine

**James Halbert Gambrell**, El Paso Texas Baylor University College of Medicine Dallas 1910, served in internship at St Pauls and Baylor hospitals in Dallas formerly instructor of surgery at his alma mater served as chief of staff of the Masonic and El Paso County hospitals formerly member of the city school board in 1916 accepted a commission as lieutenant in the medical corps of the Texas National Guard and served on the Texas-Mexican border during the punitive campaign against Pancho Villa served with the 36th division in France during World War I commissioned a major in the medical reserve corps of the U S Army on Oct 7 1919 later promoted to lieutenant colonel and colonel began active duty as a colonel on Jan 21 1942 served as commanding officer of the 51st 67th and 96th General hospitals when these units each in turn were activated and trained for overseas duty medical training officer of the military training division of the Eighth Service Command in Dallas where he died April 23 aged 59 of coronary arteriosclerosis and coronary thrombosis

**William Arthur Johnson** Uniontown Pa University of Pittsburgh School of Medicine 1935 served an internship at the Pittsburgh Medical Center interned and served as assistant resident in obstetrics and gynecology at the New York Hospital served a residency in obstetrics at the New York Polyclinic Medical School and Hospital in New York commissioned a first lieutenant in the medical reserve corps of the U S Army on June 5, 1935 began active duty on Dec 5 1940 promoted to captain in November 1941 and major in November 1942 went overseas in December 1943 killed while on duty as a flight surgeon in Gunnislake England June 11, aged 32 in an aircraft accident

**James Patrick Jordan**, North Tonawanda N Y St Louis University School of Medicine 1932 member of the Medical Society of the State of New York diplomate of the National Board of Medical Examiners member of the National Gastroenterological Association specialist certified by the American Board of Internal Medicine served an internship at the Buffalo Hospital of the Sisters of Charity and a residency in medicine at the Millard Fillmore Hospital, Buffalo commissioned a lieutenant commander in the medical corps of the U S Naval Reserve on Sept 5, 1942 and began active duty on Oct 26 1942 had been assigned to the Office of Naval Officer Procurement in Rochester, N Y, died in the South Atlantic area off the coast of South America July 23, aged 44 of bronchopneumonia

**Joshua Levitsky** Philadelphia, University of Pennsylvania School of Medicine Philadelphia, 1936 served an internship at the Mount Sinai Hospital commissioned a first lieutenant in the medical corps, Army of the United States on Oct 21, 1942, later promoted to captain, began active duty on Dec 10 1942 died in England April 25 aged 31, as the result of injuries received in an airplane crash

**Harry Meyer** New York, University and Bellevue Hospital Medical College, New York, 1922 served an internship at St Mark's Hospital, commissioned a major in the medical corps Army of the United States on Sept 11, 1942 died in the Lawson General Hospital, Atlanta Ga, August 4, aged 47, of malignant hypertension

**Allen Sydney Morris**, Buffalo University of Buffalo School of Medicine 1926, member of the Medical Society of the State of New York interned at the Buffalo City Hospital served on the staff of the Millard Fillmore Hospital, formerly connected with the city health department commissioned a captain in the medical corps of the Army of the United States on July 27 1942, later promoted to major died at Camp Rucker, Ala, August 31, aged 43, of myocardial failure

## Bureau of Investigation

## Correspondence

## MISBRANDED PRODUCTS

Abstracts of Notices of Judgment Issued by the  
Food and Drug Administration of the  
Federal Security Agency

[EDITORIAL NOTE—These Notices of Judgment are issued under the Food, Drug and Cosmetic Act, and in cases in which they refer to drugs and devices they are designated DDNJ and foods, FNJ. The abstracts that follow are given in the briefest possible form (1) the name of the product, (2) the name of the manufacturer, shipper or consigner, (3) the date of shipment (4) the composition, (5) the type of nostrum, (6) the reason for the charge of misbranding, and (7) the date of issuance of the Notice of Judgment.]

**Armi Mineral Water**—Ralph R. Markwood trading as Armi Mineral Water Company Toledo Ohio. Shipped July 2 and August 15 1940. Substantial amounts of sodium sulfate and lime not more than 0.15 grain of silicon dioxide per quart (declared an insignificant quantity present in many city water supplies) and only traces of if any potassium diphosphate manganese and potassium chlorides magnesium calcium, sodium and ferric phosphates potassium iodide or lithium bromide. Misbranded because label falsely represented product to contain important and substantial amounts of the substances in the last named group. Also misbranded because label did not give the common or usual name of each active ingredient, since one of them was listed lime which label listed as calcium hydroxide. Further misbranded because label did not so list ingredients as to make them understood by the ordinary individual with the exception of lime and sodium sulfate, which were present if at all in unimportant and inconsequential proportions. Misbranded again because of misleading zigzag design on label depicting lightning and because the statement Treated By Electrolysis failed to reveal that any treatment by electrolysis to which the article may have been subjected had not affected its properties. Misbranded finally because label claim Scientifically Balanced was false and misleading when applied to water to which had been added small amounts of lime and sodium sulfate and inconsequential amounts of other substances—[DDNJ FDC 777 September 1943]

**Floramucin**—Lawrence M. Williams trading as Lawrence Laboratories Chicago. Shipped Jan 27 and March 7 1941. Composition essentially the mucilaginous portion of psyllium seed with karaya gum, sugar and dextrin. Misbranded because of misrepresentation that it would detoxify and be efficacious in treating biliousness sore stomach indigestion intestinal stasis, excess gas colitis, torpid liver, and stomach and bowel troubles that it would combat constipation and colitis without laxatives thus implying that it was not a laxative that it would keep the digestive tract vigorous and healthy insure quick and effective relief from faulty elimination and do some other things that it was not a drug or laxative did not contain a gum and was more than a bulk producing laxative—[DDNJ FDC 766 September 1943]

**Howell's Cocoa & Quinine Syrup**—Howell Company, Inc. New Orleans. Shipped between Feb 21, 1940 and Jan 6 1941. Composition labeled to contain 2 grains of quinine sulfate per teaspoonful whereas only 1.65 grains were found by analysis. Hence misbranded—[DDNJ, FDC 807 December 1943]

**Mentho Thymoline**—Standard Drug Company Inc. Spartanburg, S. C. Shipped Feb 28 and March 13 1941. Composition essentially a mixture of small amounts of camphor, menthol and thymol incorporated in a petrolatum base. Misbranded because labeling falsely represented product as a cure or treatment for inflammations colds croup sore throat, burns wounds hemorrhoids headache and carache further misbranded because the name Mentho Thymoline was misleading in suggesting that the product consisted solely of menthol and thymol whereas it contained other active ingredients also misbranded because label did not accurately declare the quantity of the contents—[DDNJ FDC 805 December 1943]

**Pitche's Castoria**—Roma Extract Company, Inc. Boston. Shipped Nov 10 1941. Composition essentially extracts of plant drugs including senna, Rochelle salt (approximately 0.28 per cent) sodium bicarbonate (2.5 per cent) santonin (0.027 per cent) and flavoring materials including methyl salicylate with sugar and water. Misbranded because of false label claims A Reliable Remedy for Diarrhea due to Constipation, Worms and Promotes Sleep by Overcoming these Disorders further misbranded because active ingredients were not listed on label in such terms as to make them easily understood by the ordinary individual. Also misbranded because label did not give the common or usual name of each active ingredient misbranded finally, because container was so made and filled as to be misleading since carton was materially larger than necessary to hold the bottle—[DDNJ FDC 782, September 1943]

**Vi Penta Drops 'Roche'**—Hoffman La Roche Inc. Nutley, N. J. Shipped April 22 1941. Composition less than the claimed 9,000 units of vitamin A per 0.6 cc. Adulterated and misbranded for this reason. Also misbranded because falsely represented as efficacious for malnutrition infections anemias tuberculosis typhoid fever diarrhea colitis obesity diabetes catarrhal jaundice certain skin diseases (such as eczema) prophylaxis of abnormal dentition and periods of vomiting such as in infancy childhood or pregnancy—[DDNJ FDC 774 September 1943]

## THE RELIEF OF PAINFUL THIGH STUMP AND SCIATICA

To the Editor—In THE JOURNAL, April 8, page 1030, in his article on "Pain After Amputation and Its Treatment," Dr. J. C. White writes "In this discussion of intractable pain which may follow amputation I should like to begin by pointing out how little is known about it, and what an opportunity is awaiting surgeons in the military forces today for gaining a better insight into its mechanism, as well as for devising effective methods of treatment." The following case seems pertinent.

An aviator aged 30 crashed five years previously, the injury requiring supracondylar amputation of the right thigh, a few weeks later the stump became painful and was injected with saline solution. Then the sciatic nerve was alcoholized and one year later 4 inches of it was removed, but without relief, and he took to narcotics. On Jan 27, 1944 he was suddenly seized with an excruciatingly severe and almost unbearable pain in the stump and was then referred to me by Coroner T. C. Goraczewski. He came in at 10 p. m. suffering agonizing pain in the sciatic nerve with tonic contraction of the hamstrings, which aggravated the pain. Employing a technic I devised and have been successfully using in sciatica I searched for and found a wincing spot of tenderness over the sacral origin of the sacrospinalis in the dorsal hollow of the sacrum and injected it with 1 cc of 2 per cent procaine hydrochloride, with instantaneous relief of the pain and disappearance of the tonic spasm. At the time of this writing (September 18) the patient states that the relief has been maintained, including freedom from the tickling sensations in the phantom ankle and toes of the amputated limb.

I suggest the following mechanism as being operative in these cases. In response to a peripheral irritation the piriformis and obturator internus (with the gemelli), from between which the sciatic nerve emerges, become spastic and pinch the nerve. This peripheral irritant is removed by anesthetization of the posterior sacral plexus, whose fibers emerge from the upper four sacral foramina to enter the multifidus to supply it with motor fibers. Relief of the ordinary case of sciatica ensues quite regularly in seven minutes when clocked, and as the pain vanishes muscle stiffness or spasm disappears and pain present in the hip joint or knee joint is relieved. In some cases there will be a tender spot over each of the upper four sacral foramina, each requiring an injection. In this region I use a 1 inch needle (preferably a B-D Huber point, which is much less painful to introduce) attached to an ordinary hypodermic syringe (I prefer a tuberculin syringe) the needle is boldly plunged through each tender spot up to its hilt so as to reach the multifidus and therefore the fibers of the posterior sacral plexus, and from 0.5 to 1 cc. of 2 per cent procaine is deposited for each spot.

The following case of sciatica in civilian practice exemplifies the suggested etiology and treatment.

H. F., a man aged 53, an electrical engineer, referred by Dr. Harry Goldblatt of the Western Reserve University Medical School, Cleveland, walked into the office with an obviously painful lump on the left side. He stated that on July 27, 1944 after a sudden, peculiar twist when lifting a 25 pound bag a pain was suddenly felt low in the back on the left side and became excruciatingly severe. Twenty-four hours after treatment by a physical therapist on August 25 pain began in the left sciatic nerve, and the left foot began to drag. His present (September 20) complaint is of pain in the left sciatic nerve, constant stabbing and aching, not aggravated by coughing or sneezing. There is numbness of the foot from its sole up along the outer side of the left leg to about its middle, with partial foot-drop and inability to extend the toes. Wincing tenderness

is present over the left sacroiliac joint and over the posterior sacral foramina on the same side. The joint was injected with 1 cc. of 2 per cent procaine hydrochloride as was each sacral winning spot. Ten minutes later the patient could weakly extend the toes and walk without a limp, and he noticed that the numbness was leaving the foot, outer side first. Examination on the succeeding three days showed continued improvement and finally complete relief from all symptoms.

This situation can definitely be explained by assuming a minor strain of the sacroiliac joint as the peripheral irritant for spasm of the piriformis and obturator internus via the sacral plexus squeezing between them the sciatic nerve and producing a full blown sciatica. Injection of the joint and winning spots released the grip of the muscles on the nerve with clearance of the symptoms and signs.

Of late I have been substituting this method for lumbar sympathetic plexus block in cases of vascular disturbances of the lower extremity, the results of which I shall report later.

I sincerely hope that these same results will be obtained in the hands of others if so our boys with painful thigh stumps can avoid the formidable operations Dr. White (unwillingly I am sure) finds it necessary to practice, while in civil practice the at times hazardous direct blocking of the sciatic nerve itself may be avoided.

P. G. SKILLERN, M.D. South Bend, Ind.

## Medical Examinations and Licensure

### COMING EXAMINATIONS AND MEETINGS

#### NATIONAL BOARD OF MEDICAL EXAMINERS EXAMINING BOARDS IN SPECIALTIES

Examinations of the National Board of Medical Examiners and of Examining Boards in Specialties were published in *THE JOURNAL*, Oct. 14, page 421.

#### BOARDS OF MEDICAL EXAMINERS

ALABAMA: Montgomery, Oct. 24-26. Sec. Dr. B. F. Austin. 519 Dexter Ave., Montgomery.

ARKANSAS: \* Little Rock, Nov. 9-10. Sec. Dr. D. L. Owens. Harrison. CALIFORNIA: Oral, San Francisco, Nov. 15. Sec. Dr. Frederick N. Scatena. 1020 N. St. Sacramento 14.

CONNECTICUT: \* Medical Written, Hartford, Nov. 14-15. *Endorsement*, Hartford, Nov. 28. Sec. to the Board, Dr. Creighton Barker. 258 Church St. New Haven. *Homopathic*, Derby, Nov. 14-15. Sec. Dr. J. H. Evans. Hartford 6.

DISTRICT OF COLUMBIA: \* Washington, November. Sec. Commission on Licensure, Dr. G. C. Ruhland. 6150 E. Municipal Bldg., Washington.

FLORIDA: \* Jacksonville, Nov. 20-21. Sec. Dr. Harold D. Van Schaick. 2736 S.W. Seventh Ave., Miami 36.

IDAHO: Boise, Jan. 8-11. Dir. Bureau of Occupational Licenses, Mrs. Lela D. Painter. 355 State Capitol Bldg., Boise.

INDIANA: Indianapolis, Jan. 3-5. Exec. Sec. Board of Medical Registration and Examination, Mrs. Ruth V. Kirk. 301 State House, Indianapolis 4.

KANSAS: Nov. 23. Sec. Board of Medical Registration and Examination, Dr. J. F. Hasing. 903 N. Seventh St., Kansas City.

MAINE: Portland, Nov. 14-15. Sec., Board of Registration of Medicine, Dr. A. P. Leighton. 192 State St., Portland.

MARYLAND: *Homopathic*, Baltimore, Dec. 13. Sec. Dr. John A. Evans. 612 W. 40th St., Baltimore.

MASSACHUSETTS: Boston, Nov. 14-17. Sec. Board of Registration in Medicine, Dr. H. Q. Gallupe. 413 F. State House, Boston.

NEVADA: Carson City, Nov. 6. Sec. Dr. G. H. Ross. 215 N. Carson St., Carson City.

NORTH DAKOTA: Grand Forks, Jan. 25. Sec. Dr. G. M. Williamson. 412 S. 3rd St., Grand Forks.

SOUTH CAROLINA: Columbia, June 25-27. Sec. Dr. N. B. Heyward. 1329 Blandina St., Columbia.

SOUTH DAKOTA: \* Pierre, Jan. 16-17. Sec. Medical Licensure, State Board of Health, Dr. G. Cottam. Pierre.

TEXAS: Dallas, Nov. 15-17 and Dec. 19-21. Sec. Dr. T. J. Crowe. 918 20 Texas Bank Bldg., Dallas 2.

VIRGINIA: Richmond, June 20-22. Sec. Dr. J. W. Preston. 301 1/2 Franklin Rd., Roanoke.

WASHINGTON: \* Seattle, Jan. 15-17. Dir., Department of Licenses, Mr. Thomas A. Swayze, Olympia.

\* Basic Science Certificate required.

#### BOARDS OF EXAMINERS IN THE BASIC SCIENCES

ARKANSAS: Little Rock, Oct. 20. Sec. Mr. L. E. Gebauer. 701 Main St., Little Rock.

COLORADO: Denver, Dec. 6-7. Sec. Dr. Esther B. Stark. 140 Ogden St., Denver.

DISTRICT OF COLUMBIA: Washington, Oct. 2-24. Sec. Commission on Licensure, Dr. G. C. Ruhland. 6150 E. Municipal Bldg., Washington.

NEW MEXICO: Santa Fe, Feb. 12. Sec. Mr. Marion M. Rhea. State Capitol, Santa Fe.

OREGON: Portland, Nov. 4. Sec. Mr. C. D. Brue. University of Oregon, Eugene.

RHODE ISLAND: Providence, Nov. 15. Chief Division of Examiner, Mr. Thomas B. Casey. 366 State Office Bldg., Providence.

SOUTH DAKOTA: Aberdeen, Dec. 12. Sec. Dr. C. M. Evans. Yankton.

WISCONSIN: Milwaukee, Dec. 2. Sec. Prof. K. A. Pauer. 12 W. Wisconsin Ave., Milwaukee 2.

## Bureau of Legal Medicine and Legislation

### MEDICOLEGAL ABSTRACTS

Hospitals Not for Profit State Unemployment Compensation Act Not Applicable to Charitable Hospital—The Scripps Memorial Hospital, Inc. is a nonprofit organization organized under the laws of the state of California conducting a hospital, a metabolic clinic and a dietetic school. In accordance with the purposes for which it was founded it treats persons regardless of race, creed or ability to pay, although it receives pay from about 75 per cent of the patients admitted, a full charge being made to patients with the ability to pay, a lesser charge being made in proportion to a patient's ability to pay, and no charge being made if the patient is unable to pay. All sums received from the care of patients are used in the maintenance of the hospital and no profit from the hospital operation has been used for any other purpose. Sometime subsequent to the adoption of the federal social security act appropriate federal officials ruled in accordance with provisions in the law that authorize an exemption for such a corporation that the corporation was exempt from the payment of the taxes required by title IX of that act (the title that was designed to aid the several states in the operation of systems of unemployment compensation) on the ground that the hospital corporation was exclusively organized and operated for charitable purposes and that no portion of its funds inures to the benefit of any private individual or shareholder. In 1936 the corporation was exempted also from the payment of taxes under the California unemployment compensation act by reason of section 7 (g) of that act, which exempts from the payment of taxes a corporation, community chest fund or foundation, organized and operated exclusively for religious, charitable, scientific, literary or educational purposes or for the prevention of cruelty to children or animals, no part of the net earnings of which inures to the benefit of any private shareholder or individual.

In 1941 the California employment commission revoked the exemption but granted an exemption under a section added in 1939 to the California unemployment compensation act, namely section 7 (k), which grants an exemption to a nonprofit organization, nonprofit safety organization, chamber of commerce, service club or fraternal organization not subject to a tax under title IX of the social security act. In March 1942 the commission revoked that exemption and the hospital corporation paid unemployment compensation taxes under protest. Subsequently it instituted three suits to recover the taxes so paid, all of which actions were consolidated for trial. The trial court held that the hospital was exempt from paying taxes under both sections 7 (g) and 7 (k) of the unemployment compensation act and entered a judgment for the corporation. The commission then appealed to the district court of appeals, fourth appellate district, which affirmed the judgment in favor of the

hospital (*Scrapps Memorial Hospital Inc, v California Employment Commission*, 143 P (2d) 364) On further appeal the Supreme Court of California affirmed the judgment of the district court of appeal and adopted, in toto, as its decision the opinion rendered in the intermediate court

The employment commission contended that the hospital corporation was not entitled to exemption as an organization exclusively organized and operated for charitable purposes because only a small part of its operations were purely charitable in the sense that they are services rendered gratuitously to persons that are unable to pay therefor But, answered the court, it has generally been held that the fact that fees are charged by an institution such as the hospital here involved is not controlling if those fees go to pay the expenses of operation and not to the profit of the founders or shareholders It is also usually held that it is immaterial that such an institution is supported in part by full pay or part pay patients and that it is the use to which any profit or income is devoted which is controlling The court thought it clear that the hospital was intended to be included in the exemption provided in the unemployment compensation act

In defining the phrase continued the court, "operated exclusively for charitable purposes" as used in the act in conformity with the purpose of the law makers, the context and surrounding provisions of that section should not be overlooked Among the organizations which are to be exempted are community chests and funds or foundations which ordinarily include in their scope and operations many things aside from the relief of the poor and needy, in the strictest sense of the word charity Again, the organizations to be exempted include also those organized and operated for religious, scientific, literary or educational purposes, and even those for the prevention of cruelty to children or animals The wide and varied nature of the exemptions thus provided rather clearly indicates a purpose and intention to give the words here in question a broad rather than a strict meaning, and that it was intended, for exemption purposes, to apply the sort of standards to charitable institutions that are applied to the others named In the broader meaning of charitable purposes the general principle usually applied in cases in this and other states is that such an institution as a hospital, in order to come within the meaning, must be one that is open to all persons irrespective of race, color, creed or ability to pay and must be one from which no individual or entity may benefit or profit from its operations or assets on dissolution That the legislative purpose and intention in adopting the language used in the section under discussion were as we have suggested is also indicated by the fact that, although the employment commission had for some years thus interpreted this section, as shown by its exemption of the hospital through all those years, the legislature in extensively revising the unemployment compensation act in 1939 made no change in that regard but instead enlarged the scope of such exemptions by adding a new subsection 7 (k) That new section provided for an additional exemption with respect to nonprofit organizations, nonprofit safety organizations, chambers of commerce, service clubs and fraternal organizations which are not subject to tax under title IX of the social security act

That this was the intention of the legislature, continued the court, is further indicated by the fact that this act was adopted as a part of a plan for a uniform system of unemployment compensation then proposed and later adopted by the federal government in practically all of the American states The language used in section 7 (g) the section providing exemption for charitable organizations, is practically identical with that used in similar sections of the federal legislation and that of many states and is precisely similar to the language used in other federal statutes that have been in effect for many years For that reason the interpretation placed on the language by the federal and other courts is unusually persuasive here In passing on practically the same language in a case involving quite similar facts the Supreme Court of the United States in *Trinidad v Sagrada etc* 263 U S 578 44 S Ct 204 said

The exception covered among others any corporation 'organized and operated exclusively for religious charitable scientific or educational purpose no part of the net income of which inures to the benefit of any private stockholder or individual'

Two matters apparent on the face of the clause go far toward settling its meaning First it recognizes that a corporation may be organized and operated exclusively for religious charitable scientific or educational purposes and yet have a net income Next it says nothing about the source of the income but makes the destination the ultimate test of exemption

That the transactions yield some profit is in the circumstances a negligible factor Financial gain is not the end to which they are directed

Our conclusion is that the plaintiff is organized and operated exclusively for religious charitable and educational purposes within the meaning of the excepting clause

In passing on a similar question involving the same language as used in the New York unemployment compensation act the court said in *re Mendelsolm*, 262 App Div 605, 31 N Y S (2d) 435

The record shows that the hospital was organized exclusively for hospital purposes and is engaged exclusively in operating a hospital of a nonprofit character

That fees are charged by a university or hospital is not controlling as to its being a charity for only when such income is devoted to the profit of the founders and not used to carry on the work by adding to the endowment etc does it show the institution is a business and not a charity

A hospital association not conducted for profit which devotes all of its funds including those received from patients exclusively to the maintenance and improvement of the institution is therefore a charity in every sense of the word

Charitable purposes include nonprofit hospital corporations organized and operated exclusively for hospital purposes irrespective of whether they charge their benefactors for their services and facilities

The same interpretation has been given this or similar language in *Virginia Mason Hospital Assn v Larson* 114 P (2d) 976, and *Commissioner of Internal Revenue v Battle Creek* 126 F (2d) 405

For the reasons stated the finding of the trial court that the hospital corporation was entitled to exemption from the payment of taxes under the unemployment compensation act was affirmed. —*Scrapps Memorial Hospital, Inc v California Employment Commission* 151 P (2d) 109 (Calif 1944)

## Society Proceedings

### COMING MEETINGS

- American Academy of Pediatrics St Louis Nov 9 11 Dr Clifford G Grulee 636 Church St Evanston Ill Secretary
- Annual Conference of State Secretaries and Editors Chicago Nov 17 18 Dr Olin West 535 N Dearborn St Chicago Secretary
- Association of American Medical Colleges Detroit Oct 23 25 Dr Fred C Zapffe 5 S Wabash Ave Chicago Secretary
- Association of Military Surgeons of the United States New York Nov 24 Col James M Phalen Army Medical Museum Washington 25 D C Secretary
- Central Neuro-psychiatric Association Chicago October 31 Dr Ernest M Hummes 1124 Lowry Medical Arts Bldg St Paul 2 Minn President
- Central Society for Clinical Research Chicago Nov 3 4 Dr Carl V Moore 602 S Euclid Ave St Louis 10 Secretary
- Midwestern Section of American Federation for Clinical Research Chicago Nov 2 Dr Richard H Lyons University Hospital Ann Arbor Mich Secretary
- Oklahoma City Clinical Society Oklahoma City Oct 23 26 Dr L C McHenry 512 Medical Arts Bldg Oklahoma City Secretary
- Omaha Mid West Clinical Society Omaha Nebraska Oct 23 27 Dr J D McCarthy 1036 Medical Arts Bldg Omaha 2 Secretary
- Puerto Rico Medical Association of Santurce Dec 15 17 Dr E Martinez Rivera P O Box 3866 Santurce Secretary
- Southern Medical Association St Louis Mo Nov 13 16 Mr C P Loranz Empire Building Birmingham 3 Ala Secretary
- Virginia Medical Society of Richmond Oct 23 25 Miss Agnes V Edwards 1200 E Clay St Richmond 19 Secretary
- Western Surgical Association Chicago Dec 1 2 Dr Arthur R Metz 20 Erie Superior St Chicago Secretary

## Current Medical Literature

### AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1934 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (\*) are abstracted below.

#### American J Digestive Diseases, Fort Wayne, Ind 11 241-270 (Aug.) 1944

- Relationship Between Lymphoblastic Tumor and Digestive Tract. J. Bork. —p. 241.  
On Absorption of Iron. V. F. Henderson and G. H. W. Luca. —p. 244.  
Neurotic Patient. Discussion of Cause and Treatment of Neurosis. H. Gross. —p. 248.  
Diarrhea in American Troops in Middle East. C. W. Wirts Jr. and E. J. Tallant. —p. 252.  
Chronic Constipation. H. W. Soper. —p. 253.  
Constipation. Further Clinical Evidence of Use of Bran as Dietary Laxative Agent. M. H. Streicher and Lucille Quirk. —p. 259.  
Fat Metabolism. H. M. Feinblatt. —p. 260.  
Role of Fat Soluble Vitamin A and D in Nutrition. I. Buckstein. —p. 261.

#### American Journal of Diseases of Children, Chicago 68 1 82 (July) 1944

- \*Relationship of Tonsils and Adenoids to Type of Poliomyelitis. Analysis of 432 Cases. P. F. Lucchesi and A. C. LaBoccetta. —p. 1.  
\*Sulfadiazine in Treatment of Diarrhea in Children. I. I. Menchaca. —p. 5.  
Thumb and Finger Sucking in Relation to Feeding in Early Infancy. E. Roberts. —p. 10.  
\*Poisoning Due to Ipec. Value of Bokay Prophylactic Dilution in Prevention of Early Strictures of Esophagus. J. T. Crowe. —p. 9.  
Study of Personalities of Children with Diabetes. Winifred C. Loughlin and H. O. Macenthal. —p. 17.  
Basal Blood Pressure and Pulse Rate in Adolescents. A. W. Shock. —p. 16.  
Effects of Repeated Use of Sulfadiazine for Recurring Acute Infections of Respiratory Tract. M. Siegel. —p. 2.

**Relationship of Tonsils and Adenoids to Poliomyelitis**—Lucchesi and LaBoccetta investigated the question of whether the presence or absence of tonsils has any relationship to the type or mortality of poliomyelitis. The material for the study included 432 patients admitted to the Philadelphia Hospital for Contagious Diseases with diagnosis of acute anterior poliomyelitis from 1937 to 1942 inclusive. The authors apply the term "spinal poliomyelitis" to designate the condition in which only the spinal cord is involved. The term 'bulbar poliomyelitis' is used when cranial nerves alone are involved. The condition in which both the cranial nerves and the spinal cord are involved is classified as 'bulbospinal poliomyelitis'. There were 19 patients under 6 years of age who had had their tonsils and adenoids removed, and 8 of these children had bulbar involvement. Of 161 patients in the nonadenoidotonsillectomized group under 6 years of age only 13 had bulbar involvement. Eighteen of 432 patients died. Of these 3 had bulbar, 5 had spinal and 10 had bulbospinal poliomyelitis. Fourteen of the patients who died had had tonsillectomy and adenoidectomy. The authors analyze the types of poliomyelitis occurring in 164 adenoidotonsillectomized patients and in 263 patients with intact tonsils and adenoids. Over 70 per cent of the patients with bulbar poliomyelitis and 61 per cent of those with bulbospinal poliomyelitis had had an adenoidotonsillectomy while only 30.9 per cent of the patients with only spinal involvement had had their tonsils and adenoids removed. Nonparalytic poliomyelitis occurred in about equal proportions in the two groups. The consistency of the data adds weight to the belief that a positive correlation exists between absence of pharyngeal lymphoid tissue and involvement of the higher centers in poliomyelitis. Some believe that an adenoidotonsillectomy must occur within the incubation period of the disease in order to have any effect on the course of the illness. The evidence presented here

suggests that the absence of tonsils and adenoids increases the risk of bulbar and bulbospinal involvement in persons with poliomyelitis. Consequently the indiscriminate removal of tonsils and adenoids should not be condoned.

**Sulfadiazine in Diarrhea in Children**—Menchaca employed sulfadiazine in infantile diarrhea. Most of his patients had severe or moderate diarrhea that had not improved under treatment in outpatient clinics. Injections of isotonic solution of sodium chloride with dextrose were given and isotonic solution of three chlorides with 3 per cent dextrimaltose was administered by mouth. The diet consisted of either buttermilk with dextrimaltose or human milk. Only 2 patients received plasma and the use of antidiarrheics was avoided. A total of 0.1 to 0.15 Gm. of sulfadiazine per kilogram of body weight was given daily in four doses six hours apart. From observations on 20 children the author concludes that this drug is an efficacious aid in the treatment of infantile diarrhea.

**Prophylactic Dilution for Strictures of Esophagus from Ipec**—According to Crowe corrosive burns of the esophagus constitute one of the most difficult problems in pediatric practice. He analyzes 57 cases of ingestion of caustic alkali. The first aid given is generally poor. Patients with early poisoning due to ipec can be saved. Secondary stenosis of the esophagus by the use of Bokay prophylactic esophageal dilation. This treatment should be used for every patient who has swallowed alkali unless there is definite pharyngoscopic proof that the esophagus is undamaged. If the presence of oral burns or the conditions revealed by fluoroscopy or pharyngoscopy indicate that the esophagus has been damaged even slightly an eyeless (Bokay) catheter size 10 to 30 (1 French) which has been filled with lead shot or mercury tied off at the open end and wet with water or with lubricating jelly should be gently passed down the child's esophagus and left in place for five minutes once daily starting on the third day after the child swallows the ipec or as near that time as possible. The catheter should not be forced but allowed to pass by weight of the shot or mercury contained in it. During the first few days the size of the catheter should be increased until difficulty is encountered in passing it. From the third to the tenth week the largest possible catheter should be passed once daily and kept in place for ten to thirty minutes. The catheter should be introduced twice a week for the next month and then once a week for at least three months. Then the interval can be lengthened to suit the patient's condition. Only 13 of the patients were seen in a sufficiently early stage so that Bokay prophylactic therapy could be used. In the 9 patients for whom Bokay therapy was adequate no strictures of the esophagus occurred. In 4 children the treatment at home was not sufficiently prolonged and strictures developed necessitating a second admission to the hospital for gastrostomy and bougienage. Strictures developed also in 44 children who did not have Bokay treatment. All the patients with strictures required one of the following types of treatment: (1) peroral esophagoscopy bougienage, (2) retrograde bougienage through an artificial gastric fistula or (3) peroral bougienage with a silk thread used as a guide. Procedures which involve long hospitalization (an average of fifty-six days), inconvenience, expense and the possibility of death from surgical causes. Four of the 48 patients died.

#### American Journal of Hygiene, Baltimore 40 1-108 (July) 1944

- Propagation of Yellow Fever Virus in Tissue Cultures Containing Sulfonamides. H. Koprowski and E. H. Lennette. —p. 1.  
Sulfonamides in Yellow Fever Virus Infections of Mice and Developing Chiel Embryos. H. Koprowski and E. H. Lennette. —p. 14.  
Nuclei in Avian Malaria Parasites. I. Structure of Nuclei in Plasmodium elongatum with Some Considerations on Technique. J. T. Chen. —p. 26.  
Typhoid in Army Personnel in Western Region of United States and Its Relation to Vaccination Against Yellow Fever (Parts II, III and IV). W. A. Sawyer, K. F. Meyer, M. D. Eaton, J. H. Bauer, P. Putnam and F. F. Schwenker. —p. 35.

**Sulfonamides and Yellow Fever in Cultures**—Koprowski and Lennette cultivated the 17DD High substrain of yellow fever in tissue culture in the presence of maximal concentrations of sulfapyridine or sulfathiazole. No evidence was obtained that



either of these drugs interferes with the propagation of the virus. No changes in the infectivity of the virus for mice were noted after fifty passages in tissue culture medium containing sulfapyridine.

**Sulfonamides in Yellow Fever of Mice and Chick Embryos**—Koprowski and Lennette found that sulfapyridine and sulfathiazole administered orally or parenterally and sodium sulfapyridine administered parenterally had no demonstrable prophylactic or therapeutic effect on mice infected with yellow fever virus. Sodium sulfapyridine administered by way of the chorioallantoic membrane had no effect on the course of the infection produced in the chick embryo inoculated on the membrane with virus prior to or after administration of the drug.

### American Journal of Ophthalmology, Cincinnati

27 803-932 (Aug.) 1944

- Type of Foveomacular Retinitis Observed in U. S. Army. F. C. Cordes —p. 803.  
Choice of Fixating Eye in Paralytic and Nonparalytic Strabismus. J. W. White —p. 817.  
Exophthalmos of Hyperthyroidism: Differentiation in Mechanism Pathology, Symptomatology and Treatment of Two Varieties. Part III. J. H. Mulvaney —p. 820.  
Inclusion Blepharitis. J. H. Allen —p. 833.  
Etiology and Treatment of Tobacco-Alcohol Amblyopia. Part II. F. D. Carroll —p. 847.  
Ray Treatment of Thrombosis of Retinal Vein and of Several Types of Iridocyclitis. R. J. Hessberg —p. 864.  
Almost Complete Retinal Detachment After Cataract Extraction: Complete Reattachment After Glaucoma Attack. F. Nelson —p. 876.

### American Journal of Public Health, New York

34 817-930 (Aug.) 1944

- Cooperative Health Program of American Republics. G. C. Dunham —p. 817.  
Wartime Nutrition in England as Public Health Problem. H. M. Sinclair —p. 828.  
Staphylococcus and Streptococcus Carriers: Sources of Food Borne Outbreaks in War Industry. V. A. Cetting, A. D. Rubenstein and G. L. Foley —p. 833.  
Salmonellosis as Public Health Problem in Wartime. A. D. Rubenstein, P. F. Peemster and Helen M. Smith —p. 841.  
Food Poisoning Caused by Hemolytic Staphylococcus in Defense Plant. B. J. Slater and J. L. Norris —p. 854.  
Housing Health Department—Experiment in Rural Oklahoma. Gertrude Nielsen and H. L. Kamphoefner —p. 857.  
Automatically Controlled Suction Device for Field Air Sampling. A. Setterlund —p. 863.

### Am J Roentgenol & Rad Therapy, Springfield, Ill

52 1-122 (July) 1944

- Osseous Metastases from Graded Cancers of Breast with Particular Reference to Roentgen Treatment. H. A. Burch —p. 1.  
Some Experiences in Treatment of Bronchial Cancer. W. J. Mattick —p. 24.  
Cardiac Aneurysm. P. J. Delano and A. R. Weihe —p. 31.  
Tuberous Sclerosis. M. D. Sachs and D. A. Shaskan —p. 35.  
Roentgenologic Diagnosis of Peptic Ulcer of Esophagus. F. J. Lust and A. R. Peskin —p. 40.  
Normal Distribution of Small Intestine. S. T. Herstone and S. Freund —p. 46.  
Position of Small Intestine as Determined Roentgenographically. M. H. Poppel and S. T. Herstone —p. 52.  
Spinal Extradural Cyst (Diverticulum of Spinal Arachnoid): Report of Case. C. A. Good, A. W. Adson and K. H. Abbott —p. 53.  
Roentgen Interpretation of Pathology in Pott's Disease. O. Auerbach and Marguerite G. Stemmerman —p. 57.  
Ring Sequestrums as Complication of Fixed Skeletal Traction. C. P. Truog —p. 64.  
Osteoid Osteoma: Review of Portions of Literature and Presentation of Cases. R. W. Lewis —p. 70.  
Pancreatic Cyst and Lithiasis: Classification and Incidence. Report of Pseudocyst Associated with Disseminated Parenchymal Calcification. I. M. Pasceucci —p. 80.

**Tuberous Sclerosis**—According to Sachs and Shaskan tuberous sclerosis is a rare hereditary disease of ectodermal origin. Tuberous sclerosis, Recklinghausen's neurofibromatosis and trigeminal nevus with angioma of the brain are distinct types of neurocutaneous syndromes. Of the three, tuberous sclerosis presents the most clearcut clinical, roentgenologic and pathologic picture. It is most frequently associated with mental retardation and epileptic seizures. The authors describe a case of tuberous sclerosis in a white soldier aged 32. The cardinal findings in this case with a history of epileptic seizures were adenoma sebaceum, fibromatous nodules on the forehead, scalp and back, pigmented hairy nevus of the lumbar area,

vulgo of the left thigh and back, phacoma of the retina, and "cotton ball" calcifications of the brain, right greater trochanter and fifth lumbar vertebra. The authors think that delay in the diagnosis of tuberous sclerosis is probably due to the physician's unfamiliarity with the syndrome because of relative scarcity.

**"Ring" Sequestrums as Complication of Fixed Skeletal Traction**—Truog points out that a complication which occurs not uncommonly with skeletal traction is the formation of "ring" sequestrum. He has observed 7 such cases at an orthopedic clinic. Six of the patients were treated with pins incorporated in plaster casts which extended from the toes to above the knees with about 15 degrees flexion at the knees. They then became ambulatory and were seen in the outpatient clinic. Five of these 6 patients had pins inserted through the upper tibial fragment and the calcaneus, one had a pin driven through the distal fragment as well as the proximal fragment. These 6 all had delayed union. The seventh patient was treated with the Kirschner wire extension. He had a fracture of the femur and humerus and of the tibia and fibula. Non-union developed in both the femur and the tibia necessitating bone grafts. Roentgenologists should give special attention to such cases, as the diagnosis will depend entirely on the roentgen examination. It is important to make the diagnosis as soon as possible so that the skeletal traction may be removed. Constant traction under these conditions may lead to extensive bone damage or to migration of the pin out of the bone into soft tissue, epiphyses or joints. The cause is probably pressure necrosis plus a low grade infection.

### Annals of Internal Medicine, Lancaster, Pa

21 1-172 (July) 1944

- Great Need for Internists in Naval Medical Program. R. T. McIntire —p. 1.  
Demerol: New Synthetic Analgetic, Spasmolytic and Sedative Agent. I. Pharmacologic Studies. F. T. Yonkman, P. H. Noth and H. H. Hecht —p. 7.  
Id. II. Clinical Observations. P. H. Noth, H. H. Hecht and F. T. Yonkman —p. 17.  
Serum Amylase in Mumps. I. L. Applebaum —p. 35.  
Rheumatic Fever: Diet as Predisposing Factor. D. C. Peete —p. 44.  
Short PR Interval Associated with Prolongation of QRS Complex: Clinical Study Demonstrating Interesting Variations. O. A. Palatucci and J. E. Knighton —p. 58.  
I. Treatment of Experimentally Produced Staphylococcal Thoracic Empyema. W. E. Evans Jr., J. G. McAlpine, B. Skitarelic and E. H. Tonolla —p. 70.  
Spontaneous Complete Rupture of Aorta without Dissecting Aneurysm with Report of Case Showing New Physical Sign (Periaortic Friction Rub). F. R. Taylor and R. P. Morehead —p. 81.  
Evaluation of Dark Test. P. H. Woska —p. 101.  
Effect of Certain Antacids in Man Measured by Simplified Method for Continuous Recording of Gastric pH. N. E. Rossett and J. Flexner —p. 119.

**Clinical Observations with Isonipeacaine**—Noth and his associates made observations on the effect of isonipeacaine on 146 patients, 118 of whom were suffering pain severe enough to justify the use of one of the opiates. The customary dose was 100 mg given orally or intramuscularly. The drug was administered in 123 instances of severe pain to 118 patients (5 patients had two types of pain). Complete relief was obtained in 79, partial relief in 29 and no relief in 15 instances. The onset of relief was from five to twenty minutes following intramuscular injection and from twenty to thirty minutes following oral administration. Its duration varied between one and six hours but was usually three or four hours. Relief was more often complete following intramuscular injection. The analgetic potency of isonipeacaine in the dose employed was greater than that of 1 gram (0.06 Gm) or more of codeine or combinations of codeine and acetylsalicylic acid. It was usually less than that of morphine in  $\frac{1}{4}$  or  $\frac{1}{2}$  gram (0.016 or 0.01 Gm) doses. The sedative action of isonipeacaine was studied in the group of 81 patients with pain and in 24 patients without pain. The group of patients with pain received, as a rule, only a few doses of isonipeacaine. Its administration was followed by sleep in about 50 per cent by mild sedation in about 30 per cent and by no noticeable sedative effect in about 20 per cent of instances. The hypnotic or sedative effects following repeated administration were not profound a fact which was of advantage in the treatment of



patients with chronic painful diseases. Three of 4 patients suffering from status asthmaticus were benefited by isonipecaine. Side effects were noted by 40 of the 146 patients, but in only 7 was it necessary to stop the drug. Laboratory studies showed no changes which could be attributed to it. In 9 of 21 patients who had received isonipecaine for varying periods of time the withdrawal of the drug and the substitution of one of the opiates were followed by certain undesirable symptoms. Isonipecaine is an effective analgetic drug which is relatively nontoxic. It may possess addictive properties but these are apparently not as severe as those of some of the opiates. Isonipecaine is capable of replacing these drugs for a great number of painful conditions.

### Annals of Surgery, Philadelphia

120 1-128 (July) 1944

- Treatment of Air Force Combat Casualties. W. F. MacFee—p. 1  
Whole Upper Extremity Transplant for Human Beings. General Plans of Procedure and Operative Technique. R. H. Hall—p. 12  
Studies on Effects of Posture in Shock and Injury. G. W. Dunbar, S. J. Siroff and C. M. Rhode—p. 24  
Operation for Aneurysm of Heart. C. S. Beck—p. 34  
Infected Dissecting Aneurysm of Iliac Artery Following Arteriovenous Fistula of Femoral Vessels. H. Neuhof—p. 41  
Ligation of Abdominal Aorta. Case Report. J. H. Ormond, H. N. Harkins and I. J. Smith—p. 49  
Surgical Aspects of Pancreatic Fistula. T. B. Wiper and J. M. Miller—p. 52  
Primary Gastric Resection for Perforated Gastroduodenal Ulcers. A. Strauss—p. 60  
Atresia of Small Intestine. Two Case Reports. One Multiple Atresia with Survival. W. H. Erb and D. C. Smith—p. 66  
\*Cauda Equina Compression Syndrome with Herniated Nucleus Pulposus. Report of 8 Cases. J. D. French and J. T. Payne—p. 73  
Lumbosacral Roentgenograms of 450 Consecutive Applicants for Hernia Work. L. W. Brock, I. W. Hillman and W. C. Basom—p. 88  
Comparative Values of Various Methods of Resuscitation. S. A. Thompson—p. 94  
\*Studies on Surgical Convalescence. I. Sources of Nitrogen Loss Post-gastrectomy and Effect of High Amino Acid and High Caloric Intake on Convalescence. Co. Tui, A. M. Wright, J. H. Mulholland, V. Caribba, I. Barclay and V. J. Vinci—p. 99

**Cauda Equina Compression Syndrome with Herniated Nucleus Pulposus.**—French and Payne observed a number of instances in which the protrusions of nucleus pulposus were so extensive as to produce complete or nearly complete, subarachnoid block with cauda equina compression. The resultant symptoms so closely simulate cauda equina tumors that in most of the early cases exploration was done for suspected neoplasms. The authors gained the impression that cauda equina compression occurs much more frequently as the result of herniated nucleus pulposus as of tumor. They present 8 cases of cauda equina compression due to herniated nucleus pulposus. These cases were proved by myelography and operation. The pathologic process was encountered at the third lumbar in 1 case, at the fourth lumbar in 4 cases and at the fifth lumbar in 3 cases. There is considerable similarity in the symptom complex presented by these patients. Their main complaints were pain in the back and both legs, numbness in the saddle area and/or both legs, weakness and sphincter disturbances. There is usually a long antecedent history of back pain followed by an acute episode of rapid progression of the symptoms. The predominant symptoms were weakness or atrophy in the gluteal region or both legs, sensory changes in both legs, multiple reflex changes and sphincter abnormalities. Narrowed interspace determined by x-ray was frequently present and of differential diagnostic importance when found. Increased spinal fluid protein was the rule. Myelography showed complete or nearly complete subarachnoid block in all cases. The difficulty in differentiating this clinical entity from cauda equina tumor preoperatively is apparent.

**Nitrogen Loss After Gastrectomy.**—Co Tui and his associates reported in a preliminary communication that patients convalescing from gastrectomy, when fed with a high caloric and high amino acid diet (nutramigen), were able to maintain a consistently positive nitrogen balance throughout the postoperative period, to register a rise in body weight and to achieve an early return of strength and a significantly shortened convalescence. This picture was in contrast to that of a similar group of postoperative patients under the classic postoperative ward regimen who had a consistently negative nitrogen balance

a loss of body weight, a longer period of postoperative debility and a more prolonged stay in bed. The authors now report the results of treating a group of 19 patients, 8 of whom were on routine ward regimen, 8 were fed high caloric and high amino acid mixture, and 3 were fed in sufficient quantities to maintain nitrogen equilibrium. Under the classic ward regimen there was a consistent nitrogen deficit and loss of weight and a prolonged stay in bed. Objective ergography also showed postoperative asthenia which had not disappeared on the twelfth postoperative day. In those fed with high caloric and high amino acid mixtures there was a consistent nitrogen surplus, a steady gain in weight and a stay in bed of less than one-half that of the control series. The ergograph showed an early return of endurance. The principal cause of nitrogen loss in postgastrectomy convalescence was the starvation postoperative regimen. The nitrogen loss resulting from the gastric suction was considerable. It was correctable by feeding an early assimilable high amino acid mixture. A hyperalimentation regimen consisting of high caloric and high amino acid feeding postoperatively has been worked out and found practical and is recommended in gastrectomy in order to circumvent nitrogen loss, shorten convalescence and prevent postoperative asthenia.

### Archives of Neurology and Psychiatry, Chicago

52 1-86 (July) 1944

- Lesion in Peripheral Nerve Resulting from Compression by Spring Clip. D. Denny Brown and C. Brenner—p. 1  
Dystonia III. Pathology and Conclusions. E. Herz—p. 20  
Cerebral Thromboangitis Obliterans. Histogenesis of Early Lesions. I. M. Schenker—p. 27  
Electroencephalogram of Criminals. Analysis of 411 Cases. D. Silverman—p. 38  
Vasoparalysis of Central Nervous System. Characteristic Vascular Syndrome. Significance in Pathology of Central Nervous System. I. M. Schenker—p. 43  
Synthesis of Hippuric Acid in Dementia Precox. S. T. Michael, J. M. Looney and E. J. Borkovic—p. 57  
Abolition of Bulboexpiric Catalepsy in Cat by AC Tetrahydro B Naphthylamine. E. T. Kerman—p. 61  
Histamine Content of Blood During Insulin Shock Therapy. O. Billig and F. H. Hesser—p. 65

### Archives of Otolaryngology, Chicago

40 1-74 (July) 1944

- Intraaural Suppuration Secondary to Disease of Nasal Septum. Survey of Literature. Report of Cases and Animal Experiments. L. K. Rosenfeld—p. 1  
Chemotherapy and Biotherapy. Their Relation to Prevention and Treatment of Diseases of Ear, Nose and Throat. J. A. Kolmer—p. 17  
Modern View of Neuritis Referable to Meckel's Ganglion. Report of Cases Showing Relief of Pain and Sometimes Arrest of Development of Ulcers of Cornea by Cocainization of Ganglion. B. R. Dysart—p. 29  
Thrombosis of Cavernous Sinus with Hemolytic Streptococcal Bacteremia. Treatment by Intravenous Injection of Sulfadiazine and Penicillin with Recovery. J. W. Wolf—p. 33  
\*Present Status of Diagnosis and Management of Meniere's Syndrome. H. Brunner—p. 38  
Absorptive Capacity of Nose. M. Siltzman—p. 44  
Cancer of Trachea. Report of 5 Cases. G. E. Fisher—p. 49  
Prevention of Traumatic Deafness. Further Studies. W. H. Wilson—p. 52  
Modification of Blade of LaForce Tonsillectome. F. E. Keller—p. 59

**Meniere's Syndrome.**—According to recent studies Meniere's syndrome is due to an acute increase of fluid within the internal ear, particularly within the endolymphatic canal of the inferior part of the internal ear. These changes are called 'hydrolabyrinth' to emphasize the similarity to hydrocephalus. The symptoms of Meniere's syndrome are due to acute hydrolabyrinth which may resolve without injury to the internal ear or may lead to fixed dilatation of the inferior part of the internal ear and gradual or acute destruction of the sensorial cells. The typical Meniere attack consists ofinnitus, diminution of hearing, labyrinthine vertigo and spontaneous nystagmus. Only vertigo of the type which can be produced by the usual clinical methods of examining the labyrinth should be considered as labyrinthine. Spontaneous nystagmus between Meniere attacks is not of labyrinthine origin; it indicates an organic disease in the posterior cranial fossa. If the attacks consist only of labyrinthine or only of cochlear symptoms a definite diagnosis cannot be made. If there is a systemic cerebral or aural cause the symptom complex is

called "symptomatic Meniere's syndrome." When no etiologic factor can be determined the disease is designated "idiopathic Meniere's syndrome." The pathologic changes are apparently the same in the two cases. The metabolic theory of the causation of the disease is not supported by microscopic observation, by chemical examination of the blood or by treatment. The vascular theory is supported by microscopic observation of the human ear as well as by experiment and explains the pathologic picture of the idiopathic as well as the symptomatic Meniere's syndrome. Most frequently the angioneurotic disturbances within the internal ear are due to arteriosclerosis of the brain. Various types of leukemia, syphilis, influenza, malaria, virus infection and particularly focal infection may cause the symptomatic Meniere's syndrome. Allergy is occasionally but not frequently a cause. A chronic adhesive process of the tympanic cavity frequently causes symptomatic Meniere's syndrome. When Meniere's syndrome is symptomatic, the etiologic disease should be treated. Treatment of the idiopathic type of Meniere's disease is difficult. Atkinson has recommended nicotinic acid on the ground that it is a vasodilator. The author employs symptomatic treatment which is not always successful. Surgical treatment is justified only if the diagnosis of Meniere's syndrome is certain if conservative measures have been exhausted and if the disease is progressive on one side while the other ear is normal.

### Archives of Pathology, Chicago

38 1-62 (July) 1944

- Infantile Toxoplasmosis with Report of 3 New Cases Including 2 in which Patients Were Identical Twins W. W. Zuelzer—p. 1  
Parathyroiditis Syndrome Pituitary Dysfunction and Primary Hyperparathyroidism R. M. Perlman—p. 20  
Protein in Urine M. H. Fischer and W. J. Suer—p. 28  
Morphologic and Histochemical Study of Effect of Scurvy on Tuberculosis in Guinea Pigs and of Origin Amount and Distribution of Alkaline Phosphatase in Foci of Chronic Necrosis W. O. Russell, J. A. Reid and E. T. Rouse—p. 31  
Histochemical Study of Effect of Scurvy on Activity of Alkaline Phosphatase in Kidneys of Guinea Pigs W. O. Russell, E. T. Rouse and J. A. Reid—p. 40  
Spontaneous Arteriosclerosis in Chickens D. V. Dauler—p. 46  
Incidence of Uterine Carcinoma in Mice Treated with Estrogen Effect of Age at Which Treatment with Estrogen Begins I. Loeb, V. Sontzoff, E. L. Burns and I. R. Schenken—p. 52

**Infantile Toxoplasmosis**—The number of reported cases of human toxoplasmosis, according to Zuelzer totals 32. He reports 3 new cases. The first patient was a white boy who died on the third day of hospitalization when 11 days old. The second patient was a Negro infant, 1 of identical twin boys who died when 1 month old. Complete necropsy reports are given of these 2 patients. The third patient the identical twin brother of the second patient is alive and has been under observation from birth to the present age of 7 months. Although in infants toxoplasmosis has a predilection for the central nervous system the infection passes through a generalized stage in which many organs may be involved. The relative effect of toxoplasmosis on the central nervous system is magnified in later stages by the permanent character of the residual lesions owing to the inability of nerve cells to regenerate, while lesions in other organs may heal with little or no residue. The disease may produce variable combinations of clinical and pathologic abnormalities. The parasites of toxoplasmosis invade tissue cells, in which they multiply causing gradual loss of the characteristic cell structure and producing the appearance of cysts. The intracellular aggregate of toxoplasmas does not seem to produce a reaction in the tissue as long as the membrane of the host cell remains intact. Single parasites set free by rupture of a host cell or on their way from vessels to cells produce an inflammatory response. An equilibrium between host tissues and parasites may be established, leading to persistence of intact intracellular aggregates of toxoplasmas in normal tissues. The demonstration of the disease in twins together with the presence of neutralizing antibodies in the maternal serum and the chronic character of most of the lesions observed in the twin who died of the disease at the age of 1 month, constitutes new evidence for the occurrence of prenatal infections with toxoplasma. One patient dying at the age of 11 days had an acute generalized toxoplasmic infection. Lesions were found in many organs

among these the testicles, the pancreas and the kidneys, in which the infection has not been reported until now. The renal lesion consisted of focal glomerulonephritis. Generally the changes resembled those in acute toxoplasmosis of adults. The absence of demonstrable antibodies in the maternal serum indicates that the infection in this infant was acquired after birth and suggests that even early infantile toxoplasmosis is not always necessarily congenital. The clinical onset of the disease in the first few weeks of life is not in itself adequate proof of its prenatal inception. In the twins icterus accompanied the toxoplasmic infection. Icterus does not seem to be a common feature of the disease. Among 21 previously reported cases this symptom was present in only 3 instances. Analysis of the character of the icterus in the twins and of the underlying changes in the liver in the one who died does not support a causal relation to the toxoplasmic infection. Hepatosplenomegaly and extramedullary hemopoiesis in the spleen, the liver and other organs are genuine manifestations of toxoplasmosis of newborn and young infants.

### Arkansas Medical Society Journal, Fort Smith

41 43-58 (July) 1944

Tuberculosis Control in Arkansas A. C. Curtis—p. 43

41 59-78 (Aug) 1944

Continuation Crutal Analgesia in Obstetrics J. Linton Jones—p. 59  
Suggested Health Program for Schools for Blind F. W. Harris—p. 67

### Bulletin of Los Angeles Neurological Society

9 1-120 (March June) 1944

- Some Notes on History of Injury to Skull and Brain C. B. Courville—p. 1  
Structural Basis for Common Traumatic Cerebral Syndromes C. B. Courville—p. 17  
Disturbances of Cerebral Physiology Following Certain Types of Cranio-cerebral Injuries R. B. Rancy and A. A. Ranev—p. 28  
Electroencephalographic Changes Due to Cerebral Trauma C. Varli—p. 38  
Concussion of Brain Clinical and Experimental Observations C. W. Olsen—p. 46  
Aphasia Due to Cerebral Trauma J. M. Nielsen—p. 52  
Head Injuries in Relation to Psychoneurotic Symptoms and Personality Change S. D. Ingham—p. 61  
Psychiatric Syndromes Due to Head Injury Observations on 174 Cases from Los Angeles County Psychopathic Hospital C. V. Thompson and J. L. McInnis—p. 65  
Intervall Syndrome with Some Comments on Its Cranial Traumatic Lesions R. S. Knighton—p. 72  
Post-Traumatic Epilepsy Some Observations as to Its Pathogenesis and Treatment C. Marsh—p. 79  
Traumatic Abscess of Brain Survey of Recent Literature and Report of 9 Cases H. M. Cuneo—p. 87  
Subdural Neomembrane Following Head Injury Report of 2 Cases W. T. Grant—p. 94  
Surgical Experiences with War Wound of Skull and Brain Relating Surgical Experiences of Operating Team No. 378 and Subsequent Reflections C. W. Reid—p. 101  
Penetrating Wounds of Skull Some Therapeutic Considerations G. H. Patterson—p. 106  
Repair of Traumatic Cranial Defects Some Experiences with Tantalum D. L. Reeves—p. 112

**Tantalum in Repair of Traumatic Cranial Defects**—Reeves states that until the more recent use of vitallium and tantalum materials other than autogenic bone grafts for the repair of cranial defects had been generally discredited. Tantalum is a bluish white metal, which has proved a satisfactory alloplastic material for the repair of peripheral nerves and cranial defects. The tantalum plates retain their original luster and show no signs of corrosion. No inflammatory reaction leading to extrusion or necessitating removal of the plates occurs. Because of its malleability the flat tantalum sheet can be cut to fit the defect with tin shears or heavy surgical scissors and then hammered or bent to the desired contour. By means of preoperative impressions molds and models the tantalum sheet can be contoured accurately to fit the cranial defect and still be adjusted at the operating table. The accurately fitted plate is fastened to the bone with tantalum wire through perforations made along the edge of the plate. In the past year tantalum wire and foil have been used increasingly in the repair of peripheral nerves and the plates for the closure of large and difficult defects with very satisfactory results. The author describes 2 cases which illustrate the value of tantalum in the repair of cranial defects.

## Cancer Research, Baltimore

4 465-528 (Aug) 1944 Partial Index

- Fluorescence Studies on Cancer F H J Figgie—p 465  
Oxidative Response of Normal and Neoplastic Tissues to Succinate and p-Phenylenediamine O Rosenthal and D L Drablin—p 487  
Action of Heptanal Sodium Bisulfite Methylsulfate and of 2,4,6-Trimethylpyridine on Tissue Cultures of Human and Mouse Carcinoma and Rat Lymphosarcoma Gladys Cameron C J Kenler and R Chambers—p 495  
Retarding Effect of Glyceraldehyde on Benzpyrene Sarcoma Formation in Mice J F Riley and F Pettigrew—p 502  
Multiple Primary Tumors in Dogs R M Mulligan—p 505  
Antifibrotic Effects Produced by Intermittent Action of Progesterone R Iglesias A Lipschutz and G Nieto—p 510  
Inactivation of Antifibrotic Substances (Progesterone and Deoxycorticosterone Acetate) in Liver Christiane Dosne—p 512  
Experimental Study of Lateral Spread of Epidermoid (Squamous Cells) Carcinoma in Man and Reaction of Such Lesion to Wound Healing Stimulus A Brunschwig and T T Thornton Jr—p 515

## Endocrinology, Springfield, Ill

35 73-138 (Aug) 1944

- Biochemical Effects of Sex Hormones Acid and Alkaline Phosphatase Activity, Calcium and Phosphorus K W Buchwald and Leon Hudson—p 73  
Effect of Some Androgenic Steroids on Adrenal Cortex of Hypophysectomized Rats S L Leonard—p 85  
Effect of Pure Adrenocorticotrophic Hormone on Work Performance of Hypophysectomized Rats D J Ingle C H Hix and H M Evans—p 91  
Sensitivity of Reproductive System of Hypophysectomized 40 Day Male Rats to Gonadotropic Substances Miriam E Simpson C H Li and H M Evans—p 96  
Water Intoxication in Relation to Thyroid and Adrenal Function R Crant Margaret Cordson and Mildred Liling—p 105  
Role of Hypophysis and Adrenals in Control of Systolic Blood Pressure in Rat J H Leatham and A A Drill—p 112  
Metabolism of Steroid Hormones Adrenal Cortical like Material in Human Urine R I Dorfman B N Horwitz and K A Shipley—p 121

## Gastroenterology, Baltimore

3 1-72 (July) 1944

- \*Heartburn W C Alvarez—p 1  
Gastric Diverticulum Gastroscopic Observation of 2 Cases F Whitehouse and J M MacMillan—p 13  
Cholecystography with Beta (4 Hydroxy 3,5 Diiodophenyl) Alpha Phenyl Propionic Acid H C Ochsmier—p 25  
Strangulation of Small Intestine Due to Prolapse Through Aperture in Great Omentum S Saues and A V Postoloff—p 30  
Pyogenic Hepatitis with Staphylococcal Bacteremia Treated with Penicillin A A Gonzalez and C L Veyar—p 33  
Gastric Excretion of Sulfadiazine in Man Observations on Normal Patients with Peptic Ulcer Atrophic Gastritis and Gastric Cancer A Shapiro H S Bloch and L Schiff with technical assistance of Lucy J Crossley—p 39  
Effect of Detergents on Proteolytic Activity of Trypsin C L Block S A Portis and H Nechles—p 45

**Heartburn**—Alvarez summarizes the results of questioning 123 persons with heartburn. The sensation consists of a burning and sometimes painful or rending distress, which begins usually under the lower end of the sternum and sometimes runs up as far as the pharynx. It tends to come in spells, and there are many curious and inexplicable features about its coming and goings. It does not appear to be due to any known organic disease of the digestive tract. At least 17 of the patients had or had had ulcer but curiously when the ulcer was active and they had hunger pain they were free from heartburn. The symptom, therefore did not seem to be produced by the ulcer. Heredity is sometimes a factor. Seventy-three per cent of the patients were men. Many of the patients suffered with regurgitation and belching and these symptoms were occasionally associated with the heartburn, apparently only when the esophageal mucosa had been sensitized. When the esophagus was normal, regurgitation of acid gastric contents did not cause burning. Immediate causes of heartburn are eating too fast or too much or eating certain foods such as fats coffee, onions, seasonings, radishes tomato orange egg cucumber, chocolate, peppers and cabbage. Alcohol and tobacco can be important factor as can be emotion. Lying down or bending or exercising may bring on heartburn. The degree of acidity of the gastric contents is apparently not important, and heartburn can trouble persons with achlorhydria even to histamine. Three of the patients studied had cruer of the stomach. Sodium bicarbonate compound gives relief partly through neutralizing acid in the

esophagus and the stomach and partly by causing waves of reverse peristalsis to run out and stop coming. The evidence obtained in this study fits with that obtained by experimenters and suggests that heartburn is due largely to regurgitation into a sensitized esophagus and partly to reverse waves of peristalsis coming up from the stomach.

## Indiana State Medical Assn Journal, Indianapolis

37 387-426 (Aug) 1944

- Retrocecal Appendix W C Reed and L T D Stork—p 387  
Psychosomatic Medicine J A Reed—p 391  
Industrial Medicine in Action E S Jones—p 97  
New Technique in Drawing Blood for Serodiagnostics Test (Ureter Hemo test) K E Markson—p 400  
Primary Closure of Pilonidal Cyst and Sinus M Cornacchione—p 402  
Eye Trauma in Amphibious Troop Operations of U S S Solace A F Clements—p 404

## Journal of Allergy, St Louis

15 245-310 (Jul) 1944

- Immunity Against H Substance M B Cohen and H I Friedman—p 245  
\*Deaths from Asthma F M Rackemann—p 249  
Value of Patch Test in Poison Ivy Dermatitis with Consideration of Group Reactions Between Rhus Extract and Turpentine Pyrethrum Ragweed Oil and 3 Geranyl Catechol H Keil—p 259  
\*Penicillin Allergy Probability of Allergic Reactions in Fungus Sensitive Individuals Preliminary Experience S M Fennberg—p 271  
Immunologic Management of Patient with Allergy M B Cohen—p 274  
Significance of Allergy in Military Medicine Report of Incidence of Allergic Disease in Large Station Hospital and Method of Prediction Evaluation of Allergic State F M Cold and I M Bazemore—p 279

**Deaths from Asthma**—Rackemann reviews the records of 82 patients who died because of asthma. Most of these deaths occurred in persons whose asthma began after the age of 45 although typical symptoms and pathologic manifestations can also occur in younger persons. Death from asthma is caused by the development of plugs of tough sticky mucus which obstruct the bronchi and lead to suffocation. The pathologic picture is typical. It is characterized by voluminous distended lungs of bluish gray the cut section of which shows all the bronchi especially those of medium and small size occluded by plug. The author presents one chart which shows in graphic form the mode of death and the pathologic changes in 50 of the author's patients who died with asthma as the presenting symptom. Of these 27 presented pathologic features which he regards as typical of asthma. Another chart shows 55 cases found in the literature which meet the requirements namely (a) a clinical history and a mode of death characteristic of asthma (b) a necropsy showing voluminous lungs and bronchial plugs and (c) a necropsy showing no gross evidence of other causes of death.

**Patch Tests in Poison Ivy Dermatitis**—Keil studied 72 cases of which 40 were probable instances of dermatitis due to poison ivy 26 of dermatitis caused by various other causes mainly plants and 6 of doubtful instances of poison ivy. With the exception of the second subgroup, all of the patients showed positive reactions to an extract of poison ivy. The cases were carefully selected so that the incidence of 64 per cent positive reactions to rhus extract was probably higher than the figures for normal subjects. These studies support the generally accepted opinions on the uses and limitations of the patch test in relation to poison ivy dermatitis. A positive patch test with a potent rhus extract does not prove the presence of dermatitis due to poison ivy but simply indicates sensitization to the plant. The diagnostic value of the test is depreciated by the high incidence of positive reactions in the normal adult population. A negative patch test eliminates past and present hypersensitivity to Rhus toxicodendron on this point rests the chief value of the test in differential diagnosis of dermatitis due to poison ivy. The quantitative patch test is an important method of checking the value of treatment in this disease. A positive patch test does not necessarily mean that the patient has had clinical dermatitis from poison ivy or will acquire it under ordinary conditions of exposure. The relation between the results obtained with the patch test and the acquisition of clinical disease depends probably on quantitative factor involving the

degree of hypersensitiveness and the severity of exposure. Those showing positive patch tests are more apt to acquire a dermatitis from contact with rhus than those with negative patch tests. The value of the test in experimental studies cannot be overstressed. There is no apparent biologic relation between hypersensitiveness to poison ivy and that to fresh turpentine of various types or to alpha and beta pinene. Group reactions may be encountered with old specimens of turpentine probably because of an increase in the phenolic fraction of turpentine. Evidence of a group relation between the active ingredient in poison ivy and pyrethrum or ragweed oil was not found. Evidence is presented to show, in substantiation of the work of Landsteiner and Jacobs in guinea pigs, that, in man, 3-geranyl catechol is biologically related to the active principle in poison ivy. Hypersensitiveness to 3-geranyl catechol seems to be dependent on the unsaturated geranyl group in combination with the catechol configuration.

**Penicillin Allergy**—Femberg points out that reactions to penicillin, mainly in the form of urticaria, have appeared in 57 per cent of patients receiving the substance. The reactions did not resemble the classic and severe allergic reactions which would be likely to follow the injection of an allergen to which the person had been naturally sensitive. Ten patients who were clinically mold sensitive and who gave positive reactions with extracts of various Penicillia were given skin tests with two batches of penicillin. Reactions were negative in all cases. Apparently Penicillium sensitive persons are safe from allergic reactions to penicillin. The possibility of allergic reactions cannot be totally ignored in view of the fact that the original source of penicillin is a potent antigen and that at times some of the antigen may be a final contaminant. It is suggested that as an added safeguard every batch of commercial penicillin be tested on known Penicillium sensitive persons. The author tested a more recently prepared penicillin of higher potency. This preparation could be tolerated by an average Penicillium sensitive patient in doses of at least 500,000 units.

## Journal of Bone and Joint Surgery, Boston

26 435-620 (July) 1944 Partial Index

- Basic Problems in Bone Grafting for Ununited Compound Fractures C. R. Murray—p. 437  
Wound Healing in Compound Fractures and Repair of Bone Defects K. F. Meek—p. 442  
Surface Repair of Compound Injuries J. B. Brown—p. 448  
Bridging of Bone Defects in Compound Wounds J. R. Moore—p. 455  
End Results of Treatment of Fresh Fractures by Use of Stader Apparatus C. M. Shaar, F. P. Kreuz Jr. and D. T. Jones—p. 471  
Use of Haynes Skeletal Fixation Apparatus in Definitive Orthopedic Surgery R. W. Johnson Jr. and J. Lyford III—p. 475  
Use of Untubed Pedicle Grafts in Repair of Deep Defects of Foot and Ankle: Technique and Results R. K. Ghormley and P. R. Lipcomb—p. 483  
\*Immediate Application of Free Full Thickness Skin Graft for Traumatic Amputation of Finger H. R. McCarroll—p. 489  
Injuries to Ligaments of Knee Joint L. C. Abbott, J. B. de C. M. Saunders, F. C. Bost and C. E. Ander—p. 503  
Role of Penicillin in Management of Infection J. M. Ferrer Jr.—p. 522  
Surgical Treatment of Hallux Valgus in Troops in Training at Fort Jackson During Year of 1942 M. Cleveland, L. J. Willen and P. C. Doran—p. 531  
Principles of Amputations of Fingers and Hand D. B. Slocum and D. R. Pratt—p. 555  
Fatigue Fractures P. A. Robin and S. B. Thompson—p. 557  
\*Bone Drilling in Delayed Union of Fractures M. E. Pusitz and E. V. Davis—p. 560  
Fractures of Os Calcis Tripod Pin Traction Apparatus E. D. McBride—p. 578  
Posterior Approach to Shoulder Joint C. R. Rowe and L. B. K. Yee—p. 580  
Subtalar Dislocation L. W. Plewes and K. G. McKelvey—p. 585  
Acute Acromioclavicular Dislocation: Simple Effective Method of Conservative Treatment I. Wolin—p. 589

**Immediate Free Full Thickness Skin Graft for Traumatic Amputation of Finger**—McCarroll shows that the use of punch presses, trim machines, loading machines and numerous other automatic mechanical units by personnel often new and inexperienced in their operation is the factor responsible for the increasing role which traumatic amputation of fingers now plays in the field of traumatic surgery. Most of these injuries occur in the distal phalanx and result in a guillotine type or amputation including all the soft tissue pad at the finger tip,

a part or all of the nail and part of the bone. The amputation in all cases in this series of 45 cases occurred through the distal phalanx. These patients were treated by immediate application of a free full thickness graft. Of these 45 cases, 43 have shown complete takes of the grafts. Each presented a smooth, well rounded finger tip, soft, nonadherent, nonsensitive and satisfactory in appearance, all the patients have been able to return to their former occupation. They have been able to work during the period of postoperative care, since only the involved finger was incorporated in a dressing. The remaining 2 cases are classified as failures with loss of the graft, although in neither instance was the graft a hundred per cent loss. Each retained enough of the graft to aid in filling in the defect and in decreasing the period of disability, although there was an increased amount of scarring over the finger tip, which was adherent to the underlying structures. Immediate application of free full thickness skin grafts should be considered as the procedure of first choice in the management of traumatic amputation of the finger.

**Bone Drilling in Delayed Union of Fractures**—Pusitz and Davis say that bone drilling is not a method of choice in the treatment of definite nonunion, it is intended for the treatment of delayed union. Differentiation between delayed and nonunion involves time and roentgenographic studies. A delayed union may be still present at the end of ten months whereas nonunion may be present at the end of ten weeks. There are three essential types of nonunion: (1) typical pseudarthrosis with sclerosis of the ends of the fragments, (2) fibrous union with osteoporosis of the fragments and (3) fibrous union with atrophy of disuse. In delayed union, although there may be no discernible callus, there is no sclerosis of the ends of the fragments. If there is absolutely no evidence of callus formation at the end of four to six months, delayed union may be considered to be present. A large number probably the majority of delayed unions will ultimately unite. This may take eight months or eighteen months and a proportion of these delayed unions will resolve themselves into nonunions. Delayed union is the primary indication for bone drilling. It should be performed within a four to six months period. The dissection should be minimal. A series of thirty to fifty holes are drilled. After the bone has been properly drilled, simple closure is effected. The part is then properly immobilized, as after a fresh fracture. A well fitting, nonpadded plaster of paris cast is applied, to which a walking caliper is added after a week or ten days. The authors review 25 consecutive cases in which bone drilling was done. All cases except 1 showed bony union both clinically and roentgenographically. The average duration for the development of union after drilling was eight weeks. The shortest period was three weeks, and the longest was five months. The patients were up and around in a walking cast a week or ten days after operation. There were no postoperative infections.

## Journal of Clinical Investigation, Boston

23 289-416 (May) 1944 Partial Index

- Level of Vitamin A and Carotene in Plasma of Rheumatic Subjects R. E. Shank, A. F. Coburn, Lucille V. Moore and C. L. Hoagland—p. 289  
Subclinical Vitamin Deficiency. IV. Plasma Thiamine Mildred H. Carleen, N. Weissman and J. W. Ferrebee—p. 297  
Characteristics of Normal Electroencephalogram. I. Study of Occipital Cortical Potentials in 500 Normal Adults Mary A. B. Brazier and I. E. Finesinger—p. 303  
Effects of Pleural Effusion on Respiration and Circulation in Man M. D. Altschule and N. Zamcheck—p. 325  
Influence of Collapsibility of Veins on Venous Pressure Including New Procedure for Measuring Tissue Pressure H. W. Ryder, W. E. Mollé and E. B. Fernis Jr.—p. 333  
Preservation of Normal Human Plasma in Liquid State. I. Statistical Study of 1,751 Administrations E. L. Lozner and L. R. Newhouser—p. 343  
Effect of Single Injection of Concentrated Human Serum Albumin on Circulating Proteins and Proteinuria in Nephrosis J. A. Luescher Jr.—p. 365  
Skin Temperatures of Extremities of Persons with Induced Deficiencies of Thiamine, Riboflavin and Other Components of B Complex Grace M. Roth, R. D. Williams and C. Sheard—p. 373  
Renal Circulation in Shock H. D. Lauson, S. E. Bradley and A. Courmand with technical assistance of Vera Vessey Andrews—p. 381  
Fate and Effects of Transfused Serum or Plasma in Normal Dog W. Metcalf—p. 403

Journal of Immunology, Baltimore

49 1-70 (July) 1944

- Studies on Plague Immunity in Experimental Animals I Protective and Antitoxic Antibodies in Serum of Actively Immunized Animals E Jawetz and K F Meyer—p 1  
Id II Some Factors of Immunity Mechanism in Bubonic Plague E Jawetz and K F Meyer—p 15  
Immunological Studies on Human Serum VI Fixation of Components of Human Complement by Bacteria T F Dozois S Seifter and E E Ecker—p 31  
Id V Bactericidal Properties of Purified C1 and C2 of Human Complement S Seifter T F Dozois and E E Ecker—p 45  
Diagrammatic Representation of Human Blood Group Reactions A S Wiener and H E Karowe—p 51  
Complement Fixation Reaction with Antigen of Lymphogranuloma Venereum (Lymphogranuloma) J E Blair with technical assistance of Frances A Hallman—p 63

Journal Neuropath and Exper Neurology, Baltimore

3 199-310 (July) 1944

- \*Neurohistologic Findings in Experimental Electric Shock Treatment N W Winkelman and M T Moore—p 199  
Pathologic Characteristics of Embolic or Metastatic Encephalitis B J Alpers and H S Gaskill—p 210  
Alterations in Brain Structure After Asphyxiation at Birth Experimental Study in Guinea Pig W F Windle R F Becker and A Weil—p 224  
Allergic Brain Changes in Postscarlatinal Encephalitis A Ferraro—p 239  
Multiple Meningioma and Meningiomas Associated with Other Brain Tumors S Arieti—p 255  
Subacute Necrotic Myelopathy Fatal Myelopathy of Unknown Origin C Davison and S Brock—p 271  
Reactions of Monkeys of Various Ages to Partial and Complete Decortication Margaret A Kennard—p 289

**Neurohistologic Findings in Experimental Electric Shock Treatment**—Winkelman and Moore subjected cats to electrocerebral shock, utilizing the faradic current of Berkwitz or the Cerletti-Bini type of house current. The experiments were conducted in close imitation to human electroshock therapy, and to 2 animals excessive doses were given intentionally. The nutritional aspects of the animals were carefully controlled. Microscopic studies of the brains and cords revealed no morphologic changes in animals receiving convulsive doses analogous to those given to human beings. In the 2 animals given excessive electric shock doses one small area of pericapillary hemorrhage was seen in 1 and congestion of the smaller vasculature was observed in the other. In no case were subarachnoid hemorrhages or diffuse or extensive intracerebral hemorrhages encountered. While their studies indicate that permanent morphologic changes do not result from electrocerebral shock per se, they feel that intracellular biochemical changes do take place by virtue of the passage of the current and the resultant convulsion. These undemonstrable changes explain the clinical improvement in some patients. They gained the impression that in a large series of human cases in which a prolonged series of shocks was accompanied by a rise in blood pressure this was not attributable to cardiovascular renal change but rather to changes within the autonomic nerve cells of the subthalamic nuclei.

**Pathologic Aspects of Embolic or Metastatic Encephalitis**—Alpers and Gaskill, in their studies of 17 cases of embolic encephalitis, found that the heart valves are most frequently the source of metastatic encephalitis, particularly in cases of subacute bacterial endocarditis. Acute endocarditis of other types, pulmonary disease and foci involving other organs may give rise to this form of encephalitis. Clinical manifestations indicating brain involvement, particularly in endocarditis, may usher in the disease. They may be terminal or may occur anywhere along its course. The brain may contain few or numerous areas of encephalitis. These may be found anywhere in the cerebral hemispheres, brain stem or basal ganglia. Microscopically, brains so afflicted show a proliferative endarteritis which tends to be quite generalized, areas of perivascular infiltration with leukocytes, minute leukocytic nodules which are essentially milium abscesses and in some instances areas of petechial and perivascular hemorrhage. Subarachnoid, cerebral or ventricular hemorrhage may be found as well as meningitis. The foci of metastatic encephalitis are probably blood borne and are probably carried by means of the system of paravertebral veins described by Batson.

Journal of Urology, Baltimore

52 1-98 (July) 1944

- Physiologic Concepts Conveyed by Word for Kidneys Among Various People D I Macht—p 1  
Report of Case of Perineal Hemorrhage from Spontaneous Rupture of an Intrarenal Artery W P Longmire Jr—p 12  
Perineal Abscess with Extension into Right Pleural Cavity Following Rupture of Right Renal Pelvis Operative Findings and Results S Moore and H H McCarthy—p 17  
Cuma of Bladder Report of Case J K Ormond and I C Hemmings Jr—p 25  
Operation for Cure of Stress Incontinence in Female F Mack—p 27  
Management of Traumatic Rupture of Urethra and Bladder Complicating Fracture of Pelvis E J McCague and J H Semans—p 6  
Reconstruction of Membranous Urethra Case Report C A W Uhle and H R Erb—p 42  
Management of Urethrectal Fistula Review of Literature and Report of Spontaneous Closure B C Corbus Jr and B C Corbus Sr—p 61  
Sarcoma of Penis B Levant—p 63  
True Hermaphroditism Report of 2 Cases R B McTier D R Seabough and M Mangels Jr—p 67  
Keratomatous Cysts of Scrotum Case Report A A Roth—p 86  
Xanthine Calculus Case Report A J Butt and H D Hollman Jr—p 89  
Nonspecific Urethritis of Venereal Origin P Grenley—p 92

Minnesota Medicine, St Paul

27 513-592 (July) 1944

- New Intensive Measures for Treatment of Early Syphilis P A O'Leary—p 535  
Preoperative and Postoperative Care for Bad Risk Patient C Dennis—p 538  
Early Diagnosis of Tuberculosis B J Terrell—p 543  
Postmortem Examinations H E Robertson—p 548  
Isolation from Milk Supplies of Specific Types of Green Producing (Alpha) Streptococci and Their Thermal Death Point in Milk E C Rosenow—p 550

27 593-680 (Aug) 1944

- Certain Obligations of Physician E M Jones—p 617  
Malignant Carcinoid Tumors of Small Intestine Report of 2 Cases J E Blumgren—p 620  
Providing for Nutritional Needs of Older Patients in General Hospitals E L Tuohy—p 623  
Relationship of Descensus Uteri to Pelvic Size and Morphology and to Certain Obstetric and Economic Factors A L Dippel—p 627  
Oriental Diseases G J Guildseth—p 631  
War and Pestilence C B Drake—p 634  
Failure of Surgical Wound Healing Due to Talc A H Wells—p 640

New Jersey Medical Society Journal, Trenton

41 263-298 (July) 1944

- Postwar Planning L H Bauer—p 270  
Postwar Medical Education R C Buerki—p 277  
Newer Aspects of Chemotherapy B W Carey—p 279

41 299-328 (Aug) 1944

- Planning for Medical Service in Postwar Period J E Paulin—p 302  
Announcement to Doctors and Pharmacists of New Jersey R P Ickels—p 305  
Can Voluntary Health Insurance Meet the Need? E A Van Steenwyk—p 306  
Some Aspects of Abortion Problem H P Shupps—p 311

Public Health Reports, Washington, D C

59 1009 1040 (Aug 4) 1944

- \*Histopathologic Changes Following Administration of DDT to Several Species of Animals A A Nelson J H Druze G Woodard O G Fitzhugh R B Smith Jr and H O Calvery—p 1009  
Diamond Points and Discard Rate of Steel Dental Burs H Klein—p 1021

**Histopathologic Changes Following DDT Administration**—Nelson and his collaborators made microscopic studies on 117 animals of 9 different species after the administration of 1, 1, 1 trichlor- 2, 2 diphenyl ethane, an insecticide which is generally designated as DDT. The substance was administered by intubation, by stomach tube or by admixture in the diet and in doses varying from those fatal in a few days to those causing no perceptible lesions after several months. The animals included rabbits, rats, guinea pigs, mice, chicks, dogs, cows, sheep and a horse. Although there were wide variations in sensitivity to the compound among the different animals of a given species the lesions caused were quite consistent throughout the different species. On the higher dosage levels with the animals surviving for one to several weeks, there resulted a moderate degree of central necrosis of the liver or with the



longer periods of survival, a combination of central necrosis and reparative hypertrophy which can be labeled as a moderate subacute degeneration of the liver. The thyroid often showed moderate colloid depletion, less often epithelial desquamation and rarely epithelial hyperplasia. Slight to moderate focal necrosis of voluntary muscles occurred in about 20 per cent of animals on the higher dosage levels. Rabbits showed certain lesions not seen in the other species, a focal necrosis of the gallbladder and an increased incidence of the "spontaneous" types of encephalitis and nephritis. Dermatitis in injected animals was mild throughout except that rabbits on the highest doses showed slight focal necrosis of the epidermis. For a given dosage level of DDT, chickens and guinea pigs showed fewer microscopic lesions than did the other species. A special effort was made to determine nerve cell changes in the brain and spinal cord of animals with tremors. With routine fixation and staining (formaldehyde and Orth's hematoxylin eosin) no changes could be seen that were not present in controls similarly and concurrently fixed and stained. Rare myocardial and adrenal lesions may be of significance. DDT caused insignificant or no effects on bone marrow, bone, testis, pancreas and spleen. Renal lesions were slight and infrequent. Because of the tremors of long duration produced by it, DDT would appear to be a promising experimental agent for the neurophysiologist.

### Southern Medical Journal, Birmingham, Ala

37 415-470 (Aug) 1944

- Indications for Pelviscopy in the Female W. B. Harrell and R. Estevez—p. 415  
Body Section Roentgenography G. J. Baylin—p. 418  
\*Cerebral Glioma in Siblings W. Riese, J. M. Meredith and I. S. Zis—p. 424  
Myocardial Infarction in Congenital Dextrocardia I. F. Geeslin and C. R. Tyler—p. 428  
New Operation for Shortening Round Ligaments N. A. Schneider—p. 434  
Uterine Malformation Case Report J. M. Olds, W. A. Swanker and J. E. Josephson—p. 436  
Diagnostic Aid in Perinephric Abscess Sulfonamide Ineffectiveness G. G. Gilbert and J. E. Dees—p. 438  
Clump in Rectum: Significance, Differentiation and Treatment with Case Reports M. C. Pruitt—p. 442  
Esophageal Manifestations of Pellagra C. E. Fisher—p. 446  
Hemolytic Anemia M. I. Beard—p. 448  
Treatment of Diabetic Coma L. B. Owens—p. 450  
Diabetic Coma F. G. Speidel—p. 454  
William Shaker Therapist W. E. Vest—p. 457

**Cerebral Glioma in Siblings**—Riese and his associates state that the only "glioma" in which a familial tendency has been established is the glioma of the retina. Only occasionally has the familial occurrence of a true glioma been mentioned in the literature. They describe the clinical picture and the histopathologic type of 2 cases of cerebral glioma which occurred in 2 members of the same family (brother and sister). In both the growth developed in adult life, at the age of 39 in the sister and at 50 in the brother. In both cases the duration of the clinical history was two months. In the brother the tumor was a supratentorial growth, in the sister an involvement of similar regions was probable, although the tumor also involved the cortex. The histogenic type of the tumor was identical in the two instances, it was a glioblastoma multiforme. The sister also had a carcinoma of the left lung and uterine leiomyomas. The authors think that the fact that this woman did not develop a brain tumor of the same type of neoplasm which was present in the lung, but instead a primary glioma, is indicative of an intrinsic tendency to develop glioma. The authors do not think that pure coincidence would be satisfactory in explaining the occurrence of the identical type of brain neoplasm in siblings and suggest further investigations of the frequency of brain tumor in siblings and of the combination of primary brain tumor with primary tumors of other distant organs in the same person.

**Myocardial Infarction in Congenital Dextrocardia**—Geeslin and Tyler present the history of an officer aged 43, who complained of substernal "twisting" pain radiating into both shoulders and arms for the preceding four days. The presence of dextrocardia with situs inversus was established by physical examination, roentgenographic visualization of the transposed heart, stomach, liver and gallbladder and the mirror image inversion of lead 1 in the electrocardiograms in 1936 and 1943. Coronary occlusion was suspected from the history. The

changes in leads 1, 2 and 4 of the serial electrocardiograms were diagnostic of an anteroapical myocardial infarction. In congenital dextrocardia the conductive system of the heart is transposed as well as the chambers and, since the left arm 1 nearer the right auricle in contrast to the normally placed heart in which the right arm is closer to the right auricle, a total inversion of lead 1 and transposition of leads 2 and 3 is produced. The use of mirror image leads to study the "mirror image" heart is a logical procedure and their use to study heart disease in the presence of dextrocardia has been reported previously. The use of the mirror image technique is particularly important for the precordial leads. To place the precordial electrode on the left chest when a dextrocardia is present must fail to elicit a fair proportion of the available cardiac current deflections and offer the confused possibility not only of deflection reversals but of change in contour shape.

### Surgery, St. Louis

16 1-168 (July) 1944

- Symposium on Endocrinology of Neoplastic Diseases Introduction G. H. Twombly and G. T. Pack—p. 1  
Tumors in Experimental Animals Receiving Steroid Hormones W. L. Gardner—p. 8  
Experimental Investigations Concerning Role of Pituitary in Tumor Genesis H. Selje—p. 33  
Endocrine Effects of Pituitary Tumors Clinical Review W. L. German—p. 47  
Ovarian Tumors with Sex Hormone Function E. Novak—p. 82  
Endocrine Factor in Origin of Tumors of Uterus H. C. Taylor—p. 91  
Relationship of Hormones to Diseases of Breast I. T. Nathanson—p. 109  
Effect of Sex Hormones on Skeletal Metabolism from Breast Cancer J. H. Farrow—p. 141  
Benign Hypertrophy and Carcinoma of Prostate: Occurrence and Experimental Production in Animals R. A. Moore—p. 152

### Union Médicale du Canada, Montreal

73 873-1002 (Aug) 1944

- Considerations of Cancer of Colon A. Jutra—p. 877  
\*Allergic Purpura Simulating Surgical Abdomen Henoch's Purpura C. Bisson and I. David—p. 881  
Embolism of Lower Extremities R. Amiot and J. Vasquez—p. 88  
Cyst of the Thyroglossal Duct Simulating a Laryngocele V. Latraverse—p. 890  
Suffocating Influenzal Laryngitis in Infant of 5 Weeks N. Vezina—p. 894  
Masked Syphilis Study of Several Cases H. Smith—p. 898  
Tumors of Interstitial Cells of Testes J. L. Riopelle—p. 903  
Mode of Action of Vitamins A. Gagnon—p. 906

**Purpura of Henoch Simulating "Surgical Abdomen,"**—Bisson and David report the history of a child aged 11, who fifteen days previously had had profuse sanguinolent vomiting. Sippy treatment was given for a week, but when at the end of this period a boiled egg was given another attack of sanguinolent vomiting occurred. At this time it was noted that the patient had petechiae on his feet, arms and buttocks. There was excruciating pain in the epigastric region. The child was stuporous, its temperature was 99.4 F and the pulse rate was 88. The stupor and vomiting persisted and the stools became increasingly bloody. On the sixth day the child became doubled up with abdominal pain, refused all food and vomited repeatedly. The purpuric spots reappeared in large numbers on the extremities and the abdomen. An abdominal surgical emergency was thought of such as a typhic perforation, a Meckel diverticulum, intestinal invagination, acute pancreatitis or rupture of the appendix. On the following day the child suddenly was much improved and was free from abdominal pain, but the cutaneous spots persisted. The purpura was unusual because platelets and the bleeding time were normal. Schonlein's or rheumatic purpura is characterized by the predominance of articular symptoms while Henoch's purpura is characterized by abdominal symptoms. Henoch's purpura should be defined as an allergic purpura with abdominal symptoms. In 95 per cent of cases of Henoch's purpura useless surgical interventions such as appendectomy, gastrectomy or cholecystectomy have been done. The treatment of Henoch's purpura is still largely empirical. It includes epinephrine to counteract the abdominal pain, vitamin P to regulate the permeability of the vessels and search for alimentary allergy and desensitization. This patient was found to be sensitive to crab meat and lima beans.



## FOREIGN

An asterisk (\*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

## British Journal of Radiology, London

17 165-196 (June) 1944

- Diagnosis and Treatment of Lung Abscess. Symposium. T. H. Seiler, L. G. Blair and L. E. Houghton—p. 165  
Energy Absorption. Part II. Integral Dose When Whole Body Is Irradiated. W. V. Mayneord and J. R. Clarkson—p. 177  
Case of Peptic Ulcer on Greater Curvature of Stomach. A. Preiss—p. 182  
Cancer of Lip. S. J. Douglas—p. 185  
Geometrical Method of Dose Finding for Radium Sources with Special Reference to Treatment of Carcinoma of Cervix Uteri. B. Sandler and E. M. Ungar—p. 190

## British Medical Journal, London

2 134 (July 1) 1944

- Penicillin in Battle Casualties. J. S. Jeffrey and S. Thomson—p. 1  
Early Diagnosis of Peripheral Nerve Injuries in Battle Casualties. W. R. Russell and A. B. Harrington—p. 4  
Acute Hemolytic Anemia. Report of Case Presenting Hitherto Unreported Features. J. P. Currie—p. 8  
Typhus Fever in Great Britain. A. P. Agnew and W. B. Kyles—p. 10  
Tetanus After Head Injury in Immunized Subject. W. Lewin—p. 11

2 35-66 (July 8) 1944

- Clinical View of Shock. V. Z. Cope—p. 35  
Thoughts on Four Years of War Surgery—1939 to 1943. P. H. Mitchiner—p. 37  
Neuropsychiatry at Royal Air Force Center. Analysis of 2,000 Cases. S. J. Ballard and H. G. Miller—p. 40  
Spontaneous Renal Apoplexy with Resuscitation After Cardiac Arrest. S. L. Covernale and A. G. Rink—p. 43  
Concussion in North Africa and Central Mediterranean. D. J. Campbell—p. 44

**Penicillin in Battle Casualties.**—Jeffrey and Thomson state that the War Office formed in September 1943 a "Penicillin Control Unit." Supplies of penicillin were flown to Italy regularly. The drug was distributed among eighty operating centers. The calcium penicillin was mixed with sulfathiazole in the strength of 5,000 units of penicillin per gram of sulfathiazole. This made a satisfactory powder, which, along with an efficient insufflator, was distributed among the forward operating centers. Most of the sodium salt was sent to base hospitals to give adequate courses of penicillin systemically. The forward units were given small stocks of sodium penicillin for use in gas gangrene and penetrating chest wounds. The transfusion officer and his orderlies were entrusted with the systemic administration, 15,000 units in three doses was injected at three hour intervals. Occasionally the administration was by continuous intravenous drip. The intramuscular route proved more satisfactory. The technique of penicillin administration in secondary suture became standardized (1) for superficial wounds, it clean—a single insufflation of penicillin-sulfathiazole powder and suture, (2) for dirty superficial wounds—preliminary insufflations once daily for two days, then suture over a third insufflation (3) for sinuses and perforating wounds where the powder could not reach—suture with fine rubber tubes and instillations of 3 cc (250 units per cubic centimeter) down each tube daily for four days. In all three types practically no excision was done except to freshen the skin edge and remove a loose tag. The powder was at a strength of 5,000 units per gram but latterly equally good results were obtained at base hospitals using 2,000 units per gram. In empyema systemic treatment with penicillin is not enough. In severe fractures the course of penicillin extended over five to ten days (500,000 to 1,000,000 units). 15,000 units was given three hourly by intramuscular injection. Infected amputation stumps healed fairly well when treated by means of tubes and instillations, but better results were obtained with a systemic course of penicillin. Encouraging results were obtained in gas gangrene, in addition to radical surgery and gas gangrene antiserum penicillin was given systemically. It was not felt that there was a special indication for penicillin in penetrating abdominal wounds, for it seemed that the deaths were due to physiologic reasons rather than to sepsis. Penicillin-sulfathiazole powder was insufflated into surface wound and into the depths of the brain. In brain

abscesses tubes and instillations formed the method of choice. With the use of penicillin-sulfathiazole powder many free wounds have had primary suture. Satisfactory results were obtained in cases of corneal ulcers and abrasions and conjunctivitis by two hourly drops of sodium penicillin 1,000 unit per cubic centimeter of distilled water. Penicillin-sulfathiazole powder insufflated on to the burned area and covered with tulle gras proved an excellent dressing for burns.

## Journal of Physiology, Cambridge

103 1-136 (June 15) 1944

- Effect of Age on Dark Adaptation. G. W. Robertson and J. Yudkin—p. 1  
Action of Vitamin D on Incisor Teeth of Rats Consuming Diet with High or Low Ca/P Ratio. J. T. Irving—p. 9  
Nature of Synaptic Transmission in Sympathetic Ganglion. I. C. E. Clark—p. 57  
Action of Adrenalin on Transmission in Superior Cervical Ganglion. Edith Bulbring—p. 55  
Intracerebral Lesions of Normal Urine. Mary F. Lockett—p. 68  
Action of Acetylcholine, Atropine and Escerin on Central Nervous System of Decerebrate Cat. I. Calma and S. Wright—p. 93  
Stimulus Intensity in Relation to Excitation and Preexcitatory and Postexcitatory Inhibition in Isolated Element of Mammalian Retina. R. Grant—p. 103  
Pole of Peripheral Stump in Control of Fiber Diameter in Regenerating Nerve. I. K. Sanders and I. Z. Young—p. 119

## Lancet, London

2 33-64 (July 8) 1944

- Visual Problems of Aerial Warfare. P. C. Livingston—p. 33  
Abdominal Wound. Clinical Review of 65 Cases. H. C. I. Leclercq, T. A. Ross, S. I. C. Clarke and R. W. Ross—p. 38  
Toxic Reaction to Thiourea. Report on 3 Cases. C. R. St. Johnston—p. 42  
Delayed Suture of Soft Tissue Wounds. A. I. S. MacPherson—p. 44  
Penicillin and Smallpox. Report of 4 Cases. W. D. Jeans, J. S. Jeffrey and K. Gunders—p. 44

**Toxic Reaction to Thiourea.**—St. Johnston states that of 7 patients with thyrotoxicosis treated with thiourea 3 developed toxic reactions. Pyrexia of 101 to 104 F occurring eight to ten days after administering thiourea with palpable enlargement of the spleen, a fall in the white blood cell count with monocytosis and a maculopapular eruption was present in all 3 cases and appeared to be due to the thiourea. The 3 cases were remarkably similar. All symptoms and signs disappeared when the drug was withdrawn, to reappear in the first case when it was readministered.

**Penicillin and Smallpox.**—According to Jeans and his co-workers 37 patients with smallpox were admitted to a hospital in Italy during the spring of 1943. Two men soon died, covered with pustules. Four other men were critically ill and death seemed likely. They were covered from head to foot with vesicles which were becoming pustular and in places confluent. Throat and buccal mucous membranes were pustular and ulcerated. All 4 patients had had a course of sulfathiazole orally early in illness. Cultures from the pustules thereafter showed *Staphylococcus aureus* in abundance. The patients were then given sodium penicillin, 15,000 units intramuscularly every three hours, for three to four days (average 400,000 units). In the 3 that recovered there was a pronounced improvement within twenty-four hours. The quick drying of the pustules and subsequent minimal pock marking was quite striking. One of the patients who survived had never been vaccinated. The fatal case was one of confluent smallpox. The patient had been successfully vaccinated in the army in 1943 but never previously.

2 65-96 (July 15) 1944

- Vital Statistics of 1943. P. Stocks—p. 65  
Visual Problems of Aerial Warfare. P. C. Livingston—p. 67  
Proflavine Powder in Wounds. R. W. Raven—p. 71  
Phosphatase and the Repair of Fractures. C. Blum—p. 7  
Impetigo Contagiosa Treated with Microcrystalline Sulfathiazole. J. W. Bieger and G. A. Hodgson—p. 78

**Proflavine Powder in Wounds.**—Raven describes the effects of proflavine (2,8-diaminoacridine sulfate) in the treatment of wounds. All patients had received a chemotherapeutic drug before they reached the author. In the local treatment of wounds care is taken to ensure cleanliness of the skin surrounding the wound. Hair is shaved, purulent discharge is mopped

away and the skin is cleaned. If oil is present ether soap is used for ordinary contaminants soap and water suffices. A solution of 1 in 1,000 proflavine is then applied. Dead tissue is excised avoiding sacrifice of good skin, and easily accessible foreign bodies are removed. Free drainage of the wound must be established. Next the wound is gently mopped with swabs soaked in a solution of proflavine so that a moderately dry cavity is obtained. Proflavine powder is carefully inserted into all parts of the wound, especially where there is a comminuted fracture of bone. The amount of proflavine powder used varies with the size of the wound. In most cases it has not exceeded 0.5 Gm. One layer of wide mesh gauze lightly impregnated with petrolatum is laid over the wound. In fractures, alignment of the bone fragments is secured and the part is immobilized in plaster over an adequate amount of cotton wool, which absorbs the wound discharge. If a joint is involved, it is immobilized in plaster in the correct position. Plaster is usually changed after about ten days. Proflavine was used not only in wounds involving bones and joints but also in suppurative lesions of the soft tissues and in burns. To ascertain its prophylactic value it has been applied to fresh wounds. The danger of overdosage is emphasized. In suppurating battle wounds the use of proflavine leads to satisfactory healing within a reasonable time and with a notable lack of scar tissue. Various infected lesions have been treated with a powder consisting of proflavine, sulfanilamide and ascorbic acid, and this combination has proved satisfactory for suppurating wounds, cellulitis and large chronic ulcers of the leg.

### Schweizerische medizinische Wochenschrift, Basel

73 1221-1244 (Oct 2) 1943 Partial Index

Clinical Aspects of Mental Depressions J Wyrsch—p 1221

Pulmonary Infiltrates in Infectious Icterus of Weil S Moeschlin—p 1227

\*Actinomycosis of Lung Cured with Irganid N Dimethylacroyl Sulfanilamide Case C Merkle—p 1230

Endobronchial Perforation of Hilar Tuberculous Adenitis with Elimination of Lymph Node Sequestrums P Steiner and M Geisberger—p 1232

**Actinomycosis of Lung Cured with a Sulfonamide**—Merkle reports the case of a farmer, aged 44, in whom actinomycosis started in carious teeth and involved the mandible with formation of fistulas and board hard infiltrations on the chin. A pleural empyema developed either as the result of the mandibular abscess invading the mediastinum, or the lung and pleura becoming involved by aspiration. In spite of the prolonged administration of large doses of potassium iodide and roentgen irradiation, the patient continued to have fever, leukocytosis, increased sedimentation reaction, suppurating fistulas of the mandible and fetid sputum containing Actinomycosis mycelium. The patient was given 6 Gm of n dimethylacroyl sulfanilamide daily for a period of seventeen weeks. This resulted in a cure. The patient has now remained well for four months. The total amount of 568 Gm of the sulfonamide was well tolerated. In view of the great resistance of actinomycosis, the author regards it as unlikely that the chemotherapy acts directly on Actinomycosis. Since Actinomycosis is a saprophytic fungus and since actinomycoses with mixed infections are especially resistant, the author thinks that the administered sulfonamide preparation destroyed the favorable growth medium of Actinomycosis.

### Analecta Medica, Mexico, D F

5 1-34 (April-June) 1944 Partial Index

Development Improvement and Perspective of Neurosurgery S Obrador Alcalde—p 1

Actual Clinical Conception of Uremia S Garcia Tellez—p 17

\*Therapy of Pleural Empyema J L Gomez Pimental—p 25

**Therapy of Pleural Empyema**—Gomez Pimental classifies pleural empyema into tuberculous, septic and mixed types. Simple tuberculous empyema develops in patients with efficient artificial pneumothorax. Pleural drainage is here interdicted. Treatment consists in aspiration of the pleural cavity and lavage with 10 or 20 cc of Lugol's solution in 1,000 cc of isotonic solution of sodium chloride. Extrapleural thoracoplasty is indicated when the preservation of pneumothorax is necessary because of the severity of the tuberculous lesion. Tuberculous

empyema complicating active pulmonary tuberculosis develops in patients with inefficient artificial pneumothorax. The therapy consists in extrapleural thoracoplasty after emptying of the pleural cavity by aspiration and lavage. Mixed tuberculous and streptococcal or pneumococcal empyema is caused by pulmonary perforation or by exogenous contamination. Treatment consists in aspiration, administration of a sulfonamide, preliminary intercostal pleurotomy and extrapleural thoracoplasty. Septic empyema is treated with a sulfonamide, aspiration of pleural contents and subsequent pleural drainage. The latter is resorted to only after the tuberculous pulmonary lesion has become quiescent, as shown by the transformation of the pleural fluid to pus and after formation of mediastinal and pleural adhesions which tend to immobilize the mediastinum and limit the size of the postoperative pneumothorax.

### Prensa Medica Argentina, Buenos Aires

31 1041-1080 (June 7) 1944 Partial Index

Gastroscopy in Diagnosis of Gastric Cancer J Nasio—p 1041

\*Dextrose in Pleuritic Effusion—Prognostic Importance O A Garre L Desimone and R Mingrone—p 1053

Costal Tuberculosis H A Passalacqua L Farias and J O Gutierrez—p 1058

**Dextrose in Pleuritic Effusion**—Garre and his collaborators state that the amount of dextrose in pleuritic effusion is of prognostic significance. They made quantitative determinations in pleuritic effusion of 27 patients. They found that the average amount of dextrose for each thousand cubic centimeters of fluid was 0.2702 Gm in purulent pleurisy, less than 0.60 Gm in serofibrinous pleurisy and more than 0.60 Gm in nonpurulent pleurisy. In effusion with an amount of less than 0.60 Gm of dextrose for each thousand cubic centimeters of the fluid, smears and cultures are positive for tubercle bacilli. In fluids containing an amount of more than 0.60 Gm of dextrose for each thousand cubic centimeters of fluid, smears and cultures are negative for tubercle bacilli.

### Archiv fur klinische Chirurgie, Berlin

204 211-444 (March 26) 1943

Therapy of Infected Gunshot Injuries of Joints H Hellner—p 211  
Callus Formation and Fracture Repair in Fractures of Diaphysis of Forearm with Particular Reference to Pseudarthrosis S Aunersten—p 299

\*Significance of Sugar Tolerance Test in Diagnosis of Comotio Cerebri W Osterchrist—p 332

Experiences After Resection of Large Portions of Large Intestine F L Duschl—p 344

Indications for Early Operation of Injuries of Blood Vessels and of Aneurysms H Killran—p 355

Röntgenologic Demonstration of Aneurysms in Wartime C H Schroder—p 411

**Sugar Tolerance Test in Comotio Cerebri**—Osterchrist points out that in the large majority of cases diagnosis of comotio cerebri is dependent on the statements of the injured or of witnesses, because there is no reliable method of clinical examination. Osterchrist investigated the sugar tolerance of 25 patients hospitalized with the diagnosis of comotio cerebri. These were not selected and clinically proved cases. The results of his tests are recorded in two tables. Table 1 records all cases that showed definitely pathologic curves, table 2 those with normal sugar tolerance curves. The sugar tolerance test permits differentiation of traumatically induced loss of consciousness from that caused by fainting, hysteria, coma and the like. Every traumatically induced loss of consciousness is accompanied by a temporary disturbance in the blood sugar regulation. This disturbance is frequently revealed in a pathologic increase in the fasting blood sugar and invariably in an abnormal course of a blood sugar tolerance test. Dextrose tolerance tests are valuable for the corroboration of the diagnosis of comotio cerebri. Cases with normal blood sugar tolerance curves are not true cases of comotio cerebri but are those of a traumatic shock. The author explains the concurrence of abnormal blood sugar levels with comotio cerebri as the result of a local traumatic impairment of the middle part of the hypothalamus with its sensitive functional centers.

## Book Notices

**Infections of the Peritoneum** By Bernhard Steinberg M.D. Director of Toledo Hospital Institute of Medical Research With a foreword by Frederick A. Collier M.S. M.D. Professor of Surgery University of Michigan Medical School Ann Arbor Cloth Price \$8. Pp. 455 with 45 illustrations New York & London Paul B. Hoeber Inc. 1944

Much has been written on peritonitis from many points of view by many authors. Dr. Steinberg's book is a comprehensive review of this voluminous material as well as the report of his intensive experimental and clinical work on the subject for eighteen years. There is more emphasis placed on the relation of basic sciences to the condition than in most publications dealing with peritonitis. Most of Dr. Steinberg's researches have dealt with etiology and pathogenesis and his conceptions are deserving of widespread dissemination among the medical profession. Uniform understanding of the early stages of peritonitis and its development would result in earlier and better treatment and a corresponding reduction of mortality. The basic principles expounded so well by Steinberg are of great importance in the management of this condition. There has been a tendency toward slighting them and substituting indiscriminate chemotherapy. While chemotherapy is of great value, it cannot as yet, and may never displace basic surgical principles. Steinberg brings this out well, and for this reason his contributions are not only important but timely. Though this book is perhaps too comprehensive to be read and digested by all "accelerated" medical students, it is worthy of being carefully read by all doctors who may come in contact with peritonitis.

**Infectious Anemias Due to Bartonella and Related Red Cell Parasites** By David Weinman Instructor in Comparative Pathology and Tropical Medicine Schools of Medicine and Public Health Harvard University Boston. Transactions of the American Philosophical Society Held at Philadelphia for Promoting Useful Knowledge. New Series—Volume XXXIII Part III Paper Price \$1.25. Pp. 243. 350 with 2 illustrations Philadelphia American Philosophical Society 1944

This monograph is an intensive study of bartonella infections in man and animals with a digest of the literature (723 references). In man Carrion's disease (Oroya fever and verruga peruana) as well as asymptomatic bartonellosis are encountered in Peru, Colombia and Ecuador. There is suggestive evidence that the area, which appears to correspond with the distribution of certain species of sandflies of the genus *Phlebotomus* may be spreading. The bacteriology, symptomatology, blood changes, pathology and therapeutic measures are presented in detail and discussed. A chapter is devoted to the public health aspects of bartonellosis. As Dr. Tyzzer notes in the introduction "the present monograph should serve as a reliable modern and full source of information and reference, the South American literature which is so difficult of access, being particularly well represented."

**Technique in Trauma. Planned Timing in the Treatment of Wounds Including Burns** From the Montreal General Hospital and McGill University. By Fraser B. Gurd M.D. C.M. and F. Douglas McMan M.D. C.M. In collaboration with John W. Gerrie M.D. C.M. Edward S. Mills M.D. C.M. Joseph F. Pritchard M.D. and Frederick Smith M.D. Preface by John S. Lockwood M.D. University of Pennsylvania Philadelphia. With commentary by Ralph R. Fitzgerald M.D. C.M. McGill University Montreal. [Reprinted from the *Annals of Surgery* with Additional Text.] Fabricoid Price \$2. Pp. 68 with 20 illustrations Philadelphia London & Montreal J. B. Lippincott Company 1942 1944

This little volume is an attractively bound reprinting of three papers by the Montreal group which have appeared in the *Annals of Surgery* plus a foreword by John S. Lockwood and a commentary by Ralph R. Fitzgerald. The first two sections deal with the treatment of burns and since the first was originally published in November 1942 it contains considerable material which is out of date. For example it is recommended that tannic acid and silver nitrate be applied to large surface areas on the trunk or thighs. This method has fallen into disrepute, a fact which was recognized by the authors in the second paper, which appeared in December 1943 in which the exclusive use of a sulfathiazole emulsion was advised. The first paper mentions the use of a "burn tent" for the application of external heat. There is much evidence at hand that more harm than good is done by thus combating the so called shock of

burns. The photograph of the tent in operation shows a patient apparently almost hermetically sealed in with a battery of heating lamps. It is doubtful that the conscious patient would tolerate such anoxic and uncomfortable conditions for long. On the other hand appropriate stress is placed on the avoidance of unnecessary dressings and on the value of early dermatome skin grafting.

The third section considers the treatment of other types of injuries and infections. In a general way the authors favor the let alone methods of Orr and Trueta. There is generous use of the M. G. H. (sulfathiazole) emulsion for local implantation in wounds. There is no statistical proof of the necessity for the use of the sulfonamide. Anticipating this objection in his commentary Fitzgerald states that controls are impossible in clinical surgery. This view is hardly tenable in the light of the published statistical studies of Meleney and the collaborating study units of the Committee on Medical Research in this country.

This monograph is a valuable record of the point of view of one group of surgeons interested in giving the best possible care to patients with various kinds of trauma. It is not however, a handbook which the novice can use for a quick solution to all his problems in the treatment of the injured.

**Fundamentals of Internal Medicine** By Wallace Macon Later M.B. M.D. M.S. Professor of Medicine and Director of the Department of Medicine Georgetown University School of Medicine Washington D. C. Second edition. Fabricoid Price \$10. Pp. 1204 with 275 illustrations New York & London D. Appleton Century Company Inc. 1944

This edition continues the policy set forth in the first which appeared in 1939, it supplies in the briefest possible space the minimum of information necessary to deal with diagnosis and principles of treatment in clinical medicine exclusive of surgery. Subjects of special value to the internist in the armed forces have been added. Others including primary atypical pneumonia, blood typing, hypoproteinemias, strabismus, arachnoiditis and coccidioidomycosis have been revised or rewritten. A preliminary evaluation of the use of penicillin also has been included. There are fourteen contributors including Dr. Later. This is a true textbook rather than a reference book. The elimination of much material found in many similar publications unfits it to serve most reference purposes. Preparation of a book of this kind is now a colossal task. The appearance of a new edition at this time constitutes prima facie evidence of its popularity.

**An Atlas of Anatomy in One Volume** By J. C. Bouleau Chant M.C. M.B. F.R.C.S. Professor of Anatomy in the University of Toronto. By Regions: Upper Limb, Abdomen, Pelvis and Lower Limb, Vertebrae and Vertebral Column, Thorax, Head and Neck. Reprinted 1944. Cloth Price \$10. Pp. 398 with 400 illustrations. Baltimore William Wood & Company [1944]

Designed to meet the needs of teachers and students and also those of physicians and surgeons Grant provides in one volume a regional atlas that follows the method of dissection taught in American schools. It also should prove useful in clinical work. The structures of the human body are shown region by region: upper limb, abdomen, perineum, pelvis, lower limb, vertebrae and vertebral column, thorax and head and neck. The drawings are by Mrs. Dorothy I. Chubb, a pupil of the late Max Broedel. To assure accuracy of the plates each illustration is based on photographs of each specimen. A majority of the plates are colored; many of them in three, four or more colors. There is a detailed index providing a quick reference to the plates depicting any structure.

**Accident Facts 1944 Edition** Prepared by the Statistical Division National Safety Council Chicago. Paper Price 50 cents. 1 p. 96 with illustrations. Chicago National Safety Council Inc. 1944

The 1944 edition of Accident Facts presents in graphic form, and by means of tables and text the important information concerning accidents in the United States during the calendar year 1943. This well organized booklet is indexed and one can find readily the total number of accidents by cause, by age group, by occupation and by geographic location and almost any other information on accidents which it is important to know. The National Safety Council deserves the full support of the medical profession in its efforts to reduce this leading cause of death and disability.

## Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

### TRANSMISSION OF POLIOMYELITIS

**To the Editor**—How is infantile paralysis transmitted? The town where I live (population 1200) has had 2 cases within the last three weeks and the cry for effective prophylaxis is being sounded. According to articles available to me there are two schools of thought. Dr. Stimson (The Journal July 10 1943 p 764) says that it has not been proved that flies can carry enough (virus) to infect human beings. Maxcy and Howe as quoted in the editorial Dec 4 1943 page 904 assume that the disease would not attack children preponderantly as is the case were it transmitted primarily by the fly or any other insect. On the other hand Rosenow, South and McCormack (Kentucky M J 35 437 [Sept.] 1937) and Trask, Paul and Melnick (J Exper Med 77 531 [June] 1943) quoted in your editorial on Aug 28 1943 page 1250 accumulate data that a high percentage of flies swarming around sewage—polluted water—is able to infect experimental animals. The reasoning of Maxcy and Howe seems to be fallacious as (a) children are not exclusively attacked by poliomyelitis in our epidemic (b) the relative immunity of adults may be easily explained by a possible previous abortive poliomyelitis infection and (c) the seasonal distribution of poliomyelitis seems to favor indirect rather than direct contact. In winter children are much more crowded with more intimacy and more pharyngeal discharge the first frost usually kills flies and the poliomyelitis epidemics does it make little boys wash their hands more? The fact that both our cases appeared in families living near the sewer infected Housatonic River swarming with flies makes me think of a possibility of an insect vector.

George Vash M D Hinsdale, Mass

**ANSWER**—The method of transmission of the virus of poliomyelitis has not yet been clearly demonstrated. Up to a few years ago the nasopharynx was accepted almost universally as the common port of entry as well as the port of exit of the virus of poliomyelitis. This theory enjoyed wide acceptance until three or four years ago when the gastrointestinal port idea was reemphasized. The virus has been found consistently in the alimentary tract and stools of both patients and contacts. While a large body of circumstantial evidence supports the theory of direct contact from patient to patient there is also the fact that virus has been recovered repeatedly from flies trapped in epidemic areas. However, the importance of the fly as a vector has not yet been clearly demonstrated. It is not possible in the present state of knowledge to say whether the contamination of the fly with virus is a result of the disease or a causal factor in it. The seasonal incidence of poliomyelitis epidemics, combined with the finding of virus in the human alimentary tract, stools, sewage and flies, lends weight to the contention that poliomyelitis is primarily an intestinal disease such as typhoid and dysentery. Not enough conclusive evidence has yet been accumulated to permit a clearcut answer as to the usual mode of transmission.

### SEBORRHEA OLEOSA

**To the Editor**—A woman aged 27, married without children has an extremely oily scalp and oily face. She has no pimples and no black heads. With the exception of a chronic sinus infection she is perfectly normal. She does have however attacks of hay fever. She has been checked thoroughly blood urine heart lungs and all are within normal limits. The bowels are regular. I have tried many things but am unable to get rid of this oily condition. X-ray treatments were suggested to the patient but she rebelled because of an unpleasant experience with x-ray burns. She will wash her hair and within twelve hours the entire scalp will be greasy. Can you make any suggestions?

M D California

**ANSWER**—The case described is one of benign seborrhea oleosa formerly called hyperhidrosis capitis (Jackson G T, and McMurtry, C W Diseases of the Hair, Philadelphia, Lea & Febiger, 1912 p 306) on the now discounted theory that the oil was a product of the sweat glands instead of the sebaceous glands.

Clinical investigations of the effect of large doses of vitamin A, vitamin D, niacin, pyridoxine or liver extract have produced evidence that each of these is effective in relief of some cases of acne vulgaris. Sex hormones, both male and female, have also been credited by some experimenters with good effects, by others with unfavorable effects. Such conflicts are also found in the research with vitamin A. One is forced to conclude that the causes of acne vulgaris are multiple and complicated. Some cases of acne rosacea also have been shown to respond to supplementation of the diet with large doses of riboflavin or of

pyridoxine or the combination of these two members of the B group. Other cases of acne rosacea do not respond to this treatment. The relationship between the various vitamins and their interaction with the hormones is complicated.

**Savin** (Newer Concepts in the Etiology and Treatment of the Seborrheic Dermatoses, *Urol & Cutan Rev* 46 719 [Nov.] 1942) reports good results in the seborrheic dermatoses from injections of crude liver extract 2 to 25 cc once a week and a diet rich in vitamin B.

Local treatment may be helpful in the amelioration of the distressing features of the disease. It is presumed that hot packs to the face after soap and hot water cleansing have been tried as well as lotio alba. The latter can be used also on the scalp if necessary in double strength (sulfurated potash 2 Gm, zinc sulfate 3 Gm and bentonite lotion to make 30 cc) applied to the scalp with a dropper after shaking the bottle. The bentonite lotion is made of 25 per cent of bentonite in rose water, allowed to stand several hours and then decanted to get rid of coarser particles (Tantus, Bernard, and Dywicz, H A Cutaneous Preparations, *J Am Pharm A* 27 882, 1938). Daily application of this to the scalp results in drying of the hair as well as the stimulation of sulfur acting on the sebaceous apparatus.

In view of the objection to roentgen therapy, ultraviolet light may be used in dosage sufficient to cause a mild erythema.

### ANTICOAGULANT TO FACILITATE INTRAVENOUS THERAPY

**To the Editor**—Has an anticoagulant such as citrate or heparin been used to facilitate the slow administration intravenously of such solutions as penicillin or penicillin by avoiding clotting in the needle or adjacent vein without using enough anticoagulant to affect the general coagulation time of the blood? Can you cite references to the literature?

Dell Theodore Lundquist M D Palo Alto Calif

**ANSWER**—So far as can be determined, anticoagulants have not been used to facilitate the slow administration of fluids intravenously. The flow of the solution itself is usually enough to prevent coagulation at the tip of the needle. Penicillin solution, for example, may be administered by continuous intravenous drip by allowing as little as 2,000 cc of fluid to flow into the vein over a period of twenty-four hours. This slow passage of fluid through the needle usually prevents clotting of blood. It would seem to be advisable to avoid the use of citrate or heparin, since comparatively large amounts would have to be used to prevent clotting, particularly in cases in which the infusion is kept up for more than twenty-four hours.

### SUTURES FOR REPAIR OF TENDONS

**To the Editor**—What size and type of suture are recommended for repair of tendons? What is the usual length of time of splinting and the optimal time at which to start passive and active movement of the involved tendons? I realize that each case is different but would appreciate general information.

R M Neseemann M D Kewonuee Wis

**ANSWER**—No 6 or No 8 silk (Champion scale) is an excellent suture material. The exact size used depends on the thickness and strength of the tendon. It is impossible to say in a few words how long the part should be immobilized and when motion should be begun after tendon repair. The paper entitled "The Rate of Healing of Tendon" by Mason and Allen in the *Annals of Surgery* 113 424 (March) 1941 is one of the best discussions of the subject and offers the surgeon definite help in deciding on the best plan of treatment in an individual case.

### PANCREATIC EXTRACTS FOR DERMATOLOGIC DISORDERS

**To the Editor**—What available evidence is there that pancreatic tissue extract topically applied has any therapeutic effect on chronic eczema?

Walter Wilson M D Bridgeport Conn

**ANSWER**—Several authors have reported on the use of pancreatic tissue extract in cutaneous disorders. In all of these reports the material was given by injection. No report has been found in which the topical application of pancreatic extract was made.

#### References

- Rowlett Jack and DeLay E W Use of Insulin Free Pancreatic Hormone in Treatment of Certain Type of Erythematous Skin Diseases *J Med* 21 257 (Aug.) 1940
- Downing I G, Glicklich E A and Messing S I Deproteinized Pancreatic Extract in Treatment of Psoriasis *Arch Dermat & Syph* 45 1125 (June) 1942

# The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL 126, No 9

CHICAGO, ILLINOIS  
COPYRIGHT 1944 BY AMERICAN MEDICAL ASSOCIATION

OCTOBER 28, 1944

## PRESENT DAY PROCTOLOGY

CHAIRMAN'S ADDRESS

L. H. TIRRELL, M.D.

RICHMOND, VA.

A cursory review of the history of medicine reveals that some interest has been manifested in proctology for many centuries. The etiology and pathology of the many diseases affecting the lower part of the bowel were not understood and treatment was of the crudest and most unscientific sort until toward the end of the last century. It was not until about this time that any serious and orderly consideration of them was undertaken. Considerable impetus was given these studies by Dr. Joseph Mathews of Louisville, Ky., who has been considered the father of proctology. He was the first physician in the world to limit his practice to this field. Since his time there has been a continued and progressive advancement in the knowledge of these diseases.

Not unlike some other specialties, proctology has had to overcome certain prejudices, which were brought about largely because of indifference on the part of the profession or probably to a greater extent, by incompetence. At any rate this was for a long time a lucrative field for the advertising quack. During the latter part of the last century and extending well into the early part of the present the stigma of charlatanry was closely associated with proctology. There were, however, during this period a few ethical specialists who were doing good scientific work. Unlike the irregulars, they had nothing to conceal from either their fellow practitioners or their patients. For them there were no secret formulas, but whatever knowledge they possessed was given openly and freely. The more determined and enthusiastic of these in 1899 banded together in an organization which they called the American Proctologic Society, the purpose of which was the study and dissemination of knowledge pertaining to diseases of the rectum and colon. Since then great strides have been made in the understanding of the etiology of these various diseases, also greatly improved methods of diagnosis and treatment have been instituted. Now the skepticism toward proctology formerly held by the profession and some of the public has been I believe completely dissipated and it holds as honorable a place as the other surgical specialties.

The proper limitations of the specialty have been much discussed but not determined definitely. There are some who confine their efforts to treatment of diseases within reach of the sigmoidoscope, probably 10 or 12 inches from the anus. Others include surgery of the lower colon, colostomies and abdominopercutaneous resections for cancer or other conditions. Whether a proctologist shall attempt such a formidable operation is a question is of course primarily dependent on his capabilities. If one has been well trained in this type of surgery he should by all means be encouraged to continue it provided he has a sufficient number of these operations to maintain the proper technique. No operator wishes to shirk his duty or responsibility, but operations for cancer of the lower bowel at best carry with them much anxiety and oftentimes grief as well. When all has been said and done each individual must be the judge of his own qualifications.

Proctology is one of the few specialties not overcrowded. There are many large and prosperous communities with no physician claiming any special knowledge in this line of work. Almost any one of these would support handsomely an energetic and well trained man. For a long time a gradually increasing interest has been shown in the study of proctology, although many would be students are handicapped because there is an insufficient number of places where proper training can be obtained. While at present nearly every medical school has a department in proctology for undergraduates the daily schedule is so crowded that the student at best can obtain only a rudimentary knowledge of the rectum and its diseases. There are of course a few postgraduate institutions with courses in proctology but these can accommodate only a limited number of students. At present the best opportunity for a young man to receive proper training is to become associated if possible, with an older and well established proctologist. Unfortunately, there are only a few such opportunities.

Since specialists in rectal diseases are relatively few a large amount of this work is done by the general surgeon and much not requiring surgery by the general practitioner or internist. It is most gratifying to note that among our best surgeons and internists there is an increasing tendency toward more frequent proctoscopies. Many of these men become proficient in diagnosis as any one can by study and close observation. It is unfortunate however that the impression still prevails as it has for a long time in some quarters that rectal surgery is simple and can be performed satisfactorily by the newest intern. Not only should the surgeon always

Read before the Section on Gastroenterology and Proctology at the Ninety-Fourth Annual Session of the American Medical Association, Chicago, June 15, 1944.

have in mind that his object is to remove existing pathologic conditions but he must so conduct the operation that when healing is complete there will be no impairment in the function of the parts. The accomplishment of these purposes usually requires a rather exacting technic equal to that of most abdominal operations. I am confident that there are more unsatisfactory hemorrhoidectomies than appendectomies performed in the hands of an experienced surgeon; however, a patient has every right to expect when he submits to an ordinary rectal operation that he will be completely relieved of symptoms and also that there will be no impairment of function of the parts. Of course exceptions may occur in cancerous conditions and in some deep and extensive infections. I may add, however, that untoward results are by no means always due to a faulty operative technic. Oftentimes there are other causative factors, and chief among them is lack of proper after-care. Rectal wounds seem to require more attention than those of other parts of the body and the conscientious surgeon gives them his personal attention unless he has a trained assistant to do this for him.

Often of great concern to the patient who contemplates a rectal operation is the possibility of an incontinence resulting. Loss of control is always to be deplored, of course, but there is little reason for its occurrence except in rare instances. The most common cause of this in the past has been the almost universal custom of forcibly dilating the sphincter muscles as a preliminary step in all rectal operations. This procedure of "paralyzing the sphincters" an expression often employed, was deemed absolutely necessary, particularly if the sphincters were at all spastic. Whether stretching was done with the fingers or with instruments, the muscle fibers often were injured to such an extent that their tone and contractability were destroyed, allowing a leakage to liquid or soft stools. The best informed proctologists no longer dilate the anal canal during any operation unless a fibrous constriction is present.

The postoperative care of a fistula is as important as the operation itself, and not infrequently a failure to cure is due to inadequate attention to the wound. For a time there were some who advocated excision of fistulous tracts with immediate suture. Failure to secure primary union was so common that the method has been abandoned almost entirely. Now it is considered best to leave the tract open to heal by granulation. Until recent years it was thought necessary to keep such wounds tightly packed until healing was complete. This practice has been discarded. It was observed that continuous pressure of the gauze forced apart not only the wound edges but also any muscle fibers which may have been incised. In the healing of a tightly packed wound there will be deposited a wider and more extensive amount of fibrous tissue which because of its rigidity necessarily interferes with the normal closure of the sphincters. Incontinence following fistulectomy is more often due to excessive scar tissue than to incised muscles. Of course, adhesions between adjacent raw surfaces must not be allowed to take place, but if such wounds are otherwise left alone the resulting scar will be narrow and interfere little, if at all, with the normal function of the sphincters.

Formerly the so-called "rectal plug" was used regularly by many surgeons on the completion of every

rectal operation. This was left in position for several days, the purpose being it was said to keep the muscles dilated, prevent adhesions and furnish an avenue of escape for gases. Such a foreign body in the anal canal caused much pain requiring regular doses of opium to control. Also, when used retention of urine was a frequent complication. As far as I know, the plug is no longer employed.

The proper interpretation of symptoms and an avoidance of hasty conclusions are necessary in the practice of proctology. Unless one is constantly on the alert there are many possibilities of error. It will be disconcerting to say the least to find, shortly after performing a hemorrhoidectomy, that there is a malignant growth only a few inches away. Again at other times small symptomless hemorrhoids are removed for pain, bleeding or itching when the symptoms have an entirely different cause. Rarely will a false interpretation be placed on rectal symptoms if a proper and painstaking investigation is made. Errors in diagnosis in this region are usually inexcusable for most of them are due to carelessness.

When a perirectal abscess is incised the physician for his own protection if for no other reason, should inform the patient that such an abscess is the first stage of a fistula and that a chronic draining sinus is likely to ensue, also, in all probability, a removal of the sinus or fistula will be necessary before relief is obtained. Too often if reports are true attempts are made to cure these tracts by irrigation, cauterization or packing. Such treatment is time consuming and always disappointing.

Every one at all interested in proctology should be familiar with the work of Dr. George Thiele of Kansas City. His contribution in my opinion, is the most valuable given in our field during the past decade. I refer to a paper read by him<sup>1</sup> in this section and published in *THE JOURNAL* about five years ago in which he called attention to spasm of one or more of the deep pelvic muscles causing symptoms previously not satisfactorily explained. The muscles involved are the coccygeus, pyriformis or levator ani, and their spasticity usually may be detected by palpation. Symptoms associated with this condition are somewhat variable, most often a feeling of pressure in the rectum or a dull aching, neuralgic in character, which some times extends to the vagina. Systematic and regular massage of the affected muscles as suggested by him gives relief in most instances. We have been pleased to note that frequently an associated coccygodynia and low back ache disappear also after massage of these muscles. Apparently no cause for this spasticity has been determined.

Most proctologists are conservative and attempt operations of only the most minor nature in their offices. Surgery of any magnitude is best done in a hospital where suitable assistance is obtainable and conditions in every respect more favorable. I am confident that often too much is undertaken in the office particularly by young men with limited experience. Only one or two uncontrollable hemorrhages will suffice to convince any one that there are distinct limitations to office surgery. On the contrary, however, the well trained proctologist treats many ailments satis-

<sup>1</sup> Thiele, G. H. Coccygodynia and Pain in the Superior Gluteal Region. *J. A. M. A.* 109:1271 (Oct. 16) 1937.



factorily in his office. Here, again, his knowledge of pathology usually will allow him to differentiate rather accurately whether a condition requires surgery or can be relieved by nonsurgical methods. There are borderline cases which treatment will benefit but not cure completely. In such instances surgery is advisable unless contraindicated because of age or physical disability.

The ambulatory treatment of hemorrhoids has become very popular in recent years. I fear that its limitations are not always understood. Only simple, uncomplicated, internal hemorrhoids are suitable for treatment by the electric needle or by injection of any one of the popular sclerosing agents. Surgery is indicated in all forms of hemorrhoids when associated with other diseases, as cryptitis, papillitis or fistula.

At present most surgeons employ the so-called ligature method in removing hemorrhoids. This seems altogether the most satisfactory and is followed by fewer complications than others. Some still use the clamp and canter, although usually this causes more pain, and in healing there is deposited a greater amount of connective tissue, also secondary hemorrhages are more frequent. The Whitehead operation, very popular in some sections a few years ago, is almost obsolete now. Theoretically it was considered the perfect operation, but the end results in many instances were far from satisfactory.

Postoperative treatment in rectal surgery has changed materially in recent years. Unless there are unusual complications, soft diet is allowed the morning after operating. In forty-eight hours a bowel movement is secured by either a mild laxative or an enema, following which the patient is given general diet and is allowed out of bed ad libitum. Even within a few hours after operation he may be permitted to stand if there is difficulty in voiding. In allowing this no harm has been observed, but often retention and catheterization, always objectionable complications, may be avoided. Hot sitz baths and hot compresses add much to the comfort of the patient and are conducive to healing. Unless the operation has been extensive or an unusual one the patient leaves the hospital in four to six days. He is requested to report to the office regularly every few days until healing is complete. At these visits any tendency to adhesions or bridging of the wounds is forestalled and excessive granulation tissue removed. Success or failure of operations on the rectum is more often dependent on the amount and nature of the after-care than is generally admitted.

Many surgeons have reported favorable results from topical applications of the sulfonamides to open post-operative wounds. It has been my experience that their use has not reduced noticeably the time of healing, and in no way have they seemed superior to the mild antiseptic wet dressings and sitz baths which have been employed for many years. These drugs, however, administered internally are most effective and indispensable in many deep seated infections. In addition, certain of them are more or less specific in many cases of ulcerative proctitis. All drugs of this class are dangerous and should not be prescribed indiscriminately. For myself when I think they are indicated I prefer that they be administered by and under the close supervision of an internist or a gastroenterologist. The medi-

cal practitioner is better able to keep a close watch and detect in their incipience any untoward effects should they arise. In fact, there should be a close cooperation between the gastroenterologist and the proctologist. There are innumerable occasions in which they may be of mutual benefit.

Most of us are more or less creatures of habit. We often prescribe remedies or employ methods handed down from one generation to another without consideration as to their merits. One in particular is the custom, in some localities at least of prescribing ointments and suppositories containing opium for inflamed and painful conditions at or near the anal outlet. Few drugs are absorbed through the unbroken skin. Opium is not a local anesthetic and when applied or inserted into the rectum, can relieve pain only after it is absorbed into the blood stream. A mild antiseptic wet dressing with a hot water bag over it is generally more effective than any ointment or suppository. Most of the popular ointments and suppositories owe their reputation to the fact that they are used generally in acute self-limiting diseases.

The physician should discourage the indiscriminate use of laxatives. One is sometimes surprised how quickly a sluggish and inactive bowel will respond to simply a regulation of diet and habits when the patient is fully cooperative. Frequently, however, some aid other than laxatives is necessary. For this purpose preparations containing seed taken in 1 to 2 teaspoon doses daily are very effectual in many instances. They seem not to have any of the detrimental effects of liquid petrolatum, which for many years has been used extensively in chronic constipation. Oil interferes with digestion, prevents proper assimilation of food and prevents absorption of certain vitamins. The taking of oil, except for a very limited time should be discouraged.

Some physicians make it a rule to order a roentgenoscopy whenever cancer of the lower bowel is suspected. A tumor located in the ampulla of the rectum often is not diagnosed definitely by the x-rays. When the report is found to be inconclusive a proctoscopy is requested. The procedure should be reversed. If a growth is located through the proctoscope a biopsy specimen will determine the diagnosis definitely. Then roentgenoscopy is generally not necessary.

We are passing through an era of great progress in medicine. Proctology has kept pace with all other progressive departments of medicine and probably is ahead of some. These accomplishments have been the result of contributions of many interested, hard working and observant individuals. We have by no means, however, reached the stage of perfection. That new ideas and improved methods will continue to be brought forth from time to time there is no reason to doubt, that is, while we remain free and independent agents. When, however, the practice of medicine becomes regimented, as is strongly advocated in certain quarters, most certainly progress will be at an end. Then medicine will be practiced carelessly and indifferently.

One cannot imagine that physicians of today will tolerate the dictatorship of a centralized group of selfish and autocratic politicians whose chief interest is not that of their dear constituents as they claim but that of feathering their own political nests.

116 East Franklin Street

## CHRONIC GLOMERULONEPHRITIS AND THE NEPHROTIC SYNDROME

A FOLLOW-UP INVESTIGATION OF PATIENTS  
TREATED WITH ACACIA

RAYMOND E. SMALLEY, M.D.

First Assistant in Medicine Mayo Clinic  
AND

MEVIN W. BINGER, M.D.

ROCHESTER, MINN.

"It is indeed an humiliating confession that although much attention has been directed to nephritis for nearly ten years—yet little or nothing has been done toward devising a method for permanent relief, when the disease has been confirmed, and no fixed plan has been laid down as affording a tolerable certainty of a cure in the more recent cases." Richard Bright<sup>1</sup> wrote the foregoing in 1836. In 1944 we still must confess that we cannot cure the patient who has this disease but the plan of treatment<sup>2</sup> here to be described restores many of the patients to work and eases the sufferings of those who are bedfast.

Our purpose in this study was to ascertain the health of the patients and the status of the disease from which they suffered in the interval between the time of their first treatment at the Mayo Clinic and the time of the follow-up investigation. At the time of admission at the clinic the 109 patients selected for study had in common glomerulonephritis and the nephrotic syndrome, extensive and resistant edema, and they were treated with injections of a solution of acacia in the years 1937 to 1943 inclusive. By "nephrotic syndrome" is meant the clinical state characterized by albuminuria, the presence of edema and a decreased concentration of serum albumin. In addition the concentration of blood cholesterol usually is elevated and not infrequently the basal metabolic rate is lowered. Two of the 109 patients in addition received diagnoses of Hodgkin's disease. 1 other patient had indeterminate edema and 1 chronic hepatitis. Of the 109 patients, 72 were alive and 25 were dead at the time of the follow-up investigation, we received no response concerning 12. Of the 72 patients known to be living 27 were more than 40 years of age at the time when data for this report were gathered.

Glomerulonephritis with nephrotic tendencies is primarily a disease of children and young adults. Grouped according to decades of life, most of the patients were in their teens when the symptoms became evident and the next largest number were in the third decade of life. Three patients were less than 10 and 2 were more than 68 years of age. The exact age of the onset is difficult to determine because patients without extrarenal symptoms frequently do not go to a physician. It has been said<sup>3</sup> that even now in the majority of instances the presence of Bright's disease remains unsuspected and that only a small proportion of all people with this disease ever lie on a postmortem table or even in a hospital bed. Most of our patients had had symptoms of renal disease for three to four

years when first seen at the clinic, in 5 of the cases the kidneys had been known to be involved longer than ten years and in 2 of them longer than eighteen years. Males seem to be more susceptible to the disease than females. In our series of 72 patients who could be followed up 39 were men and 33 women.

These patients complain chiefly of malaise and of discomfort from the edema. In a severe case the legs are so swollen that to walk is troublesome. Swelling of the genitalia may make urination difficult and painful, edema of the abdominal wall and ascites cause distention impede respiration and cause slowing of gastric motility, pleural effusion causes dyspnea and may embarrass the circulation, edema of the stomach and intestine causes loss of appetite, indigestion, nausea, vomiting and intestinal irregularity, cerebral edema may cause headache, mental confusion, lethargy and possibly psychosis. All but 3 of the group of 109 patients had edema, varying from pitting edema at the ankles sometimes extending upward to the knees or hips to generalized anasarca with fluid in the body cavities. Forty-two patients had clinically demonstrable fluid in the pleural or peritoneal cavities.

Our plan of treatment is directed toward removing the edema and helping to restore the normal concentration of serum protein. Dietary aids consist in restriction of intake of sodium and protection of the normal concentration of serum protein. Patients are instructed to take either a salt free diet or one containing only the salt used in preparation of the food. Intake of fluids is limited to not more than 1 to 1½ quarts (approximately 1 to 1.5 liters) daily. The protein content of the diet is increased to between 7% and 12.5 Gm daily because of the excessive proteinuria that is one feature of the nephrotic syndrome. There is no evidence that forced injection of protein produces a significant rise in the concentration of serum protein, although it may prevent progress of hypoproteinemias. Vitamins and iron may be used to supplement the diet. Potassium nitrate is used indefinitely in a dose of 3 Gm three times daily. This diuretic drug has low toxicity, is easily administered and has the desired diuretic action. Administration of acacia is indicated when renal function is good, the concentration of serum protein is low and the edema does not respond readily to treatment in the hospital. The usual total dose is 90 Gm, that is a 6 per cent solution of pure acacia in 1500 cc of a 0.06 per cent solution of sodium chloride. One third of this quantity is given in each of three intravenous injections administered usually on alternate days. In the average case in which the intake of fluid is controlled, this quantity will give a concentration of approximately 2 Gm of acacia per hundred cubic centimeters of blood serum. If it fails to give this concentration or if clinical edema is still present, further injection can be given. Mercurial diuretic drugs may be more effective after administration of acacia than before.

The acacia is gradually eliminated from the blood. One year after the administration the average concentration is 100 mg per hundred cubic centimeters of serum. Power<sup>4</sup> has reported 25 mg per hundred cubic centimeters being found in the serum three years after the last injection. The concentration of acacia in the blood serum of 1 patient who recently returned for reexamination six years after her last injection of acacia was 10 mg per hundred cubic centimeters.

From the Division of Medicine Mayo Clinic.  
1 Bright, Richard cited by Loeb, R. F. "Nephritis (Bright's Disease)" in Cecil R. L. Textbook of Medicine, ed. 5 Philadelphia: W. B. Saunders Company, 1940, p. 1018.

2 Goudsmit, Arnoldus Jr. and Binger, M. W. "Treatment of Nephrotic Edema." J. A. M. A. 114: 2515-2517 (June 29) 1940. Lehnhoff, H. J. Jr. and Binger, M. W. "Treatment of Edema of Renal Origin." Report of Twelve Cases. *ibid.* 121: 1321-1325 (April 24) 1943.

3 Addison, Thomas and Oliver, Jean. "The Renal Lesion in Bright's Disease." New York: Paul B. Hoeber, Inc. 1931, p. 15.

4 Power, M. H., Keith, N. M. and Wakefield, E. C. "The Persistence of Acacia in the Blood After Intravenous Injection of Acacia Solution." *Am. J. Physiol.* 113: 107 (Sept.) 1935.

She had received the average total dose of 90 Gm of acacia. Twenty of the 25 patients who were dead at the time of the follow-up investigation had lost their edema when hospitalized at the clinic under treatment which included administration of acacia. Twelve of the 25 patients lived two years or longer after returning home. Five patients lived four years or longer. The listed causes of death were further manifestations of chronic Bright's disease such as uremia, hypertension and cardiac failure in most of the cases, also acute appendicitis, mastoiditis, pancreatitis, septicemia and old age were reported.

We now propose to discuss certain manifestations of this disease found at the initial examination and either at reexamination or at the time of the follow-up inquiry of the 72 living patients.

Of this number at the time of the follow-up investigation 49 were doing a full day's work—substantial work as business executives, stenographers, farmers, housewives and students. One woman was teaching school in addition to caring for her house and family. Two patients were only slightly handicapped, 19 were working part time, at least half a day, and 2 were bed patients. One of the latter was a man 74 years of age.

Administration of acacia was instituted 103 times with reference to these 72 patients, and 342 separate injections were given. Most patients received 90 Gm of acacia distributed in three injections; however, 1 patient has received nineteen injections or 570 Gm and 12 have received more than 200 Gm. No ill effects have been reported.

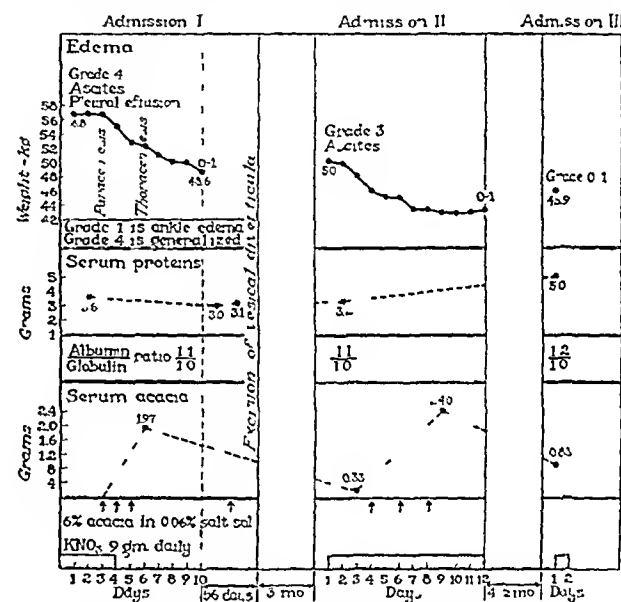
In 12 cases reactions occurred in the course of administration of the acacia. They consisted of coldness of the extremities, flushing of the face, chill, nausea, vomiting, dyspnea and urticaria. Two of these 12 patients had reactions two and three times, but all the patients were able to complete the necessary injections, including 1 patient with a proved allergy. In some instances epinephrine was given in the solution prophylactically to patients who had had one reaction and this prevented recurrence.

Nephrotic edema may develop at any time during the course of the disease. One patient was relieved of clinical edema sixteen years after onset of the disease and 2 others twelve and eight years respectively after the disease began. Acacia was given to these 3 patients on one or two different occasions. All were working when this was written. Acacia was administered to these 72 patients at least two years, and to some of the patients seven years before the time of this report. The mode of action of acacia is not certain but it does facilitate excretion of sodium chloride and water.<sup>5</sup> The value for blood chlorides was elevated on primary admission in most of the cases in which the value was determined. Once the excretion of sodium ion is initiated edema fluid is restored to the circulation and then is eliminated by way of the kidneys. Under treatment all 72 patients lost weight with the diuresis and with the decrease in edema. The average loss of weight was approximately 19 pounds (8.6 Kg.) per patient. Twelve patients lost 50 pounds (22.7 Kg.) or more and 3 lost 46, 55 and 60 pounds (20.9, 24.9 and 27.2 Kg.) respectively. On the average 1 to 2 pounds (0.5 to 0.9 Kg.) is lost daily.

The normal concentration of serum proteins is 6 to 8 Gm per hundred cubic centimeters and the normal albumin-globulin ratio  $\frac{1}{1}$ . Among 38 patients reexamined after administration of acacia on a previous visit the value for total serum proteins of 30 was found to have increased. In addition the albumin-globulin ratio of 2 had become normal. Clinically 15 patients of this group of 38 had had ascites or demonstrable pleural fluid in addition to the peripheral edema at the time of the first admission but not at reexamination. Also 33 of the 38 patients had no edema or minimal edema of the ankles only at the time of the last admission while all of them had exhibited considerably more edema than this when first seen at the clinic.

What has just been said about edema, serum acacia and serum proteins is illustrated in the following report of a case.

A woman aged 60 who was admitted to the clinic Sept. 26, 1941, stated that for five years she had had frequency, nocturia and dysuria without chills, fever or colic. Six weeks before she came to the clinic while on a trip and after she had waded in



Record of patient's course

a cold stream and cold had developed and at that time the patient first noticed swelling of her ankles and legs. This condition had progressed until her abdomen had begun to swell ten days before her admission.

On examination the legs were found to be decidedly edematous and the edema extended upward to include the sacral and lumbar regions. She had ascites as well as effusion in both sides of the thorax as shown in the accompanying chart. She weighed 125 pounds (56.8 Kg.). The blood pressure was normal and results of examination of the ocular fundi were essentially negative. Urinalysis revealed a specific gravity of 1.019, albuminuria graded 4 and pus graded 1. The blood contained 26 mg of urea per hundred cubic centimeters and 36 Gm of serum proteins. The albumin-globulin ratio was  $\frac{1}{10}$ . An intravenous urogram revealed multiple vesical diverticula, one of which contained a stone. The vesical findings were thought to account for the local urinary symptoms. A diagnosis was made of chronic glomerulonephritis with nephrotic features and vesical diverticula with stone.

The patient was in the hospital sixty-five days after her first admission. At once a diet was prescribed which was free of

<sup>5</sup> Coudmit, Arnold, Jr., Power, M. H., and Bellman, I. I. Some Effect of Injection of Acacia with Special Reference to Lymph Function. *Proc. Soc. Exper. Biol. & Med.* 47: 254-257 (June) 1941.  
<sup>6</sup> Coudmit, Arnold, Jr., Binger, M. W., and Keith, N. M. Acacia in Treatment of the Nephrotic Syndrome with Special Reference to Excretion of Chloride and Water: A Report of Case. *Arch. Int. Med.* 65: 51-54 (Sept.) 1941. Coudmit, Lower, and Bellman.

<sup>7</sup> Peter, J. P., and Man, E. B. The Interrelations of Serum Lipids in Patients with Disease of the Kidney. *J. Clin. Investigation* 22: 721-726 (Sept.) 1943.

salt, high in protein and high in calories and of which the quantity of fluid was controlled. As a diuretic measure, administration of potassium nitrate in a dose of 9 Gm daily was started but had to be discontinued after four days because of nausea. On the patient's third day in the hospital abdominal paracentesis was performed, and 1,200 cc of fluid was removed. On the sixth day in the hospital 500 cc of clear fluid was aspirated from the right side of the thorax. On each of the third, fourth and fifth days in the hospital injections of 500 cc of 6 per cent solution of acacia were given intravenously, in all 1,500 cc, containing 90 Gm of acacia. On the day following the first injection the concentration of serum acacia was 1.97 Gm per hundred cubic centimeters. On the patient's tenth day in the hospital her weight was 107 pounds (48.6 Kg) and her condition was improved enough to warrant surgical treatment for the vesical diverticula and stone. The postoperative course was essentially uneventful but, because edema of the ankles and legs developed a fourth intravenous injection of 500 cc of 6 per cent solution of acacia was given in the fourth postoperative week.

Three months after the patient's dismissal from the surgical service she was readmitted to the hospital because of increasing edema. Examination revealed pitting edema of the legs, including the hips and ascites was present although the thorax was clear. She weighed 110 pounds (50 Kg). There was no change in urinary findings from those of her first admission or in the results of examination of the ocular fundi. The concentration of blood urea was 24 mg per hundred cubic centimeters and that of serum proteins 3.2 Gm per hundred cubic centimeters. The albumin-globulin ratio was  $\frac{1.1}{1.0}$ . The value for serum acacia was 0.33 Gm per hundred cubic centimeters. The patient was in the hospital twelve days on her second admission. Her diet was controlled as before. Potassium nitrate 9 Gm was given daily. On each of the fourth, sixth and eighth days in the hospital 500 cc of 6 per cent solution of acacia was administered intravenously, 1,500 cc in all. On the day following the first injection of acacia the value for serum acacia was 2.40 Gm per hundred cubic centimeters. The patient's weight decreased to 94 pounds (42.7 Kg) and clinically she was free from edema. She was dismissed to go home with a prescription for a controlled diet and was advised to take 9 Gm of potassium nitrate daily.

The patient was seen at the clinic on her third admission, four and a half months following the second dismissal. She came because her husband insisted that she be reexamined. She had been doing her own housework and climbing fifteen stairs twice daily without difficulty. Examination revealed minimal edema at the ankles. She weighed 101 pounds (45.9 Kg). Blood pressure was normal. Urinalysis revealed albuminuria graded 3. The concentration of blood urea was 26 mg per hundred cubic centimeters. The concentration of serum proteins was 5.0 Gm per hundred cubic centimeters and the albumin-globulin ratio  $\frac{1.2}{1.0}$ . The value for serum acacia was 0.83 Gm per hundred cubic centimeters. The patient was dismissed to go home and was advised to continue with the same treatment. She wrote us recently that she was getting along well.

Values for blood cholesterol ranging from 129 to 1,190 mg per hundred cubic centimeters were obtained at the time of first admission of 65 of the 72 patients who later responded to our questionnaire. In 60 of these cases the values were primarily in excess of what we considered the normal of 160 to 200 mg per hundred cubic centimeters. The values in 47 cases fell between 216 and 595 mg per hundred cubic centimeters. The 2 patients most seriously ill at the time of writing of this paper had values of 378 and 490 mg per hundred cubic centimeters. The patients with respectively the very high and the very low values were working and well. When the patients were placed under dietary control, the values for blood cholesterol that had obtained on primary admission fell rapidly toward normal, that is, in 1 case in which the value on primary

admission was 595 mg per hundred cubic centimeters, the value became 282 mg per hundred cubic centimeters eight days later. It was also interesting that in cases in which values for serum protein on primary admission were low frequently hypercholesterolemia was found, while in cases in which values for serum protein were more nearly normal on primary admission the values for blood cholesterol were low. Peters and Mann reported that in their series of 54 nephritic patients the hypercholesterolemia bore no consistent relation to any single phenomenon of the disease. They stated that hypercholesterolemia was encountered most frequently in the presence of edema and that it was most striking in cases in which there was the greatest deficiency of serum albumin. From these observations it would appear that the initial value for blood cholesterol has very little prognostic significance.

We used retention of blood urea as an index of renal function in place of the urea clearance test because of the poor urinary output of this group of patients. This value is obtained by multiplying the value for urea nitrogen by the factor 2.14. The normal value ranges between 15 and 40 mg per hundred cubic centimeters. On their first admission 26 of the 72 patients gave evidence of some renal insufficiency, as shown by elevation of the concentration of blood urea. These 26 patients had been known to have renal disease for from two to nineteen years, the majority for from two to nine years. The value returned to normal in 4 of these cases while treatment was being given in the hospital following the primary admission. In 8 more cases the values obtained on primary admission were decreased but were still above normal limits at the time of dismissal. The concentration of blood urea in 3 of the 8 cases later returned to normal. Also in 3 of the 26 cases the value for blood urea was elevated on primary admission, rose still higher while treatment was being given and was still elevated on dismissal, the value had returned to normal, however, at a later reexamination. This makes a total of 10 of these 26 patients whose measurable renal insufficiency evidently improved sufficiently to reach normal either while under treatment at the clinic or after their dismissal.

Four of the 72 patients had had the disease eleven years or longer. The values for blood urea were normal when they were first examined. The concentration of the blood urea of a fifth patient on primary admission who also had had the disease eleven years or longer, was elevated to 46 mg per hundred cubic centimeters.

Nine of the 72 patients had blood urea of normal concentration at the time of the first admission but gave evidence of renal insufficiency on reexamination. All 9 patients had had the disease from two to eight years when this elevation in value for blood urea was noted. In 4 of these 9 cases hypertension was an associated condition and, in all, apparently the hypertension was progressive.

We took 4,250,000 to 5,250,000 per cubic millimeter of blood as the normal erythrocyte count. For females 13 to 16 Gm per hundred cubic centimeters of blood and for males 14 to 17 Gm was taken as the normal concentration of hemoglobin. By the foregoing standards 43 of the 72 patients were anemic on primary admission. Anemia finally develops in most cases of chronic nephritis. The lowest erythrocyte count was 2,040,000 and the lowest hemoglobin determination was 6.8 Gm per hundred cubic centimeters. The leukocyte counts of 23 patients were increased when they were

first admitted, the highest leukocyte count was 16 200 per cubic millimeter of blood. By the foregoing standards, of the 38 patients later reexamined 8 who previously had been anemic gave normal values at reexamination, however, on reexamination 6 patients were anemic who had not been anemic on primary admission. The treatment of anemia in the presence of chronic nephritis is difficult.

Of 29 patients whose basal metabolic rates were estimated, 9 gave readings of more than —10 per cent on primary admission. In no case was the rate more than +10 per cent. The basal metabolic rates of 2 patients were —25 and —37 per cent. Also the blood cholesterol values of both of these patients were elevated respectively to 893 and 1,190 mg per hundred cubic centimeters. The laboratory picture, therefore, resembled that seen in myxedema. Desiccated thyroid was used as an adjunct in treatment of these 2 patients. Both were working part time when this report was written.

Using determinations of blood pressure of 150 mm of mercury systolic and 90 mm of mercury diastolic as arbitrarily taken upper limits of normal, 27 of 38 patients who were reexamined had normal blood pressures at the time of the reexamination. Seven of these 27 patients had had hypertension at a previous visit. At the time of reexamination, hypertension was present in the 11 remaining cases of the 38. In 6 of these 11 cases the hypertension apparently had developed since the previous visit, while in the other 5 cases it had been present at a previous visit and had continued. The patients with hypertension represented all decades of life from the teens to the seventies. They had had renal disease for from two to nine years when hypertension developed, this period of antecedent renal disease is like that encountered in the cases of renal insufficiency. Four of the 11 patients with hypertension complained of exertional dyspnea and 4 of headache. These two groups of 4 overlap. This type of headache usually is frontal, is present in the early morning, on awakening, and usually lasts one to two hours.

Two of the 72 patients, both men, aged 18 and 24 years respectively, presented the ophthalmoscopic picture of developing retinitis.<sup>8</sup> One had had knowledge of his renal disease for eight years and the other for two years. Also in both cases hypertension and nitrogen retention had developed since the patients first had been examined at the clinic. They both continued to have some clinical edema.

Retinitis at times may be reversible. In the ocular fundi of 4 patients were signs indicating regression of previous retinitis. Two of these patients, whose blood pressures had been elevated when they first had been seen at the clinic, had normal blood pressures at the time of their last visits. Slight nitrogen retention was found in examination of 3 of these 4 patients when they were last examined.

Using the microscopic evidence of erythrocyturia, leukocyturia and cylindruria, and the presence of albuminuria as criteria, 20 of the 38 patients reexamined gave evidence of improvement in urinary findings on reexamination, 11 of these patients showed some improvement, 5 showed definite improvement and the

urine of 4 was normal. These studies of the urinary sediment indicate that at the time of these examinations the disease was relatively quiescent but as Addis and Oliver<sup>9</sup> and Christian<sup>10</sup> have pointed out qualitative observations of the urinary sediment are only now and then decisive and are not prognostic.

In all cases in which values for plasma fibrinogen were determined the results were within the normal limits of 300 to 600 mg per hundred cubic centimeters. A tendency to bleeding was not exhibited by any patient following the use of acacia.

This follow-up study indicates that many of the patients who had resistant nephrotic edema and who were treated successfully with acacia and other treatments discussed have been able to maintain a more nearly normal economic and social existence than they had been able to lead before treatment. As was said in an earlier paragraph we could not find any evidence that acacia was harmful in any way to these patients.

## SEPTICEMIA AND BACTERIAL ENDOCARDITIS RESULTING FROM HEROIN ADDICTION

REPORT OF TEN CASES

HUGH HUDSON HUSSEY MD

THOMAS F KELIHER MD

BERTRAM F SCHAFFER MD

AND

BERNARD J WAISH MD

WASHINGTON, D C

The development of bacterial infection of the blood stream in narcotic addicts as a result of their addiction is a rare occurrence. This is somewhat surprising in view of the fact that so many addicts use morphine or heroin by injection and entirely without antiseptic technic. Most<sup>1</sup> has reported on the epidemiologic and clinical aspects of more than 200 cases of malaria in drug addicts in New York City. Apparently this disease is not uncommon, being spread through groups of addicts as a result of contamination of their injection equipment with blood containing the parasites. This assumption is based on the fact that it is common practice for addicts to employ a single syringe and needle for a series of injections in different individuals without the slightest attention to cleansing of the equipment between injections. Doane<sup>2</sup> reviewed the literature on the subject of tetanus acquired by narcotic addicts presumably as the result of using contaminated equipment for injection. He added 3 cases to the total of 9 cases previously reported by other authors. In addition there have been several reports<sup>3</sup> on the occurrence of

<sup>9</sup> Addis and Oliver. The Renal Lesion in Bright's Disease. 3 pp. 18 and 19.

<sup>10</sup> Osler William. Principles and Practice of Medicine revised by H A Christian. ed 13. New York: D Appleton Century Company, Inc. 1938. pp 867-868.

From the Department of Medicine of the Georgetown University School of Medicine and the Georgetown Division of the Medical Service at Gallinger Municipal Hospital.

<sup>1</sup> Most H. Falciparum Malaria Among Drug Addicts. Epidemiologic Studies. Am J Pub Health 30:405 (April) 1940. Falciparum Malaria in Drug Addicts. Clinical Aspects. Am J Trop Med 20:551 (July) 1940.

<sup>2</sup> Doane J C. Tetanus as a Complication in Drug Inebriety. J A M A 82:1105 (April 5) 1924.

<sup>3</sup> Wikler A, Williams E G, Douglas E D, Emmons C W, and Dunn R C. Mreotic Endocarditis. J A M A 119:333 (May 23) 1942. Wikler A, Williams E G, and Wiesel C. Monilemia Associated with Toxic Purpura. Arch Neurol & Psychiat 50:661 (Dec) 1943.

<sup>8</sup> Keith N M, Wagener H P, and Barker A W. Some Different Types of Essential Hypertension. Their Course and Prognosis. Am J Med Sc 107:332-343 (March) 1939. Graham R W. Ophthalmoscopically Visible Retinal Lesions in Chronic Glomerulonephritis. Occurrence and Characteristics. Arch Ophthalmol 26:435-465 (Sept) 1941.

blood stream infection by Monilia in drug addicts and in 3 cases mycotic endocarditis was found

Over a period of about a year we have observed 5 cases of septicemia in heroin addicts 4 of whom had acute bacterial endocarditis. Because the development of septicemia under these circumstances is unusual these cases are reported here in detail

#### REPORT OF CASES

**CASE 1**—A man aged 45 Chinese was admitted to the Psychiatric Division of the Gallinger Municipal Hospital for the treatment of heroin addiction of several years' standing. Because of language difficulties it was impossible to obtain an adequate history. He appeared acutely ill and had labored respirations. The blood pressure was 140/70, temperature 101 F, pulse rate 100 and respiratory rate 36. There were many needle puncture marks along the veins of both upper extremities. Several infected ulcer were present over the middle third of the left tibia. Three petechiae were visible in the left palpebral conjunctiva. Over the lower half of the right lung there were found diminished tactile fremitus and unpaired resonance. Bronchovesicular breathing and subcrepitant rales were heard in this same area. A soft nonradiating, apical systolic murmur could be heard. His abdomen was distended and tympanitic. Urinalysis showed 2 plus albumin, 2 granular casts and 18 red cells per high power field. The red blood cell count was 2,630,000, the white blood cell count 25,000 with 80 per cent polymorphonuclears, 13 per cent young forms and 7 per cent lymphocytes. Type XXIV pneumococcus was found in the sputum. A blood culture taken on admission was negative.

Sulfathiazole was started on admission and adequate levels were obtained. An x-ray film of the chest on the second hospital day showed diffuse pneumonia in the lower half of the right lung. There was no apparent change during the ensuing two weeks except for the appearance of several petechiae on the hands and feet. His temperature fluctuated between 99 and 104 F. Severe chills occurred almost daily, but blood cultures were repeatedly negative. The white blood cell count remained elevated.

On the fifteenth hospital day sulfathiazole was discontinued and sulfadiazine started. An x-ray film of the chest showed some clearing of the pneumonia in the right base. The chills continued, however, and on the sixteenth, seventeenth and eighteenth days positive blood cultures were obtained by another laboratory and *Bacillus pyocyaneus* was grown. New petechiae appeared on the chest and extremities, and the patient looked more severely ill and irritable. There was no change in the character of the temperature curve. On the nineteenth hospital day a short, high pitched early diastolic murmur of low intensity was heard in the second left intercostal space next to the sternum.

The remainder of the clinical course was steadily downhill. There were no significant alterations in the physical and laboratory findings. In view of the reported beneficial effects from the use of acetic acid in the treatment of *B. pyocyaneus* infection of the skin, and because the sulfonamides had shown no ameliorating influence on the disease in this case, 100 cc of 1 per cent acetic acid solution was given by vein daily for five days. There was no observable effect from this treatment. The patient died on the thirty-ninth hospital day.

At necropsy the heart weighed 620 Gm and was moderately dilated. The pericardial cavity was completely obliterated as the result of fibrinous pericarditis. The heart valves were normal except for a large soft friable vegetation on the anterior cusp of the aortic valve. Just above this leaflet there was a mycotic aneurysm 3 cm wide and 2 cm deep. A culture of the vegetation was positive for *B. pyocyaneus*. The spleen weighed 350 Gm, was quite firm and contained 3 infarcts. There were also numerous small infarcts in the kidneys.

**CASE 2**—C S, a Negro aged 38, was admitted to the hospital because of cough and loss of weight. His illness had begun three months before admission with cough, anorexia and night sweats. On the advice of a friend the patient began taking heroin intravenously as a tonic. The drug had been administered daily by vein without use of antiseptic precautions of any kind. During the three months he had lost 18 pounds (8 Kg) in weight. Just prior to admission he had become weak, dyspneic and febrile. A roentgenogram of the chest taken one week before admission had been reported as negative.

On examination the patient looked acutely ill and dyspneic. The temperature was 102.5 F, pulse 125, respiratory rate 32, blood pressure 110/68. The forearms showed scar along the veins at the sites of injection of heroin. The breath sounds were diminished and there were subcrepitant rales over the posterior aspect of the left lung at the base. The remainder of the physical examination was negative.

The urinalysis was normal. There were slight leukocytosis and mild anemia. An x-ray film of the chest showed areas of increased density in the lower half of the left lung and a slight increase in the transverse diameter of the heart. A blood culture taken on the third hospital day was reported to show *Staphylococcus albus*, but several subsequent cultures yielded *Staphylococcus aureus* which was coagulase positive. An x-ray film of the chest made on the seventh day revealed discrete areas of soft infiltration containing radiolucent centers scattered throughout both lungs.

The patient was given sulfamerazine, and adequate blood levels were maintained. His course was septic and rapidly downward. On several occasions he coughed up blood tinged sputum. Except for the development of rales in additional areas of the lungs there were no new physical findings. The white blood cell count ranged between 18,000 and 21,000. He died on the fourteenth hospital day.

At necropsy the heart weighed 325 Gm. The valves were normal except the tricuspid, which was the site of a large mass of soft vegetation. Both lungs contained innumerable small abscesses of embolic origin. Cultures from the vegetation and from the lung abscesses yielded *Staphylococcus aureus*. The spleen was moderately enlarged.

**CASE 3**—O B, a Negro woman aged 25 was acutely ill when admitted to the hospital, and her history was vague. She was about six months pregnant and had been well until a few weeks before admission. Then she had developed fever, vomiting and symptoms of a respiratory infection, including sore throat and cough. Six days prior to admission she had anointed her skin first with alcohol and then with camphorated oil for relief of headache. The next day blebs had appeared on her skin, and the following day peeling had begun.

The patient looked stuporous and seriously ill. The temperature was 102.5 F, pulse 130, respiratory rate 48, blood pressure 120/70. The face was swollen, and there was extensive patchy exfoliation of the skin of the arms and chest with many cracked and bleeding areas. On the arms were several flattened bullous lesions. The mucous membranes and tongue were dry, and the pharynx was congested. At the base of the right lung resonance was diminished, and there were subcrepitant rales in both axillae and at the right base. The heart was normal in size. There was a short soft systolic murmur on the left of the sternum and a gallop rhythm. The uterus was enlarged to the level of the umbilicus. The fetal heart sound were distinctly audible. Extensive raw areas were seen around the vulva.

Urinalysis showed albumin (1 plus), there was moderately severe anemia and the leukocyte count was 20,500. A blood culture taken on the first day yielded *Staphylococcus aureus*, and this organism was repeatedly obtained. The blood urea nitrogen was 16 mg per hundred cubic centimeters. An x-ray film of the chest showed soft areas of infiltration scattered throughout both lung fields suggesting pulmonary infarcts.

The patient lived nine days after entering the hospital. She was treated with sulfamerazine for two days and then with



penicillin until the time of her death. The hematologic and bacteriologic findings remained the same but the patient's general appearance improved temporarily after penicillin was started. High fever and tachycardia continued however and after the 14th day she became rapidly weaker. The fetal heart sounds were last heard on this day.

After he died it was learned from the patient's husband that she had been addicted to the use of heroin administered intravenously without aseptic precautions.

At autopsy the heart weighed 320 Gm. There were 3 gray warty vegetations on the tricuspid valve. The other valves were not affected and none of the valves showed evidence of preexisting disease. The peripheral parts of the lungs were filled with numerous small septic infarcts many of which had formed abscesses. The liver was greatly enlarged as the result of cloudy swelling and the spleen was slightly enlarged.

CASE 4—A Negro aged 33 the husband of patient 3 was admitted to the hospital because of an abscess of the left antecubital fossa and for diabetic control. The patient had administered heroin to himself at irregular intervals by the intravenous route for seven years. However for the preceding three months he had used the drug three times daily. Sterile precautions were not observed at any time and on several occasions abscesses had developed at the sites of injection. The infection of the left antecubital space had been present for about a week. He stated that he and his wife used the same syringe and needle.

The only significant findings on examination included many scars along the veins of both upper extremities and an area in the left antecubital fossa which was swollen, warm, red tender and firm. The temperature was 102 F, pulse 110, respiratory rate 20 and blood pressure 130/80.

Urinalysis showed 4 plus reduction of Benedict's solution. The red blood cell count was 4,270,000, the white blood cell count 11,300. The blood sugar was 400 mg. per hundred cubic centimeter. A blood culture taken on admission was negative. An x-ray film of the left elbow showed no evidence of bone or joint disease.

After two days of application of hot saline soaks to the area of cellulitis the patient's temperature returned to normal and the inflammation appeared to be subsiding. On the seventh and ninth days his temperature rose to 100 F and on the eleventh day he had a severe chill with a rise in temperature to 103 F. His temperature remained elevated and fluctuated between 99 and 103 F for the ensuing five days, during which time three positive blood cultures for *Staphylococcus aureus* were obtained. At this time the patient looked acutely ill and complained of profound weakness and severe generalized aches and headache. Sulfamerazine was started and adequate levels maintained. The temperature gradually fell to normal during the next six days and the patient appeared much improved. Three positive blood cultures for *Staphylococcus aureus* were reported for this period. The local infection in the antecubital fossa became fluctuant and was incised. A small amount of pus containing *Staphylococcus aureus* was evacuated. Sulfamerazine was discontinued at this time and penicillin administered by the intramuscular route for the next seven days. No further positive blood cultures were obtained. The patient continued to improve, and the incision healed completely. Diabetic control was unsatisfactory during the first three weeks of hospitalization but was well established from then until his discharge on the fifty-fourth hospital day.

CASE 5—A Negro woman aged 28 entered the hospital complaining of pain in the upper half of the left hemithorax. Ten days before admission she had experienced chilliness followed by a feeling of fever. These symptoms had recurred repeatedly each day afterward. After four days she had suddenly been stricken with sharp pain in the left pectoral region. Cough had then begun and had noticeably aggravated the pain. Her private physician had informed her that she had pleurisy, and sulfathiazole had been prescribed. The cough later had become productive of thick brown sputum.

The patient had been taking heroin intravenously for four months, during which time there had been a loss in weight of 50 pounds (23 Kg). The syringe and needle used for injections had not been sterilized at any time.

On examination the patient looked acutely ill and emaciated. The temperature was 102.8 F, pulse rate 110, respiratory rate 32 and blood pressure 100/75. Both forearms were scarred along the course of the veins. There were bronchovesicular breath sounds and subcrepitant rales over the left upper lobe. The heart was normal except for a soft apical systolic murmur.

Urinalysis showed a trace of albumin. There was moderately severe anemia and the leukocyte count was 6,400 with 75 per cent neutrophils and 25 per cent lymphocytes. Smears for malaria were negative. X-ray examination of the chest showed small areas of infiltration in the left upper lobe. Blood cultures were repeatedly positive for *Staphylococcus aureus*.

The patient lived thirty-one days after entering the hospital. Her clinical course was septic and steadily downward. She was treated with sulfamerazine without any effect on either the course or the positive blood cultures. Subsequent x-ray films of the chest demonstrated clearing of the infiltration in the left upper lobe and the appearance of numerous new areas of involvement which were interpreted as pulmonary metastases. From time to time there was expectoration of fresh blood but the physical findings in general were not altered except for variation in the location of pulmonary rales.

At postmortem examination the heart was not enlarged. There was acute bacterial endocarditis of the tricuspid valve the picture in general being similar to that of the other cases. There were many small pulmonary infarcts, all of which had undergone abscess formation. There was emphysema of the right pleural cavity. The spleen was moderately enlarged.

#### COMMENT

As far as we have been able to determine from the literature and from Dr. Edwin G. Williams of the United States Public Health Service, septicemia due to ordinary organisms must be very uncommon in narcotic addicts. In 4 of the 5 cases reported here the causative organism was *Staphylococcus aureus* and in one *Bacillus pyocyaneus*.

None of the patients used any antiseptic precaution in the self administration of the heroin. There are therefore several possible modes by which blood stream infection may have occurred. First the material used may have contained pathogenic bacteria. In general heroin used by addicts is mixed with various agents for the purpose of adding bulk. One such common adulterant is lactose, which perhaps would improve the mixture as a culture medium. Second the equipment used in the administration of the heroin was not sterilized and was often passed from one addict to another without cleansing. Third, failure to apply an antiseptic to the skin before injection of heroin intravenously may have permitted the introduction into the blood stream of organisms inhabiting the skin. Fourth in case 4 the source of the septicemia may have been the abscess which had developed at a site of injection. Presumably of course the abscess had its inception by one of the mechanisms previously mentioned. There is no way to determine definitely which of these possible modes of infection operated in these cases. However, the fact that cases 3, 4 and 5 were closely associated chronologically suggests that the heroin was contaminated. On the other hand patients 3 and 4 were husband and wife who used a syringe in common.

It is not particularly surprising that acute bacterial endocarditis developed in 4 of these 5 cases of septicemia. However localization of the lesion on the tri-

cuspid valve alone in 3 of the cases is noteworthy because of its rarity. For example, in a series of 646 cases of acute bacterial endocarditis reported by Goldburgh, Baer and Lieber<sup>4</sup> the tricuspid valve alone was involved in only 20 cases (3.1 per cent). In the remaining case the aortic valve alone was affected. There was no evidence of preexisting valvular disease in any of the cases.

The diagnosis of acute endocarditis was readily apparent in case 1. Manifestations of septicemia, repeatedly positive blood cultures, petechiae and the appearance of an aortic diastolic murmur indicated the existence of bacterial endocarditis of the aortic valve.

In cases of endocarditis involving the right side of the heart the diagnosis may be less apparent. In the 3 cases of this group the presence of septicemia was obvious from the clinical course and the positive blood cultures for *Staphylococcus aureus*. However, the onset of manifestations of pulmonary infarction indicated the need for discovering a source of the emboli. The absence of any such source in the peripheral veins permitted the deduction that there was right sided endocarditis. The failure to detect a murmur in any case was strong ground for concluding that the tricuspid valve was the seat of the endocarditis. There was no evidence of embolic phenomena in the systemic circulation in any of these cases, and it is interesting that in spite of the presence of staphylococcal septicemia abscesses were found only in the lungs. The diagnostic features of these 3 cases have been discussed in greater detail elsewhere.<sup>5</sup>

The treatment in the 4 cases of endocarditis included the use of average doses of one of the sulfonamides in each case and of penicillin in 1 case. The outcome was uniformly fatal. In case 4, in which there was a large staphylococcal abscess of the antecubital fossa and *Staphylococcus aureus* septicemia but no endocarditis, incision and drainage of the abscess, sulfamerazine and penicillin successfully controlled the infection.

#### SUMMARY

In 4 of 5 cases of septicemia in heroin addicts death followed the development of acute bacterial endocarditis, which in 3 instances involved the tricuspid valve alone. Three of the cases of endocarditis were due to *Staphylococcus aureus* and the fourth to *Bacillus pyocyaneus*. In the 1 case of *Staphylococcus aureus* septicemia without endocarditis, recovery occurred.

<sup>4</sup> Goldburgh H. L., Baer S. and Lieber M. M. Acute Bacterial Endocarditis of the Tricuspid Valve. *Am J M Sc* **204**, 319 (Sept) 1942.

<sup>5</sup> Hussein H. H. and Katz S. Septic Pulmonary Infarction to be published.

**Mental Exhaustion from Intellectual Effort**—Bearing on this subject, I, like others of our profession, have had repeated occasion to observe the effect of overwork on gentlemen who use their brains with an expenditure of energy inconceivable to the thoughtless—men of widespread mercantile affairs, men engaged in money transactions on a large and anxious scale. The condition of such patients attested the applicability of these remarks by their mental and physical exhaustion, by their depression of spirits and by their want of self confidence. Yet with such men, the restoration to health has been made complete by mental leisure, by "going out of town" and taking plenty of exercise in the open air, while abstaining from the really disturbing cause, their business—Hilton John Rest and Pam, London George Bell & Sons 1857.

## THE TREATMENT OF EARLY AND LATENT SYPHILIS

IN NINE TO TWELVE WEEKS WITH TRIWEEKLY INJECTIONS OF MAPHARSEN

A PRELIMINARY ANALYSIS OF THE RESULTS IN THE FIRST 4823 CASES

HARRY EAGLE, M.D.

BALTIMORE

The pioneer work of Chaigun, Leifer, Hyman and their associates<sup>1</sup> with the five day intravenous drip has stimulated a large number of clinical studies on other intensive methods of antisymphilitic treatment. The duration of treatment has been varied from one day to twenty weeks, the frequency of injections has been varied from twice daily to twice weekly, and in some clinics artificially induced fever has been used as an adjunct to the intensified course of arsenotherapy.

As with any chemotherapeutic procedure, the three major considerations which determine the utility of these treatment schemes are their therapeutic efficacy, their toxicity and their practicability. Recent studies in experimental rabbit syphilis provide a helpful orientation to the first two of these points. The total curative dose of mapharsen was found to be more or less constant, largely independent either of the frequency of injections or of the duration of treatment. On the other hand, the toxicity of the drug varied directly with the method of administration. The shorter the time period over which the mapharsen was administered and the fewer the injections, the greater was its toxicity<sup>2</sup> and the smaller was the margin of safety provided by a given therapeutic dose.<sup>3</sup>

In man also the curative dose of mapharsen has been found to be essentially the same, regardless of the method of administration.<sup>4</sup> From the animal data it was therefore to have been anticipated that the shorter the time period into which the curative dose of mapharsen was compressed, the greater would be the incidence of serious toxic reactions and death. That has been fully borne out in practice. Thus, weekly injections of 60 mg of mapharsen represent approximately one tenth the maximal tolerated dose in animals, and, corresponding to that wide margin of safety, the mortality in man following routine weekly treatment at this dosage level has been on the order of 1/5,000 or less.<sup>5</sup> On the other hand, when the total therapeutic dose of 1,200 mg of mapharsen was compressed into five days, the calculated margin of safety<sup>6</sup> was only 20, and the observed mortality with this schedule in man has been on the order of 1/200. Between these two extremes, schedules of intermediate degrees of intensity providing intermediate margins of safety,

Owing to limitations of space tables 1 and 6 appear in reprints only. 1 from the U. S. Public Health Service Venereal Disease Research and Postgraduate Training Center, Johns Hopkins Hospital. Read in a panel discussion on Intensive Therapy of Early Syphilis with Special Reference to Arsenotherapy Either Alone or Combined with Other Agents before the Section on Dermatology and Syphilology at the Ninety Fourth Annual Session of the American Medical Association, Chicago, June 15, 1944.

1 and 2 Bibliographic titles are given in the reprints. 3 Eagle H. and Hogan R. B. An Experimental Evaluation of Intensive Methods for the Treatment of Early Syphilis. II. Therapeutic Efficacy and Margin of Safety. *Ven Dis Inform* **24**, 69-79, 1943.

4 Eagle H. and Hogan R. B. An Experimental Evaluation of Intensive Methods for the Treatment of Early Syphilis. I. Toxicity and Excretion. *Ven Dis Inform* **24**, 33-44, 1943.

5 Eagle H. and Hogan R. B. An Experimental Evaluation of Intensive Methods for the Treatment of Early Syphilis. III. Clinical Implications. *Ven Dis Inform* **24**, 159-170, 1943.

6 Hahn R. D. Antisyphilitic Treatment. Mortality Studies. Clinical, Statistical and Pathologic Analysis of Forty Seven Fatal Reactions. *Am J Syph Gonorr & Ven Dis* **25**, 659-686, 1941.

necessarily result in a correspondingly intermediate morbidity and mortality (chart 1)

On the basis of the animal data there was reason to believe that a treatment schedule involving injections of mapharsen repeated three times weekly at a unit dose of approximately 1 mg per kilogram represented a reasonable compromise between speed and safety. This schedule in animals provided a safety factor of 6 to 8. Corresponding to that large margin of safety it was anticipated that the mortality in man would be less than 1/1,000 and that such a schedule would permit the definitive treatment of early and perhaps of latent syphilis in outpatient clinics within a period of six to twelve weeks. The clinical study was begun in October 1941 with the cooperation of hospital, state, county and municipal venereal disease clinics. The number of participating clinics gradually increased, reaching 86 as of March 1, 1944. These clinics are listed in table 1.

With the exception of those cases treated in Marine hospitals and a few other hospital clinics, all patients were treated as ambulatory outpatients. The dosage was adjusted to body weight at first with ten different

The present preliminary report is based on the early results in the first 4,823 patients on whom treatment records were submitted for analysis. Although the proportion of patients observed for a year or longer has been small (cf table 3) it is nevertheless believed that the method of analysis permits preliminary conclusions.

TABLE 2—Dosage Scale of Mapharsen in Relation to Body Weight of Patients Treated Three Times Weekly

| Weight  |       | Mapharsen<br>Mg per Injection |
|---------|-------|-------------------------------|
| Lbs     | Kg    |                               |
| 90      | 40    | 40                            |
| 90-120  | 40-55 | 50                            |
| 120-150 | 55-70 | 60                            |
| 150-180 | 70-85 | 70                            |
| 185-    | 85-   | 80                            |

TABLE 3—Duration of Observation of 3,376 Patients with Primary and Secondary Syphilis

| Weeks after beginning of treatment | <6  | 6-9   | 10-14 | 15-19 | 20-24 | 25-29 | 30-39 | 40-49 | 50+ |
|------------------------------------|-----|-------|-------|-------|-------|-------|-------|-------|-----|
| Patients still under observation   | 336 | 2,944 | 2,940 | 1,771 | 1,410 | 1,164 | 742   | 600   | 11  |

This progressive falling off is due in part to lapse and in part to the fact that almost half these patients have been treated during the last twelve months.

with respect to therapeutic efficacy in early syphilis and that these conclusions will be modified only slightly as more patients fall into the longer observation period.

#### METHOD OF ANALYSIS

As shown in table 4, the 4,823 patients treated included 290 with seronegative primary, 1,054 with seropositive primary, 2,050 with secondary and 1,190

TABLE 4—Analysis of 4,823 Cases of Syphilis Treated with Traceably Injections of Mapharsen

| Race and Sex           |         | Age     |           |                         |          |                  |   |           |         |
|------------------------|---------|---------|-----------|-------------------------|----------|------------------|---|-----------|---------|
| White                  | Negro   | White   | Negro     | <10                     | 10-17    | 18-20            | 21-29                                       | 30-44     | >45     |
| 1,142                  | 1,01    | 675     | 1,062     | 68                      | 573      | 1,162            | 2,005                                       | 338       | 100     |
| B Diagnosis            |         |         |           |                         |          |                  |   |           |         |
| Early Syphilis (3,384) |         |         |           | Latent Syphilis (1,190) |          |                  | Late Secondary and Treatment Failures (119) |           |         |
| Primary                | Primary | Total   | Secondary | <2 Years                | >2 Years | Duration Unknown | Reinfection or Recurrence                   | Secondary | Sero    |
| neg                    | pos     | Primary | Secondary | Duration                | Duration | Unknown          | Unknown                                     | Relapse   | Relapse |
| 290                    | 1,054   | 1,344   | 2,040     | 347                     | 712      | 631              | 120   | 8         | 1       |

1 Fifty cases of central nervous system syphilis and 29 with mucous lesions present, symptoms are not included in the table.  
76 dark field positive, 163 dark field negative, 201 dark field not done.

3 Including cases of both primary and secondary syphilis.

| C Amount of Treatment Received |                    | Without Bismuth           |                    | With Bismuth              |                    |
|--------------------------------|--------------------|---------------------------|--------------------|---------------------------|--------------------|
| Number of Mapharsen Injections | Number of Patients | Number of Mapharsen Mg/Kg | Number of Patients | Number of Mapharsen Mg/Kg | Number of Patients |
| 10                             | 354                | 14                        | 233                | 400                       | 233                |
| 10-14                          | 367                | 15-20                     | 201                | 630                       | 201                |
| 15-20                          | 662                | 21-26                     | 918                | 1,388                     | 918                |
| 21-26                          | 2,047              | 27                        | 143                | 606                       | 143                |
| 27                             | 265                | 28                        | 47                 | 133                       | 47                 |

4 Weight unknown.

with latent syphilis. There were 151 patients previously treated for early syphilis and now diagnosed as presenting infectious relapse or serologic relapse and 8 with late recurrent syphilis. Forty per cent of the total were white and 53 per cent were male. The amounts of treatment received, expressed both as the number of injections and as the total milligrams per kilogram of body weight, are listed in table 4.

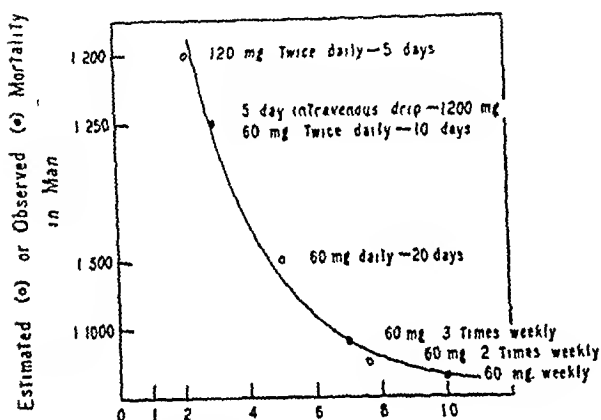


Chart 1—Mortality of various treatment schedules in man as a function of the margin of safety calculated from experimental data

dosage scales, but later with five, as indicated in table 2. The average dose was 60 mg, the maximum was arbitrarily set at 80 and the minimum at 40 mg. No distinction was made between the sexes. The duration of treatment was varied from four to twelve weeks in order to ascertain the minimum total amount of treatment which would give satisfactory results. In approximately half the clinics the patients were given weekly injections of a bismuth compound concomitant with the mapharsen in order to determine the degree to which the end results would be affected by the administration of heavy metal. Although the choice of the bismuth preparation was left to the discretion of the clinic director, 80 per cent of those receiving bismuth were given the bismuth subsalicylate at an average dose of 0.2 Gm equivalent to 0.13 Gm of bismuth metal. The clinics were urged to do quantitative rather than qualitative serologic tests in order to permit the detection of serologic relapse in patients not yet seronegative, and it was asked that such tests be repeated at least twice during the period of treatment, and monthly thereafter. It was further requested that a spinal puncture be done three months after the completion of treatment and repeated at the end of a year if feasible.

In evaluating the therapeutic results in cases of primary and secondary syphilis the following types of case were adjudged treatment failures: infectious relapse; clinical evidence of central nervous system involvement; positive Wassermann or flocculation test in the spinal fluid without clinical symptoms; serologic relapse; and cases presenting a persistently positive blood test at a more or less stationary level one year after the beginning of treatment. Cases which were strongly suggestive of reinfection rather than relapse were nevertheless considered treatment failures. Cases were adjudged serologic relapse (a) if the blood tests

proportion adjudged seronegative, clinically well and "cured" would have had a positive fluid.

The methods used in the calculation of the cumulative percentage of treatment failure, and the cumulative percentage of patients becoming and remaining seronegative are illustrated in table 5.

TOXICITY

The toxic reactions observed in the entire group of 4,823 patients are summarized in table 6, grouped in three categories. The minor subjective reactions of nausea, vomiting, malaise or headache occurred in 16

TABLE 5.—Method Used in the Calculation of the Cumulative Percentage of Treatment Failure and Cure

| Patients with primary and secondary syphilis who received 21 mg./kg. mapharsen or more with concomitant injections of bismuth |      |     |    |   |   |    |     |    |   |   |    |    |    |    |    |    |    |
|---|------|-----|----|---|---|----|-----|----|---|---|----|----|----|----|----|----|----|
| Week after beginning of treatment   |      | 1   | 2  | 3 | 4 | 5  | 6   | 7  | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| (1) No patient under observation  | (2)  | 1   | 41 | 1 | 1 | 1  | 60  | 1  | 0 | 9 | 91 | 1  | 13 | 19 | 20 | 94 | 2  |
| (3) Treatment failures observed at indicated time   | (4)  |     |    |   |   |    |     |    |   |   |    |    |    |    |    |    |    |
| (5) Apparent per cent failing   | (6)  |     |    |   |   |    |     |    |   |   |    |    |    |    |    |    |    |
| (7) Apparent per cent not failing   | (8)  | 100 |    |   |   |    |     |    |   |   |    |    |    |    |    |    |    |
| (9) Cumulative per cent not failing   | (10) |     |    |   |   |    |     |    |   |   |    |    |    |    |    |    |    |
| (11) Cumulative per cent treatment failure  | (12) |     |    |   |   |    |     |    |   |   |    |    |    |    |    |    |    |
| (13) No becoming seronegative   | (14) | 144 | 6  | 7 | 7 | 99 | 113 | 11 | 0 | 0 | 0  | 0  | 0  | 0  | 0  | 0  | 0  |
| (15) Apparent per cent becoming seronegative  | (16) | 10  | 4  | 6 | 6 | 7  | 10  | 14 | 9 | 0 | 0  | 0  | 0  | 0  | 0  | 0  | 0  |
| (17) Per cent becoming seronegative corrected for those already failed  | (18) | 10  | 4  | 6 | 6 | 7  | 10  | 14 | 9 | 0 | 0  | 0  | 0  | 0  | 0  | 0  | 0  |
| (19) Cumulative per cent becoming seronegative  | (20) | 10  | 4  | 6 | 6 | 7  | 10  | 14 | 9 | 0 | 0  | 0  | 0  | 0  | 0  | 0  | 0  |
| (21) No patient once seronegative developing treatment failure  | (22) |     |    |   |   |    |     |    |   |   |    |    |    |    |    |    |    |
| (23) Apparent per cent above failures referred to total patient number observation (1) is 100                                 | (24) |     |    |   |   |    |     |    |   |   |    |    |    |    |    |    |    |
| (25) Corrected per cent above failures referred to total patients under observation (1) is 100                                | (26) |     |    |   |   |    |     |    |   |   |    |    |    |    |    |    |    |
| (27) Cumulative per cent of total population who failed after once being seronegative   | (28) |     |    |   |   |    |     |    |   |   |    |    |    |    |    |    |    |
| (29) Cumulative per cent becoming and remaining seronegative  | (30) |     |    |   |   |    |     |    |   |   |    |    |    |    |    |    |    |

1. Figures in the column of dubious quantitative significance because of small numbers of patients still under observation.

TABLE 7.—Effect of Amount of Mapharsen Treatment (Total Mg/kg) on Number of Treatment Failures in 3,376 Cases of Primary and Secondary Syphilis

|                                      | Patients Receiving Mapharsen Alone  |      |      |       | Patients Receiving Bismuth Plus Mapharsen |        |       |       | Total |
|--------------------------------------|---|------|------|-------|---|--------|-------|-------|-------|
|                                      | Total   | <1   | 1-10 | 11-20 | Total                                     | Dosage | Mg/kg | 21-25 |       |
| Number of patients treated           | 3,376   | 29   | 14   | 66    | 34  | 113    | 42    | 4     | 241   |
| Mean period of observation (weeks)   | 24  | 21   | 24   | 24    | 28  | 23     | 7     | 22    | 21    |
| Reinfection or relapse               | 8   | 19   | 0    | 1     | 6   | 61     | 1     | 6     | 9     |
| Neurosyphilis                        | 51  | 8    | 4    | 4     | 6   | 62     | 1     | 11    | 19    |
| Clinical neurosyphilis               | 12  | 1    | 1    | 4     | 10  | 10     | 1     | 1     | 7     |
| Spinal fluid positive (asymptomatic) | 14  | 5    | 2    | 2     | 7   | 7      | 4     | 3     | 2     |
| Serologic failure                    | 14  | 7    | 2    | 2     | 12  | 12     | 1     | 1     | 2     |
| Total treatment failures             | 208   | 44   | 12   | 4     | 9   | 152    | 4     | 14    | 66    |
| Apparent incidence of failure %      | 6.2   | 14.8 | 10   | 14.8  | 9.6                                       | 13.4   | 6.6   | 10    | 11    |
| Comment                              | In patients not receiving bismuth there was a uniformly high incidence of treatment failure. Even large amounts of mapharsen alone were not as effective as moderate amounts of mapharsen supplemented by 1 to 5 injections of bismuth. |      |      |       |   |        |       |       |       |

1. Fifty per cent of patients receiving bismuth were given the subcutaneous, once weekly, in average dose of 0.2 Gm (0.13 Gm of bismuth metol). Total number of bismuth injections was approximately one third of the total mapharsen dosage in milligrams per kilogram. For the corrected cumulative percentage of treatment failures and cures in relation to the method of treatment compare charts 1, 2 and 3.

2. The figures are of relative and not of absolute significance since they refer the failures to the original number of patients treated and do not take into consideration the fact that the number of patients under observation fell off steadily after treatment was completed.

reverted to positive after having been negative for a significant period of time and remained so or (b) if the serum tests without ever having become negative showed a definite and continuing upward trend in the quantitative reagin titer. The fact that in only 30 per cent of the cases of early syphilis was a spinal puncture done three months or longer after beginning treatment is not believed to affect the apparent end results materially. Every one of the patients with a positive spinal fluid for clinical evidence of neurosyphilis had a positive serum test. It follows that of those patients who did not have a spinal puncture only a negligible

per cent of the patients and approximately 15 times more often in women than in men. The incidence of these reactions differed widely among individual clinics and psychologic factors as well as the varying quality of medical care undoubtedly contributed to that varying frequency. In 23 patients or 1 in every 210 treated the repetition and severity of these ordinarily minor complaints made it necessary to discontinue treatment.

In 106 of the patients a syndrome was observed suggestive of sensitization to mapharsen and resembling that observed in some patients receiving a sulfonamide compound. The symptoms varied from patient to

patient and occurred in varying combination. In order of decreasing frequency they consisted of fever, rash, vomiting, headache, conjunctivitis and photophobia, and facial edema. Most of these patients recovered completely in forty-eight to seventy-two hours. In 24 of 62 patients tested in that respect soon after recovery

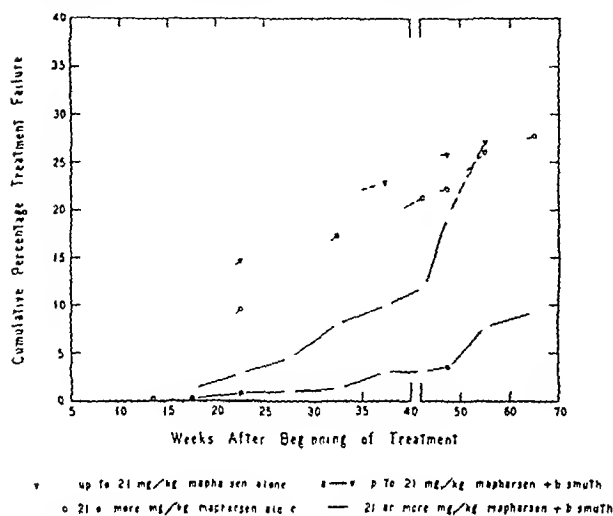


Chart 2—Cumulative percentage of treatment failure in patients treated triweekly in relation to the total dose of mapharsen and bismuth

actual sensitization to mapharsen was demonstrated in that small doses precipitated the same syndrome, and in a total of 54 patients, or 1 in every 90 patients treated, it was necessary to discontinue arsenical treatment. It is of interest that 70 per cent of these reactions occurred in the second to fourth week of treatment and 60 per cent in the second week between the eighth and the fourteenth day of treatment. The time period coupled with the high frequency of an associated toxic rash, suggests a close relationship of this syndrome to so called erythema of the ninth day.

Serious toxic reactions occurred in a total of 39 patients. They consisted of 2 cases of toxic encephalopathy (1/2,400), 7 cases of arsenical dermatitis (1/700), 4 of nephritis (1/1,200), 5 of blood dyscrasia (1/950) and, as the most frequent complication, 21 cases of jaundice (1/250). As with the "sensitization syndrome" 40 per cent of these serious reactions occurred in the second week of treatment and 75 per cent in the second to the fourth week. In general, toxic reactions occurred most frequently during the second week of treatment, beyond that period there was progressively decreasing likelihood of a serious toxic complication.

There were four deaths in the entire series of 4,823 patients: 2 cases of nephritis, 1 of toxic encephalopathy and 1 of jaundice, all occurring in the second to fourth week of treatment. This mortality of 1/1,200 is reasonably close to that anticipated on the basis of animal data but should be further qualified in that two and perhaps three, of these deaths may have been preventable. With reasonably good medical care the mortality on the triweekly schedule may therefore be 1/2,000 or less rather than 1/1,200.

Unlike the mild reactions to mapharsen and unlike the syndrome suggestive of sensitization to mapharsen, serious toxic reactions tended to occur in women, in young patients and in Negroes. Thus, all four deaths were in Negro women, 3 of whom were under 18

This tendency for serious reactions to occur in women is of particular interest in relation to the treatment of syphilis in the armed forces. In the 2,583 men represented in the present study no deaths occurred; there were 14 serious reactions, including 11 cases of jaundice and treatment had to be discontinued for any reason in a total of only 48.

#### THERAPEUTIC RESULTS IN EARLY SYPHILIS

When the mapharsen was given alone without bismuth the results were uniformly poor regardless of the amount of arsenical administered. The number of observed failures per hundred patients treated differed but little in patients receiving a total of less than 15, 15 to 20, 21 to 26 or 27 or more mg of mapharsen per kilogram (15, 9, 15 and 10 per cent treatment failures respectively, cf. table 7). However, when bismuth was given along with the mapharsen the results were consistently better, and the optimum results far exceeded those it was possible to attain with mapharsen alone. In patients receiving a total of 15 to 20, 21 to 26 and 27 or more mg of mapharsen per kilogram plus an average of six, eight and ten injections of bismuth respectively, the incidence of observed treatment failures was 6.6, 1.5 and 1.1 per cent respectively.

These figures are of relative rather than absolute significance because of the large proportion of patients who disappeared from observation. A statistically more reliable comparison is afforded by the cumulative percentage of treatment failure and the cumulative percentage of cure calculated by the method illustrated in table 5. The results are in complete agreement with those obtained by the crude method of analysis that has been outlined. As shown in charts 2 and 3, mapharsen alone (the open circles and triangles in charts 2 and 3) gave uniformly poor results.

The addition of an average of only five injections of bismuth to the smaller amount of mapharsen (less than

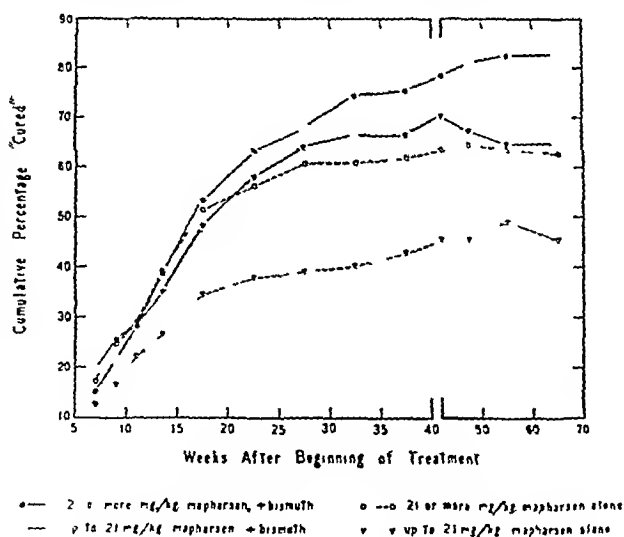


Chart 3—Cumulative percentage of cure in patients treated triweekly in relation to the total dose of mapharsen and bismuth

21 mg per kilogram) significantly decreased the percentage of definite failure and increased the percentage of cure in fifty to sixty weeks from 49 to 65. When an average of nine injections of bismuth was added to the larger amount of mapharsen (21 mg per kilogram or more) the cumulative percentage of treatment failure seventy weeks after beginning treatment fell to 9.3 and

82 per cent of the patients were seronegative and "cured" with the remainder of the cases still pending (closed circles in charts 2 and 3)

In summary at least in the triweekly schedule, and perhaps in other intensified forms of arsenotherapy as

mapharsen per kilogram plus approximately six injections of bismuth) The two drugs are apparently not merely additive but actually synergistic in their therapeutic effects This suggests that they may exert their spirocheticidal action by affecting different vital functions of the organism

The question may be raised as to whether the striking adjuvant role of bismuth may not be more apparent than real It is conceivable that the deposit of insoluble bismuth subsalicylate serves merely to postpone infectious or serologic relapse Although this is unlikely, and although the rate at which patients failed gave no indication that such was the case, several years' observation will be necessary before this possibility can be dismissed from consideration

MISCELLANEOUS CONSIDERATIONS

*Type of Failure*—As indicated in table 6, infectious relapse and serologic relapse accounted for 43 and 40 per cent of the observed treatment failures A large proportion of the serologic relapses were diagnosed in patients who had never been seronegative, by virtue of a sustained and continuing rise in the serum reagin content, quantitatively titrated Central nervous system involvement accounted for an additional 13 per cent, half of these being asymptomatic, and 7 per cent of the

TABLE 8—Incidence of Observed Treatment Failures<sup>1</sup> in Relation to Amounts of Bismuth and Mapharsen Received

| Total Mapharsen Mg/kg | Incidence (%) of Treatment Failure in Patients Receiving Indicated Number of Bismuth Injections |         |          |                  |
|-----------------------|---|---------|----------|------------------|
|                       | None (796)  | 14 (53) | 28 (881) | 9 and over (819) |
| 1-20                  | 9.1   |         | 7.7      | 2.6              |
| 21-36                 | 15  |         | 1.8      | 1.7              |
| 2 and over            | 9.6   |         |          | 1.1              |
| Total                 | 13.2  | 8.4     | 4.0      | 1.4              |

1 Although the actual cumulative percentage of treatment failure was several times the apparent incidence as listed above, these figures do reflect the relative efficacy of the various treatment schedules

2 Results not significant because of small number of patients

well mapharsen should be supplemented by bismuth for optimum results In the absence of heavy metal a relatively small amount of mapharsen (up to 20 mg per kilogram averaging a total of 800 mg) "cured" half of the patients, and even twice that amount, in

TABLE 9—Analysis of Treatment Failures in 908 Cases of Primary and Secondary Syphilis Treated with a Total of 21.26 Mg of Mapharsen per Kilogram and Concurrent Injections of Bismuth

|  | Totals | Race and Sex |     |       |     | Initial Serologic Titer <sup>1</sup> |     |     |     | Diagnosis         |                   |             | Duration of Treatment Days |       |     |
|--|--------|--------------|-----|-------|-----|--------------------------------------|-----|-----|-----|-------------------|-------------------|-------------|----------------------------|-------|-----|
|  |        | White        |     | Negro |     |                                      |     |     |     | Sero neg Pri mary | Sero pos Pri mary | Sec on dary | 68                         | 52-76 | 71  |
|  |        | ♂            | ♀   | ♂     | ♀   | 0                                    | 17  | 831 | 32  |                   |                   |             |                            |       |     |
| Number of patients                     | 908    | 244          | 244 | 89    | 371 | 70                                   | 76  | 131 | 248 | 70                | 282               | 551         | 300                        | 310   | 288 |
| Mean period of observation weeks       | 20     | 16           | 24  | 28    | 20  |                                      |     |     |     |                   |                   |             |                            |       |     |
| Number of treatment failures all types | 14     | 6            | 6   | 2     | 2   | 1                                    | 2   | 1   | 2   | 1                 | 2                 | 11          | 5                          | 6     | 10  |
| Apparent incidence treatment failures  | 1.6    | 2.4          | 2.4 | 2.0   | 1.0 | 1.3                                  | 2.6 | 0.8 | 1.2 | 1.3               | 0.7               | 2.0         | 1.5                        | 1.9   | 1.0 |

Comment: No demonstrable correlation between the incidence of observed treatment failure and either race, sex, initial serologic titer or the duration of treatment. As in the entire series, fewer failures were observed in seropositive primary syphilis than in secondary syphilis. There was certainly no evidence that the latter has a more favorable prognosis because of a putative immunity.

1 Titer = highest dilution of serum giving a definitely positive result

average total of approximately 1,600 mg, "cured" less than two thirds. However, with simultaneous weekly injections of bismuth (0.2 Gm of bismuth subsalicylate), triweekly injections of mapharsen at individual doses of approximately 1 mg per kilogram (40 to 80 mg per injection) continued for nine to twelve weeks will apparently "cure" at least 80 per cent, and probably closer to 90 per cent, of cases of early syphilis.

*Relative Importance of Mapharsen and Bismuth*—Given the fact that the simultaneous administration of bismuth so materially affected the results attained by the triweekly administration of mapharsen, the question arises as to the relative importance of the arsenical and of the bismuth. The data of table 7 provide a partial answer to that question. When both mapharsen and bismuth were used, an increase in the amount of either drug led to more favorable results. A relatively small amount of mapharsen (15 to 20 mg per kilogram) supplemented by nine injections or more of bismuth gave results comparable to those achieved by larger amounts of mapharsen with smaller amounts of bismuth. In that sense the drugs were mutually supplementary. However, even the largest amount of mapharsen alone (27 or more mg per kilogram, averaging 30) was less effective than relatively small amounts of mapharsen and bismuth used in conjunction (15 to 20 mg of

failures were of patients whose serologic findings were positive at a stationary level one year after the beginning of treatment. The degree to which the central nervous system failures represented cases of central nervous system involvement at the time treatment was begun is an open question.

*Outcome as Influenced by Stage of Infection*—On the basis of previous studies, the prognosis of early syphilis is generally considered better in secondary syphilis than in the seropositive primary stage. In explanation it is usually assumed that the patient with secondary syphilis has had time to develop a certain degree of immunity. However, the present study gave no indication of a more favorable prognosis in secondary syphilis.

*Relapsing and Recurrent Syphilis*—In patients with previously treated early syphilis who had relapsed, the number of treatment failures significantly exceeded those obtained in previously untreated syphilis, but only when mapharsen was given alone, without bismuth. In those patients who received mapharsen plus bismuth the prognosis was apparently no less favorable than in previously untreated cases. However, the number of

7 Moore, J. E. *The Modern Treatment of Syphilis*, ed. 2. Springfield, Ill.: Charles C. Thomas Publisher, 1941. pp. 581-588.



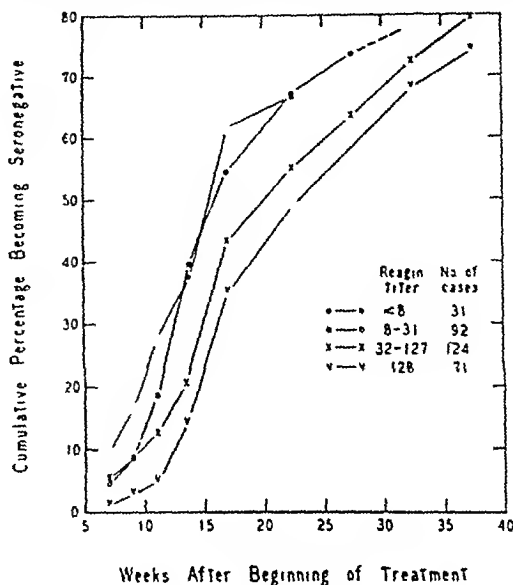
patients was small, and further experience and observation may alter the picture unfavorably (table 10)

**Rate of Serologic Reversal**—Although, as shown in table 9, the initial serologic titer had no effect on the prognosis of early syphilis, it did materially affect the time required for serologic reversal. As is shown in chart 4, in a group of patients who received similar amounts of treatment (21 to 26 mg of mapharsen, plus bismuth), those with a low reagin titer attained seronegativity considerably faster, on the average, than those with initially high titers. It is of interest that the rate at which the serum reagin titer fell, and the rate at which patients became seronegative, were the same in this semi-intensive schedule of treatment as in the traditional method of weekly injections.

The question comes up as to the relative efficacy of treatment when the same total dosage of mapharsen was spread over a longer time period, either because treatment was irregular or because the individual dose was smaller than that indicated in table 2. On the basis of the animal data<sup>2</sup> one would have anticipated little or no difference in the end results, and that has been the experience in the present study. As shown in the last section of table 9, in patients receiving similar total amounts of treatment (21 to 26 mg of mapharsen per kilogram), all of whom also received bismuth, there was no significant difference in the number of observed failures if treatment was completed in less than fifty-eight days (averaging fifty-four), in fifty-eight to seventy-seven days (averaging sixty-six) or in more than seventy-seven days (averaging eighty-one). Within these limits, occasional lapses in treatment or the use of e. g. a biweekly instead of a triweekly schedule had no effect on therapeutic efficacy. The important consideration was the total amount of drug received rather than the intensity or regularity of its administration.

**Latent Syphilis**—In 945 of the 1,190 cases of latent syphilis included in the present study, no previous treatment had been given and they were diagnosed on serologic grounds alone. In 279 of these the disease was believed to be of less than two years' duration. In this presumably most favorable group, 99 were given the schedule of treatment found to be most effective in early syphilis (more than 21 or more mg of mapharsen

rather permanent freedom from symptoms and since a relatively small amount of standard weekly treatment apparently suffices for that purpose there is every reason to anticipate that an intensive schedule of treatment which is adequate for early syphilis will be equally satisfactory for the treatment of latent syphilis. Because



318 cases of secondary syphilis similarly treated  
(21-26 mg/kg. mapharsen + bismuth)

Chart 4—Rate at which patients became seronegative in relation to the initial serum reagin titer

of the generally favorable prognosis of latent syphilis even with little or no treatment, many years' observation of a large group of patients will be necessary to establish this point.

#### SUMMARY

1. A total of 4,823 patients, including 3,394 cases of primary and secondary, 1,190 of latent and 159 of recurrent or relapsing syphilis, have been treated with triweekly injections of mapharsen at approximately 1 mg per kilogram per injection, with a maximum of 80 mg and a minimum of 40. Two thirds of the patients were given concomitant weekly injections of a bismuth compound usually bismuth sub-salicylate (0.2 Gm.)

2. Treatment had to be interrupted because of toxic reactions in a total of 106 patients. Thirty-nine of these were serious reactions, with jaundice the most common complication. Four patients died. It is believed that at least two of these deaths were preventable and that the mortality of the triweekly schedule is on the order of 1/2,000. The incidence of toxic reactions was highest in young Negro women and there were no deaths in the 2,583 men.

3. Triweekly injections of mapharsen alone without bismuth, gave uniformly poor therapeutic results regardless of dosage.

4. Triweekly injections of mapharsen in conjunction with weekly injections of bismuth proved highly effective. In patients receiving an average total of 1,600 mg (21 mg per kilogram or more) plus an average total of nine injections of bismuth, the cumulative percentage of treatment failure was 9.3 and the cumulative percentage of cure fifty to sixty weeks after the beginning of treatment was 82 per cent. A decrease in either mapharsen or bismuth to less than these amounts resulted in a higher proportion of treatment failure.

TABLE 10—The Relative Incidence of Treatment Failure in Relapsing or Recurrent Syphilis Compared with Previously Untreated Early Syphilis

|                                  | Primary and Secondary Syphilis |              | Infections Relapse Serologic Relapse and Recurrent Syphilis |              |
|----------------------------------|--------------------------------|--------------|---|--------------|
|                                  | Without Bismuth                | With Bismuth | Without Bismuth   | With Bismuth |
| Number of patients               | 1135                           | 2241         | 69  | 70           |
| Average period of observation    | 28                             | 21           | 33  | 26           |
| Number of failures               | 152                            | 56           | 21  | 2            |
| Incidence of apparent failure, % | 13.4                           | 2.5          | 23.0  | 2.8          |

Comment. In patients who received only mapharsen the relapsing group gave significantly more failures. In patients who received bismuth as well as mapharsen there was no significant difference in the prognosis of recurrent or relapsing syphilis and previously untreated cases of early syphilis.

per kilogram with simultaneous weekly injections of bismuth). Of these only 25 had become seronegative during a varying period of observation. This is consistent with the results obtained with routine standard methods of treatment.<sup>6</sup> However, since the goal of treatment in latent syphilis is not seronegativity but

5 Although these results are tentative based on the prolonged observation of as yet a small proportion of the total patients treated it is believed that twelve weekly injections of mapharsen at approximately 1 mg per kilogram combined with weekly injections of 0.2 Gm of bismuth subsalicylate and continued for nine to twelve weeks will probably 'cure' 85 to 90 per cent of cases of early syphilis.

6 (a) The initial reagin titer affected the rate at which seronegativity was obtained but did not affect the ultimate percentage "cured." (b) Within fairly wide limits (fifty-four to eighty-one days) the total duration of treatment also had no effect on the end results. Within that time period occasional lapses in treatment or smaller individual dosages could be ignored provided the patient eventually received the scheduled total amount of drug. (c) With equal amounts of treatment secondary syphilis gave significantly more treatment failures than did seropositive primary syphilis.

7 The efficacy of this schedule in the prevention of congenital syphilis and its efficacy in latent syphilis are under continued study.

### INTENSIVE ARSPHENAMINE

A. BENSON CANNON, M.D.

GEROME K. FISHER, M.D.

JUAN J. RODRIGUEZ, M.D.

GUILA F. BEATTIE, M.D.

AND

ELLENIA MAECHLING, Ph.D.

NEW YORK

We are presenting a report of 332 cases of early syphilis treated in the past three years with massive doses of arsphenamine by the syringe method, the treatment period being five to six days. Arsphenamine was chosen because of our experience in the rapid healing of syphilitic lesions and the spectacular cures we had witnessed with this drug in early syphilis when other arsenicals had failed, and again because of the excellent results we had obtained in the treatment of early syphilis at the Vanderbilt Clinic over a period of some twelve years with this arsenical. Such observations encouraged us to think that some one should evaluate this drug in an intensive treatment program of early syphilis, i.e. the five day treatment.

We were prompted to undertake this study by the encouraging results of Leifer, Chargin and Hyman—who treated 382 patients by the intravenous drip method with neoarsphenamine and mapharsen. They reported a completely satisfactory course in 81 per cent of their cases. Further study was carried on by various investigators under this plan or modification of Chargin's

technic. Rattner<sup>3</sup> used mapharsen by the intravenous drip method in his series. Schoch and Alexander<sup>4</sup> used mapharsen by the syringe method daily over periods of two to four weeks. Of 103 patients they followed for six to eighteen months 77 per cent are in a satisfactory condition. Shaffer<sup>5</sup> used mapharsen in his series of 430 patients. Cole<sup>6</sup> including the results of his own work has summarized the studies of these and other investigators including a discussion of some work done by Dr. Rattner subsequent to that mentioned and not reported elsewhere.

### SELECTION AND CARE OF PATIENTS

All patients treated were men between the ages of 15 and 64 years chiefly young, healthy men. One patient had active pulmonary tuberculosis, several had hypertension, 1 had a history of jaundice and a number had various skin eruptions other than syphilitic. Several were obese, and a few were thin and emaciated. All these seemingly defective patients were considered poor risks, but they tolerated the treatment as well, apparently, as the otherwise healthy individuals. Two thirds were Negroes. Most of the cases were supplied by the board of health.

All patients were hospitalized for treatment. The ward was under constant nursing care day and night and a team of physicians gave the treatments, made all tests and closely observed each patient while in the hospital. The injections were given at three to four hour intervals during the daytime.

Every patient had a complete history and physical examination on admission. Two hundred and ninety-six had positive dark fields and these dark field examinations were repeated daily until they were negative. Sixty-one cases were seronegative. Titrated blood Wassermann reactions were done on patients entering the ward and before discharge. Only 19 were found to have positive spinal fluid Wassermann reactions. These spinal fluid examinations were repeated at the completion of treatment. The blood and platelet counts were within normal limits. These counts were repeated after completion of the course of treatment. Albuminuria was present in 7 cases on admission. Urinalyses were done daily on all patients during the time of treatment. Eighty-nine cephalin flocculation reactions were slightly to strongly positive on admission and became negative in one week to several months following discharge from the hospital. Dr. Franklin Hanger, who has made a study of post-arsphenamine liver damage and in whose laboratory the latter tests were done stated (in a personal communication) that these positive reactions before treatment possibly signified liver damage from syphilis. The serum bilirubin and the blood urea nitrogen were found to be within normal limits on admission. These and the cephalin flocculation reactions were repeated when indicated. Frei and Ducrey tests and urethral cultures were done on all patients. Fifty-nine patients were found to have a slightly to a strongly positive Frei test when read at forty-eight hours. Sixty-nine had a

The bed in the ward were lent by the Department of Medicine, Dr. Franklin M. Hanger, associate professor of medicine, did all of the functional liver tests.

From the Department of Dermatology, Columbia University College of Physicians and Surgeons and the Presbyterian Hospital.

Dr. Walter W. Palmer, professor of medicine and Dr. J. Gardner Hopkins, professor of dermatology, served in an advisory capacity.

Read in a panel discussion on "Intensive Therapy of Early Syphilis with Special Reference to Arsenotherapy, Either Alone or Combined with Other Agents," before the Section on Dermatology and Syphilology at the Ninety-Fourth Annual Session of the American Medical Association, Chicago, June 15, 1944.

J. Cannon, A. B. Optimal Treatment for Early Syphilis Based on a Twenty-Year Trial of Arsphenamine, Bismuth and Mercury Preparation. *Am. J. Syph. Gonorr. & Ven. Dis.* 21: 15, 1937.

2. Leifer, W., Chargin, L. and Hyman, H. T. Massive Dose Arsenotherapy of Early Syphilis by Intravenous Drip Method. *J. A. M. A.* 117: 114 (Oct. 4) 1941.

3. Rattner, H. Five Day Treatment of Syphilis. *Illinois M. J.* 51: 29, 1942.

4. Schoch, A. G. and Alexander, I. J. Short Term Intensive Arsenotherapy of Early Syphilis. Preliminary Report. *Am. J. Syph. Gonorr. & Ven. Dis.* 25: 60, 1941. Intensive Arsenotherapy of Early Syphilis. Follow Up Report on the Ten Day Syringe Method of Treatment. *Arch. Dermat. & Syph.* 46: 125 (July) 1942.

5. Shaffer, L. W. and Silchow, P. T. Report of Social Hygiene Division, Detroit Department of Health, September 1942.

6. Cole, H. A., Heisel, E. B. and Stroud, G. III. Intensive Methods of Treating Syphilis. *J. A. M. A.* 123: 253 (Oct. 2) 1943.

7. Hanger, F. M. Jr. and Cutman, A. B. Post-arsphenamine Jaundice. *J. A. M. A.* 115: 62 (July 27) 1940.

slightly to a strongly positive Ducrey skin test at forty-eight hours, and 21 had positive urethral cultures for gonorrheal organisms. No evidence of syphilitic involvement was found on x-ray examination of the heart or aorta. Electrocardiograms were done on the first half of the series. No noteworthy abnormalities were discovered. Rectal temperature, pulse rate and respiration were recorded on each patient every four hours.

A record was kept of the time required for spirochetes to disappear from surface lesions, of the healing of lesions, of the disappearance of glands and of all reactions to treatment.

After discharge from the hospital the patients were followed weekly in the clinic, where physical examinations and titrated blood Wassermann reactions were done. After the initial period of six weeks the patients were followed monthly.

#### TREATMENT PLAN

Our procedure consisted in giving arsphenamine in 2 per cent solution by the syringe method three to four times daily for five to six days depending on the particular variation of our plan. The total dosage ranged from 1.5 Gm. in the beginning of the experiment to

seventh patient so it was decided that the amount of arsenic could be increased. In order to do this the treatment was extended to six days instead of five with a corresponding increase in the amount of arsphenamine in each weight group.

*Plan Variation 2*—This increase gave the light weights a total of 1.8 Gm., the middle weights 2.55 Gm. and the heavy weights 3.45 Gm.

Forty cases were treated in this group. Sixty per cent had negative dark fields after one day's treatment, 83 per cent were negative after the second day and 95 per cent were negative after the third day. One patient was dark field positive for as long as five days. The reactions remained mild except for the second case of encephalitis, the fifth patient treated under this new scheme. It soon became evident that some radical change must be made in the treatment program in order to hasten the disappearance of spirochetes from the lesions and to prevent mucocutaneous relapses.

*Plan Variation 3*—The first radical departure from the original treatment program was to give the largest doses on the first day and gradually diminish the amount toward the end of the treatment. We give the injections four times a day and increased the amount

TABLE 1—Plan Variations in the Treatment with Arsphenamine

| Plan Variation | Number of Cases Treated | Number of Days Treated | Number of Injections per Day | Total Amount Arsphenamine Given 1st Day (Gm.) | Total Amount Arsphenamine Given Last Day (Gm.) | Total Amount Arsphenamine Given in the Course |  |                                       |
|----------------|-------------------------|------------------------|------------------------------|---|--|---|--|---------------------------------------|
|                |                         |                        |                              |   |  | Light Weight 100 Lb. to 135 Lb. (Gm.)         | Medium Weight 135 Lb. to 165 Lb. (Gm.) | Heavy Weight 165 Lb. to 220 Lb. (Gm.) |
| 1              | 47                      | 5                      | 3                            | 0.7 to 0.4                                    | 0.7 to 0.6                                     | 15  | 21                                     | 5                                     |
| 2              | 40                      | 6                      | 3                            | 0.7 to 0.4                                    | 0.3 to 0.6                                     | 18  | 15                                     | 4                                     |
| 3              | 60                      | 6                      | 4                            | 0.4 to 1.0                                    | 0.3 to 0.3                                     | 20  | 20                                     | 40                                    |
| 4              | 102                     | 6                      | 4                            | 0.6 to 1.0                                    | 0.4  | 30  | 30                                     | 6                                     |
| 5*             | 4                       | 6                      | 4                            | 1.0   | 1.0  |   | 3.0                                    |                                       |
| 6              | 15                      | 6                      | 4                            | 1.0   | 0.4  | 24  | 3.0                                    | 14                                    |
| 7              | 37                      | 6                      | 4                            | 1.0   | 0.4  | 22  | 3.6                                    | 4.0                                   |

\* Plan 5 consisted in giving 1.0 Gm. of arsphenamine in four divided doses a day on three alternate days.

4.4 Gm. in the latter part of the treatment program. As arsphenamine had never been used in the five day treatment program, we began cautiously with small doses. Experience showed that the reactions were chiefly of a mild sort, so we increased the number of injections from three to four times a day, and the number of days from five to six.

#### VARIATIONS OF TREATMENT PLAN

We employed seven different treatment plans (table 1), each new plan having been worked out after a study of the results of the preceding one. The dosage was gaged according to the weight of the patient, each group being divided into light weight (100 to 135 pounds, or 45 to 61 Kg.) medium weight (135 to 165 pounds, or 61 to 75 Kg.) and heavy weight (165 to 220 pounds, or 75 to 98 Kg.) so that the light weight received a total of 1.5 Gm., the middle weight 2.1 Gm. and the heavy weight 2.85 Gm. of arsphenamine, given three times a day for five days. The dose was increased each day.

Forty-seven patients were treated under this plan. At the end of the first day's treatment, 52.5 per cent of the patients had negative dark fields. Two required four days before their dark fields became negative. Mucocutaneous relapses with positive dark fields began to appear. It quickly became evident that this plan had proved a failure. The reactions had been of an exceedingly mild type except for an encephalitis in the forty-

seventh patient. So it was decided that the amount of arsenic could be increased. In order to do this the treatment was extended to six days instead of five with a corresponding increase in the amount of arsphenamine in each weight group. We were prompted to begin the treatment with large doses on the first day because of the lack of serious reactions and of the patient's good general condition at this period of treatment. Furthermore we were convinced that the greater the initial dosage in the first day or two of treatment the more favorable would be the result. Large doses in the beginning had the added advantage that, should the treatment have to be discontinued because of reactions, the patient would already have received a substantial part of his treatment in the first two days, virtually half the total amount of arsphenamine planned for the course.

Of the 60 patients treated under this third plan 96 per cent were negative on dark field examination after the first day of treatment and 100 per cent were negative at the end of the second day, a decided improvement over the other two plans. The serologic responses were most encouraging, a number of patients becoming negative and others showing pronounced reduction in the intensity of the reactions. While frequency and intensity of all the reactions were somewhat increased, especially the initial rise in temperature, they were not serious. Even though the individual had a Herxheimer reaction with a temperature of 104.2 F., the injection of arsphenamine was given. The next morning the patient's temperature would be normal and he would be none the worse.

After six months infectious relapses began to make their appearance. A study was then made of all cases treated to date in each variation of our plan of treatment and it was observed that no patient who had received as much as 30 Gm of arsphenamine had suffered a relapse. It appeared that if each patient could be given a minimum of 30 Gm that might be the answer to our problem.

**Plan Variation 4**—This was devised whereby the light weight and middle weight groups each received 30 Gm, and the heavy weight group 36 Gm. One hundred and three patients were treated in this plan. All except 1 had a negative dark field after the first day of treatment. While the incidence of initial febrile reactions remained about the same as in the previous group treated under plan 3, there was a 6 per cent increase in toxic erythema. Optimism over this plan of treatment was soon dispelled by the appearance of mucocutaneous relapses in spite of the minimum 30 Gm dose that had been given.

TABLE 2—Time Required for Dark Fields to Become Negative

| Plan Variation | Dark Field to Itive Cases | Negative After 1st Day per Cent | Negative After 2d Day per Cent | Negative After 3d Day per Cent | Negative After 4th Day per Cent | Negative After 5th Day per Cent |
|----------------|---------------------------|---------------------------------|--------------------------------|--------------------------------|---------------------------------|---------------------------------|
| 1              | 40                        | 52.5                            | 90.0                           | 99.0                           | 100.0                           |                                 |
| 2              | 33                        | 60.5                            | 83.7                           | 99.2                           | 99.9                            | 100.0                           |
| 3              | 30                        | 94.0                            | 100.0                          |                                |                                 |                                 |
| 4              | 84                        | 88.9                            | 100.0                          |                                |                                 |                                 |
| 5              | 27                        | 100.0                           |                                |                                |                                 |                                 |
| 6              | 18                        | 100.0                           |                                |                                |                                 |                                 |
| 7              | 37                        | 100.0                           |                                |                                |                                 |                                 |

TABLE 3—Outcome of Treatment

|   |     |
|---|-----|
| Number of cases   | 332 |
| Observed 6 months to 3 years  | 178 |
| Observed 9 to 11 months: outcome pending (10%)  | 3   |
| Clinically and serologically negative (66%)   | 118 |
| Unsatisfactory outcome (37%)  | 57  |
| Cutaneous relapses with positive dark field (Negative blood Wassermann before cutaneous relapse—24) | 36  |
| Serorelapse after becoming seronegative   | 9   |
| Did not become serologically negative in 12 months  | 12  |
| Failed to become serologically negative sometime during observation regardless of outcome           | 27  |

**Plan Variation 5**—Examination of the blood arsenic reports done in the cases showed a sharp rise in the arsenic level on the second day and a tendency toward a more gradual rise on the last days of the treatment. By giving 10 Gm in four divided doses every other day for a total of 30 Gm in five days, we thought that the intervening day of rest would allow for the excretion of sufficient amounts of arsenic to maintain the blood arsenic at a more even level. All 27 patients treated under this plan were middle weights. All dark fields were negative at the end of the first day's treatment and there was a very satisfactory serologic response but even though we have followed only 13 patients for six months we have had 3 mucocutaneous relapses. There was an increase both in initial rise in temperature of 16 per cent of the patients and in secondary rise in temperature of 10 per cent.

**Plan Variation 6**—Although it was apparent from the increased number of reactions that we were approaching the highest total amount of arsenic that an individual could tolerate in six days, we decided to make an increase in the amount of arsphenamine to 10 Gm the first day for each patient and gradually

reduce the dose toward the end of treatment. In this plan the light weights received a total of 34 Gm, the middle weights 40 Gm and the heavy weights 44 Gm in six days. Eighteen patients were treated according to this outline. All dark fields were negative by the completion of one day's treatment. Of the 8 patients that we have followed for at least six months, no relapses have occurred. This group has given the best clinical and serologic results of any so far treated, but at a cost of great increase in reactions. Toxic erythemas occurred in 55.5 per cent of the patients, secondary fevers in 89 per cent and toxic neuritis in 39 per cent. Although not severe, these reactions have been so frequent as to cause us to make a reduction in the dosage.

**Plan Variation 7**—The last plan variation, 7, called for 10 Gm of arsphenamine the first day in all groups of patients. For the light weight group we gave a total of 32 Gm, the middle weight group 36 Gm and the heavy weight group 40 Gm. Thirty-seven patients were treated in this group. All dark fields were negative by the end of the first twenty-four hours of treatment. Although only 2 patients in this group were followed for six months, 1 had a mucocutaneous relapse on the eighty-first day after completion of the treatment.

#### OUTCOME OF TREATMENT

The time required for the disappearance of spirochetes from the lesions varied according to the plan of treatment and the amount of arsphenamine used. In the first group of patients treated in plan 1, there were only 52.5 per cent negative dark fields after the first day of treatment. With each successive increase in the amount of arsphenamine given the first day there was a greater number of dark field negative cases after twenty-four hours. It was not until we reached the fifth plan, in which each patient received 10 Gm of arsphenamine the first day, that 100 per cent of the dark fields became negative within twenty-four hours from the beginning of treatment, as shown by table 2.

Healing of all surface lesions was prompt and usually complete by the time the patient was discharged from the ward in seven days, irrespective of the plan used. Within twenty-four hours after beginning treatment the open lesions were noticeably drier, swelling was less and epithelization of the chancre was usually complete by the time of discharge. All secondary lesions healed promptly, the macular lesions disappearing within the first one or two days. All lichenoid and papular lesions became flat and healed completely, or practically so, within a week. The enlarged glands were the last to disappear, sometimes requiring two or three months or longer to subside.

Of the 332 cases treated by all plans we shall discuss only the 178 that have been followed from six months to three years. One hundred and eighteen (66 per cent) are clinically and serologically negative and have normal spinal fluids. Three cases are still serologically positive at nine, ten and eleven months respectively. Their final outcome is pending (table 3).

Fifty-seven patients had an unsatisfactory outcome. Of this number 36 had cutaneous recurrences with recovery of spirochetes on dark field examination. Two of these cases that were dark field positive showed negative blood Wassermann reactions at the time of the recurrence. Also of these 36 cutaneous relapses 24 had become serologically negative for varying periods of time before their recurrence.

Of the 57 patients with unsatisfactory outcome 12 failed to become serologically negative by the end of a year, and 9 patients became negative but reverted to positive.

It will be seen then that of the entire 178 cases only 27 failed to become serologically negative at some time during the observation.

All cases that have not become serologically negative after one year's observation are classed as treatment failures.

Each patient had a spinal fluid examination before the treatment was begun. Of the entire group only 19 were found to have positive spinal Wassermanns in varying degrees. Four of these have become negative, 8 have been lost from observation, 4 had positive spinals at the end of one year and were successfully treated, and the remaining 3 are under observation.

Of the 57 unsuccessfully treated patients, 18 were retreated in the ward with a more intensified plan than was used originally. On the whole they tolerated the treatment better the second time, with the increased amount of drug, than they did originally. Further, it is interesting to note that all these patients except 1 had a Herxheimer reaction on the first or second day of the second course of treatment, with a rise in temperature to 100 F or over, just as they had had in the first course. Eight of these patients had temperatures that rose to 102 F or over. One patient had a nitritoid reaction with the first injection of the second course.

None of the relapsed cases that were retreated successfully in the ward have been added to the list of cures. The remaining relapsed cases were treated as ambulatory patients in the clinic. Two cases have had a second relapse.

Of all patients treated 69 are in the armed forces and 38 are in the Merchant Marine. Thirty-nine other patients are from out of the city and are classed as transients. One is in a sanatorium. Five are in defense jobs and are unable to report to the clinic. Three are dead: 1 in the ward, previously referred to, 1 killed in an automobile accident and the third dead from an unknown cause. We have lost 70 patients (20 per cent) from our clinic, and neither the social service department nor the board of health has been able to find them.

Twenty-one white and 4 Negroes, totaling 25 patients, ranging in age from 40 to 64, had an almost perfect follow-up. Forty-eight patients of the entire group treated were under 20 years of age, 42 Negro and 6 white. The latter group has been very difficult to follow.

#### LABORATORY ARSENIC STUDIES

A daily blood arsenic determination was made on each patient.<sup>8</sup> The specimen was taken each morning before the first treatment. This represented a time interval of fourteen to fifteen hours between injections.

The blood arsenic levels revealed interesting facts which we believe are worthy of special mention. Most of the patients had a blood arsenic content that was normal or only slightly increased on admission, and every patient following the first day of treatment had an increase in arsenic that reached a maximum on the third to the sixth day, depending on the amount of arsenic given in each plan. There was no uniformity in the amount of arsenic retained or in the date on which retention reached its height, even when all

patients received the same amount of arsphenamine. There was, however, a definite tendency for a greater retention of arsenic as the age incidence of the individual increased. Moreover, there was in most cases a decrease in the amount of arsenic in the urine of the older patients.

There was also a decided increase in the incidence of reactions in patients 34 to 56 years old whereas the minimum number of patients showing reactions was under 34.

The young men of both the light weight and the middle weight groups disposed of their arsenic better than did the heavy weight group, as revealed by the arsenic blood level curve. Even though the total amount of arsphenamine was less per kilogram of body weight in the heavy weight group there was greater retention than in the light weight patients who received larger amounts of arsphenamine per kilogram of body weight. This bears out our clinical experience, namely, that dosage cannot be satisfactorily gaged according to body weight. For this reason experimental work for standardization of dosage and the like on selected laboratory animals of relatively uniform physique cannot be carried across to human beings who are so different in build, age, health and so on.

The quantity of arsenic retained was virtually the same on the sixth day of treatment in the patients

TABLE 4—SEVERE REACTIONS

| Plan variation      | 1  | 2  | 3  | 4   | 5  | 6  | 7  | Total Cases |
|---------------------|----|----|----|-----|----|----|----|-------------|
| Cases treated       | 47 | 40 | 60 | 105 | 51 | 18 | 37 |             |
| Encephalitis        | 1  | 1  |    |     |    |    |    | 2           |
| Hepatitis           |    |    | 1  |     |    |    | 1  | 2           |
| Dermatitis          |    |    |    |     |    | 1  | 1  | 2           |
| Persistent neuritis |    |    | 1  | 1   |    | 1  |    | 3           |
| Leukopenia          |    | 1  | 1  |     |    |    |    | 2           |
| Death (hepatic)     |    |    |    |     |    |    | 1  | 1           |

treated with small ascending doses of arsphenamine as it was in the patients to whom large doses were given on the first day and diminished toward the sixth day. This was true when the same amount of arsenic was given in each procedure.

Three things stood out quite definitely in the study: (1) There was always a retention of arsenic long after cessation of treatment, (2) all reactors showed a greater retention of arsenic and for a longer period of time than nonreactors, (3) the more arsenic received, the greater was the retention.

Patients receiving 10 Gm of arsphenamine every other day for a total of 30 Gm in five days had a definite spiking increasing blood arsenic curve, of the same type in each case.

The complete report of our findings of arsenic in the 332 cases studied will be included in detail in another paper.

#### REACTIONS TO TREATMENT

There were 12 severe reactions, 1 ending fatally. These included 2 of encephalitis with recovery, 3 of hepatitis (1 ending in death), 1 in an alcoholic addict, 2 of exfoliative dermatitis (1 mild), 3 of persistent neuritis and 2 of blood dyscrasias (table 4).

The first case of encephalitis appeared early in the experiment in a 20 year old Negro under the first plan of treatment in which the patient was given his injections three times a day for five days, receiving a total of 21 Gm of arsphenamine. He developed a secondary rise in temperature during treatment, and on the second day his temperature reached 102.4 F. His

<sup>8</sup> Macchling E. H. and Flynn T. B. Colorimetric Determination of Small Amounts of Arsenic in Biologic Material. *J. Lab. & Clin. Med.* 15: 779, 1930. Macchling E. H. Separation and Determination of Bismuth and Arsenic in Biologic Material. *ibid.* 18: 1058, 1933.

temperature remained elevated and two days after cessation of treatment he had a slight tremor of the fingers, which was most noticeable when he was feeding himself. On the third day aphasia was apparent and he was unable to speak distinctly. He was stuporous, had a blank expression, would not obey commands and could not swallow so that he had to be fed by stomach tube. He had to be catheterized daily, and his bowels were involuntary. He was given fluid and dextrose by vein. A spinal puncture was not done. On the fourteenth day he began to improve and was discharged thirty-three days after his admission, apparently none the worse for his experience except for urinary urgency. His spinal fluid was negative before treatment and has remained so. His blood Wassermann reaction reverted to negative in two months and has remained so.

The second case of encephalitis appeared eight days after completion of treatment in a 26 year old Puerto Rican. He had received a total of 2.4 Gm of arsphenamine, given three times a day for six days. He was nauseated and vomited on the last two days of treatment and had a mild nosebleed. His treatment had to be interrupted on the sixth day because of a secondary rise in temperature. Instead of receiving 2.55 Gm of arsphenamine, as outlined, he received only 2.4 Gm. The temperature reached 104 F after the treatment was stopped and was followed by a toxic erythema of a pronounced type that had a dark red to an almost cyanotic color with purpura developing distal to where a tourniquet was applied on his arm.

On the fifteenth day of his hospitalization one day after his temperature had fallen to near normal, he developed a tremor in his hands, more pronounced on feeding himself. Within a period of twelve hours he became aphasic, could not obey commands and could not speak clearly. A lumbar puncture was attempted by another department, during which he had a convulsion. Four cc of grossly bloody fluid was obtained which was thought to be due to trauma. His treatment consisted of dextrose infusions twice daily and sedation as required. He was semicomatose for four days, when he began to improve. His recovery was complete and he was discharged thirty-three days after his admission, apparently well. His blood Wassermann reaction was negative six months after treatment.

We had no way of foretelling that either patient would have encephalitis until the first signs of tremor appeared, followed later by aphasia.

Of the 3 cases of hepatitis, the first occurred sixty-three days after discharge from the hospital.

He was a chronic alcoholic addict aged 21. His hepatitis followed one of his periodic alcoholic bouts. This patient was in treatment plan 3. He received 20 Gm of arsphenamine and tolerated his treatment well. His liver function tests had been normal on his first admission to the hospital and on subsequent clinic visits. He recovered from his hepatitis after a stay of fifteen days in the hospital. His blood Wassermann reaction became negative and remained so for about one and one-half years before he was taken into the Army.

The second patient, aged 22, developed symptoms of hepatitis three days after receiving 3.2 Gm of arsphenamine in five days. There was no history of previous icterus or disease of the liver. His temperature rose on the fifth day, and treatment was stopped immediately. His cephalin flocculation tests rose from negative to 4 plus together with a rise in temperature to 104.4 F, and a toxic erythema. Clinical jaundice was evident three days after treatment had been stopped.

The patient was nauseated throughout his treatment period and vomited. He ate very little food during this time and was given 1000 cc of 5 per cent dextrose solution intravenously twice daily, starting with the second day of treatment. His liver became enlarged and tender. The patient complained of pains all over his body and generalized weakness. He had pain also across his chest. The night of the sixth day he had a severe epistaxis, estimated at about 400 cc. His blood pressure rose from 140 systolic to 186 systolic. On the seventh day of his hospitalization he suddenly developed short, fast respirations and tachycardia. The heart and lungs were normal on physical examination except for a high right diaphragm. His temperature fell to 99.4 F. He had to be placed in an

oxygen tent. He grew gradually weaker and died on the evening of the ninth day after admission. Permission for postmortem examination could not be obtained.

The third patient, aged 31, showed no clinical evidence of jaundice but the diagnosis was made on the basis of a rise in cephalin flocculation from negative to 3 plus. Also his cholesterol blood level fell to 78 mg per hundred cubic centimeters. He had a secondary rise in temperature to 102.4 F and a toxic erythema. His total treatment was 3.2 Gm of arsphenamine in six days. He had an uneventful recovery after a stay of twenty-one days in the hospital.

A transient leukopenia was observed in 2 patients.

The first was a 25 year old Negro who had received 1.7 Gm of arsphenamine in six days. His initial leukocyte blood count fell from 5,000 to 2,480 per cubic millimeter and polymorphonuclear leukocytes fell from 74 per cent to 43 per cent. The patient was given three small blood transfusions over a period of ten days. He recovered completely. His only symptom was a daily temperature that fluctuated between 102 and 104 F. The temperature fell to 98.6 F after the blood transfusions and the blood count became normal. He has remained clinically and serologically negative for over two years.

The second patient with leukopenia, a 28 year old Negro who received 2.4 Gm of arsphenamine in six days showed symptoms of agranulocytosis on the seventeenth day after treatment had been stopped. His leukocyte count of 8,560 per cubic millimeter of blood on admission with 70 per cent polymorphonuclear leukocytes fell to 6,400 leukocytes with an absence of granular forms. Frequent blood counts in this interval revealed a gradual reduction of leukocytes and granulocytes. His recovery was spontaneous, without treatment of any kind and complete in two and a half weeks. He too has been serologically and clinically negative for more than a year.

Three patients with severe neuritis have been persistent for approximately nine months, one year and one and one-half years respectively. Their ages were 26, 31 and 34 years, and they received 3.4 Gm, 2.0 Gm and 3.0 Gm respectively. Each patient complained of 'pins and needles' sensation in the feet. They also had dull pain in the calves and knees. There was no ataxia. Two patients have continued to work. The third patient has an active pulmonary tuberculosis and is now confined to a sanatorium with that disease. All 3 are still serologically and clinically negative.

Of 2 patients with exfoliative dermatitis, the first patient, aged 33, developed dermatitis ten days after he was discharged from the hospital. He received 3.6 Gm of arsphenamine. Treatment was discontinued on the fifth day because of a rise in temperature followed by a toxic erythema. He was discharged on the fourteenth day, well except for a little itching of the forearms and flanks. After being out of the hospital ten days he developed a generalized exudative dermatitis accompanied by edema. He was readmitted and hospitalized for three weeks. He had general thinning of hair and exfoliating of all nails. This patient has remained clinically and serologically cured for approximately eight months of observation.

The second case of dermatitis developed fourteen days after discharge from the hospital. A man aged 33 was in the seventh treatment plan and tolerated his drug well except for a pain in the pit of his stomach on the last day. His total dose was 3.9 Gm of arsphenamine. This patient had a dry, itching, lichenified eruption that was generalized, with a few areas of exudation. He remained ambulatory and the condition cleared in approximately three weeks without any other symptoms.

There were numerous minor reactions, such as an initial rise in temperature the first day that appeared in a great majority of cases and returned to normal the



next day. Although the temperature may have risen to 104 F in the first afternoon, the regular injection of arsphenamine was given and the temperature would be normal the next day. Patients with secondary syphilitic manifestations often had redness and swelling of the surface lesions and tenderness of the glands. These too disappeared the following morning.

Secondary rises in temperature and toxic erythemas occurred near the end of the course, and mild neuritis usually appeared about two weeks after cessation of treatment. The neuritis was evidenced by transitory numbness and tingling of the hands and feet that usually cleared in a few days to several weeks.

The aforementioned reactions were the ones most commonly encountered, the incidence of their frequency increasing as the amount of the drug was increased. The occurrence of rise in secondary temperature over 100 F was 25 per cent in the first group treated and increased to 89 per cent in patients receiving the greatest amount of arsphenamine. Mild neuritis rose from 2 per cent to 35 per cent. Toxic erythemas increased from 8 per cent to 40 per cent. All toxic erythemas were preceded by a rise in temperature of 100 F or over.

These reactions, as a rule, were of no serious import and often were so mild as not to have been noticed by the patient or were brought out only on close questioning.

Traces of albumin were noted in the urine in 18 per cent of the cases. Ten cases showed as much as 3 plus albumin in the urine (based on 1 plus to 4 plus reaction). All these subsequently cleared following completion of treatment. Albumin, which was found in the urine of 7 patients before treatment was begun, disappeared completely in 5 of the cases during the course of the treatment.

Jaundice, without evidence of hepatitis, as demonstrated by negative cephalin flocculation reactions, was observed in 3 patients following toxic erythemas. Their recoveries were complete.

Vomiting at some time during the course of the treatment occurred in 22 per cent of the cases. Diarrhea, when present, usually occurred on the first day and was present in 10 per cent of the cases.

Still milder reactions included anorexia, nausea, abdominal pain, transient pruritus, herpes simplex, epistaxis, watering of the eyes, buzzing of the ears, herpes zoster and herpes progenitalis. All were transient.

#### OBSERVATIONS

A study of approximately 2,500 titrated Wassermann reactions showed that the higher the titer the longer the time required for the Wassermann reaction to become negative. The weaker the titer, the shorter the time. Patients with the highest titer, i.e. positive reaction in a dilution of 1:160 of the whole serum required an average of twenty-two weeks to become negative and to continue so. Cases with titers positive in a 1:80 dilution required an average of fifteen weeks to become negative, those with 1:40 dilution fourteen weeks, 1:20 dilution, eleven weeks, while those with a 1:10 dilution required 9.7 weeks to become negative. Cases showing a 4 plus reaction with a negative titer required an average of 8.9 weeks while those with a 1 plus to 3 plus Wassermann reaction required only 4.1 weeks to reverse. The patients with seronegative primaries in which the blood Wassermann reaction

became positive during the treatment required 4.4 weeks to become completely negative again.

Those patients having positive titers greater than the usual 4 plus in undiluted serum were not only more resistant to treatment but had more than twice the number of recurrences than were found in the cases in which the initial blood Wassermann reaction was 4 plus or less. 37.2 per cent in the former as compared to 14.2 per cent in the latter.

These findings indicate that the earlier the treatment is begun in the syphilitic, preferably before the Wassermann reaction becomes positive (seronegative primary), the greater the chances of cure. One would infer that a patient whose blood Wassermann reaction does not become negative within six months from the beginning of intensive arsenotherapy and remain so should in all probability be considered inadequately treated.

The foregoing observations suggest that a syphilitic patient who becomes serologically negative after the expiration of six months from the date of his last treatment does so by the retention of arsenic or by his own body resistance.

TABLE 5—Moderate Reactions

| Plan variation<br>Cases treated | 1<br>47 | 2<br>40 | 4<br>60 | 10 <sup>+</sup><br>10 <sup>+</sup> | 5 <sup>+</sup><br>14 | 1 <sup>+</sup><br>14 | 7 <sup>+</sup><br>14 |
|---------------------------------|---------|---------|---------|------------------------------------|----------------------|----------------------|----------------------|
| Primary rise in temp            | 71.5%   | 87.5%   | 90.0%   | 90.0%                              | 100.0%               | 114.0%               | 114.0%               |
| Secondary rise in temp          | 90.0%   | 22.5%   | 33.3%   | 14.0%                              | 41.4%                | 50.0%                | 50.0%                |
| Toxic erythema Miliar           | 8.5     | 12.5    | 16.6    | 1                                  | 14.3                 | 33.3                 | 50.0                 |
| Transient neuritis              | 9.1     | 7.5     | 11.4    | 1                                  | 14.3                 | 33.3                 | 50.0                 |

TABLE 6—Weeks for Blood Wassermann Reaction to Become Negative

| Positive on Admission                          | Weeks to Become Negative |
|--|--------------------------|
| 1/160 dilution titer                           | 1                        |
| 1/80 dilution titer                            | 1                        |
| 1/40 dilution titer                            | 11                       |
| 1/20 dilution titer                            | 11                       |
| 1/10 dilution titer                            | 9.7                      |
| Four plus in undiluted serum                   | 8.9                      |
| One plus to 3 plus in undiluted serum          | 4.1                      |
| Negative that became positive during treatment | 4.4                      |

Fifty-nine patients who were over 35 years of age became and have remained serologically and clinically cured to date with the exception of 3 and the latter patients had only serologic relapses. The fact that this same age group showed the greatest retention of arsenic would tend to substantiate our belief that the patients who became spontaneously cured long after cessation of treatment did so by the arsenic stored in their systems.

The percentage of cures was the same in patients who received a total of 3.0 Gm of arsphenamine given in 1.0 Gm doses on alternate days as in the patients receiving the same total amount of arsphenamine given daily.

The patients who received the largest dosage of arsphenamine (70 mg per kilogram of body weight) had no reactions either while under treatment or subsequently and to date have remained serologically and clinically negative.

All patients receiving 1.0 Gm of arsphenamine the first day were dark field negative within twenty-four hours after their first injection.

Sixty-one patients had seronegative primary lesions, 47 of whom reverted to positive while under treatment.

A large dose of arsphenamine on the first day of treatment in early syphilis was more effective than a small dose in rendering the lesions dark field negative, and the serious toxic reactions were no greater.

The greater the amount of arsphenamine given, the more frequent was the occurrence of primary fever and secondary fever, and the more severe the toxic erythema, nausea, vomiting, neuritis and dermatitis.

Patients reacting with fever or toxic erythemas showed no higher percentage of cures than those without such reactions.

All 12 patients who had severe reactions, hepatitis, encephalitis, dermatitis, blood dyscrasias and neuritis became serologically negative and have remained so.

Twenty-eight per cent of patients who had neuritis had symptoms within one week after finishing the treatment.

Both cases of encephalitis occurred with relatively small doses of arsphenamine, 2.1 and 2.4 Gm respectively, given in fractional doses three times a day in the five and six day plans. Neither patient had spinal drainage, and both recovered.

Patients in the light weight groups who received the smallest amount of arsphenamine had the fewest number of cures.

Of the 36 mucocutaneous recurrences, 10 showed chancres with enlargement of the regional glands and recovery of spirochetes from the chancre. Some initial lesions were located at different sites from the original chancre. There was no way to distinguish the lesions in the recurring mucocutaneous relapses from those observed in the original infection.

No case of thrombocytopenic purpura was found clinically, nor was there a depression in the platelet counts that were done repeatedly on all patients.

Patients receiving over 55 mg of arsphenamine per kilogram of body weight had the most satisfactory outcome.

Of the entire series treated, only 27 patients failed to become serologically negative.

#### SUMMARY

Three hundred and thirty-two patients with early syphilis were treated three or four times daily over five or six day periods with arsphenamine by the syringe method.

Of 178 patients followed for six months to approximately three years, 118 have remained clinically cured with negative blood Wassermann and spinal fluids.

Fifty-seven patients had unsatisfactory outcomes. Thirty-six of these had mucocutaneous relapses with recovery of spirochetes.

There was one death from toxic hepatitis. Two patients had encephalitis, 3 hepatitis, including the one mentioned, 3 severe neuritis, 2 exfoliating dermatitis and 2 blood dyscrasias.

#### CONCLUSIONS

As a result of our experience in this study we are forced to the opinion that treatment of early syphilis with arsphenamine by the multiple syringe method over a period of five or six days is ineffective, dangerous, expensive and altogether unpractical.

We are convinced that any such five or six day intensive treatment plan with arsphenamine, using the multiple syringe method, must be followed by additional therapy of a heavy metal fever or both to be successful.

## COMBINED FEVER AND ARSENO-THERAPY

IN THE INTENSIVE TREATMENT OF EARLY SYPHILIS

EVAN W. THOMAS, M.D.  
AND

GIRIRUDE WEXLER, M.D.  
NEW YORK

Since Ehrlich's discovery of arsphenamine the treatment of syphilis by the intensive use of arsenical drugs has been associated with the hazard of toxic reactions. The introduction of arsenoxide, which permitted smaller doses of arsenic with equally good therapeutic results, lowered the incidence of toxic effects but failed to eliminate them.

Eagle and Hogan<sup>1</sup> in their reports on the toxicity of arsenoxide, calculated from experiments in animals, showed that the margin of safety in man was only about 30 when a total dose of 1,200 mg of mapharsen was given to the average adult in five to ten days. They considered this margin of safety dangerously low. When mapharsen alone is used in the rapid treatment of syphilis, clinical experience indicates that a total of 20 to 30 mg per kilogram of body weight is needed for the best results. From our experience at Bellevue Hospital, Eagle and Hogan were correct in considering a schedule of therapy requiring this amount of mapharsen in a five to ten day period too dangerous for routine use.

A false sense of security can easily be acquired in intensive arsenotherapy, because one may give a hundred treatment courses with relatively large amounts of mapharsen and encounter no serious difficulty only to be rudely awakened by a grave reaction in the very next treatment. So far no one has collected into a single statistical table all of the available data on the toxic effects of intensive arsenotherapy. When this is done for treatment schedules where mapharsen alone was given in five to ten days, it will probably be found that the incidence of encephalopathy has been over 1 per cent. This at least was our experience at Bellevue Hospital.

Following our first death from arsenical encephalopathy, we tried lowering the total dose of mapharsen and turned to fever to reinforce the action of these lowered doses. Originally we believed that the combination of fever with chemotherapy not only would permit smaller amounts of mapharsen but might also protect against its toxicity, as Rose, Simpson and Kendell<sup>2</sup> suggested. Consequently we completed several relatively large series of treatment courses using various combinations of mapharsen with fever induced by typhoid vaccine. Every one of these schedules called for two injections of about 60 mg of mapharsen.

Aided by grants from the United States Public Health Service from the Department of Dermatology and Syphilology, New York University College of Medicine and the Department of Dermatology and Syphilology, Third Medical Division (New York University) Bellevue Hospital.

Read in a panel discussion on Intensive Therapy of Early Syphilis with Special Reference to Arsenotherapy, Either Alone or Combined with Other Agents, before the Section on Dermatology and Syphilology at the Ninety-Fourth Annual Session of the American Medical Association, Chicago, June 15, 1944.

<sup>1</sup> Eagle H. and Hogan R. B. An Experimental Evaluation of Intensive Methods for the Treatment of Early Syphilis. Ven. Dis. Inform. 24: 33, 69 and 159, 1943.

<sup>2</sup> Rose D. L., Simpson W. M. and Kendell H. W. Quantitative Serologic Studies in Early Syphilis. III. Treatment with a Single Intensive Session of Combined Fever Chemotherapy. Ven. Dis. Inform. 23: 411, 1942.

on at least one day of treatment. The incidence of arsenical encephalopathy, however, continued to be over 1 per cent, although most of the reactions were less severe because of the lower total dose of mapharsen. Thus it was evident that fever failed to protect against the toxicity of arsenic. And, in fact, Carpenter and his co-workers<sup>3</sup> recently have reported that in animals fever actually increases the toxicity of mapharsen, but it also enhances the effectiveness of arsenotherapy and so permits smaller amounts of drug.

Table 1 shows that among 321 treatment courses given at Bellevue Hospital with mapharsen alone in a six to ten day period the incidence of encephalopathy was 1.6 per cent. In a series of 588 treatment courses with combined fever and mapharsen in which two injections of about 60 mg. of mapharsen were given on at least one day of treatment, the incidence of encephalopathy was 1.36 per cent. In the total series of 909 treatment courses encephalopathy occurred in 1.43 per cent and the mortality rate was 1 in 300.

The advantages of rapid treatment for early syphilis to both the community and the patient are so great that one might justify even a mortality of 0.3 per cent if safer means of rapid cure were unavailable. But obviously our task was to find safer schedules of treatment. As we have as yet no means of determining in advance the tolerance of individuals for arsenical drugs, we attempted to find the dose of mapharsen which could be given in five to ten days without danger to those particularly susceptible to arsenic. To determine this as well as the effectiveness of the therapy, it was necessary to give relatively large series of treatment courses. A death attributed to treatment made us change the schedule of therapy, but it was not until after our third fatality that we finally found a method of treatment which proved acceptable.

In formulating our schedules of therapy we had to consider not only the total amount of mapharsen which could safely be given in five to ten days but also the maximum single dose which could prudently be given at daily intervals. By July 1942 we determined that the maximum single dose of mapharsen per day was approximately 1 mg. per kilogram of body weight and the minimum period of treatment was ten days. With this schedule the average patient received ten daily injections of about 60 mg. of mapharsen. To reinforce treatment with this low dosage, four fevers induced by typhoid vaccine were included in the ten days.

The fevers as a rule were given on the second, fourth, sixth and eighth days. The vaccine used was obtained from the New York City Department of Health and contained 1,000 million *B. typhosus*, 750 million *B. paratyphosus* A and 750 million *B. paratyphosus* B per cubic centimeter. The first fever was induced with an intral injection of 0.1 cc. of this vaccine intravenously, the second with 0.2 cc., the third with 0.4 cc. and the last with 0.6 cc. From one and one-half to two hours after the intral injection another dose was given of equal amount in most cases. The response to these injections varied but in general these doses caused a fever of at least 104 F. for about four hours.

The induction of fever with typhoid vaccine causes discomfort to patients, but this can usually be alleviated with sedatives, such as isompecaine or if necessary

morphine. In our opinion the induction of fever with typhoid vaccine is safer than with electropexon. The latter is more effective therapeutically because more sustained and higher fevers can be produced but it is less practical because the necessary equipment and personnel for inducing fevers with electropexon are not usually available. At Bellevue Hospital we have given typhoid vaccine intravenously in over 1,650 treatment courses without a single serious reaction due to the vaccine.

In June 1943, further to enhance the effect of treatment, we added bismuth to our schedule of rapid treatment, giving intramuscular injections of 0.1 Gm. of bismuth salicylate in oil on the first, third, seventh and tenth days of therapy. Thus, our standard chart of therapy came to be as shown in table 2.

By May 1, 1944 we had given 1,163 treatment courses according to this plan without a single fatality. Only 3 very mild cases of encephalopathy were encountered. The diagnosis in all 3 was made chiefly by finding increased cells and protein in the spinal fluid. One patient developed an agranulocytosis, with complete recovery after a single transfusion with whole blood.

TABLE 1—Cerebral Reactions

|                             | Mapharsen Only | Mapharsen and Typhoid 7-8 Day Treatment | Total      |
|-----------------------------|----------------|---|------------|
| Number of treatment courses | 321            | 588                                     | 909        |
| Encephalopathy              | 5 (1.6%)       | 8 (1.36%)                               | 13 (1.43%) |
| Deaths                      | 1 (0.3%)       | 2 (0.4%)                                | 3 (0.33%)  |

TABLE 2—Ten Day Plan of Treatment

|                                      | 1 | 2   | 3 | 4   | 5 | 6   | 7 | 8   | 9 | 10 |
|--------------------------------------|---|-----|---|-----|---|-----|---|-----|---|----|
| Mapharsen 1 mg. per kilogram         | x | x   | x | x   | x | x   | x | x   | x | x  |
| Bismuth salicylate in oil 100 mg.    |   |     |   |     |   |     |   |     |   |    |
| Typhoid vaccine in cubic centimeters |   | 0.1 |   | 0.2 |   | 0.4 |   | 0.6 |   |    |

Unfortunately, this record was broken even as this paper was being written. On May 5, 1944 a white woman with secondary syphilis, who was six months pregnant, developed encephalopathy following her fifth injection of 70 mg. of mapharsen and died. During the five days of treatment she had had only one fever induced by typhoid vaccine. This tragic accident again shows that, when arsenical drugs are used, there is always the danger of a fatal accident in a person who has a definite sensitivity to arsenic. Fatal arsenical encephalopathy has occurred after only two injections of neoarsphenamine given five days apart, and as long as syphilis is treated with arsenic the rule of constant alertness by those administering the treatment can never be broken. Arsenical encephalopathy strikes like a bolt from the blue, but in many cases fatal reactions can be prevented by the caution which comes from experience. We have found that the apprehensive, worrying type of individual demands special attention. It is also probable that pregnancy adds to the risk of intensive arsenotherapy. Our recent fatality occurred in a woman who was both apprehensive and pregnant. In addition her treatment was started at a time of confusion when the syphilis service at Bellevue Hospital was being moved to new quarters.

By May 15, 1944 we had completed 1,181 treatment courses with the schedule of therapy we had adopted in July 1942. On this schedule the incidence of serious

<sup>3</sup> June 1, Carpenter, C. M., Bork, R. A., Warren, S. L., and Hanson, H. The One Day Treatment of Syphilis with Fever and Mapharsen. Ven. Dis. Inform. 25: 99, 1944.

reactions is very low. As shown in table 3, the incidence of encephalopathy among our patients dropped from 1.43 per cent to 0.34 and the mortality rate is 1 in 1,181 instead of 1 in 300. Since our latest and we hope, our last fatality we have slightly modified the schedule of treatment so that the mapharsen is injected in the late afternoon instead of the morning. This means that on the fever days the injection of mapharsen follows the fever instead of preceding it.

RESULTS OF TREATMENT

In compiling statistical results of treatment we have chosen six months as the minimum follow-up period which is likely to give a fairly accurate estimate of the effectiveness of the treatment. This period has been chosen both because the serologic tests of most patients with early syphilis become negative within six months after effective rapid therapy and because the majority of relapses occur within this period. A careful analysis of all the relapses or reinfections which have come to our attention at Bellevue Hospital following rapid

TABLE 3—Cerebral Reactions in Ten Day Treatment

|                            |           |
|----------------------------|-----------|
| Number of treatment course | 1181      |
| Encephalopathy             | 4 (0.34%) |
| Deaths                     | 1 (0.08%) |

TABLE 4—Results of Ten Day Treatment

|   | Total  |          |
|---|--------|----------|
|   | Number | Per Cent |
| Status of patients followed               |        |          |
| Lost (followed less than 6 months)        | 337    | 4.7      |
| Number followed 6 to 35 months            | 435    | 36.3     |
| Total number treated                      | 772    | 100.0    |
| Probable favorable result                 |        |          |
| Negative serologic reactions              | 304    | 63.9     |
| Wassermann titers less than 8             | 47     | 10.8     |
| Probable favorable results (total number) | 351    | 80.7     |
| Unfavorable results                       |        |          |
| Relapse or reinfection                    | 50     | 11.6     |
| Wassermann titers greater than 8          | 25     | 5.7      |
| Unfavorable results (total number)        | 75     | 19.3     |
| Total number followed                     | 435    | 100      |

treatment for early syphilis makes us hesitate to distinguish between relapses and reinfections in compiling statistical tables. We believe that reinfections are much more frequent than relapses after six months. Consequently an observation period of six months enables us to differentiate somewhat between a fairly valuable follow-up and one that is less revealing of the probable results of treatment.

We excluded from the analysis of therapeutic results all patients lost within the first six months of follow-up, regardless of whether or not they had negative serologic tests when last seen. Patients with Wassermann titers less than 8, as reported by the New York State Department of Health serologic laboratory, are included among those with a satisfactory status because experience has proved that almost all such patients go on to become seronegative. Patients with Wassermann titers greater than 8 six months or more after treatment are reported as unsatisfactory results although some of them may become seronegative without further treatment. This method of reporting is based on over four years of experience in observing quantitative serologic tests for syphilis. From our experience, as long as Wassermann titers of the blood are falling or remain at low levels, further treatment is not indicated.

As our case load at Bellevue Hospital has increased decidedly since August 1943, many patients treated according to the schedule of therapy we have just described have been followed for too short a period to be included in the present tabulation of results. It should also be stated that most of the patients on whom treatment results are reported did not receive bismuth in addition to mapharsen and fever. The percentage of patients kept under observation is not as high in this group as in previous groups, partly because of the increased case load but chiefly because of the increased number of sailors and transients admitted to the hospital for the rapid treatment of early syphilis.

Included among the treatment results summarized in table 4 is a relatively small group of patients who received a total of 0.54 Gm. of mapharsen and four fevers induced by typhoid vaccine prior to July 1942. This group is included because the treatment was similar and because the patients in it have been followed for longer periods.

The percentage of satisfactory results reported in table 4 is not quite as high as for most of the schedules of treatment published in our previous reports,<sup>4</sup> but the differences are not very significant and the percentage of 80.7 satisfactory results is almost identical with that given in a recent report by Schoch and Alexander, who used much larger doses of mapharsen without the addition of fever.

138 East 36th Street

ABSTRACT OF DISCUSSION

ON PAPERS OF DR. EAGLE, DR. CANNON, FISHER,  
RODRIGUEZ, BEATTIE AND MAECILING AND  
DR. THOMAS AND WEXLER

DR. HERBERT RATTNER, Chicago. It is eleven years since Dr. Chargin and his associates introduced the five day treatment with neoarsphenamine. Since then many modifications of the original method have been introduced, the one day arsenofever method, which received so much premature publicity but of which little is heard today, the use of arsenic and bismuth administered concurrently in a course of five days, the syringe method, in which the drug is administered in seven, ten or twenty days, and the three methods reported today. Dr. Cannon concluded that his method had little merit. The methods of Eagle and Thomas are equally effective with respect to their "curative" values. With both methods there was an incidence of about 1,200 or total reactions. Thomas's fatality occurred in a pregnant woman, and he suggests therefore that pregnancy adds to the risk of intensive arsenotherapy. At our hospital we treated 29 pregnant women in all stages of pregnancy by the five day method without a serious reaction, and in each case there was a normal baby. With the method of Thomas the patient is isolated, rendered noninfectious quickly, wilful lapse from treatment is reduced to a minimum and untoward reactions can be treated early. With Eagle's routine the patient continues at work, but inevitably when one relies on a patient to return of his own will there results a high lapse rate. Apparently any rapid method will cure the majority of patients who receive a sufficient amount of drug. Statistics indicate that the shorter the course of treatment the greater the element of risk, but there are times when one must assume the risk. At the Cook County Hospital we used the five day method on 480 patients without a fatality. We attribute these good results in part to our willingness to discontinue treatment temporarily for the smallest reason—persistent headache, nausea or fever, and in such cases concentrated glucose was administered liberally.

4. Thomas, E. W. and Wexler, G. Rapid Treatment of Early Syphilis with Multiple Injections of Mapharsen. Am. J. Pub. Health 31: 545, 1941. Rapid Treatment of Early Syphilis. Arch. Dermat. & Syph. 17: 533 (April) 1943.  
5. Schoch, A. G. and Alexander, L. J. Infections and Serologic Relapse During Intensive Arsenotherapy of Early Syphilis. Am. J. Syph. & Ven. Dis. 28: 221, 1944.

There are available to the physician a number of methods from which to choose that which is best suited to the patient's needs. Dr. Thomas's method is excellent for public practice. For the private patient who can be trusted to return for treatment, the Eagle method may be safer. For the traveling man who has but a week to give to treatment the five day treatment is eminently suitable. And if he wishes that there be no hospital record one could use the Schoch syringe technique.

DR E. A. STRAKOSCH, Chicago. From Oct. 31, 1942 through April 30, 1944 we started 515 patients on the Eagle-Hogan regimen at the Chicago Intensive Treatment Center. These were patients with primary, secondary or early latent syphilis who, on account of heart, chest or other pathologic findings, were ruled out from intensive fever-chemotherapy or the modification of the Schoch-Alexander treatment. 470 patients were started on the eight weeks and only 45 on the ten weeks schedule. It is noteworthy that only 211 patients completed their treatment. Of the 211 only 58 completed it on time. 132 patients became delinquent. 57 patients moved out of our jurisdiction—Army, Navy or somewhere else—and 103 patients stayed under our treatment. The range of delinquency goes up to 204 days. The treatment had to be discontinued in 12 patients because of nephrosis in 1 case, hepatitis after the fifth arsenic injection in another and severe bismuth stomatitis in 9 cases, and because of an uncooperative attitude in another. Seven patients were retreated: 1 with primary syphilis on account of serologic progression, 4 patients with secondary syphilis, 2 on account of cutaneous relapses, 2 on account of serologic relapse, and 2 patients with latent syphilis whose Kahn titer was still positive or unchanged six months after the treatment was finished. These 7 patients took their treatment irregularly and did not finish it in time. It is my opinion that the Eagle-Hogan treatment method is a more practical, safer and to some extent better method than the other methods used by us, such as the fever chemotherapy or the Schoch-Alexander method or its modifications. The definite disadvantage is the high treatment delinquency even in a treatment schedule as short as eight weeks.

DR ARTHUR CURTIS, Ann Arbor, Mich. By far the most serious complication of massive arsenotherapy is hemorrhagic encephalitis. Last fall Dr. Mallery and I, hoping to find some procedure which might enable us to anticipate the development of hemorrhagic encephalitis, set up the following experiment for patients receiving intensive arsenotherapy. On the day before treatment was begun, the first day of treatment, the third day of treatment and the fifth day of treatment as well as two days after treatment ceased, the following procedures were done: a complete blood count, bleeding time, clotting time, prothrombin time, vitamin C level, positive pressure tourniquet test (Rumpel-Leede) and a negative pressure test. With these procedures we followed 58 consecutive patients on massive arsenotherapy. During this period there were 7 cases of hemorrhagic encephalitis with 2 fatalities. All patients that developed hemorrhagic encephalitis, with the exception of 1 male, had a positive pressure tourniquet test (Rumpel-Leede) before the onset of clinical symptoms. Since that time we have used the positive pressure tourniquet test (Rumpel-Leede) on all of our patients receiving intensive arsenotherapy. Treatment is stopped immediately on the appearance of any petechial hemorrhage by this test. We have not had a case of hemorrhagic encephalitis since that time.

DR GEORGE N. SCHWEMMLEIN, Chicago. The Section on Fever-Chemotherapy at the Chicago Intensive Treatment Center is continuing the study of the use of artificial fever combined with chemotherapy in early syphilis. Past experiences have demonstrated that this type of therapy has been beneficial in neurosyphilis and congenital and ocular syphilis. It was a natural step to investigate the effect of this procedure on the early stages of syphilis. We have employed a single eight hour session of artificial fever at 105 to 106 F rectal level, with varying amounts of mapharsen and bismuth. On the basis of 1,500 patients treated the following observations may be noted. Combined artificial fever chemotherapy is effective in completely arresting the disease; the method is advantageous in that relatively small amounts of mapharsen and bismuth are employed; the use of physically induced fever is as satisfactory as other methods. From the public health standpoint infectious syphilis can be quickly controlled in the vast majority of cases.

DR J. R. DRIVER, Cleveland. It has been shown here today that a large proportion of patients treated for early infectious syphilis by short, intensive method can be rendered noninfectious and probably cured. However these methods are still experimental, are attended by more risks than the standard treatment procedures and should be used only by experts. Justification for their use lies chiefly in the control of large groups of early syphilitic infections that present a public health hazard especially in our large urban center. The great majority of syphilitic infections occur among the most ignorant and least cooperative of our population. The difficulty in the past has been to keep them under treatment long enough to render them noninfectious. Therefore the desirability of intensive treatment procedures is obvious. With the Eagle method the patients are treated in the outpatient clinics and the lapse rate due to uncooperative behavior is higher. In our treatment centers at the university hospitals and at the Cleveland City Hospital, out of 178 cases in which treatment was begun, completion of treatment was obtained in only 92. A few of these were given other forms of treatment because of reactions but the great majority were lost as a result of uncooperative behavior. The advantage of the Thomas method lies in the fact that the patients are hospitalized during the entire course of treatment. Out of 252 cases in which we have begun treatment by this method the course has been completed in 243. In 9 cases other forms of therapy were instituted because of severe reactions. In only 1 instance was treatment discontinued because of uncooperative behavior.

DR ROY L. KILL, Cleveland. Dr. Driver has explained the series of cases we have observed in Cleveland on the Thomas-Wexler routine. There was one death which Dr. George Blinkley observed wherein a batch of mapharsen was used that was outdated. This was the only serious reaction in 366 cases treated by this routine. I want to call attention to the fact that there may be some variation in different batches of mapharsen, more reactions having been noted with certain ones. The results with the Thomas-Wexler routine have been very satisfactory. The patients are hospitalized during their treatment and are free to return to work in a comparatively short time.

DR ARTHUR G. SCHOCHE, Dallas, Texas. The addition of bismuth to any arsenical regimen for the treatment of early syphilis seems to be a necessity. We thought that the addition of a rapidly acting oil soluble bismuth, bismuth ethyl camphorate should be one step beyond the use of the slowly acting insoluble bismuth salicylate in oil. So far our results have been very encouraging. Using the Eagle triweekly schedule and substituting bismuth ethyl camphorate for bismuth salicylate, appraising results on patients who have been followed for at least eight months or longer, our failure group is 53 per cent. Our successes in that particular group, which totals 131 are 94.7 per cent.

DR HARRY EAGLE, Surgeon U. S. P. H. S. The point has been raised as to the differentiation between reinfection and relapse in treated cases of early syphilis. The distinction is so difficult and the final decision is often so arbitrary that in the evaluation of a new therapeutic procedure any treated case in which dark field positive lesions develop within one to two years must be adjudged a treatment failure unless the evidence for reinfection is overwhelming. Those who are studying the intensive treatment of early syphilis are not necessarily protagonists of a particular procedure to the exclusion of all others. There are indications for highly intensive arsenotherapy and indications for more conservative treatment and the correct procedure to be followed in the individual case must be decided by the physician on its own merits. There is no universally applicable method of choice. The best record will be given by a highly intensive procedure applied to a hospitalized patient. On the triweekly schedule I have described a certain proportion of patients will necessarily be lost, but the case holding record will be better than with routine weekly treatment continued for a year and a half. It is impossible to estimate precisely what the case holding record has been in our own study because the duration of the scheduled treatment has deliberately been varied. Moreover, the proportion of patients completing their scheduled treatment has varied from as high as 90 per cent in some clinics to as low as 20 per cent in others. The degree to which patients

lapse is affected by many variables, a few of which are the type of patient, the efficiency of the social service workers and the quality of the medical care in the clinic itself. On a triweekly schedule more patients will receive an adequate amount of treatment than is the case with a weekly schedule but less than with a schedule involving hospitalization. In analyzing our results, no attempt was made to distinguish between the efficacy of the various types of bismuth preparation. Eighty per cent of the patients received bismuth subsalicylate and more than 90 per cent of those received 0.2 Gm per weekly injection. Our experimental data indicate that, except for a possible slight superiority of an oil soluble preparation, there is but little difference in the therapeutic efficacy of the several types of bismuth preparations in current use.

DR JEROME K FISHER, New York. I realize that a paper as pessimistic as ours doesn't leave much room for comment. With the advent of penicillin and the extensive use of phenarsine compounds in intensive treatment of early syphilis, you have likely heard the swan song of arsphenamine. Our report has been based on all the cases, and those include the cases in which we gave only 15 Gm. The treatment of the cases in the sixth variation of our plan, all of which we have followed for six months or longer, has been 100 per cent effective. Our study showed that not all patients require the same amount of arsphenamine. In our early studies we had secondary cases that cleared completely and have been negative for over two years with 15 Gm of arsphenamine. In our later group we had 2 seronegative primary cases in which 32 and 34 Gm of arsphenamine were administered in six days which later became seropositive, with lesions and spirochetes recovered. Another fact brought out in our paper is that the largest doses of arsphenamine can be given in the first few days of treatment when the patient is in the best condition. That was the reason for the reversing of our schedule, so that in the allotted time, should a patient be ill, he would have the greatest quantity in his system. We retreated 18 patients. None of these have been included in the present report as having a second course of treatment or have been entered into any of the calculations. Of those 18 cases, all but 1 presented a Herxheimer reaction on the first day of the second course of treatment. In 8 of them the temperature ranged from 102 to 104 F. The paper, although unfavorable so far as the outcome of the use of arsphenamine is concerned, offers a great deal of other information, which unfortunately Dr Cannon did not have time to include. I think that this will be of value in estimating other plans of intensive treatment perhaps with penicillin.

DR EVAN W THOMAS, New York. With reference to reinfection and relapses, I agree heartily with Dr Eagle that we must be very conservative. Of the relapses listed in the table which I showed, 12 were seronegative at the time they reappeared with dark field positive lesions. Those, I presume, might be listed as reinfections. However, we have other patients who were followed for thirty months or more. These patients came in with dark field positive lesions after they had been negative for over twenty-six months. They gave histories of promiscuous exposures. They were undoubtedly reinfections but they were not seronegative at the time they came back. When I discussed the relapses and reinfections in my series there was not agreement in every case. If you permit any particular person to decide which is a relapse and which is a reinfection, you may get into trouble. I was interested in what Dr Bruyere said about the age groups. I wonder if it isn't possible that the much higher incidence of relapses in the younger age group is due to the fact that in the younger age group there were many more reinfections than there were in the old age group. It seems to me that is the most plausible explanation. It is exceedingly difficult to get a high follow-up percentage when you deal with Harlem patients in New York City. Nothing caused us such trouble or gave so much work as that follow-up. We still have under observation about 55 per cent of the patients treated in 1940, which I think is extraordinary for New York City. Of this last group only something like 53 per cent were followed over six months. We are now treating many Dutch, Scandinavian and English sailors. It is impossible no matter what the follow-up system may be, to follow those patients.

## MASSIVE ARSENOTHERAPY FOR SYPHILIS

UNITED STATES PUBLIC HEALTH SERVICE  
EVALUATION

### COOPERATING CLINICS OF NEW YORK AND MIDWESTERN GROUPS

Since the first experiments with massive arsenotherapy for syphilis using neoarsphenamine by slow intravenous drip, many methods of intensive treatment have been developed. The present study is concerned with a group of 4,351 intensive treatments for early syphilis contributed to the U S Public Health Service Field Study of Massive Arsenotherapy by the twenty-two cooperating clinics listed in table 1. This group of patients is limited to cases in the first four years of infection with or without active manifestations, treated dur-

TABLE 1—Hospitals Cooperating in the U S P H S Field Study of Massive Arsenotherapy for Syphilis, and the Number of Cases of Early Syphilis Contributed to the Study by Each

| Name and Location of Hospital                     | Cases of Early Syphilis Treated |
|---|---------------------------------|
| Bellevue Hospital, New York City                  | 1,041                           |
| Long Island College Hospital, Brooklyn            | 37                              |
| Mount Sinai Hospital, New York City               | 402                             |
| New Haven Hospital, New Haven, Conn.              | 13                              |
| Prebyterian Hospital, New York City               | 248                             |
| Riker's Island Prison Hospital, New York City     | 7                               |
| Sing Sing Prison Hospital, Ossining, N. Y.        | 36                              |
| Broadlawn Hospital, Des Moines, Iowa              | 91                              |
| Cleveland City Hospital, Cleveland                | 10                              |
| Coles County Free Treatment Center, Mattoon, Ill. | 3                               |
| Cook County Hospital, Chicago                     | 467                             |
| East Side Health District, East St. Louis, Ill.   | 2                               |
| Henry Ford Hospital, Detroit                      | 20                              |
| Herman Kleber Hospital, Detroit                   | 417                             |
| Indianapolis City Hospital, Indianapolis          | 500                             |
| Isolation Hospital, St. Louis                     | 41                              |
| Louisville General Hospital, Louisville, Ky.      | 131                             |
| University of Minnesota Hospital, Minneapolis     | 1                               |
| St. Elizabeth's Hospital, Belleville, Ill.        | 26                              |
| St. Joseph's Hospital, Bloomington, Ill.          | 2                               |
| State General Hospital, Madison, Wis.             | 12                              |
| University Hospital, Ann Arbor, Mich.             | 297                             |
| Total all hospitals                               | 4,351                           |

ing the period 1933-1943 inclusive. However, the analysis of results deals only with cases in which there was active evidence of primary or secondary syphilis. Six different schemes of treatment were employed, as shown in table 2.

The follow-up observation on the cases studied was far from complete, but it was adequate for purposes of analysis. As shown in table 3, 18 per cent of the cases were not seen after discharge from the hospital, two thirds were not seen more than one year after treatment and 85 per cent were not followed beyond the second year.<sup>1</sup> From the point of view of analysis of treatment results as affected by the adequacy of follow-up it is of interest to note that only half of the secondary recurrences observed occurred in the first six months.

Prepared under the direction of Miss Lida J. Usilton, Principal Statistician, with the assistance of Dr. Paul T. Bruyere and Mrs. Martha C. Bruyere, Statistical Section, Venereal Disease Division, U S Public Health Service.

Surgeon David C. Elliott, U S Public Health Service, was responsible for the promotion, organization and carrying through of this cooperative endeavor, reporting in THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, Oct. 4, 1941, page 1160, the early progress on results of massive arsenotherapy for syphilis for the Midwestern and New York groups.

1. A considerable part of the cases were treated in 1942 and 1943 and hence could not have been observed as long as two years.



after treatment and that as many as 12 per cent occurred more than one year after treatment.

In evaluating the results obtained, four broad groups were defined as "final outcomes": 1 A case negative for at least three months when last seen was considered to have experienced a "satisfactory result." 2 A case still positive or fluctuating when last seen a year or more after treatment was considered to be "serologically fast." (A fluctuating case was defined to be 1 in which the serologic test on the blood had been negative at some time after treatment, but never for as long as three consecutive months, and had subsequently become posi-

methods such examinations were reported for too small a proportion of the cases.

For each treatment method included in the study a greater percentage of satisfactory results was obtained among primary cases than among secondary cases. The percentages are given in table 4. Likewise among

TABLE 4—Results Obtained with Massive Arsenotherapy in Early Syphilis, Showing the Estimated Percentage of Cases in Each Final Outcome Following Each Method of Treatment by Diagnosis at Time of Treatment

| Method of Treatment                               | Satisfactory |           | Serologically Fast |           | Serologic Relapse |           | Clinical Relapse |           |
|---|--------------|-----------|--------------------|-----------|-------------------|-----------|------------------|-----------|
|   | Primary      | Secondary | Primary            | Secondary | Primary           | Secondary | Primary          | Secondary |
| Slow drip neosalvarsan                            | 83.5         | 55.7      | 3.3                | 2.4       | —                 | 4         | —                | 1.5       |
| Slow drip mapharsen                               | 83.7         | 71.8      | 4.3                | 10.6      | 2.2               | 4         | 0                | 14.2      |
| Rapid drip mapharsen                              | 85.4         | 64.5      | 3.7                | 9.9       | 4                 | 1.9       | 4.2              | 15.7      |
| Multiple injection mapharsen                      | 85.4         | 72.3      | 2.4                | 9.2       | —                 | 4.0       | 1.2              | 14.5      |
| Multiple injection mapharsen plus typhoid vaccine | 88.5         | 70.2      | —                  | 17.7      | 4.0               | 4.4       | 4.0              | 7.7       |
| Multiple injection arsphenamine                   | 78.6         | 56.7      | 9                  | 14.2      | 5                 | 5.5       | 11               | 20.4      |
| Total all treatments                              | 83.7         | 70.4      | 4.0                | 11.9      | 3                 | 4         | 6.4              | 1.1       |

TABLE 2—Methods of Treatment Evaluated in the U S P H S Field Study of Massive Arsenotherapy for Syphilis. Number of Cases of Early Syphilis Treated by Each Method and Number of Cases Followed After Treatment by Each Method

| Method of Treatment                                       | Cases of Early Syphilis Treated | Cases Followed After Treatment |
|---|---------------------------------|--------------------------------|
| Slow intravenous drip neosalvarsan                        | 110                             | 100                            |
| Slow intravenous drip mapharsen                           | 2,451                           | 1,971                          |
| Rapid intravenous drip mapharsen                          | 450                             | 395                            |
| Multiple syringe injection mapharsen                      | 270                             | 228                            |
| Multiple syringe injection mapharsen plus typhoid vaccine | 779                             | 67                             |
| Multiple syringe injection arsphenamine                   | 263                             | 241                            |
| Miscellaneous other methods                               | 23                              | —                              |
| Total all methods   | 4,361                           | 3,770                          |

TABLE 3—Length of Time Cases Were Followed After Treatment and the Time at Which Clinical Relapses Occurred

| Month After Treatment | Cases Treated Per Cent Still Under Observation | Clinical Relapses            |                     |
|-----------------------|--|------------------------------|---------------------|
|                       |  | Per Cent Occurring in Period | Cumulative per Cent |
| 1                     | 82.4   | 1.3                          | 1.3                 |
| 2                     | 76.7   | 3.3                          | 4.6                 |
| 3                     | 70.2   | 10.2                         | 14.8                |
| 4                     | 64.6   | 13.0                         | 27.8                |
| 5                     | 59.9   | 11.4                         | 39.2                |
| 6                     | 55.2   | 12.3                         | 51.5                |
| 7                     | 50.2   | 11.8                         | 63.3                |
| 8                     | 46.1   | 8.9                          | 72.2                |
| 9                     | 42.5   | 5.0                          | 77.2                |
| 10                    | 39.1   | 5.1                          | 82.3                |
| 11                    | 35.9   | 2.9                          | 85.2                |
| 12                    | 33.3   | 3.0                          | 88.2                |
| 13-15                 | 30.7   | 3.4                          | 91.6                |
| 16-18                 | 24.4   | 3.8                          | 95.4                |
| 19-21                 | 19.5   | 0.8                          | 96.2                |
| 22-24                 | 15.5   | 2.1                          | 98.3                |
| 25-30                 | 12.1   | 0.9                          | 99.2                |
| 31-36                 | 7.4  | 0.4                          | 99.6                |
| 3 and over            | 4.0  | 0.4                          | 100.0               |

tive. The last observation might be either positive or negative.) 3 A case positive or fluctuating at last observation which had previously fulfilled the criteria for satisfactory result was considered to be a "serologic relapse." 4 A case experiencing relapsing secondary syphilis was considered to be a "clinical relapse." As far as possible, reinfections were excluded from this last category by means of the following criteria: completion of the prescribed course of treatment, blood negative to all serologic tests on two consecutive observations at least one month apart following completion of treatment, new lesion not typical of recurrence appearing prior to a serologic relapse. Spinal fluid test results could not be used in defining the final results as listed because of the fact that for several of the treatment

patients with secondary syphilis there developed more serologically fast cases, serologic relapses and clinical relapses proportionally than among primary cases. An average of 85.7 per cent satisfactory results was obtained in primary syphilis as opposed to 70.4 per cent in secondary syphilis. Six and four tenths per cent of the primary cases exhibited clinical relapse and 13.1 per cent of the secondary cases.

In comparing the several methods of treatment it was found that, although the differences in results from one treatment to another were not great nevertheless not all of them can be ascribed to chance. In general excluding the original slow drip with neosalvarsan which was found by its authors to be too reactive the best results were obtained through the use of multiple injections of mapharsen combined with typhoid vaccine. Least effective both in inducing satisfactory results and in preventing clinical relapses, were multiple injections of arsphenamine. However when the material was

TABLE 5—Results Obtained with Massive Arsenotherapy in Early Syphilis Showing the Estimated Percentage of Cases in Each Final Outcome Following Initial Treatment and Following Retreatment

| Status at Time of Treatment                      | Final Outcome |                    |                   |                  |
|--|---------------|--------------------|-------------------|------------------|
|  | Satisfactory  | Serologically Fast | Serologic Relapse | Clinical Relapse |
| Primary syphilis                                 | 83.7          | 4                  | —                 | 6.4              |
| Secondary syphilis                               | 70.4          | 11.1               | 4                 | 1.1              |
| Clinical relapse following routine treatment     | 59.2          | 29.5               | 6.5               | 4.5              |
| Clinical relapse following massive arsenotherapy | 65.9          | 17.2               | 4.0               | 9.9              |
| All clinical relapse                             | 67.2          | 20.0               | 4.6               | 8.2              |
| Probable reinfection any stage                   | 55.5          | 17.0               | 5.5               | 5.7              |

malized by amount of arsenical given (table 7) there were indications that the poor results obtained with this method may have been due to insufficient dosage.

The therapeutic results then that can be expected from present methods of massive arsenotherapy are at best about 85 to 90 per cent cure among cases in which treatment is started in the primary stage of the disease and 70 per cent among cases in which treatment

is started in the secondary stage. Primary cases show about 5 to 6 per cent clinical relapse and secondary cases from 10 to 13 per cent. Perhaps as grave a consideration is the frequency of clinical relapses in the 8 per cent of primary cases and the 15 to 20 per cent of secondary cases that either remain serologically positive or show a serologic relapse, for any late manifestations of the disease which may occur will probably appear among these cases.

No significant differences were found between the results obtained in original infections and those obtained in reinfections. And as shown in table 5 while the

TABLE 6—Results Obtained with Massive Arsenotherapy in Early Syphilis Showing the Estimated Percentage of Cases in Each Final Outcome Following Rapid and Slow Drip with Mapharsen by Quantitative Kahn Test Titer at Time of Treatment

| Method of Treatment  | Satisfactory  |               | Serologically Fast |               | Serologic Relapse |               | Clinical Relapse |               |
|----------------------|---------------|---------------|--------------------|---------------|-------------------|---------------|------------------|---------------|
|                      | Titer         |               | Titer              |               | Titer             |               | Titer            |               |
|                      | 20            | Over 20       | 20                 | Over 20       | 20                | Over 20       | 20               | Over 20       |
|                      | Units or Less | Units or Less | Units or Less      | Units or Less | Units or Less     | Units or Less | Units or Less    | Units or Less |
| Rapid drip mapharsen | 81.6          | 69.0          | 6.0                | 8.5           | 4.4               | 9.0           | 6.0              | 1.0           |
| Slow drip mapharsen  | 80.2          | 72.1          | 4.4                | 12.0          | 7.2               | 3             | 5.2              | 12.6          |

TABLE 7—Results Obtained with Massive Arsenotherapy in Early Syphilis Showing the Estimated Percentage of Cases in Each Final Outcome for Each Method of Treatment by Amount of Arsenical Given

| Method of Treatment and Amount of Arsenical Given | Satisfactory | Serologically Fast | Serologic Relapse | Clinical Relapse |
|---|--------------|--------------------|-------------------|------------------|
| Slow drip neoarsphenamine                         |              |                    |                   |                  |
| Less than 4,000 mg.                               | 87.4         | 6                  |                   | 6                |
| 4,000 mg. and over                                | 88.0         | 4.5                | 1.2               | 6.0              |
| Slow drip mapharsen                               |              |                    |                   |                  |
| Less than 1,200 mg.                               | 76.9         | 4.8                | 1.2               | 17.1             |
| 1,200 mg. and over                                | 76.9         | 9.7                | 3.8               | 10.6             |
| Rapid drip mapharsen                              |              |                    |                   |                  |
| Less than 800 mg.                                 | 70.6         | 9.5                | 9.0               | 10.9             |
| 800 mg. and over                                  | 82           | 6.7                | 4.1               | 7.1              |
| Multiple injection mapharsen                      |              |                    |                   |                  |
| Less than 1,200 mg.                               | 72.4         | 6.9                | 4.5               | 16.9             |
| 1,200 mg. and over                                | 74.2         | 12.9               |                   | 17.9             |
| Multiple injection mapharsen plus typhoid vaccine |              |                    |                   |                  |
| Less than 800 mg.                                 | 72.0         | 14.8               | 5.6               | 6                |
| 800 mg. and over                                  | 83.0         | 10.0               |                   | 7.0              |
| Multiple injection arsphenamine                   |              |                    |                   |                  |
| Less than 2,400 mg.                               | 59.2         | 1.2                | 9                 | 2.7              |
| 2,400 mg. and over                                | 73.6         | 9.0                | 7.1               | 10.3             |

reinfections showed both a larger percentage of satisfactory results and a smaller percentage of clinical relapses than did the relapses. The differences were not statistically significant. This is probably due to the small number of reinfections. As might be expected primary syphilis, first infection, gave much better results than did relapses. However, there was no difference in the results obtained among previously untreated secondary infections and those obtained among patients with secondary manifestations occurring as a relapse after treatment either routine or intensive in type.

In a considerable number of the cases treated by means of slow and rapid drip with mapharsen blood specimens were examined at the time of treatment by means of the Kahn quantitative test. With both these methods of treatment it was found that cases whose

starting titer was 20 units or below had significantly more satisfactory results and fewer relapses than did cases with a starting titer higher than 20 units. These results are given in table 6.

In order to investigate the effect of the amount of arsenical administered the results following each

TABLE 8—Results Obtained with Massive Arsenotherapy in Early Syphilis Showing the Estimated Percentage of Cases in Each Final Outcome Following Administration of Slow and Rapid Drip with Mapharsen With and Without Bismuth

| Method of Treatment and Administration of Bismuth | Final Outcome |                    |                   |                  |
|---|---------------|--------------------|-------------------|------------------|
|   | Satisfactory  | Serologically Fast | Serologic Relapse | Clinical Relapse |
| Rapid drip mapharsen                              |               |                    |                   |                  |
| Bismuth given                                     | 92.4          | 3.8                | 3.8               |                  |
| No bismuth given                                  | 70.4          | 8.4                | 8.4               | 1.8              |
| Slow drip mapharsen                               |               |                    |                   |                  |
| Bismuth given                                     | 72            | 10.9               | 7.1               | 13.6             |
| No bismuth given                                  | 72            | 7                  | 7                 | 13.1             |

method of treatment were analyzed at various dosage levels. Table 7 presents the final outcome for each treatment scheme above and below the dosage levels which gave the largest differences. None of the differences are very great and none are clearly significant. However, in nearly every case the differences are in the direction of better results with larger doses, and, when all treatments are combined, the difference is significant. In every instance more clinical relapses occurred among the smaller dosage groups.

Bismuth was administered in connection with the intensive treatment course in a portion of the cases in which either rapid or slow drip with mapharsen was given. Table 8 shows the results following these two treatments divided according to whether or not bismuth was given. It can be seen that with rapid drip the use of bismuth improved the results decidedly. Among the patients receiving this drug there were 92.4 per cent satisfactory results compared with 70.4 per

TABLE 9—Results Obtained with Massive Arsenotherapy in Early Syphilis Showing the Estimated Percentage of Satisfactory Results and of Clinical Relapses for Each Method of Treatment by Age at Time of Treatment

| Method of Treatment                               | Per Cent Satisfactory Results |                          | Per Cent Clinical Relapses |                          |
|---|-------------------------------|--------------------------|----------------------------|--------------------------|
|   | Under 20 Years of Age         | 20 Years of Age and Over | Under 20 Years of Age      | 20 Years of Age and Over |
| Slow drip neoarsphenamine                         | 82.2                          | 90.7                     | 5.9                        | 3.7                      |
| Slow drip mapharsen                               | 76.3                          | 81.3                     | 14.5                       | 5.2                      |
| Rapid drip mapharsen                              | 75.5                          | 76.2                     | 11.4                       | 8.6                      |
| Multiple injection mapharsen                      | 67                            | 79.8                     | 15.2                       | 10.6                     |
| Multiple injection mapharsen plus typhoid vaccine | 68.6                          | 84.2                     | 9.7                        | 9.1                      |
| Multiple injection arsphenamine                   | 58.4                          | 74.1                     | 26.0                       | 9.5                      |
| Total all methods                                 | 71.7                          | 81.1                     | 13.6                       | 7.4                      |

cent among those not receiving it. Conversely there were 12.8 per cent of clinical relapses among those not given bismuth and none among those who did get it.

Among the cases treated by slow drip the results were not so clearcut. When all cases treated by this method were divided only according to whether or not bismuth was given no significant differences were found. It was noted however that bismuth was used more frequently in the treatment of secondary syphilis.

than in primary syphilis and also that among primary cases it was given more frequently to those who were seropositive than to those who were seronegative.

Differences in response to syphilotherapy may be inherent in certain characteristics of the patient population, even though these characteristics are not in any way determined by the disease or its treatment. In seeking to investigate these points the results of intensive therapy were analyzed by race, sex, and age.

With regard to age a very definite bias in favor of older patients was found. From table 9 it can be seen that 81.1 per cent of the older group reached a satisfactory outcome as opposed to 71.7 per cent of the younger patients and whereas only 7.4 per cent of the

tion of clinical relapses as it is in the case of satisfactory results. The racial difference is still apparent but there seems to be no difference between males and females. The clinical relapse rates are shown for race and sex in table 11. The nonwhite races show a significantly greater predisposition toward infectious relapse than does the white race for all treatments combined. From one sex to another however, neither is there uniformity of direction in the differences from one treatment method to another nor is there a significant difference observable in all treatments combined.

The outstanding conclusion to be drawn from the foregoing analysis by patient population characteristics is that the group most resistant to treatment was that of young nonwhite females.

The present study is primarily concerned with the therapeutic efficacy of massive arsenotherapy and the detailed analysis of reactions is not yet complete. The only data concerning treatment complications yet compiled are derived from a hand tabulation of the abstracts available on Aug. 1, 1943. At that time a search was made for cases showing evidence of encephalopathy which advanced to the point of convulsion. It was found that for all types of treatment combined there were 3.2 total encephalopathic reactions per thousand courses of treatment and 3.9 nonfatal, a total of 7.1 per thousand. No statistically significant differences could be demonstrated between individual clinical methods of treatment, sexes, or age groups. It was noted however, that encephalopathy occurred more than twice as frequently among white persons as among nonwhites and also that this type of reaction appeared to be more frequently fatal among white females than among white males or among nonwhites of either sex.

TABLE 10—Results Obtained with Massive Arsenotherapy in Early Syphilis Showing the Estimated Percentage of Satisfactory Results Following Each Method of Treatment by Race and Sex

| Method of Treatment                                | Race  |       | Sex  |      | Race and Sex |      |          |      |
|--|-------|-------|------|------|--------------|------|----------|------|
|  | Non   |       |      |      | White        |      | Nonwhite |      |
|  | White | White | ♂    | ♀    | ♂            | ♀    | ♂        | ♀    |
| Slow drip neocarsphenamine                         | 91.1  | 80.6  | 87.9 |      | 91.1         |      | 80.6     |      |
| Slow drip mapharsen                                | 82.2  | 70.5  | 80.7 | 70.5 | 85.2         | 74.7 | 74.2     | 66.4 |
| Rapid drip mapharsen                               | 77.9  | 74.6  | 83.8 | 64.5 | 66.4         | 66.7 | 82.6     | 60.5 |
| Multiple injections mapharsen                      | 7.1   | 70.6  | 77.2 | 69.0 | 77.7         | 80.7 | 76.6     | 62.5 |
| Multiple injection, mapharsen plus typhoid vaccine | 84.5  | 67.5  | 80.3 | 61.5 | 90.1         | 74.2 | 73.6     | 61.0 |
| Multiple injections arsphenamine                   | 6.2   | 60.1  | 64.0 |      | 65.2         |      | 63.1     |      |
| Total all methods                                  | 82.1  | 70.4  | 80.1 | 65.0 | 86.0         | 74.5 | 74.6     | 64.6 |

TABLE 11—Results Obtained with Massive Arsenotherapy in Early Syphilis Showing the Estimated Percentage of Clinical Relapses Following Each Method of Treatment, by Race and Sex

| Method of Treatment                                | Race  |       | Sex  |      | Race and Sex |      |          |      |
|--|-------|-------|------|------|--------------|------|----------|------|
|  | Non   |       |      |      | White        |      | Nonwhite |      |
|  | White | White | ♂    | ♀    | ♂            | ♀    | ♂        | ♀    |
| Slow drip neocarsphenamine                         | 1.0   | 19.4  | 7.1  |      | 1.5          |      | 19.4     |      |
| Slow drip mapharsen                                | 7.9   | 10.5  | 11.5 | 12.3 | 5.6          | 10.7 | 16.7     | 13.9 |
| Rapid drip mapharsen                               | 15.4  | 8.1   | 7.1  | 13.4 | 10.2         | 22.2 | 5.8      | 10.4 |
| Multiple injections mapharsen                      | 11.7  | 15.5  | 15.7 | 11.5 | 15.9         | 3.2  | 15.6     | 16.1 |
| Multiple injections mapharsen plus typhoid vaccine | 0.7   | 8.9   | 7.1  | 7.0  | 5.0          | 1.0  | 8.6      | 0.2  |
| Multiple injections arsphenamine                   | 15.9  | 17.4  | 16.9 |      | 15.9         |      | 17.4     |      |
| Total all methods                                  | 8.1   | 15.0  | 10.5 | 11.1 | 7.1          | 10.0 | 13.6     | 12.1 |

older patients experienced clinical relapses, 13.6 per cent of the younger ones did. These differences are too large to be ascribed to chance.

From table 10 it can be seen that there are both race and sex differences in the response to rapid treatment for syphilis. The proportion of satisfactory results obtained was consistently higher for the white race than for the nonwhite races and was also higher for males than for females. These differences remain significantly great when the four race-sex groups are considered separately. White males show a greater percentage of satisfactory results than nonwhite males, white females than nonwhite females, white males than white females, nonwhite males than nonwhite females.

The pattern of differences between the races and sexes is not so clear-cut when considering the propor-

#### SUMMARY

1 The therapeutic results in a group of 4,351 massive arsenical treatments for syphilis have been studied.

2 It was found that the best results (excluding the highly reactive slow intravenous drip administration of neocarsphenamine) followed the use of multiple massive injection of mapharsen combined with typhoid vaccine.

3 The most effective massive arsenotherapy yields 85 to 90 per cent of satisfactory results in primary syphilis and 70 per cent in secondary syphilis.

4 About 5 to 6 per cent of the primary cases relapsed and 10 to 13 per cent of the secondary cases.

5 Patients treated when the titer of the Kahn quantitative test on the blood was 20 units or below experienced more frequent satisfactory results and fewer clinical relapses than did cases with a titer greater than 20 units.

6 Results were slightly better among patients receiving larger doses of arsenicals than among those receiving smaller doses.

7 The administration of bismuth during the period of treatment appeared to improve the results obtained.

8 The following differences in response to treatment were noted: Patients over 25 years of age responded better than those under 25, males responded better than females, whites responded better than nonwhites.

9 Least satisfactory results to treatment were obtained among young nonwhite females.

10 Acute encephalopathy was observed in 7.1 per thousand treatments. Of these 3.2 per thousand were fatal and 3.9 per thousand were followed by recovery. No difference could be demonstrated between treatments with regard to the frequency of this type of reaction.

## THE INITIAL NEUROLOGIC AND PSYCHIATRIC SYNDROME OF PULMONARY GROWTH

MAJOR DR. A. M. MEERLOO, FRSM  
OF THE ROYAL NETHERLAND ARMY

The syndrome described in this article demonstrates the fact that psychologic and somatic phenomena continually merge into one another and that in pathology it is impossible to separate them.

It is not widely known that patients with a growth in the thoracic cavity often go in the first place to a neurologist. If one bears in mind that the initial complaint which gives rise to so serious a diagnosis is generally of vague neuralgic pains, it is important to consider the subject closely. The anamnesis is characteristic: the apparently healthy patient complains of spreading pains in the back or limbs. Intermittent neurologic signs and symptoms may be present or not. The patient is psychologically somewhat disturbed, his attention is rather closely fixed on his own pains. His intimates or his family doctor send him to the neurologist with a diagnosis of hysteria or neurosis. In the ordinary way the neurologist gives him psychotherapy. The next stage is the x-ray (in the initial phase this may not reveal anything immediately) and with the determination of the blood sedimentation rate the diagnosis is settled. It is however already possible to diagnose with fair certainty an intrathoracic growth before the x-ray gives a clear picture. If one finds for example sharp spreading pains in the right arm and in the chest whether or not with hyperesthesia and abnormal tendon reflexes, and if at the same time the blood sedimentation rate is very much increased a negative x-ray should not be relied on.

As a summary the following brief remarks should be added. In the case of my series of 9 patients covering a period of four years, it was not possible for the most part to attempt any pathologic research at the seat of the growth. The x-ray diagnosis and the clinical history as a whole were guarantees of the diagnosis. I saw still more of the same type of patient who had had only one consultation with a general practitioner. My impression is that these neurologic phenomena with an initial growth occur quite frequently—strictly speaking the metastases of intrathoracic tumors in the central nervous system come under the foregoing heading also. The pulmonary growth, especially tends to produce metastases in the brain.

### REPORT OF CASES

**CASE 1**—A man aged 69 came for consultation because he had recently suffered from neuralgic pains in the right shoulder blade. His wife found him changed, more discontented and more irritable. His son, a doctor, considered that his father was always too ready to complain of his own ills. The neurologic examination was negative. The patient had not grown thinner. An x-ray examination revealed no abnormality in the spinal column or in the upper part of the lungs. Iontophoretic treatment did not relieve the pain. The patient went on a journey abroad in good spirits, on one occasion during the journey he brought up blood stained mucus to which no attention was paid. With antineuralgic treatment the condition remained bearable. Six months after the first examination he suddenly brought up a lot of blood. The pain had meanwhile become much worse. The blood sedimentation rate increased, there was anemia, and the x-ray examination of the lungs showed a growth on the right hilus. Three months later the patient died.

**CASE 2**—A man aged 57 suffered from spreading pains in the left arm. From time to time he had attacks of choking and of tiredness. He had been treated for neuralgic pains for some time, but latterly he had been more and more depressed, let himself go, became irritable, for this reason he was sent by his family doctor to the neurologist. The pains were usually at night with a tingling feeling in the left hand. There were no motor or sensory disturbances, nor were there any typical centers of pain apart from pressure on the ribs on the upper left side. The test for angina pectoris by the doctor was negative. A week later, after preliminary antineuralgic treatment it appeared that the trachea was slightly displaced toward the right. This put us on the right track. The x-ray examination showed a large growth in the left half of the thorax which presumably issued from the first costal arch and pressed on nearly the whole left lung (sarcoma?). The blood sedimentation rate was 124 mm. Fourteen days later the tumor began to grow outward. In spite of x-ray therapy the patient died four months later.

**CASE 3**—A man aged 56 suffered for many years from depression complicated by all kinds of neuralgic pains. As his chronic psychosis deteriorated and he became more violent owing to bitterness against his family, he was placed in a hospital for rest therapy. Examination revealed a slight anemia and a blood sedimentation rate of 60. Profiting by previous experiences and in view of the neuralgic pains in his chest and arms, an x-ray examination was made, with negative results. On these grounds it was decided to give a mild course of barbitals, after which the patient felt psychologically much better. After two months he had a relapse, but his condition was still such that he could be nursed at home. Six months later the neuralgic pains were worse, they spread down the right arm and the right side of the thorax. The blood sedimentation rate was now 66. Eight months later came the first hemoptysis. When fresh x-ray films were taken a big pulmonary growth could be seen stretching from the right hilus. Nine months later the pains were more severe, especially at night, waves of pain running through the right hand and arm. There were no neurologic signs. In the tenth month there was slight paralysis in the right hand and arm, with edema of the hand, arm and head. A week later the patient died suddenly in his sleep.

**CASE 4**—The patient's illness was announced by apparent sciatic pains, for which he was treated for over six months. The general health was good, but his family complained of his 'hysterical' behavior, that is to say, he became more childish, tried to attract attention to his illness and claimed to suffer from more disturbances of functions than was actually the case. On examination a positive symptom of Lasègue was found with atrophy of the right calf but—and this did not belong to the sciatic picture—a Babinski reflex of the soles of the feet and increased reflexes. At first both patient and family set themselves against clinical observation and lumbar puncture and because the hysterodepressive syndrome dominated less attention was paid to neurologic signs. When the patient complained of more pain and neuralgic pains spread to the neck the family agreed to clinical observation. Here too the x-ray revealed the diagnosis—a large growth at the hilus of the lung, probably growing in the spinal column, while at the third and fourth vertebrae of the neck there was actually a metastasis. The blood picture showed a simple anemia, the blood sedimentation rate was very high (110 after one hour).

**CASE 5**—This case is very much akin to the preceding one. It also began with a sciatic syndrome but it appeared easier to understand as there were metastases in the third, fourth and fifth lumbar from a bronchial carcinoma in the right upper lobe. Here also I was initially called into consultation for psychosis in connection with the sciatic symptoms. The man was childish, negative, depressed. The condition of the patient could not be ameliorated and the diagnosis was confirmed by clinical examination after the doctor had really convinced the patient that it was necessary. The blood sedimentation point was 91 mm in the first hour, there was no anemia. This patient also died one and one half months after admission in a state of cachexia.

**CASE 6**—Here the diagnosis was more difficult, because the illness began clearly with pains and paralysis of the left arm. The patient was a man aged 67. At the first examination the reflexes in the paralyzed arm were increased, the pupils reacted rather slowly and there were indications of venereal disease in the anamnesis. For these reasons a thorough examination was considered necessary. At the clinical examination, however, no clues on which to base such an enquiry were found. Blood and liquor reactions were negative, the x-ray film of the skull was normal; there were no abnormalities in ventricular pressure, blood pressure and renal functions were normal. We were faced with this problem: we had not yet considered the pathologic phenomena which he certainly showed, a blood sedimentation rate of 56 mm and anemia. In the hospital the patient coughed up blood stained phlegm for the first time. An x-ray film of the lung was then taken and in the left apex of the lung a distinct pressure on the plexus had produced the phenomena already noted. The general condition of the patient remained good for a long time, there were no pathologic developments. A year passed before the patient died.

**CASE 7**—A transport worker aged 52 had complained for over a year of rheumatic pains from the left elbow to the neck. The neurologist was consulted as to the possibility of a neuritis in the plexus. From time to time the finger tips were swollen and painful. On admission to the hospital it appeared that he also had pains in the upper part of his chest, and there was a sporadic coughing up of purulent sputum. A year later in another hospital rib section on account of empyema was performed. From the x-ray it appeared that the whole thorax was deeply shadowed and the radiologist suspected multiple tumors. After examination with iodized oil a complete stoppage was found in the left main bronchus at the bifurcation. There was anemia and a blood sedimentation rate of 87 mm. In the sputum there were no tubercle bacilli and no pneumococci, but many streptococci. Electrocardiographic examination was negative. One and a half months after admission to the hospital the patient died after the usual cachectic phenomena had appeared. At the autopsy it appeared that there was a carcinoma spreading from the left lung with metastases in the other lung, pleuritis carcinomatosa, and metastases in both kidneys, along the spinal column and in the liver.

The next 2 patients came to my notice in the confusion and excitement shortly after the German occupation, and for that reason the initial phenomena were all the more difficult to interpret.

**CASE 8**—A woman aged 52, who had suffered in the bombardment of Rotterdam, was thereafter depressed and reserved, and five weeks later she came under my care for a sudden attack of asthma and traces of nervousness. She was first treated with sedatives, but after two weeks she had another attack of asthma. This gave rise to the taking of an x-ray film, a tumor of the lung was visible. She had a blood sedimentation rate of 110. The illness lasted six months, the psychosis remaining right up to the last.

**CASE 9**—A man aged 44 was thrown against a wall by blast and afterward complained of pains in the shoulder and tingling in the fingers of the right hand. In the same way there was a certain dulness and apathy. The shoulder was x-rayed, but this produced no clues. The psychologic disintegration increased, neurologic symptoms slowly emerged and the reflexes decreased. The blood sedimentation rate was too high, and in view of earlier experiences a diagnosis of intrathoracic tumor was decided on. After six weeks' treatment the patient died very suddenly. He had shown no signs of lung symptoms. At the autopsy a primary lung carcinoma was revealed.

#### COMMENT

If we analyze the case histories of these people suffering from growths in or near the lung, who in the early stages come to the nerve specialist, we must direct our attention to the following facts:

**The Psychologic Symptoms**—The psychiatrist ought to be able to establish the diagnosis of one or another

bodily process on the psychologic picture alone. There is unfortunately no typical psychologic process belonging to distinct organic lesions. There are, however, distinct syndromes which fasten suspicion on a bodily origin. Hysterical depression in the presenile period is significant even before the onset of arteriosclerosis of the central nervous system. Among my 9 patients in whom there was a certain negativism along with the syndrome we must ascribe the psychologic symptoms to a toxic disorder of the central nervous system.

**The Pain**—The pain was intense in all the cases. It was not only local but was spread over all parts of the body. This is in accordance with the toxic etiology of neuralgia, above all in those cases in which peripheral neurologic signs appeared. Here also factors connected with abnormal pressure on the sympathetic chain must be taken into account. One of my patients experienced the most intense pain a few days before it was clear from the congestion in the arm that there was pressure on the big vessels. In other cases (2 and 4) in which the tumor was already very big and the pain came later, we ought to have been able to establish the position owing to the pressure on and erosion of the neighboring skeletal parts. The symptom of neuralgic pain pointed at least as often to a general disorder as to a specific involvement of the sensitive nerve tissue.

#### OTHER INITIAL SYMPTOMS OF GROWTH IN THE LUNG

Most growths in the lungs will show their true character without neurologic and psychologic clues. None of my patients had a growth beginning with hemoptysis, and among a few there was no instance of hemoptysis. It will more often happen that these patients die without any suspicion of pulmonary disease. A man aged 53 whom I saw in the last stages of his illness and who, because of his neurologic symptoms, paralysis of the arm and leg, was thought to be suffering from acute multiple sclerosis died suddenly with hemoptysis, there being unfortunately no possibility of x-ray examination. In the initial stages also there was no cachexia among my patients. In all these cases there was an increased blood sedimentation rate from the first examination.

#### SUMMARY

Nine persons suffering from pulmonary growths consulted a psychiatrist and neurologist concerning their initial symptoms. Violent neuralgic pains with a negative hysterical depression and a raised blood sedimentation rate are a characteristic triad of symptoms demanding an immediate radiologic examination of the lungs. The difficulty of diagnosis lies in the initial psychologic interpretation of the symptoms.

---

**Blood Transfusion in Modern Times**—Scientific use of transfusion in modern times may be traced to James Blundell (1790-1877). Having been much agitated over the loss of many patients through uncontrollable puerperal hemorrhage, he first experimented on animals which had seemingly bled to death and were revived by blood taken from animals of the same species. He then proceeded to investigate the possibilities of transfusion in cases of human hemorrhage. It should be noted here that before Blundell's experiments were made by means of bladders fastened to quills, hypodermic needles were unknown. Blundell experimented with various instruments and developed in 1818 a syringe with a three way valve—Gordon, Benjamin Lee. *The Romance of Medicine*, Philadelphia, F. A. Davis Company 1944.

## Clinical Notes, Suggestions and New Instruments

### MYELOPATHY AS A RESULT OF INTENSIVE TREATMENT OF SYPHILIS WITH MAPHARSEN

A. I. SAHS, M.D. AND RUBEN NOMLAND, M.D.  
IOWA CITY

It has been observed that intensive treatment of early syphilis with mapharsen by means of multiple injections or intravenous infusion increases the incidence of complications referable to the nervous system. Encephalopathy and neuropathy head the list of injuries to the nervous system from all types of arsenical preparations used in the treatment of syphilis, whereas myelopathy is a rare sequel. Glaser and the Imermans<sup>1</sup> reviewed the literature in 1935 and found 146 reported cases of encephalitis, 8 of myelitis and 4 of encephalomyelitis and added 2 personally observed cases of encephalitis and 1 of encephalomyelitis. Lichtenstein<sup>2</sup> recently reported the pathologic changes in a case of toxic myelopathy which followed the intravenous injection of neorphenamine. We are adding the following case to the list of possible complications during intensive treatment of syphilis with mapharsen.

#### REPORT OF CASE

A 27 white woman aged 26 was delivered of a normal male infant at the University Hospital in 1936, at which time the serologic reactions on the blood were negative for syphilis. After this pregnancy she developed varicose veins in the right leg and wore an elastic bandage to prevent swelling of the right foot. She was delivered of a normal female infant in 1937, in 1942 in her fifth pregnancy her Wassermann reaction was negative. On the day following the birth of her child Jan. 10, 1944 she developed pustular lesions about the mouth lesions which gradually spread until practically the entire body was involved. The blood Wassermann reaction on March 6 was positive.

The patient was admitted to the hospital March 7, 1944 with a very unusual pustuloulcerative type of secondary syphilis of the face, extremities and trunk. The lesions varied from 1.5 to 5 cm in diameter and were heavily crusted. Removal of the crust revealed a granulating base. Although these areas were quite moist a positive dark field examination could not be obtained. There were no lesions on the mucous membranes.

The temperature was 99 F on admission. Her weight was 118 pounds (53.5 Kg). Her pupils were circular in outline and equal and reacted well to light and in accommodation. Ophthalmoscopy was negative. The other cranial nerves were intact. There was advanced dental caries. Examination of the chest and abdomen with the exception of the skin, showed nothing remarkable. The blood pressure was 110/80. The right ankle was slightly swollen. The strength and coordination of the extremities were good, the deep reflexes were present and equal, and the sensory examination was negative. The rectal sphincter tone was normal. The urine had a specific gravity of 1.015, was acid in reaction and contained no albumin, blood or sugar. The erythrocyte count was 4,500,000, the leukocyte count 10,650 and the hemoglobin value 11 Gm. The blood sugar revealed no abnormalities. The Kolmer, Kahn and Kline reactions on the blood were positive.

The five day treatment of syphilis was started on March 13. After intravenous infusion of 72 mg of mapharsen a fever of 101.4 F developed and the treatment was discontinued for that day. The schedule was: March 13, 72 mg of mapharsen; March 14, 240 mg; March 15, 240 mg; March 16, 250 mg; March 17, 240 mg; and March 18, 180 mg; total 1,222 mg.

Within a few hours after completing this course of treatment she developed a fever of 103 F. She complained of low back pain and weakness and numbness of both lower extremities. The right leg was more severely affected. Within two days she complained of generalized stiffness of the body, inability to void and loss of bowel control, in addition she developed a general

ized toxic erythema. The essential neurologic changes were as follows. There was weakness of both lower extremities, but the right side was weaker than the left. The extensors of the right ankle and toes were paralyzed. The abdominal reflexes and the knee jerk reflexes were absent. Both achilles jerks were hyperactive and there was an unsustained ankle clonus bilaterally. The response to plantar stimulation was absent on the right and extensor on the left. All types of sensation were reduced to an estimated 10 per cent of normal over the lateral aspect of the right leg and dorsum of the right foot and to an estimated 80 per cent up to the level of the costal margins. The urinary bladder was greatly distended, and rectal sphincter tone practically zero. After a few days of intermittent catheterization an indwelling catheter was installed.

On March 27, nine days after completion of the course of treatment, she developed a fever of 103.4 F and on the following day her temperature reached 105.6 F. The urine was loaded with leukocytes. A diagnosis of urinary tract infection secondary to neurogenic disease of the bladder was made and she was placed on sulfathiazole by mouth in addition to large amounts of fluids orally and intravenously. The infection subsided within one week.

Lumbar puncture on April 3 revealed clear fluid which was under an initial pressure of 140 mm with the patient in the horizontal position. A prompt rise and fall occurred with compression and release of the jugular veins. The fluid contained a trace of globulin (Pandy test), no blood and 4 mononuclear cells per cubic millimeter, the total protein was 54 mg per hundred cubic centimeters, the colloidal gold curve was 1111100000 and the Wassermann reaction was negative.

The treatment consisted essentially of care of the bladder and physical therapy to the lower extremities. Her course was one of gradual improvement. Cystometrograms, which at first showed a flaccid bladder, began to reveal a gradual return of bladder tone. In a month's time she had regained control over her rectal sphincter and was able to walk a few steps with assistance. At the end of six weeks there was still a toe and ankle drop on the right, the deep reflexes were hyperactive in both lower extremities, and the response to plantar stimulation was still extensor on the left. She was now voiding normally, and there was no residual urine. She was fitted with a short leg brace to support the right leg.

She was discharged from the hospital May 29 approximately ten weeks after her mapharsen therapy. She had numerous scars over the face and other portions of her body as a result of the pustuloulcerative lesions. There was slight improvement in the strength of the dorsiflexors of the right foot. All pyramidal tract signs had disappeared. Sensation was intact except for an estimated response of 75 per cent to light touch and prur over dermatomes fifth lumbar and first sacral on the right.

The Kolmer, Kline and Kahn reactions on the blood remained positive during her stay in the hospital. At no time during her illness did she exhibit signs or symptoms of hemorrhagic encephalitis.

#### COMMENT

Complications referable to the nervous system occur during all types of arsenotherapy of syphilis, but there is general agreement that rapid treatment increases the frequency of these accidents which usually involve the brain and peripheral nerves. Opinions vary as to the pathogenesis of a cord lesion of this type. Lichtenstein<sup>2</sup> concluded that the arsphenamines may produce spinal cord changes through vascular alterations resulting in perivascular hemorrhages or through a combination of various parenchymatous changes with or without vascular phenomena. Moore<sup>3</sup> regards this type of accident as usually due to therapeutic shock involving a previously latent syphilitic endarteritis of the cord vessels, although in certain instances proof is lacking.

#### CONCLUSIONS

1 This case illustrates an unusual and rare complication of intensive mapharsen therapy.

2 The reaction occurred in the absence of clinical evidence of hemorrhagic encephalopathy.

3 In spite of pronounced bladder, bowel and lower extremity involvement, this patient showed remarkable improvement.

From the Department of Neurology and the Department of Dermatology and Syphilology, State University of Iowa.

<sup>1</sup> Glaser, M. A., Imermans, C. P., and Imermans, S. W. So Called Hemorrhagic Encephalitis and Myelitis Secondary to Intravenous Arsphenamine. *Am. J. M. Sc.* 189: 64-79 (Jan.) 1935.

<sup>2</sup> Lichtenstein, B. W. Acute and Subacute Toxic Myelopathies Following Therapy with Arsphenamines. *Arch. Neurol. & Psychiat.* 48: 740-760 (Nov.) 1942.

<sup>3</sup> Moore, J. E. The Modern Treatment of Syphilis, ed. 2. Springfield, Ill.: Charles C. Thomas Publisher, 1941, p. 11.



## Council on Pharmacy and Chemistry

The electron microscope is giving us a new understanding of the physical structure of the microscopic and submicroscopic agents of disease the bacteria rickettsias and viruses. It appears that these microparasites may be arranged along a scale of diminishing size and complexity of organization which tends to parallel the scale of their decreasing metabolic independence and increasingly obligatory parasitism.

Simultaneously new insight into the fundamental host-parasite relationships is currently laying the foundation on which a more useful understanding of susceptibility and resistance to these disease agents will be based. Finally the principles and mechanisms underlying the spectacular recent successes in chemotherapy are beginning to assume a clarity which would seem to point the way toward a rational extension of chemotherapy into areas in which it has not as yet been successful.

These rather wide prospects are presented by the chairman of the National Research Council Committee on Applications of the Electron Microscope who is also a member of this Council.

AUSTIN F. SMITH, M.D., Secretary

### PATHOGENIC BACTERIA, RICKETTSIAS AND VIRUSES AS SHOWN BY THE ELECTRON MICROSCOPE

THEIR RELATIONSHIPS TO IMMUNITY  
AND CHEMOTHERAPY

I. MORPHOLOGY

STUART MUDD, M.D.

AND

THOMAS F. ANDERSON, Ph.D.

PHILADELPHIA

Current textbooks, teaching and discussion in bacteriology do not reflect adequate understanding of the structure of the bacterial cell or of the smaller parasitic entities known as rickettsias and viruses. It is a well recognized principle in natural science that understanding of structure is basic to analysis of function. In most areas of the medical sciences this principle is not only accepted as a matter of course but, more important, is expressed in the actual content of these sciences. However, several special circumstances have tended to foster the development of bacteriology without an adequate basis of understanding even of the structure of bacteria. Bacteriology has been pursued primarily for its practical usefulness, only secondarily as a science in its own right, structural details of the bacterial cell are close to, and in many cases beyond, and the structural details of rickettsias and viruses are completely beyond, the limits of resolution of the light microscope, the ordinary staining methods of bacteriology are relatively primitive as compared with the techniques of general cytology. All of these circumstances have tended to obscure the fact that there is a morphology of the microparasitic agents of disease adequate understand-

ing of which will have both theoretical and practical value. The use of bacteria and their components as diagnostic and immunizing agents will be more intelligent and more effective when it is generally understood that the bacterial cell has differentiated parts and when the localization of chemical and antigenic components in the several parts has been learned. Only since the introduction of the electron microscope has it become evident also that rickettsias and the larger viruses also have an essentially cellular morphology.

New possibilities for the study of the structure of bacteria, rickettsias, viruses, phage and of fine structure in tissue have been opened up by the electron microscope.<sup>1</sup> This instrument by virtue of its greatly increased power of resolution has increased the useful magnification available for investigation of fine structure by a factor of about sixtyfold as compared with the light microscope, or twentyfold as compared with the best ultraviolet microscope.

#### REVELATION OF STRUCTURE BY THE ELECTRON MICROSCOPE

**Resolution and Image Formation in the Electron Microscope.**—The useful magnification provided by any microscope is determined by its power of resolution. Resolution may be defined as the smallest distance by which two particles in the object may be separated and still appear as two particles in the image. This distance,  $d$ , has been considered as given by the equation  $d = \frac{0.5\lambda}{NA}$  in which  $\lambda$  is the wavelength of the radiation used and  $NA$  the numerical aperture of the lens. For visible light the smallest wavelength that can be used is in the neighborhood of 400 millimicrons (fig. 28) and the smallest theoretically distinguishable distance about 120 millimicrons. In ordinary practice the limit with the light microscope is reached with isolated objects or elements of structure that are less than 250 millimicrons in diameter. Using ultraviolet radiation of wavelength 257 millimicrons and a quartz lens system, Barnard<sup>2</sup> has been able to photograph particles with a diameter of 75 millimicrons. When high velocity electrons ( $\lambda = 0.005$  millimicron) are used as the observing medium, the minimal resolvable detail is very much smaller. In actual current practice with objects of biologic interest, resolution of 4 millimicrons is attained with the electron microscope assuming the resolving power of the unaided human eye to be 0.2 millimeter, this corresponds to a useful magnification of 50,000 diameters. With denser objects resolution of 1.5 millimicrons has been achieved corresponding to a useful magnification of 130,000 diameters.

The electron microscope<sup>3</sup> is analogous in principle to the light microscope. Each has a source of radiation, condenser lenses for concentrating the radiation onto the specimen, an objective lens which forms an enlarged first image of the specimen and a projection lens which forms the final image<sup>4</sup> (fig. 1). In the electron microscope the source of radiation is a thermionic cathode in an "electron gun." Electrons from this hot cathode are

Owing to lack of space this article is abbreviated in THE JOURNAL by the omission of twenty-six illustrations. The complete article appears in the authors' reprints.

Dr. Mudd was chairman of the Committee on Applications of the Electron Microscope, National Research Council 1940-1944. Dr. Anderson was RCA Fellow on the Electron Microscope, National Research Council 1940-1942.

The privilege of reproducing certain of the electron micrographs was extended by the authors and the journals cited in the corresponding references in the bibliography and by the Williams and Wilkins Company, Baltimore. The electron pictures with a few exceptions were taken at the RCA Research Laboratories. Many courtesies were extended by Dr. V. K. Zworykin and Mr. James Hillier. The pictures of figures 12, 23, 33, 34 and 35 were taken with an RCA type B electron microscope at the Johnson Foundation for Medical Physics, University of Pennsylvania.

1. Marton L. The Electron Microscope in Biology. Annual Review of Biochemistry, Stanford University P. O. Calif. Annual Review. In 12: 587-614, 1943.

2. Topley W. W. C. and Wilson G. S. The Principle of Bacteriology and Immunology. 2. Baltimore: William Wood & Co. 1936, p. 18.

3. Zworykin V. K., Hillier J. and Vance A. W. An Electron Microscope for Practical Laboratory Service. Transactions of the American Institute of Electrical Engineers 60: 127-161 (April) 1941. Zworykin V. K. and Hillier J. A Compact High Resolving Power Electron Microscope. J. Applied Physics 14: 658-673 (Dec.) 1943. Zworykin V. K., Hillier J. and Vance A. W. Electron Microscope in Glasser O. Medical Physics. Chicago: Year Book Publishers, 1944.

4. Anderson T. F. The Study of Colloids with the Electron Microscope. From Advances in Colloid Science. New York: Interscience Publishers, Inc. 1942, vol. 1, pp. 353-390.

accelerated to a high velocity by a high potential difference as soon as they leave the cathode. They are then subjected to a magnetic (or electrostatic) field which acts as a condenser lens and controls the convergence of the electron rays irradiating the specimen. This beam passes through the object, through the magnetic (or electrostatic) objective lens and projector lens, finally to form the image on the fluorescent viewing screen or photographic plate. Electrons which pass through the object undeflected of course contribute to the brightness of the image, any electrons which are sufficiently deflected in the object so that they do not pass through a small aperture in the middle of the objective lens do not contribute to the brightness of the image. The image actually formed, therefore, is essentially a record of the amount of scattering of each electron pencil which traverses the object and this scattering is to a first approximation proportional to the density times the thickness of matter traversed.

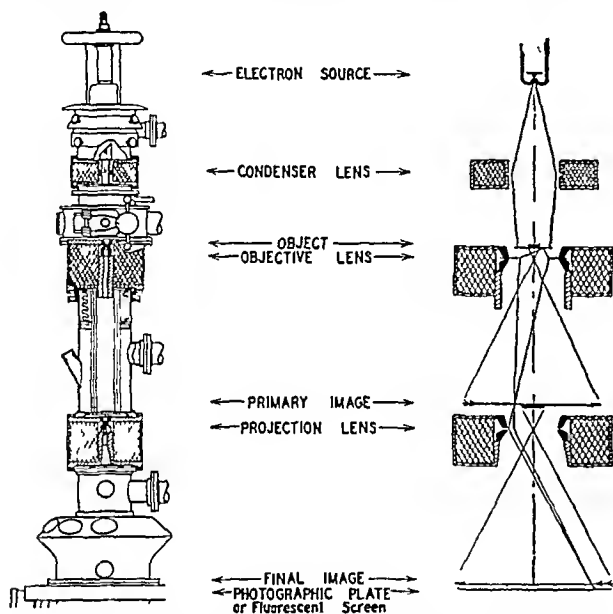


Fig. 1.—The electron microscope. On the left is a scale drawing and on the right a schematic diagram of the instrument showing the arrangement of lenses and the formation of images. (After Anderson<sup>4</sup> fig. 1)

Although the mechanism of image formation is different, electron micrographs may therefore be considered as analogous to x-ray pictures, the darkness and brightness depending on the thickness and density of the specimen. Electron pictures resemble x-ray pictures in another important respect, i.e., that the entire thickness of the usual specimen is in focus. The electron micrograph is thus a projection of the total thickness of the field under examination, this lack of a critical focal plane may cause the illusion of two separate objects, one of which overlies the other, appearing as parts of one object in the electron micrograph.

Since air itself scatters electrons, the interior of the electron microscope is kept at a high vacuum. The bacteria or other specimens are mounted, usually unstained, on a thin collodion film. Some shrinkage of parts of the bacterial cell, in particular the fluid or potentially fluid inner protoplasm, frequently occurs as a result of the unavoidable drying, some distortion of the cell and its parts, due to drying against the mount, may also occur. We have not seen evidence of appreciable alteration of such small objects as bacteria by action of the electron beam itself.

#### THE STRUCTURE OF THE BACTERIAL CELL AS SHOWN BY THE ELECTRON MICROSCOPE

Bacteria are cells, with structurally differentiated parts. A cell wall, structurally distinct from the inner protoplasm, can be detected in electron pictures of each of the kinds of bacterium thus far adequately studied, this includes most micro-organisms pathogenic for man, cocci and rod forms, both gram positive and gram negative and spiral forms (e.g., figs. 2, 3, 4, 5, 6, 17, 22, 26 and 42). Differentiation within the inner protoplasm can be detected in many species in the form of dense spheroidal (fig. 7) or discoidal (fig. 8) granules or of less well defined areas of greater or lesser density (fig. 9). Spores form within the protoplasm of sporulating species (fig. 10), flagella are demonstrable on motile species. Nucleoprotein demonstrable chemically within the bacterial cell can be seen as localized under certain but not all conditions in what has been interpreted as a simple nucleus (fig. 11). Capsules in certain species such as the pneumococcus (fig. 12) and extracellular slime in others, such as *Streptococcus pyogenes*, are demonstrable outside the bacterial cell wall.

**Bacterial Cell Wall and Inner Protoplasm.**—The bacterial cell wall is in the solid state, it maintains its shape and position with relatively little alteration under conditions of drying or mechanical injury to the bacterial cell. The inner protoplasm with its limiting surface is either fluid or a gel which readily passes into the sol state, as is evidenced by the frequency with which the protoplasm appears shrunken away from the cell wall in dried specimens and escapes from the cell wall following injury of the bacterial cell. Bacterial cells may be broken by intense sonic vibration. After such treatment many of the cell walls appear as "ghosts," from which the inner protoplasm has escaped (fig. 2), and jagged lines of fracture of the cell wall may be found (fig. 13). Shrinkage or escape of inner protoplasm from the cell wall may be brought about by appropriate chemical reagents<sup>8</sup> (figs. 14, 15 and 16). Intact cells and "ghosts" of autolyzed cells<sup>9</sup> may be found together in preparations particularly from aging cultures (fig. 17).

In bacteria which are not quite completely divided, and in those which form chains, such as *Streptococcus pyogenes* (fig. 18) or clusters such as *Staphylococcus aureus* (fig. 19), the bacterial cell walls can be seen to be continuous from cell to cell, a connecting strand of protoplasm may or may not be present between the adjacent cells according to the completeness and nature of the cell division.

**Differentiations Detectable Within the Protoplasm.**—The inner protoplasm itself may appear homogeneous in electron pictures. Or inhomogeneities may be apparent in the inner protoplasm, as in micrographs of strains of *Fusobacterium*,<sup>9</sup> *Treponema pallidum* (fig. 7), *Mycobacterium tuberculosis*<sup>10</sup> (fig. 21), *Corynebacterium*

5. Minton L. The Electron Microscope. A New Tool for Bacteriological Research. *J. Bact.* **41**: 397-413 (March) 1941, figure 6.

6. Mudd S. and Lackman D. B. Bacterial Morphology as Shown by the Electron Microscope. I. Structural Differentiation Within the *Streptococcal* Cell. *J. Bact.* **41**: 415-420 (March) 1941.

7. Mudd S., Polevitzky K., Anderson T. F., and Chambers L. A. Bacterial Morphology as Shown by the Electron Microscope. II. The Bacterial Cell Wall in the Genus *Bacillus*. *J. Bact.* **42**: 251-264 (Aug.) 1941.

8. Morton H. E. and Anderson T. F. The Morphology of *Leptospira icterohemorrhagiae* and *L. canicola* as Revealed by the Electron Microscope. *J. Bact.* **45**: 143-146 (Feb.) 1943. Mudd and Anderson<sup>13</sup>.

9. Mudd S., Polevitzky K., Anderson T. F., and Kast C. C. Bacterial Morphology as Shown by the Electron Microscope. III. Cell Wall and Protoplasm in a Strain of *Fusobacterium*. *J. Bact.* **44**: 361-366 (Sept.) 1942.

10. Mudd S., Polevitzky K., and Anderson T. F. Bacterial Morphology as Shown by the Electron Microscope. IV. Structural Differentiation Within the Bacterial Protoplasm. *Arch. Path.* **34**: 199-207 (July) 1942.

terium diphtheriae<sup>11</sup> (fig 8) and others. These inhomogeneities in the inner protoplasm may be of several kinds. In *Fusobacterium* (fig 20), for instance certain areas of the protoplasm may be denser than other areas,<sup>9</sup> and such characteristic differences may even be apparent in stained preparations<sup>12</sup> viewed with the light



Fig 3—*Staphylococcus aureus*. The light appearing cell walls are particularly clearly shown surrounding the dark inner protoplasm of three of the central cluster of four cells. Reduced from an electron micrograph with a magnification of 10 000 diameters.

microscope. In other species definite spheroidal or discoidal granules of high density may be seen within the protoplasm, such granules have been recorded notably with *Mycobacterium tuberculosis* (fig 21), *Treponema pallidum* (fig 7), *Corynebacterium diphtheriae* (fig 8) and *Staphylococcus flavocyaneus*<sup>13</sup> (fig 11). The significance of these granules is not clear in most species. In *Staphylococcus flavocyaneus*, however, microchemical and cytologic evidence<sup>13</sup> strongly suggests the interpretation of these protoplasmic granules as simple nuclei; it seems probable that a similar interpretation may become appropriate for protoplasmic granules in other species but this question had best be left open at the present pending further evidence.

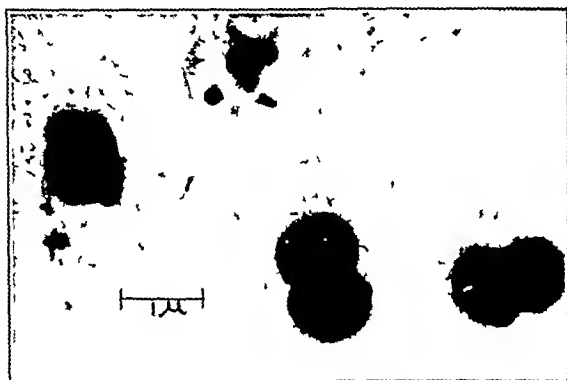


Fig 4—*Neisseria gonorrhoeae*. Two diplococcus pairs are intact, one pair is cytolized. Magnification 11 000 diameters. Reproduced through courtesy of Dr H. E. Morton.

Inhomogeneities in the bacterial protoplasm may also be produced as artefacts due to coagulation, drying or partial cytolysis, as is of course obvious. Such artefacts

are more easily produced in the inner protoplasm than in the cell wall because of the greater fluidity of the protoplasm. Knaysi<sup>14</sup> has demonstrated that in ordinary bacteriologic specimens (viewed with the light microscope) it is only the inner protoplasm and its limiting membrane which are stained and visible. The cell wall is unstained and invisible unless prepared by special mordant and staining technique. Cell wall and protoplast with protoplasmic membrane are shown particularly clearly in figure 22<sup>1</sup>.

**The Capsule**—The pneumococcus capsule has been demonstrated in electron micrographs<sup>16</sup> (fig 12) as a gel of low density outside of and closely enveloping the cell wall, the cell wall in turn enveloping the bacterial protoplasm with its outer limiting membrane. In the specific capsular swelling reaction the interstices of this capsule are permeated by rabbit immune serum, increase in the thickness and density of the capsule results<sup>1</sup> (figs 23 and 24).

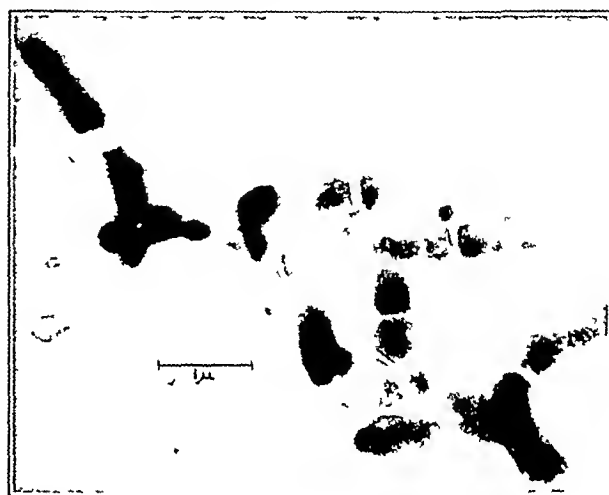


Fig 8—*Corynebacterium diphtheriae*. Discoidal dense granules can be seen near ends of the cells. The protoplasm is shrunken away from the cell walls of several cells. Reduced from an electron micrograph with a magnification of 26 500 diameters. Courtesy of Dr H. E. Morton.

**Flagella**—Flagella are beautifully shown in electron micrographs of motile bacterial species without the necessity of using any mordant or stain. These flagella may occur singly as on cells of *Vibrio cholerae*<sup>18</sup> (figs 14, 15 and 16) may occur all around the bacterial cell as is the case with *Eberthella typhosa*<sup>19</sup> (fig 25) or *Clostridium tetani* (figs 17, 26 and 27) or may occur in tufts as is the case on cells of *Treponema pallidum* (figs 6, 7 and 28). *Treponema*

11 Morton H. E. and Anderson T. F. Electron Microscopic Studies of Biological Reactions. I. Reduction of Potassium Tellurite by *Corynebacterium diphtheriae*. *Proc. Soc. Exper. Biol. & Med.* 46: 272-276 (Feb.) 1941.

12 Varney P. L. The Serological Classification of Fusiform Bacilli. *J. Bact.* 13: 275-314 (April) 1927. Hime M. K. and Bury G. P. Morphological and Cultural Studies of the Genus *Fusiform*. *ibid.* 34: 517-533 (Nov.) 1937.

13 Knaysi G. and Mudd S. The Internal Structure of Certain Bacteria as Revealed by the Electron Microscope. A Contribution to the Study of the Bacterial Nucleus. *J. Bact.* 45: 349-359 (April) 1943.

14 Knaysi C. Cytology of Bacteria. *Botan. Rev.* 4: 83-112 (Feb.) 1938. Observations on the Cell Division of Some Yeasts and Bacteria. *J. Bact.* 41: 141-154 (Feb.) 1941. Elements of Bacterial Cytology. Ithaca N. Y. Comstock Publishing Company 1944.

15 Johnson T. H. Observations on the Electron Microscopy of *B. cereus* and *Typhlocyba*. *J. Bact.* 47: 551-557 (June) 1944.

16 Mudd S., Hennings J. and Anderson T. F. Bacterial Morphology as Shown by the Electron Microscope. VI. Capsule, Cell Wall and Inner Protoplasm of *Pneumococcus* Type III. *J. Bact.* 46: 205-211 (Aug.) 1943.

17 Mudd S., Hennings J. and Anderson T. F. The Pneumococcal Capsular Swelling Reaction Studied with the Aid of the Electron Microscope. *J. Exper. Med.* 78: 327-332 (Nov.) 1943. Johnson T. H. and Dennison W. L. The Volume Change Accompanying the Quelling Reaction of *Pneumococci*. *J. Immunol.* 48: 317-323 (May) 1944.

18 Mudd S. and Anderson T. F. Selective Staining for Electron Micrographs. The Effects of Heavy Metal Salts on Individual Bacterial Cells. *J. Exper. Med.* 76: 103-108 (July) 1942.

19 The flagella of *Eberthella typhosa* are undoubtedly peritrichate. However, Pijper (Microcinematography of the Agglutination of Typhoid Bacilli. *J. Bact.* 42: 395-409 [Sept.] 1941) has shown that in locomotion the flagella of each typhoid bacillus are plumed together to form a cork screw shaped tail which is the actual locomotor organ.

pallidum was described as without flagella until flagella were demonstrated in electron micrographs<sup>20</sup>

**Spores and Sporelike Bodies**—Spores form within the protoplasm of the cells of bacteria of the genus *Clostridium* (the tetanus gas gangrene group) and of the genus *Bacillus*, which includes *Bacillus anthracis*. In young cultures the protoplasm of the bacterial cells may appear homogeneous (fig 26). In older cultures much of the protoplasm appears to be condensed into the spores (figs 10 and 27) which appear as exceedingly dense bodies within a protoplasm of reduced density. Subsequently the spore-mother cell shrivels up (fig 29) and the spore is freed (fig 30).

Electron micrographs<sup>21</sup> of *Treponema pallidum* in a number of instances have shown minute bodies of high density attached to the spirochetal cells (figs 31 and 32), these dense bodies may be closely applied to the sides of the spirochetes or may be attached to the side of the spirochetal cell by short stalks or may be found free. These bodies have been described by a long series

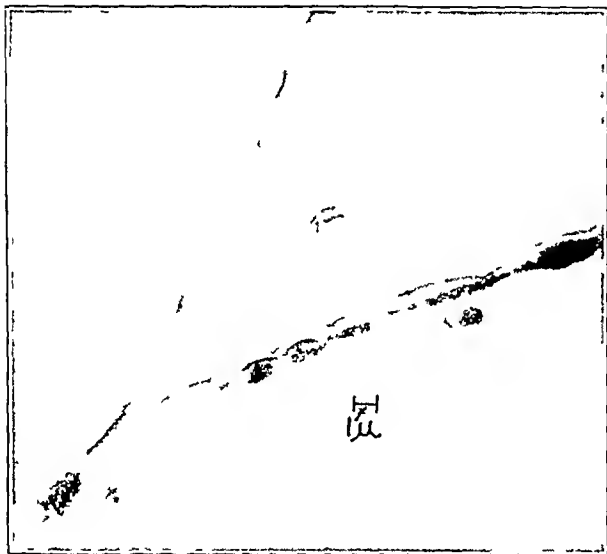


Fig 10—*Bacillus anthracis*. Two chains of vegetative cells; spores appear to be forming in three cells of the lower chain; one extracellular spore is seen from the lower chain. Slightly reduced from an electron micrograph with a magnification of 3 340 diameters.

of investigators, the terms applied to them 'knospen' or "buds" (Meirowsky), "sporelike spherical bodies" (Noguchi), "granules spirochetogenes" (Manouelian), express the interpretation often explicitly made that these are asexual resting or resistant bodies like spores capable of reproducing asexually the normal spirochetal cell. The very impressive accumulation of evidence supporting this interpretation has been reviewed by Meirowsky<sup>22</sup> and Ingraham<sup>23</sup> and more recently by

20 Wile L J and Kearney E B. The Morphology of *Treponema Pallidum* in the Electron Microscope. Demonstration of Flagella. *J A M A* 122 167 168 (May 15) 1943. Mudd S, Polevitzky K, and Anderson T F. Bacterial Morphology as Shown by the Electron Microscope. V. *Treponema Pallidum*. T. Macrodentium and T. Microdentium. *J Bact* 46 15 24 (July) 1943 footnote 10. Wile Pickard and Kearny. *Morton and Anderson*.<sup>21</sup>

21 Wile U J, Picard R G and Kearny E B. The Morphology of *Spirochaeta Pallida* in the Electron Microscope. *J A M A* 119 880-881 (July 11) 1942. Morton H E and Anderson T F. Some Morphologic Features of the Nichols Strain of *Treponema Pallidum* as Revealed by the Electron Microscope. *Am J Syph Gonorr & Ven Dis* 26 565 573 (Sept) 1942. Mudd, Polevitzky and Anderson.<sup>22</sup>

22 Meirowsky E. *Spirochaeta pallida* Schaudinn nebst Bemerkungen über den Entwicklungsreis der Spirochäten. München med. Wchnschr 77 429 430 (March) 1930.

23 Ingraham N R Jr. The Life History of the *Treponema Pallidum*. A Critical Review of the Literature. *Am J Syph* 16 155 189 (April) 1932.

Manouelian.<sup>24</sup> If this interpretation is correct, it might aid, as Ingraham has pointed out, in explaining puzzling aspects of latency, drug resistance and recurrence in syphilis.



Fig 12—*Pneumococcus* type III. Reproduced from Mudd, Hennings and Anderson<sup>25</sup> (fig 1). The delicate areola about each cell or diplococcus pair is the capsule. Reduced from an electron micrograph with a magnification of 11 000 diameters.

It is of interest to consider whether the structural differentiations thus far revealed by the electron microscope afford a clue to the nature of the organization

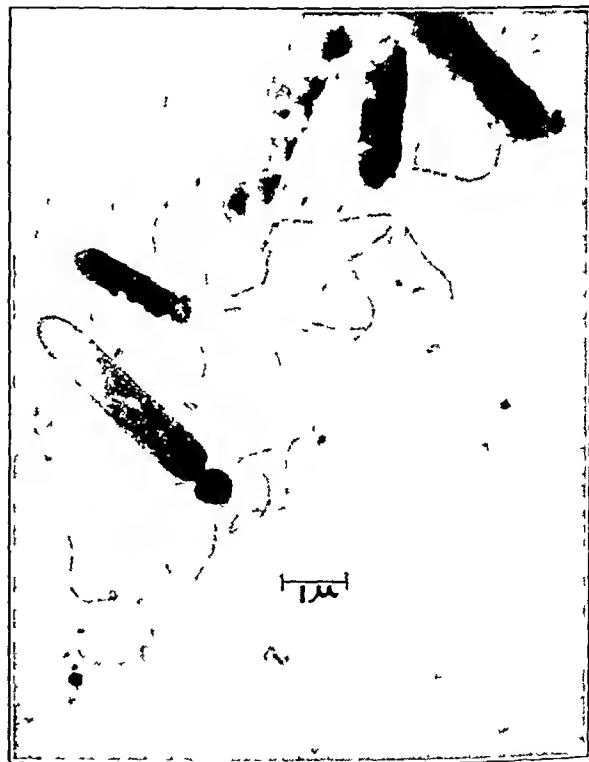


Fig 17—*Clostridium tetani*, 10 day old culture. One intact cell is undergoing unequal division to produce a coccoid cell. The other cells are more or less cytolized. Slightly reduced from an electron micrograph with a magnification of 9 300 diameters.

underlying the amazingly diverse and intricate chemical processes which occur within the minute dimensions of the bacterial cell. *Streptococcus pyogenes*, for

24 Manouelian Y. Etude morphologique de *Spirochaeta pallida* modes de division spirochetogene syphilitique, *Ann Inst Pasteur* 64 439 455 (May) 1940.

instance, elaborates a characteristic type specific protein M, whose locus is at least in part at the surface of the streptococcus cell wall, the majority of strains thus far analyzed<sup>25</sup> possess a second type specific agglutinin T of unknown chemical composition, strains of *Streptococcus pyogenes* elaborate a carbohydrate C characteristic of the serologic group,<sup>27</sup> protein or nucleoprotein components which cross-react with proteins of streptococci of other groups and of pneumococci<sup>28</sup> and nucleic acids of both the d-ribose and desoxyribose types<sup>29</sup>. *Streptococcus pyogenes*, given the necessary growth accessories and amino acids,<sup>30</sup> elaborates the enzyme systems required for aerobic and anaerobic respiration. *Streptococcus pyogenes* in its mucoid phase secretes an extracellular mucoid material, hyaluronic acid,<sup>31</sup> which appears to be identical with a polysaccharide of the mammalian umbilical cord, the vitreous humor<sup>32</sup> and an interfibrillar substance of the corium. *Streptococcus pyogenes* produces at least three demonstrably distinct physiologically active metabolites which are antigenic: the erythrogenic or skin toxin,<sup>33</sup> the streptococcus hemolysin<sup>34</sup> (streptolysin) and fibrinolysin,<sup>35</sup> which acting conjointly with a lytic agent in human serum,<sup>36</sup> causes lysis of human and rabbit fibrin. Certain strains at least of *Streptococcus pyogenes* elaborate an enzyme hyaluronidase, capable of depolymerizing and hydrolyzing hyaluronic acid,<sup>3</sup> this hyaluronidase is known as a 'spreading factor' because of its action in facilitating the dissemination of foreign material, doubtless including bacteria and their products, in the corium.<sup>38</sup> *S. pyogenes* liberates a "lethal agent"<sup>39</sup> of small molecular size

The minute streptococcus cell therefore achieves chemical syntheses which cannot be duplicated in the best equipped chemical laboratories in existence. The concurrent and orderly occurrence of so many chemical

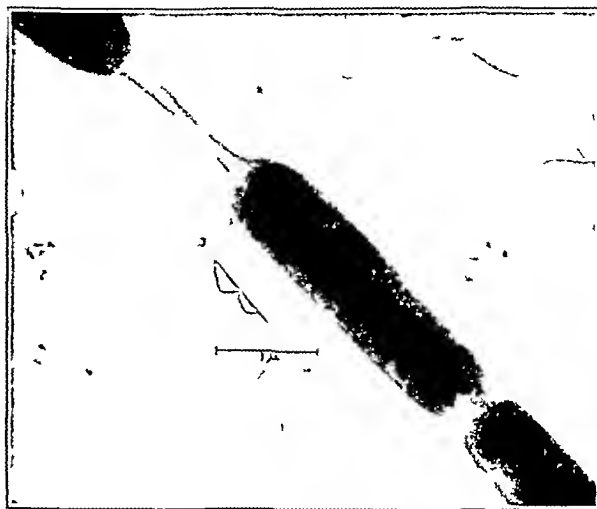


Fig. 22—*Bacillus cereus*. Reproduced from Johnson<sup>41</sup>. A transparent cell wall encloses the dense inner protoplasm. The cells in early division are joined by a relatively broad band of protoplasm; the cells in more advanced division are connected by a delicate strand of protoplasm (plasmodesmid). Reduced from an electron micrograph with a magnification of 40,000 diameters.

processes within minute dimensions must presuppose some pattern of organization of materials even though this organization is on a molecular scale. It must be admitted that the structural differentiations thus far revealed seem gross and crude in comparison to the

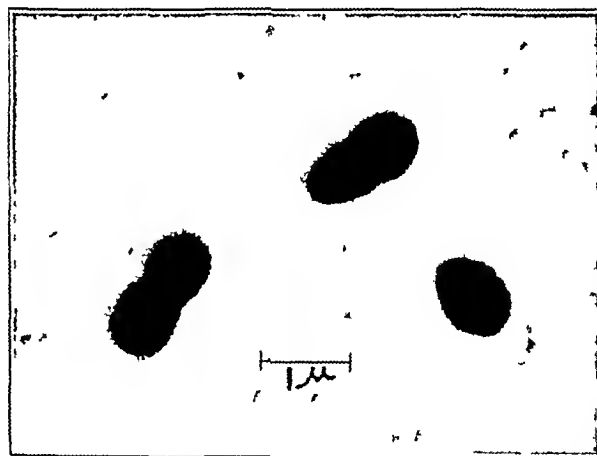


Fig. 23—*Pneumococcus* type 1. Reproduced from Mudd, Heinmets and Anderson<sup>37</sup> (fig. 14). *Pneumococcus* capsule swollen by exposure for three minutes to diluted rabbit antiserum containing specific antibody. Slightly reduced from an electron micrograph with a magnification of 14,000 diameters.

intricate ultramicroscopic organization which one must suppose to exist as a physical basis for the functioning even of bacterial cells. Possibly the discovery of "heavy particles" of complex composition in *S. pyogenes* by Sevag, Smolens and Stern<sup>40</sup> (see also Stern<sup>41</sup>) or of

39. Harris T. N. A Lethal Agent Produced by the Hemolytic Streptococcus. *J. Bact.* 43: 739-748 (June) 1942.

40. Sevag M. G., Smolens J. and Stern K. G. Isolation and Properties of Pigmented Heavy Particles from *Streptococcus pyogenes*. *J. Biol. Chem.* 139: 925-941 (June) 1941.

41. Stern K. G. Studies on Macromolecular Particles Endowed with Specific Biological Activity from Frontiers in Cytochemistry. Biological Symposia 10: 291-321. Lancaster, Pa. 1943.

25. Lancefield R. C. Studies on the Antigenic Composition of Group A Hemolytic Streptococci. I. Effects of Proteolytic Enzymes on Streptococcal Cells. *J. Exper. Med.* 78: 465-476 (Dec.) 1943.

26. Lancefield R. C. Type Specific Antigens M and T of M and Glossy Variants of Group A Hemolytic Streptococci. *J. Exper. Med.* 71: 521-537 (April) 1940. Lancefield R. C. and Stewart W. A. Studies on the Antigenic Composition of Group A Hemolytic Streptococci. II. The Occurrence of Strains in a Given Type Containing M but no T Antigen. *ibid.* 79: 79-88 (Jan.) 1944.

27. Lancefield R. C. A Serological Differentiation of Human and Other Groups of Hemolytic Streptococci. *J. Exper. Med.* 57: 571-595 (April) 1933. Zittle C. A. and Harris T. N. The Antigenic Structure of Hemolytic Streptococci of Lancefield Group A. V. The Purification and Certain Properties of the Group Specific Polysaccharide. *J. Biol. Chem.* 142: 823-833 (Feb.) 1942.

28. Lancefield R. C. The Antigenic Complex of Streptococcus Hemolyticus. II. Chemical and Immunological Properties of the Protein Fractions. *J. Exper. Med.* 47: 469-480 (March) 1928. Mudd S. and Wiener M. The Antigenic Structure of Hemolytic Streptococci of Lancefield Group A. V. Relationships of the Nucleoproteins of Some Species of Streptococci and Pneumococci. *J. Immunol.* 45: 21-28 (Sept.) 1942.

29. Sevag M. G., Smolens J. and Lackman D. B. The Nucleic Acid Content and Distribution in Streptococcus Pyogenes. *J. Biol. Chem.* 134: 523-529 (July) 1940.

30. Bernheimer A. W. and Pappenheimer A. M. Jr. Factors Necessary for Massive Growth of Group A Hemolytic Streptococcus. *J. Bact.* 43: 481-491 (April) 1942. Bernheimer A. W., Gillman W., Hottel G. A., and Pappenheimer A. M. Jr. An Improved Medium for the Cultivation of Hemolytic Streptococcus. *ibid.* 43: 495-498 (April) 1942.

31. Kendall F. E., Heidelberger M. and Dawson M. H. A Serologically Inactive Polysaccharide Elaborated by Mucoid Strains of Group A Hemolytic Streptococcus. *J. Biol. Chem.* 118: 61-69 (March) 1937. Kass E. H. and Serstone C. V. The Role of the Mucoid Polysaccharide (Hyaluronic Acid) in the Virulence of Group A Hemolytic Streptococci. *J. Exper. Med.* 79: 319-330 (March) 1944.

32. Meyer K., Dubos R. and Smith E. M. The Hydrolysis of the Polysaccharide Acids of Vitreous Humor of Umbilical Cord and of Streptococcus by the Autolytic Enzyme of Pneumococcus. *J. Biol. Chem.* 118: 71-78 (April) 1937.

33. Dick C. I. and Dick Gladys H. A Skin Test for Susceptibility to Scarlet Fever. *J. A. M. A.* 82: 265-266 (Jan. 26) 1924. Doehle A. R. and Sherrin I. The Significance of Streptococcus Hemolyticus in Scarlet Fever. *ibid.* 82: 54-544 (Feb. 16) 1924. Hottel G. A. and Pappenheimer A. M. Jr. A Quantitative Study of the Scarlet Fever Toxin Antitoxin Flocculation Reaction. *J. Exper. Med.* 74: 545-556 (Dec.) 1941.

34. Smythe C. V. and Harris T. N. Some Properties of a Hemolysin Produced by Group A Hemolytic Streptococci. *J. Immunol.* 38: 283-300 (April) 1940.

35. Tillett W. S. and Garner R. I. The Fibrinolytic Activity of Hemolytic Streptococci. *J. Exper. Med.* 58: 485-502 (Oct.) 1933.

36. Milstone H. A Factor in Normal Human Blood Which Participates in Streptococcal Fibrinolysis. *J. Immunol.* 42: 109-116 (Oct.) 1941.

37. Meyer K., Chaffee E., Hobbs G. L. and Dawson M. H. Hyaluronidases of Bacterial and Animal Origin. *J. Exper. Med.* 73: 309-328 (March) 1941.

38. Chau E. and Duthie E. S. Identity of Hyaluronidase and Spreading Factor. *Brit. J. Exper. Path.* 21: 324-338 (Dec.) 1940. McClean D. The Capsulation of Streptococci and Its Relation to Diffusion Factor (Hyaluronidase). *J. Path. & Bact.* 53: 13-27 (July) 1941.

(Footnotes continued in the next column)

the minute structural units in the protoplasm of phage lysed *E. coli* cells by Luria, Delbruck and Anderson<sup>42</sup> or of the thixotropic gel-like organization of the axoplasm of nerve cells of the squid by Richards, Steinback and Anderson<sup>43</sup> may afford first glimmers of light as to what the nature of this pattern of organization may ultimately prove to be.

#### THE MORPHOLOGY OF RICKETTSIAS AND PLEURO-PNEUMONIA-LIKE MICRO-ORGANISMS

Epidemic and endemic typhus fevers, the spotted fevers, Q fever and scrub typhus or tsutsugamushi disease are caused by pathogenic rickettsias. These are<sup>44</sup> "small, often pleomorphic, gram negative bacterium-like organisms living and multiplying in arthropod tissues behaving as obligate intracellular parasites, and staining lightly with aniline dyes." *Rickettsia prowazekii*, the causal agent of typhus in its most characteristic form appears as a minute diplobacillus, each member of the diploid form averaging about 0.6 by 0.3 micron.

The rickettsias may be regarded as intermediate in the biologic scale between bacteria and the viruses. Thus in size, shape and staining characteristics they are like little pleomorphic bacteria, they resemble the

viruses in their obligate intracellular parasitism. They may also "be regarded as intermediate in their degree of adaption to intracellular conditions, since they grow best in cells which are metabolizing slowly." For a fuller discussion the reader is referred to the review of Pinkerton.<sup>44</sup>

The morphology of typical rickettsias has recently been studied and beautifully illustrated with electron micrographs by

Plotz, Smadel, Anderson and Chambers.<sup>45</sup> The essential findings have been confirmed by Weiss.<sup>46</sup> These electron pictures show that rickettsias (figs 33, 34 and 35), like bacteria, are cells with a limiting cell wall clearly distinct from the inner protoplasm. The protoplasm of the rickettsial cells itself shows pronounced differences in density, the denser areas may be more or less sharply localized. Rickettsial cells are pleomorphic, i.e. the cells of a given preparation differ much in size and shape.

Another category of parasitic micro-organisms whose characteristics may be considered as intermediate between bacteria and viruses is the pleuropneumonia-like group. The literature has been reviewed by

42 Luria S. E., Delbruck M. and Anderson T. F. *Electron Microscope Studies of Bacterial Viruses* J. Bact. 46: 57-77 (July) 1943.

43 Richards A. G. Jr., Steinback H. B. and Anderson T. F. *Electron Microscope Studies of Squid Giant Nerve Axoplasm* J. Cell & Comp. Physiol. 21: 129-143 (April) 1943.

44 Pinkerton H. *The Pathogenic Rickettsiae with Particular Reference to Their Nature, Biologic Properties and Classification* Bact. Rev. 6: 37-78 (March) 1942.

45 Plotz H., Smadel J. E., Anderson T. F. and Chambers L. A. *Morphological Structure of Rickettsiae* J. Exper. Med. 77: 335-358 (April) 1943.

46 Weiss L. J. *Electron Micrographs of Rickettsiae of Typhus Fever* J. Immunol. 47: 353-357 (Nov.) 1943.

Sabin.<sup>47</sup> Electron micrographs of the pleomorphic cells of a pleuropneumonia-like strain from arthritis in a rat are recorded by Weiss.<sup>48</sup>

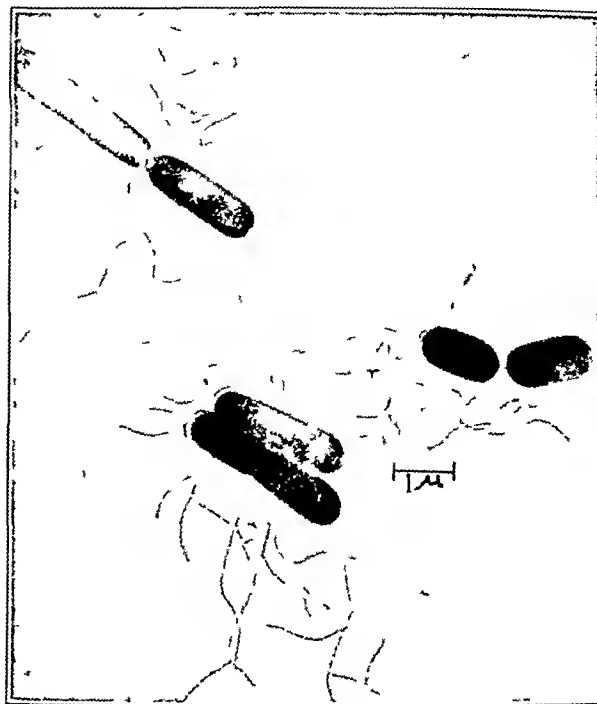


Fig. 26—*Clostridium tetani* cells from twenty four hour culture. In the cells of this young culture the protoplasm is homogeneous within its clear cell walls; stages of cell division and peritrichous flagella are shown. Slightly reduced from an electron micrograph with a magnification of 9,300 diameters.



Fig. 27—*Clostridium tetani* cells from a three day culture. Terminal drumstick spores formed within the bacterial cells. Slightly reduced from an electron micrograph with a magnification of 14,000 diameters.

Highly pleomorphic strains of pathogenic bacteria, which exhibit growth phases resembling pleuropneumonia-like micro-organisms, are currently described by

47 Sabin A. B. *The Filtrable Micro-Organisms of the Pleuropneumonia Group* Bact. Rev. 5: 1-66 (March) 1941.

48 Weiss L. J. *Electron Micrographs of Pleuropneumonia like Organisms* J. Bact. 47: 523-533 (June) 1944.



Dienes and Smith<sup>48a</sup> and by Hesselbrock and Foshay<sup>48b</sup>. Although these forms may depart widely in structure and reproductive behavior from ordinary monomorphic conceptions of bacterial morphology, their organization is still essentially cellular. A pleomorphic strain of *Bacteroides funduliformis* is under electron microscopic study.<sup>48c</sup>

#### MORPHOLOGY OF VIRUSES

The viruses are intracellular agents of disease which can be propagated only in the presence of cells that they parasitize. The viral infectious units moreover, are too small to be resolved and in most cases even to be made visible by ordinary light. It has been natural therefore for many to suppose that viruses are essentially similar to one another in their physical and chemical nature. Other students of viruses, however, notably T. M. Rivers,<sup>49</sup> have for some years advanced reasons for concluding that viruses are heterogeneous and differ widely in nature among themselves. The electron microscope is providing clear morphologic evidence of the heterogeneity of viruses. Vaccinia elementary bodies<sup>50</sup> as an example of the larger viruses,

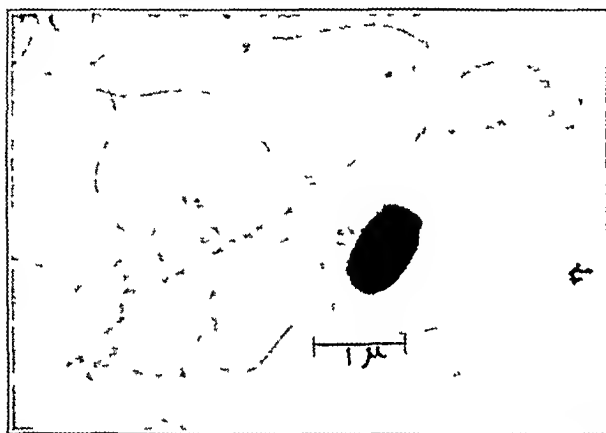


Fig. 29—*Clostridium sporogenes* cells from a three day culture. Nothing remains of the vegetative cells except ghosts to which peritrichous flagella remain attached in one ghost is a spore. Slightly reduced from an electron micrograph with a magnification of 14 000 diameters.

have an essentially cellular organization resembling that of bacteria, viruses of intermediate size such as bacteriophage still possess structural differentiation.<sup>42</sup> The smallest viruses apparently are giant molecules or minute crystals. A scale of dimensions is given in figure 37.

**Animal Viruses**—The morphology of that category of viruses in which the elementary infectious units are largest, namely the psittacosis-lymphogranuloma trachoma group, has not yet been investigated with the electron microscope as far as we are aware. Such studies would be most desirable.

**Vaccinia Elementary Bodies**—The morphology of the virus of vaccinia has been presented in clearest detail by Green, Anderson and Smadel,<sup>51</sup> from whom the following is quoted:

48a Dienes L. and Smith W. E. The Significance of Pleomorphism in *Bacteroides Strains* J. Bact. 48: 125-153 (Aug.) 1944.

48b Hesselbrock W. and Foshay L. The Morphology of *Bacterium Tularensis* J. Bact. to be published. Foshay L. and Hesselbrock W. Some Observations on the Filtrability of *Bacterium Tularensis* J. Bact. to be published.

48c Smith W. E. and Mudd S. To be published.

49 Rivers T. M. Viruses and Virus Diseases (Lane Medical Lectures) Stanford University, Calif. Stanford University Press 1939.

50 Rivers T. M. Virus Diseases with Particular Reference to Vaccinia from Virus Diseases by Members of the Rockefeller Institute for Medical Research, Ithaca N. Y. Cornell University Press 1943 pp. 3-31.

(Footnote continued in the next column)

Elementary bodies of vaccinia when viewed by electron microscopy present a high degree of regularity of external outline and of internal form. The particles are almost rectangular in shape and usually possess five circumscribed areas

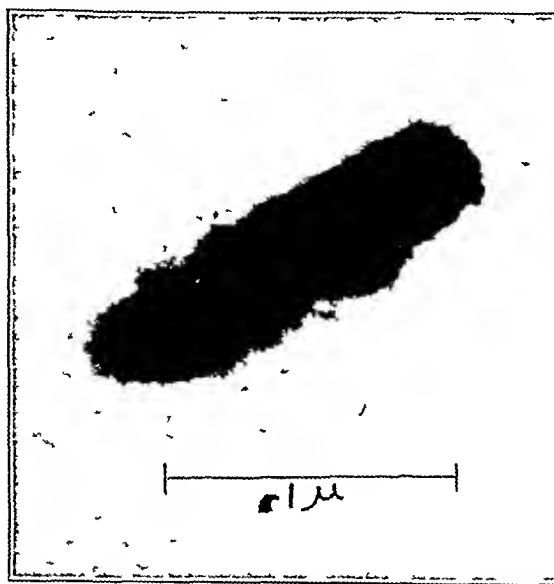


Fig. 33—*Rickettsia prowazekii* from epidemic typhus. Reproduced through the courtesy of Dr. Leslie A. Chambers. Johnson Foundation for Medical Physics, University of Pennsylvania. Magnification 40 000 diameters.

which are more dense than the surrounding substance and hence appear darker in the electron micrograph. The central area of condensation in the elementary body is slightly larger than the others which are spread around it. Their general arrangement suggests that of the five spots on dice.

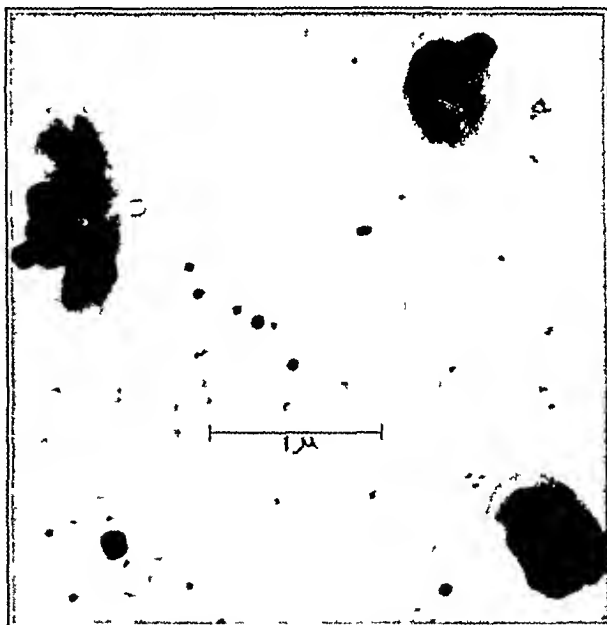


Fig. 34—*Rickettsia prowazekii* from murine typhus. Reproduced through the courtesy of Dr. L. A. Chambers. Reduced from an electron micrograph with a magnification of 40 000 diameters.

Elementary bodies which are joined by a narrow bridge of material of lighter density than the bodies themselves are not infrequently encountered. The general shape of the virus particles seems to resemble a brick (fig. 36).

51 Green R. H., Anderson T. F. and Smadel J. E. Morphological Structure of the Virus of Vaccinia. J. Exper. Med. 75: 651-656 (June) 1942.

The elementary bodies may be cytolized by ten minutes' exposure to tenth normal sodium hydroxide. The limiting membranes of the elementary bodies remain after cytolysis as "ghosts." "Certain of the ghosts formed in this manner have ruptured, some have wedge shaped gaps in their surfaces and others show substance streaming from them."

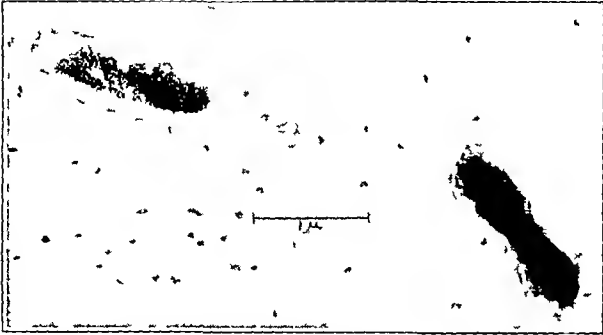


Fig 35—*Rickettsia* (*Dermacentroxenus rickettsi*) from Rocky Mountain spotted fever. Reproduced through the courtesy of Dr L A Chambers. Reduced from an electron micrograph with a magnification of 40 000 diameters.

Elementary bodies of vaccinia thus resemble bacteria in having an essentially cellular organization. In their complex chemical and antigenic composition<sup>50</sup> they also resemble bacteria.

*Influenza, Equine Encephalomyelitis, Papilloma and Foot and Mouth Disease Virus Particles*—Identification

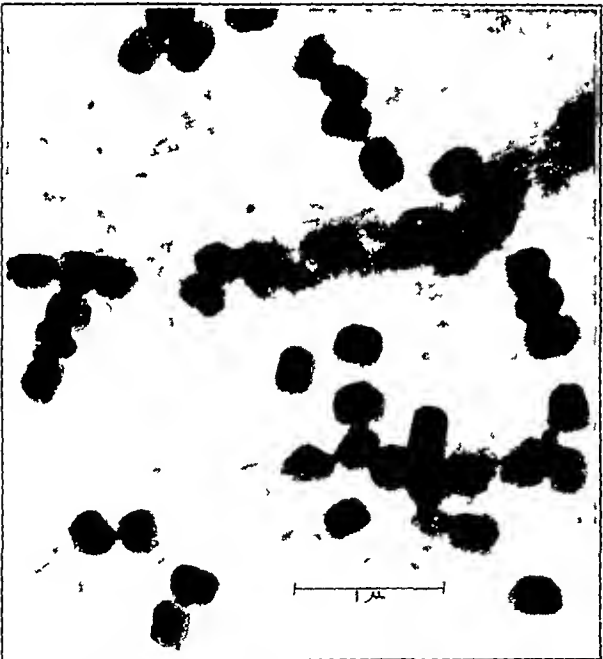


Fig 36—*Vaccinia* elementary bodies. Reproduced through the courtesy of Drs R H Green, T F Anderson and J E Smadel.<sup>51</sup> The polyhedral bodies are often joined to form diploids or short chains by the continuity of their limiting surface. Reduced from an electron micrograph with a magnification of 45 000 diameters.

tion and characterization of the elementary infectious units causing virus diseases in man and animals has been rendered very difficult by the fact that until recently the sole sources of such virus particles have been suspensions prepared from infected somatic tissues. Introduction of the method of propagation of virus in

the chorioallantoic sac<sup>52</sup> of the embryonated hen's egg with recovery of virus from the chorioallantoic fluid has ameliorated but not removed this difficulty of distinguishing with certainty between infectious agent tissue detritus and other noninfectious material.<sup>53</sup>

Moreover, the physical methods employed for separation of viruses, such as ultrafiltration, ultracentrifugation, electrophoresis and diffusion measurements, are complex and contain possibilities of error which may be incompletely explored. It is not surprising, then, that the morphology of very few viruses of human and other animal diseases may as yet be described without reservation.

COMPARATIVE SIZES OF VIRUSES

|                                       | Molecular weight X 10 <sup>6</sup><br>(Particle weight X 6.6 X 10 <sup>11</sup> ) | Diam or length X width in mμ |
|---------------------------------------|---|------------------------------|
| Red blood cells*                      | 173 000 000   | 7 500                        |
| <i>Bacillus prodigiosus</i> *         | 173 000   | 750                          |
| <i>Rickettsia</i> *                   | 11 100  | 300                          |
| <i>Pollacosis</i> *                   | 8 500   | 275                          |
| <i>Vaccinia</i> *                     | 4 300   |                              |
| <i>Myxoma</i> *                       | 4 300   | 225                          |
| Canary pox*                           | 4 300   |                              |
| <i>Pleuro-pneumonia organism</i> *    | 1 400   |                              |
| <i>Pseudo rabies</i>                  | 1 400   |                              |
| <i>Ectromelia</i>                     | 1 400   | 150                          |
| <i>Herpes simplex</i>                 | 1 400   |                              |
| <i>Rabies fixe</i>                    | 800   |                              |
| Borna disease                         | 800   | 125                          |
| Influenza                             | 400   |                              |
| Vesicular stomatitis                  | 400   | 100                          |
| <i>Staphylococcus bacteriophage</i> † | 300   |                              |
| Fowl plague                           | 300   | 90                           |
| <i>C<sub>16</sub> bacteriophage</i>   | 173   | 75                           |
| Chicken tumor I*                      | 142   | 70                           |
| Tobacco mosaic*                       | 35  |                              |
| Cucumber mosaic 3 and 4*              | 35  | 280 X 15                     |
| Gene (Hulters est of max size)*       | 33  | 125 X 20                     |
| Latent mosaic of potato*              | 26  | 430 X 9.8                    |
| Rabbit papilloma (Shope)*             | 25  | 40                           |
| Equine encephalitis                   | 23  |                              |
| <i>Megaltherium bacteriophage</i>     | 23  | 38                           |
| Rift valley fever                     | 11  | 30                           |
| Tomato bushy stunt*                   | 8   | 26                           |
| Hemocyanin molecule (Busyon)*         | 6.7   | 22                           |
| Yellow fever                          | 4.3   | 22                           |
| Tobacco ring spot*                    | 3.4   | 19                           |
| Louping ill                           | 2.8   | 19                           |
| Hemocyanin molecule (Octopus)*        | 2.8   | 20                           |
| Alfalfa mosaic*                       | 2.1   | 16.5                         |
| Poliovirus                            | 0.7   | 12                           |
| <i>Staphylococcus bacteriophage</i> † | 0.4   |                              |
| Foot and mouth disease                | 0.45  | 10                           |
| Hemoglobin molecule (Horse)*          | 0.065   | 15 X 3                       |
| Egg albumin molecule*                 | 0.040   | 9 X 3                        |

Fig 37—Comparative sizes of viruses revised as of June 1944 by W M Stanley.<sup>52</sup> (fig 6)

Early studies of the infectious agent of influenza derived from lung tissue led to the conclusion that the diameter of the infectious unit was between 80 and 120 millimicrons. The nature of influenza virus was

52 Woodruff A M and Goodpasture E W. The Susceptibility of the Chorioallantoic Membrane of Chick Embryos to Infection with the Fowl Pox Virus. *Am J Path* 7: 209-222 (May) 1931. Scott J F. Swine Influenza. 13th International Veterinary Congress, Zurich Inter-laken 1: 479-490 1938. Henle W and Chambers L A. The Serological Activity of Extraembryonic Fluids of Chick Infected with Virus of Influenza A. *Proc Soc Exper Biol & Med* 46: 713-717 (April) 1941. Burnet F M. Growth of Influenza Virus in the Allantoic Cavity of the Chick Embryo. *Australian J Exper Biol & M Sc* 19: 291-295 (Dec) 1941. Nigg C, Wilson D E and Crowley J H. Studies on the Cultivation of Influenza Virus. *Am J Hyg Sect B* 34: 138-147 (Nov) 1941.

53 A word of caution is perhaps in order with respect to virus strains propagated within the chorioallantoic sac. Burnet and Bull (Changes in Influenza Virus Associated with Adaptation to Passage in Chick Embryos. *Australian J Exper Biol & M Sc* 21: 55-69 [June] 1943) have shown that the virus of influenza A isolated from human cases on propagation in ovo undergoes phase variation. The adapted or derivative (D) phase differs appreciably in a number of respects from the original (O) phase. Only the derivative phase can be propagated in the allantoic cavity.

reinvestigated by Chambers and Henle<sup>54</sup> and by Chambers, Henle, Lauffer and Anderson<sup>55</sup> using both suspensions from influenzal lungs and suspensions of virus obtained from the allantoic fluid of chick embryos infected with influenzal virus. The results of sedimentation experiments in the angle ultracentrifuge, together with other observations, seemed to indicate the elementary infectious particles of influenza to be only about 11 millimicrons in diameter. Subsequent work, however, revealed an unreckoned complication dependent on convection currents in the angle centrifuge<sup>56</sup>. Critical reinvestigations of the infectious units of human influenza viruses A and B by Taylor, Sharp and their collaborators,<sup>57</sup> by Stanley<sup>58</sup> and by Friedewald and Pickels<sup>59</sup> have recently indicated in each case that the unit infectious particles of human influenza virus have diameters within the range originally estimated. Similar findings are obtained by Taylor, Sharp, McLean, the Beards, Dingle and Feller<sup>59a</sup> for the virus of swine influenza.

Electron micrographs recently made in the RCA laboratories in Princeton of preparations of PR 8 strain (type A) and Lee strain (type B) human influenza virus, purified and concentrated from infectious extra-embryonic fluids of chick embryos by means of differ-

amounts of normal chick components associated with them possibly adsorbed to their surfaces.

Infectious particles have recently been separated by Taylor and his collaborators<sup>60</sup> from the tissue of chick embryos infected with the virus of equine encephalomyelitis (eastern strain). These particles are described by the authors as containing 54 per cent fat solvent

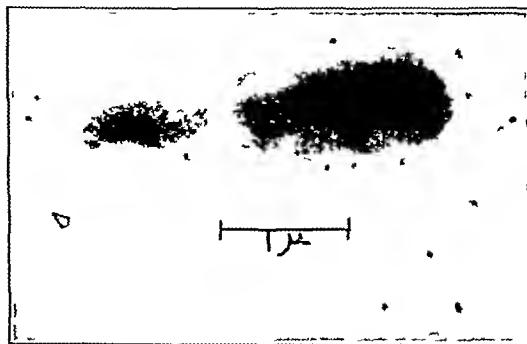


Fig. 42—Bacteriophage particles, a strain attached to cells of *Escherichia coli*. Reduced from an electron micrograph with a magnification of 17 500 diameters.

extractable material 4 per cent carbohydrate and the remainder nucleoprotein of the ribose type. Electron micrographs show these particles to be of considerable uniformity, they are described by the authors as "probably spherical in shape, constituted peripherally of a substance the limits of which are ill defined in the micrographs in the absence of special treatment." The centers of these particles appear to be denser than the peripheries. After appropriate treatment with isotonic solution of three chlorides diluted 1:3 with 0.25 per cent calcium chloride the peripheral portion of the particles becomes darker and sharper. The authors give the mean diameter of the particles of vague outline as 40.2 millimicrons, that of the particles after treatment with calcium chloride as 47.5 millimicrons.

It may be considered that the observations summarized suggest a differentiation of these virus infec-



Fig. 38—Virus of human influenza type A, PR 8 strain. Reproduced through the courtesy of Dr. Wendell M. Stanley. Reduced from an electron micrograph with a magnification of 30 000 diameters.

ent centrifugation, are shown in figures 38 and 39. These may be characterized as spheres with a diameter of about 100 millimicrons. Recent analysis by Knight<sup>59b</sup> in Stanley's laboratory indicates, however, that even these infectious purified virus particles have measurable

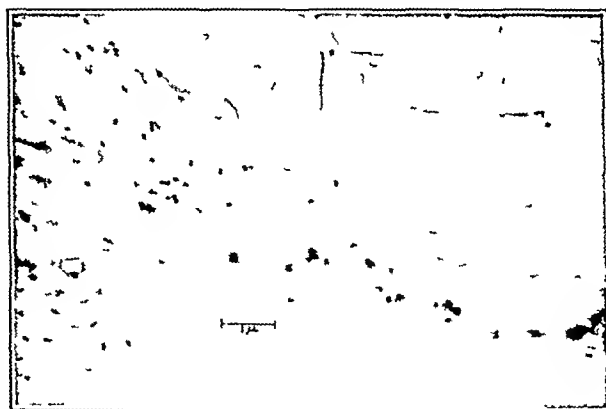


Fig. 43—*Escherichia coli* plus virus  $\gamma$  twenty-three minutes contact. A bacterium immediately after lysis showing protoplasmic granules and several hundred particles of virus. Reproduced from Luria, Delbruck and Anderson<sup>42</sup> (fig. 5). Reduced from an electron micrograph with a magnification of 20 000 diameters.

tious units into a surface material enclosing an inner material of different composition. If all the foregoing observations are confirmed and the particles are proved

60 Taylor, A. R., Sharp, D. G., Beard, D., and Beard, J. W. Isolation and Properties of the Equine Encephalomyelitis Virus (Eastern Strain). *J. Infect. Dis.* 72: 31-41 (Jan. Feb.) 1943. Electron Micrography of the Eastern Strain Equine Encephalomyelitis Virus. *Proc. Soc. Exper. Biol. & Med.* 51: 332-334 (Dec.) 1942.

54 Chambers, L. A. and Henle, W. Studies on the Nature of the Virus of Influenza. I. The Dispersal of the Virus of Influenza A in Tissue Emulsions and in Extraembryonic Fluids of the Chick. *J. Exper. Med.* 77: 251-264 (March) 1943.

55 Chambers, L. A., Henle, W., Lauffer, M. A. and Anderson, T. F. Studies on the Nature of the Virus of Influenza. II. The Size of the Infectious Unit in Influenza A. *J. Exper. Med.* 77: 265-276 (March) 1943.

56 Friedewald, W. F. and Pickels, E. G. Size of Infective Particle and Hemagglutinin of Influenza Virus as Determined by Centrifugal Analysis. *Proc. Soc. Exper. Biol. & Med.* 52: 261-262 (March) 1943.

57 Taylor, A. R., Sharp, D. G., Beard, D., Beard, J. W., Dingle, J. H. and Feller, A. E. Isolation and Characterization of Influenza A Virus (PR 8 Strain). *J. Immunol.* 47: 261-282 (Sept.) 1943. Sharp, D. G., Taylor, A. R., McLean, I. W., Jr., Beard, D., Beard, J. W., Feller, A. E. and Dingle, J. H. Isolation and Characterization of Influenza Virus B (Lee Strain). *ibid.* 48: 129-153 (Feb.) 1944. Sharp, D. G., Taylor, A. R., McLean, I. W., Jr., Beard, D. and Beard, J. W. Density and Size of Influenza Virus A (PR 8 Strain) in Solution. *Science* 100: 151-153 (Aug. 18) 1944.

58 Stanley, W. M. An Evaluation of Methods for the Concentration and Purification of Influenza Virus. *J. Exper. Med.* 79: 255-266 (March) 1944. Stanley, W. M. The Size of Influenza Virus. *J. Exper. Med.* 79: 267-283 (March) 1944.

59 Friedewald, W. F. and Pickels, E. G. Centrifugation and Ultrafiltration Studies on Allantoic Fluid Preparations of Influenza Virus. *J. Exper. Med.* 79: 301-317 (March) 1944.

59a Taylor, A. R., Sharp, D. G., McLean, I. W., Jr., Beard, D., Beard, J. W., Dingle, J. H. and Feller, A. E. Purification and Character of the Swine Influenza Virus. *J. Immunol.* 48: 361-379 (June) 1944.

59b Knight, C. A. A Sedimentable Component of Allantoic Fluid and Its Relationship to Influenza Viruses. *J. Exper. Med.* 80: 83-100 (Aug.) 1944.

beyond question to be actual infectious units of the virus, it would appear that these and similar virus units may represent the simplest organization<sup>61</sup> of life thus far described

Electron micrographs of similar character have been published by the same authors<sup>62</sup> for the virus of the

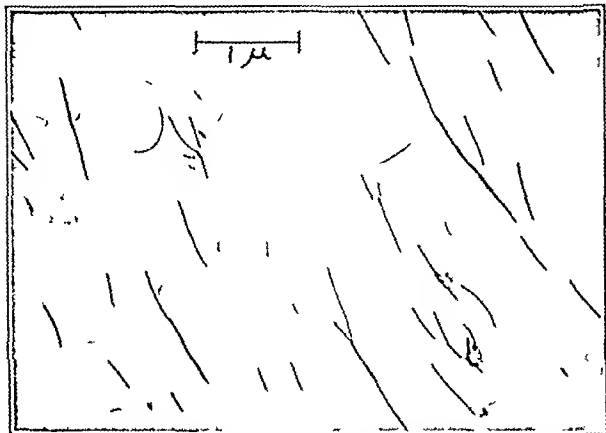


Fig 45—Virus of cucumber mosaic 4. Reproduced from Stanley and Anderson<sup>7</sup> (fig 15). Reduced from an electron micrograph with a magnification of 20,000 diameters

western strain of equine encephalomyelitis. The authors conclude that "the western strain equine encephalomyelitis virus is a spherical or disk shaped particle of

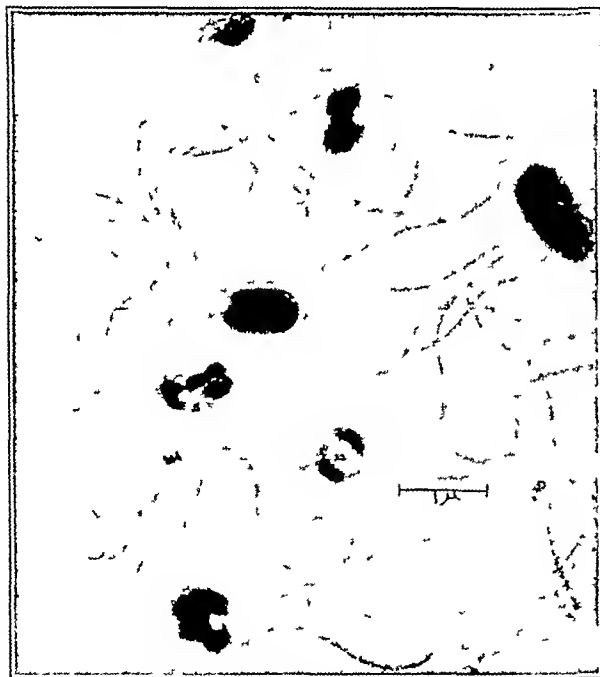


Fig 47—*Eberthella typhosa* sensitized with 1:4 antityphoid rabbit serum thirty seconds contact with serum. The flagella are thickened and darkened by deposition of antibody globulin on their surfaces; the bacterial cell walls also have a film of protein from the specific antiserum. Clear spaces due to shrinkage of the inner protoplasm on drying separate the protoplasmic membrane from the serum sensitized cell walls. Reduced from an electron micrograph with a magnification of 27,000 diameters

approximately 40 millimicrons in diameter. Electron micrographic images reveal an internal structure characterized by a round or oval region of relatively high

density surrounded by an enveloping material of less density." The same authors have reported similar findings for the virus of rabbit papillomatosis.<sup>63</sup>

Glaser and Stanley<sup>64</sup> have separated purified nucleoprotein particles from the blood of silkworms diseased with silkworm jaundice. Electron micrographs and ultracentrifugation data show these particles to be spheres with a diameter of the order of 10 millimicrons and molecular weight of about 300,000. Preparations of these purified particles reproduce the disease in very high dilution, despite this and other suggestive evidence, the authors refrain from drawing the conclusion that these particles are to be considered with certainty as being the active disease agent.

Electron micrographs of particles believed by the authors to be the virus of foot and mouth disease have been published by von Ardenne and Pyl.<sup>65</sup>

**Bacterial Viruses**—The physical nature of bacterial viruses (bacteriophage particles) until the introduction of the electron microscope could only be inferred from

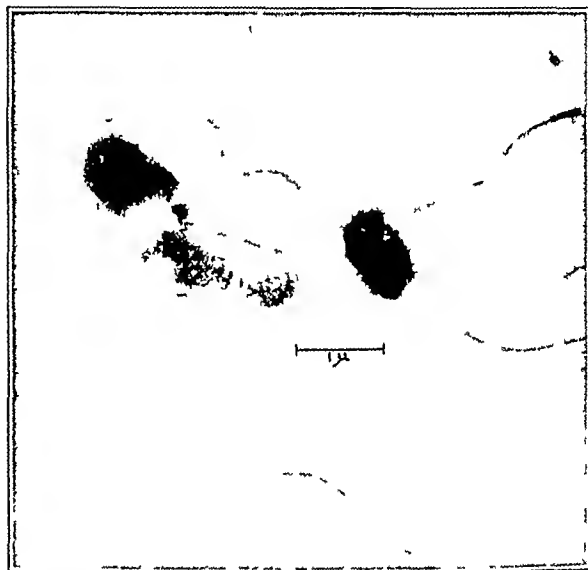


Fig 48—*Eberthella typhosa* sensitized with 1:8 antityphoid rabbit serum one hundred and five seconds contact with serum. Flagella and cell somatic surfaces are coated with protein from the specific antiserum. Reduced from an electron micrograph with a magnification of 27,000 diameters

studies by indirect methods. Investigations prior to 1941 have been reviewed by Krueger and Scribner.<sup>66</sup> Investigations of bacterial viruses with the aid of the electron microscope have been published by Ruska,<sup>67</sup> Kausche and Pfankuch,<sup>68</sup> Luria and Anderson,<sup>69</sup> Luria, Dellbrück and Anderson,<sup>70</sup> and by Baylor, Severens and Clark.<sup>71</sup>

63 Sharp D G, Taylor A R, Beard D and Beard J W. Study of the Papilloma Virus Protein with the Electron Microscope. *Proc Soc Exper Biol & Med* 50: 205-207 (June) 1942.

64 Glaser R W and Stanley W M. Biochemical Studies on the Virus and the Inclusion Bodies of Silkworm Jaundice. *J Exper Med* 77: 451-466 (May) 1943.

65 von Ardenne M and Pyl G. Versuche zur Abbildung des Maul und Klauenseuche Virus mit dem Universal Elektronenmikroskop. *Naturwissenschaften* 28: 531-532 (Aug 16) 1940.

66 Krueger A P and Scribner E Jane. The Bacteriophage Its Nature and Its Therapeutic Use. *J A M A* 116: 2160-2167 (May 10) 1941.

67 Ruska H. Die Sichtbarmachung der Bakteriophagen Lyse im Uebermikroskop. *Naturwissenschaften* 28: 45 (Jan) 1940.

68 Kausche G A and Pfankuch E. Isolierung und uermikroskopische Abbildung eines Bakteriophagen. *Naturwissenschaften* 28: 46 (Jan) 1940.

69 Luria S E and Anderson T F. The Identification and Characterization of Bacteriophages with the Electron Microscope. *Proc Nat Acad Sci* 28: 127-130 (April) 1942.

70 Baylor M R B, Severens J M and Clark G L. Electron Microscope Studies of the Bacteriophage of *Salmonella Pullorum*. *J Bact* 47: 277-282 (March) 1944.

61 By organization in the sense used is meant differentiation and localization of components of structure which are not merely structural units or building stones of a single molecule.

62 Sharp D G, Taylor A R, Beard D and Beard J W. Electron Micrography of the Western Strain Equine Encephalomyelitis Virus. *Proc Soc Exper Biol & Med* 51: 206-207 (Nov) 1942.

The definitive studies of phage structure thus far are those of Luria, Delbruck and Anderson.<sup>42</sup> These concern particularly two strains of coli phage  $\alpha$  and  $\gamma$  which are propagated on the same strain of *E. coli*; the same bacteria then produce particles of type  $\alpha$  if acted on by virus  $\alpha$ , and particles of type  $\gamma$  if acted on by virus  $\gamma$ . Both types of phage particle, amazingly, prove to be structurally differentiated "sperm shaped" bodies.

"The particles of virus  $\alpha$  have a round head, 45 to 50 millimicrons in diameter and uniformly dark in the micrographs that means uniformly scattering for 60 kilovolt electrons (fig. 40). To this round head is attached a tail about 150 millimicrons long and not more than 10 to 15 millimicrons thick. The tail appears either straight or slightly curved.

"The particles of virus  $\gamma$  present a very peculiar aspect (fig. 41). To an oval head, 65 by 80 millimicrons, a straight tail, 120 millimicrons long and 20 millimicrons thick, is attached at one of the narrow poles. The head always shows a structure consisting of light and dark areas. The structure, although striking enough to make the particles immediately recognizable, is quite variable. Four frequent configurations can be described schematically as X shaped, Z shaped, inverted Z shaped and diplococcus shaped."

The authors believe that the dark parts represent regions of greater thickness in the dried particle. "It is possible that the particles in the native state are oval, but on drying the more aqueous parts collapse, while the solid parts retain more scattering material, which forms the dark areas of the heads."

Particles of another coli virus are round, 50 to 60 millimicrons in diameter, and no tail can be seen.<sup>43</sup> Particles of a staphylococcus virus have a head about 100 millimicrons in diameter and a tail about 200 millimicrons long.<sup>44</sup>

In later work Anderson<sup>45</sup> has demonstrated that the heads of coliphage particles may be injured by sonic vibration or by ultraviolet irradiation, so as to permit escape of the dense material of the head, leaving its surrounding membrane as a "ghost" to which the tail is still attached.

**Plant Viruses**—W. M. Stanley in 1935 announced the preparation of the virus causing mosaic disease in tobacco plants in the form of a crystalline nucleoprotein. Subsequent work has confirmed and greatly extended this discovery. The unit particle of this virus is now well established to be a rod shaped nucleoprotein 'macromolecule' whose diameter is about 15 millimicrons and whose length is about 280 millimicrons. These molecules tend to aggregate end to end and side to side to form crystal-like structures of two dimensional regularity (fig. 44). Analysis by x-ray diffraction<sup>46</sup> has shown that the unit particles or molecules of the tobacco mosaic virus nucleoprotein themselves have a definite internal architecture that is due to regular and periodic arrangement of the structural units of which the macromolecule is composed.

Minute amounts of these crystalline macromolecules properly inoculated into susceptible plants of many species are infective; the virus is capable of indefinite propagation in diseased plants; modifications of the virus have been observed to occur in certain host plants; and the variant virus strains have been shown to have

demonstrable chemical differences from the parent strain.<sup>47</sup> Tobacco mosaic virus thus possesses the properties of reproduction and adaptation, two attributes which have heretofore been considered as distinctively characteristic of living systems, whether or not a crystalline nucleoprotein molecule can be considered to be alive, however, raises questions which cannot profitably be considered here.

Other plant viruses, such as the cucumber mosaic virus (fig. 45), have been shown to be essentially similar to that of tobacco mosaic disease. The virus of tomato bushy stunt (fig. 46),<sup>48</sup> on the other hand, has been shown to consist of spherical particles about 26 millimicrons in diameter and that of tobacco necrosis<sup>49</sup> of essentially spherical particles about 20 millimicrons in diameter.

NOTE—The second instalment of this paper, by Dr. Mudd, will appear in next week's issue of THE JOURNAL.

## NEW AND NONOFFICIAL REMEDIES

The following additional articles have been accepted as conforming to the rules of the Council on Pharmacy and Chemistry of the American Medical Association for admission to New and Nonofficial Remedies. A copy of the rules on which the Council bases its action will be sent on application.

AUSTIN E. SMITH, M.D., Secretary

**ISO-PAR**—A mixture of water insoluble isoparaffinic acids partially neutralized with hydroxybenzyl-dialiphatic amines. The water insoluble isoparaffinic acids are obtained by oxidation of petroleum hydrocarbons by the passage of a current of oxygen under pressure at an elevated temperature in the presence of a metallic catalyst. The water insoluble monocarboxylic and dicarboxylic acids with from 6 to 16 carbon atoms are separated and purified by fractional distillation. The hydroxybenzyl-dialiphatic amines are combined directly with the isoparaffinic acids or in a suitable solvent. The latter is then removed by distillation.

**Actions and Uses**—Unguentum Iso Par is for external use only. It should not be covered with thick tight bandaging, since irritation may result from this type of dressing. It is said to be of value in the treatment of pruritus ani and vaginae, mycotic infections of the hand and feet and eczemas of the ear and certain skin allergic manifestations. This ointment is stimulating, lowers the levels of irritability of the skin and is in varying degrees bactericidal and fungicidal.

**Dosage**—It should be applied with a rubber finger stall, a small wad of absorbent cotton or gauze, or other convenient applicator, since it possesses an odor which may be objectionable if it persists on the fingers. The first applications may cause a temporary burning sensation, but this disappears later. The ointment should be applied to the affected area in the evening before retiring and again in the morning if necessary; it may be applied more frequently. It is claimed that the majority of cases will show evidence of response within three to five days, possibly up to two weeks. If by that time relief is not obtained, some other form of treatment should be substituted.

### Tests and Standards—

Iso Par is a viscous dark brown oily liquid having a characteristic odor of burnt petroleum. It is immiscible with water, freely miscible with alcohol, volatile oil and fixed oil. The specific gravity is from 0.970 to 0.980 at 25°C.

Place about 2 cc of iso-par in a glass stoppered cylinder, add 20 cc of water, shake the contents for five minutes, filter through moistened paper and divide into two portions: to one portion add two drops of methyl red test solution; a distinct red color persists; to the other portion add two drops of thymol blue test solution; a distinct yellow color persists.

## MEDICAL CHEMICALS

**Unguentum Iso-Par** 14 Gm 285 Gm 114 Gm and 454 Gm jars. Contains Iso-Par 17 per cent and titanium dioxide 4 per cent in an ointment base consisting of beeswax, cetyl alcohol, lanolin and petrolatum.

42. Anderson, T. I. The Effect of Sonic Vibration Ultraviolet Light and on the Bacteriophage Virus. Report to 1st Annual Meeting of Electron Microscope Society of America, New York, Jan. 14, 1944.

43. Bernal, I. D. and Fankuchen, I. X-Ray and Crytallographic Studies of Plant Virus Preparations. I. Gen. Physiol. 25: 111-165 (Sept.) 1941.

44. Stanley, W. M. Chemical Structure and the Mutation of Viruses, in Virus Diseases, Ithaca, N. Y., Cornell University Press, 1943.

45. Stanley, W. M. and Anderson, T. I. Electron Micrographs of Protein Molecules. I. Biol. Chem. 146: 25-30 (Nov.) 1942. Footnote 75.

46. Stanley, W. M. and Anderson, T. I. A Study of Purified Viruses with the Electron Microscope. I. Biol. Chem. 139: 325-335 (May) 1941.

# THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

535 NORTH DEARBORN STREET CHICAGO 10, ILL

Cable Address

Medic Chicago

Subscription price

Eight dollars per annum in advance

*Please send in promptly notice of change of address giving both old and new address state whether the change is temporary or permanent. Such notice should mention all journals received from this office. Important information regarding contributions will be found on second advertising page following reading matter.*

SATURDAY OCTOBER 28 1944

## PUNISHMENT FOR VENEREAL DISEASE IN THE ARMED FORCES ENDED BY CONGRESS

The signature of the President has now enacted into law S 1250, an act to repeal section 2 of the act approved May 17, 1926, which provides for the forfeiture of pay of persons in the military and naval service of the United States who are absent from duty on account of the direct effects of venereal disease due to misconduct, and to amend Veteran's Regulation No 10, as amended to define line of duty and misconduct for pension and compensation purposes. S 1250 was passed unanimously by the Senate on July 3, 1943 and by the House of Representatives on Sept 11, 1944.

The new law abolishes all punishment for the acquisition of venereal disease, which is now "in line of duty" and is not "due to wilful misconduct," provided only that the infected person complies with Army or Navy regulations requiring him to report and receive appropriate treatment, and provided further that at the time of infection he was neither avoiding duty by desertion or absence without leave nor confined under sentence of court martial or civil court. Failure to report a venereal infection (i.e., concealment) remains punishable by court martial or other disciplinary action at the discretion of the commanding officer (A-R 40-210, par 23e). Moreover, the new law provides that with the exceptions noted, veterans who have acquired venereal disease in line of duty are eligible for pension and compensation benefits if disability results.

The law is not retroactive, and a claim heretofore disallowed by reason of misconduct or line of duty requirement may not be revived, but benefits may be payable on the basis of a new claim filed hereafter in such form as may be prescribed by the Administrator of Veterans Affairs.

The abolition of punishment for venereal disease was strongly urged by the Surgeon General U S Army, by the Subcommittee on Venereal Diseases National

Research Council, and by other authorities in social hygiene and preventive medicine. Modern public health opinion is convinced that fear of punishment does not prevent exposure to venereal disease and that punitive measures promote concealment, self treatment and treatment by nonmilitary personnel. Concealment, in turn results in continued spread of disease in the civilian population and in the armed forces themselves, and in special military hazards, as in aviators. Punishment is discriminatory in that military personnel may be penalized not for the fact of infection but for failure to respond to treatment and for various other extraneous reasons.

Under the new law just passed, the soldier or sailor infected with a venereal disease is now on the same status as one with any other acute infectious disease. The armed forces of the United States join those of Canada and France in the abolition of punishment for illness. A public health step of the first importance has been taken.

## CHRONIC GASTRITIS

In his address as retiring president of the Connecticut State Medical Society, Smith<sup>1</sup> discusses research on experimental gastric cancer, its background and progress. One of the stumbling blocks in the studies of human gastric cancer is chronic gastritis.

Schindler holds that gastroscopy has brought convincing proof of the frequency and significance of chronic gastritis which he divides into superficial atrophic and hypertrophic varieties. He also reports that the histology of chronic gastritis has been established by a method of taking biopsies from the gastric wall without ligatures or clamps. "If a normal mucosa is found gastroscopically, a normal microscopic picture is usually seen also."

Schindler's remarkable work with the flexible gastroscope receives complete and enthusiastic endorsement by Crohn who characterizes 'antral gastritis' as a clinical and morphologic entity, a conclusion with which Schindler does not agree. "Gastric function in all types of gastritis is so irregular and equivocal that it cannot be the basis of classification." In gastric cancer there is frequently a long story of gastric distress, Schindler refers to modern statistics as proving that patients with chronic gastritis are three times more prone to gastric carcinoma than healthy persons.

This view as well as current interpretations of chronic gastritis is not supported by the morphologic

- 1 Smith G M Comment on Experimental Gastric Cancer Connecticut State M J 8 409 (July) 1944
- 2 Schindler R Gastritis in Diseases of the Digestive System (edited by Sidney A Portis) ed 2 Philadelphia Lea & Febiger 1944 p 157
- 3 Crohn B B Newer Advances in Our Knowledge of Gastritis J Mount Sinai Hosp 9 75 (July Aug) 1944



studies of the mucous membrane of the stomach at various ages by Guiss and Stewart.<sup>4</sup> With regard to the literature on the endoscopic aspects of chronic gastritis they say "As yet we have been unable to discover a fully correlated pathologic study made on gastroscopically diagnosed cases, nor have we had the opportunity to study enough such cases to enable us to draw any conclusions ourselves as to whether the gastroscopic diagnosis can be substantiated pathologically with uniformity."

According to Guiss and Stewart, chronic atrophic gastritis is characterized morphologically by atrophy of the mucous membrane, by increase in lymphoid tissue and in interstitial infiltration by the transformation of the epithelial lining into the so-called intestinal or simplified type, by pyloric gland heterotopia and by increase in connective tissue. Such changes were found commonly after the fortieth year in 66 per cent of cases of death from extragastric cancer, in 82 per cent of apparently normal stomachs and in 97 per cent of deaths from gastric cancer. The inference drawn from these extensive morphologic observations is that the frequency of chronic gastritis with advancing age really may not have any other relationship to gastric cancer than intensification of gastritis by the cancer. Does early carcinoma of the stomach occur without gastric changes?

Needed advancement in the understanding of the causation and significance of the morphologic processes of chronic gastritis will depend largely on organized cooperation by investigators concerned with the various phases of the problem. On the clinician, the gastroscopist, the radiologist and the pathologist falls the difficult task of securing adequate human material for cooperative study.

#### TOXICITY OF RANCID LARD

Physiologists have long recognized that rancid fats are nutritionally deleterious. According to Burr and Barnes<sup>1</sup> of the University of Minnesota the apparent toxic effects of rancid products are due mainly to an induced vitamin deficiency. Mixed with other foods, rancid fats destroy such essential food elements as vitamin A, carotene, vitamin D, vitamin E, pantothenic acid, pyridoxine, biotin, ascorbic acid and linoleic acid.

An extreme instance of the vitamin deficiency induced by rancid fat has been reported by Fitzhugh and his associates<sup>2</sup> of the Food and Drug Administration, Washington, D. C.

Citrus unexplainable abnormalities developed in control rats maintained for long periods on their routine

laboratory diets. Fitzhugh placed 20 pairs of albino rats 21 days of age and equally divided between the sexes on mixed diets consisting of 18 parts of casein, 60 parts of corn starch, 5 parts of brewers yeast, 5 parts of whole dried liver, 4 parts of salt mixture, 2 parts of cod liver oil and either 6 parts of corn oil or 6 parts of lard which had been previously stored for several months at 35 F. The two dietary mixtures were prepared in sufficient quantities to last approximately six weeks and the mixtures stored in covered tin buckets at 35 F. The rancidity of the lard was established by organoleptic tests and the peroxide number determined. This was usually 41 millimols per kilogram as contrasted with 2 millimols per kilogram in fresh lard from the same batch.

During the rapid growth period of the first three months only a slight difference was apparent in the growth rates of the rats on the corn oil and rancid fat diets. Symptoms were noted in the rancid lard group after the animals had been on this diet for about a year. Control animals on the corn oil mixture were not affected. By the end of a year the rats fed the rancid lard were emaciated with a typical humped back and roughened coat and a rapidly progressive weakness and paralysis usually beginning in the hind legs. The emaciation, deformity and paralysis became extreme before death.

The characteristic necropsy findings were widespread focal degenerations of the skeletal muscles. Individual muscle fibers showed varying degrees of vacuolation with gray or tan pigmentation. An occasional pigmented macrophage was noted within the muscle fibers. There was also a general visceral atrophy, particularly in the uterus. This was usually small and deeply pigmented. In the male testicular atrophy occurred. Since these results are similar to the "nutritional myodegeneration" described by previous investigators as characteristic of lethal vitamin E deficiency, Fitzhugh concluded that under his test conditions the main toxic effect of rancid lard was due to a complete destruction of vitamin E in his stored food mixtures. Confirming this conclusion he found that nonrancid samples of the same batch of lard were nontoxic and nutritionally equivalent to the corn oil used in his control feedings. This is in agreement with data previously reported from the U. S. Department of Agriculture.<sup>3</sup>

As a practical application of these results the Washington investigators emphasize that dietary mixtures should be prepared as frequently as possible and if storage is necessary it should be at a subfreezing temperature. They found that the development of rancidity is more rapid in food mixtures than in unmixed lard and that little or no rancidity develops at 20 F.

<sup>4</sup> Guiss, I. W. and Stewart, F. W. Chronic Atrophic Gastritis and Cancer of the Stomach. *Arch. Surg.* 46: 823 (June) 1943.

<sup>1</sup> Burr, C. O. and Barnes, R. H. *Physiol. Rev.* 23: 26, 1943.

<sup>2</sup> Fitzhugh, O. G., Nelson, A. A. and Calvery, H. O. *Proc. Soc. Exper. Biol. & Med.* 76: 129 (June) 1944.

<sup>3</sup> Mason, K. F. *Yale J. Biol. & Med.* 14: 605, 1942. Pappenheimer, A. M. *Physiol. Rev.* 23: 37, 1943.

<sup>4</sup> Hoagland, R. and Sander, G. C. *Tech. Bull.* 821, U. S. Dept. Agr. 1942.

## Current Comment

### CHICAGO VENEREAL DISEASE CONTROL PROGRAM

A program of venereal disease control in Chicago was begun in January 1937 by the Chicago Board of Health in cooperation with the United States Public Health Service, the Federal Works Agency and the Illinois Department of Public Health. The annual report<sup>1</sup> for 1942-1943 has now been published. The organization of the project centers in an office of venereal control, under which are six principal subdivisions dealing respectively with clinics, the Chicago Intensive Treatment Center, education, investigation, registry and statistics, including reporting and records. The program is staffed by a venereal disease control officer who is a surgeon in the U. S. Public Health Service, two reserve public health officers and six other division heads. The objectives of the program as stated at its inception Jan. 2, 1937, are (a) to uncover all possible cases of venereal disease, (b) to place each newly discovered case under competent medical care, (c) to keep infectious cases under treatment until they are no longer a menace to society or to themselves and (d) to prevent new infections by all possible means, including medical, educational and legal measures. The clinic section, oldest unit of the program, is designated as the diagnostic keystone of the entire project. More than 15,000 new cases of venereal disease were diagnosed through the year. Extensive case finding and case holding methods were placed and kept large numbers of spreaders of venereal disease in the Chicago Intensive Treatment Center. The educational campaign enlisted tavern owners and those signifying their willingness to cooperate were given certificates. A Central Register was maintained of all cases of venereal disease reported to the Chicago Health Department. A register is also kept of all physicians reporting such cases. The Central Register Section received an average of 10,000 items of information per month, of which approximately 38 per cent were laboratory reports of positive serologic reactions, 27 per cent morbidity reports and 29 per cent activity reports and case dispositions, the remainder being miscellaneous items. In the Clinic Section a central clinic and eight branch clinics were operated. Over 8,600 new cases of syphilis and 8,100 cases of gonorrhea, plus 514 new cases of other venereal diseases were treated in the Clinic Section. This represented a reduction of 16 per cent in syphilis cases under treatment as compared with the end of the previous year. A social service unit operated in connection with the clinic section and was reorganized during the year to form a follow-up service. The Chicago Intensive Treatment Center, formerly the Wesley Memorial Hospital, admitted its first patients on Oct. 29, 1942. Patients stayed an average of 10.9 days in this center, 2,189 patients were admitted during the year. The report also includes extensive tabulations of venereal disease reports in the city of Chicago and an analysis of control activities.

### THE RELATIONSHIP OF FLUORESCENT PORPHYRINS TO CANCER

Figge and his co-workers<sup>1</sup> found that in a large number of vertebrates the harderian or accessory lacrimal glands excrete porphyrins giving a red fluorescence only in the animals most susceptible to experimental cancer, namely mice, rats and hamsters. They also found that in strains of mice highly susceptible to breast cancer the harderian glands were more fluorescent than in strains of low susceptibility. These observations suggested the hypothesis that "there is a direct or indirect relationship between porphyrin metabolism and the factors that determine cancer susceptibility." Naturally the question arose whether porphyrins accumulate in places where human cancer frequently occurs, as, for instance, in the female genital tract. Jones and his associates<sup>2</sup> identified porphyrins spectroscopically in red fluorescent material in various parts of the tract in about one third of the cases examined, but the occurrence of such material was not related to any definite diseases. Probably these porphyrins originate mostly from decomposition of blood. The articles cited do not claim that porphyrins are directly carcinogenic, but a good basis has been developed for further and promising studies on their relationship to carcinogenesis and other processes.

### MOTIVATIONS FOR TREASON

In a lecture given before the British Psychological Society on July 1, Major A. M. Meerloo<sup>1</sup> of the Netherlands, a psychiatrist whose views are presumably based on personal experience during the German occupation of his country, asks why we are so deeply affected by the idea of treachery. The traitor, he says, will not admit his treachery, but, in his own mind, his conduct is justifiable. The traitors whom he saw in his own practice were not "wicked" but were weak characters; they had been disappointed in life, they were frustrated and had transferred their feelings to political phantoms. Some were affected by serious psychiatric abnormalities, some had homosexual tendencies and had been unable to find any real basis for living. Two who took a violent part in the betrayal of Holland had a strong mother fixation which was projected on their country. Meerloo believes these people had a grievance and desired revenge on society for real or fancied ill treatment. The desire for revenge, he points out, is the outward impulse of an inner incapacity or weakness. It is the religion of the dissatisfied and the frustrated. For the psychologist, Meerloo states, the traitor is one who needs to break away from his environment or to do violence to it and his reasons for doing so are connected with his development particularly during adolescence.

1 Figge, F. H. J., Strong, L. C., Strong, L. C. Jr. and Shimbrom, A. Fluorescent Porphyrins in Harderian Glands and Susceptibility to Spontaneous Mammary Cancer in Mice. *Cancer Research* 2: 335 (May) 1942. Figge, F. H. J. Fluorescence Studies on Cancer. *ibid.* 4: 463 (Aug.) 1944.

2 Jones, E. G., Figge, F. H. J. and Hundley, J. Mason, Jr. The Red Fluorescence of the Genitalia of Women. *Cancer Research* 4: 42 (Aug.) 1944. Figge, F. H. J., Jones, E. G. and Wolfe, G. F. The Extraction and Identification of Porphyrins from the Pelvic Fluorescent Fluids of the Genitalia of Women. *ibid.* 4: 483 (Aug.) 1944.

1 Meerloo, A. M. A Study of Treason. *Lancet* 2: 171 (Sept. 2) 1944.

# MEDICINE AND THE WAR

## ARMY

### TWENTIETH GENERAL HOSPITAL UNIT WINS HIGH PRAISE

Admiral Lord Louis Mountbatten, supreme allied commander in southeast Asia recently presented a plaque to the 20th General Hospital U S Army, in appreciation of treatment he received while suffering from an injury to his eye. Admiral Mountbatten became a patient at the army hospital after his left eyeball was cut by a branch which struck him while he was driving through the jungle on the Ledo front in Burma. During his week at the hospital in Assam Province, India he was treated by Major Harold G. Schere who is credited with saving the sight of the injured eye. The plaque presented to the hospital unit has on its face a decorative design encircled by a border on which are the words "Supreme Allied Commander South East Asia." On the reverse of the plaque are the words "Presented to the 20th General Hospital U S A (Staffed by Volunteers from the University of Pennsylvania Under the Command of Colonel I S Ravdin), by Admiral the Lord Louis Mountbatten GCVO, CB DSO, ADC Supreme Allied Commander of the Allied Forces in the South East Asia Theatre in Grateful Appreciation of the



Lord Mountbatten's gift drawing of a plaque presented by the grateful British commander to the members of the 20th General Hospital U S Army who helped save his eye after a jungle accident.

Excellent Treatment He Received During the Week He Spent in the Hospital from an Injury to His Left Eye on the Ledo Front in Burma.

Appreciation of the treatment he received was also expressed by Lord Mountbatten in a letter to Colonel Ravdin, commanding officer of the hospital unit, who is on leave of absence from the Harrison professorship of surgery and the directorship of the Harrison Department of Surgical Research while serving with the army. Lord Mountbatten wrote: "I am writing to thank you personally and through you all members of the 20th U S General Hospital staff concerned for the way I was looked after during my week in the hospital 7th to 14th March 1944 after receiving an injured eye. Throughout my stay I was treated with unbounded kindness and untiring attention. You can certainly be proud of the wonderful team that the University of Pennsylvania has committed to your care. If anything could increase my affection and regard for our American allies, my week with you would undoubtedly do so."

In addition, the unit has also received a captured Japanese battle flag autographed by Brig Gen F D Merrill and bears the notation "For 20th Gen Hospital from 5307 with our thanks. Captured from 1st Division near Kamang Burma April 1944." In a letter to the commanding officer of the hospital

unit General Merrill paid the following tribute to the unit: "On leaving this area for another assignment I wish to express to you and all members of your staff my very sincere appreciation of the efficient medical and surgical service which you have given. I understand fully that we have added a great amount of work to an already overworked staff but it has always been comforting to know that when my sick and wounded reached your hospital they were assured of the very best medical and surgical treatment available in this theater."

The hospital unit also received letters of commendation from Major Gen W E R Covell and Brig Gen Lewis A. Pick in the China Burma India theater.

The 20th General Hospital Unit organized by the University of Pennsylvania was called into active service in May 1942. It includes physicians, surgeons, dentists, nurses, technicians, Red Cross workers and enlisted personnel. The unit has been in India since early last year and is the largest American army hospital in the China Burma India theater.

### MALARIA CONTROL IN PACIFIC PROVES SUCCESSFUL

Brig Gen R W Bliss, Assistant Surgeon General of the Army, and Brig Gen F W Rankin, director of the Surgical Consultant Division, Office of the Surgeon General, who recently returned from an inspection tour of the Pacific area, state that the malaria control activities of the Army's Medical Corps have resulted in cleaning up the South Pacific of mosquito infestation. They visited Honolulu, Maui, Canton, Mandi (Hiji Islands), Tantonio, Noumea, Espiritu Santo, Guadalcanal, Russell Island, Tarawa, Makin, Kwajalein, Saipan, Tinian, and Guam. Both officers were favorably impressed with the success of the malaria control work on all these islands.

General Bliss reported on the use of a new deodorant, PDI, which has supplanted the use of crude oil to kill flies and maggots in latrines. Where 5 gallons of oil daily had been used with only limited success, half a pound of PDI powder is now sprinkled twice a week for effective deodorization. Besides the added effectiveness of the deodorant, it saves much valuable transportation space and manpower.

### AMBULANCE PRESENTED TO ARMY MEDICAL DEPARTMENT

An army ambulance was recently donated to the Medical Department of the Army by the Thomasville N C Society of the National Society Children of the American Revolution. Lieut Col Mason Ladd, director of the legal division of the Office of the Surgeon General, accepted the gift on behalf of the War Department.

### CAPTAIN WOODROW L. PICKHARDT A PRISONER OF WAR

Capt Woodrow L. Pickhardt, formerly of Lawton, Okla., who was reported missing in action June 7, has recently been reported to be a prisoner of war of the German government. Dr. Pickhardt is a graduate of the University of Oklahoma School of Medicine, Oklahoma City, in 1937. He entered the service Aug 11, 1942.

### TREATMENT OF GONORRHEA

In the Technical Bulletin of Medicine No 96, recently issued by the War Department, penicillin is stated to be the drug of choice in the treatment of gonorrhea. The use of sulfonamides will be limited to cases not responding to adequate penicillin therapy and instances in which penicillin is not available through normal supply channels.

### NAME GENERAL HOSPITAL FOR DENTAL CORPS OFFICER

The War Department recently announced the naming of the Rodriguez General Hospital at San Juan, Puerto Rico, in honor of the memory of Major Fernando E. Rodriguez, U. S. Army Dental Corps. Major Rodriguez, who died in 1932, was one of dentistry's foremost research scientists, pioneering in the study of the bacteriologic aspects of dental diseases. The results of his work were so fundamental that it has been used as the basis for all further scientific research along this line. He developed new techniques and methods of analysis and made many other contributions to the science of bacteriology. Major Rodriguez received a B.S. degree from Georgetown University, Washington, D. C., in 1924, after having served in the Army since 1917. He was a member of the District of Columbia Dental Society, a member of the International Association of Dental Research, and a fellow of the American College of Dentists.

### ARMY AWARDS AND COMMENDATIONS

#### Captain H. Myles Johnson

Capt. H. Myles Johnson, formerly of Fort Supply, Okla., and now attached to the famous Seagrave Hospital Unit headed by Lieut. Col. Gordon S. Seagrave, recently received a special citation from Brig. W. L. Boatner. The Seagrave Hospital Unit is with General Stilwell's forces, who are clearing northern Burma so that American engineers can extend the Ledo road to the Burma road. Dr. Johnson is credited with helping to save the lives of 2,000 Chinese soldiers on the battlefields. He has been in China-Burma-India theater of war for more than two years. Soon after the Myittha Airfield was captured by American and Chinese troops, the Seagrave Unit moved in. The citation reads: "During this period he was under constant enemy fire, making his way over the most difficult of jungle terrain and with utter disregard for personal safety administered to the medical needs of both Chinese and American patients. The splendid performance of duty and disregard for personal safety reflects credit on his organization and the esprit de corps of the United States Army. Dr. Johnson graduated from the University of Oklahoma School of Medicine, Oklahoma City, in 1934 and entered the service Sept. 15, 1941."

#### Major George L. Thorpe

Major George L. Thorpe, formerly of Valley Center, Kan., and now a flight surgeon of a Liberator bomber group operating from an advanced air base in Italy, has been awarded the Soldiers' Medal. He was decorated for the courage he displayed last February in rescuing an injured navigator from a burning plane that crashed near its home base. Unmindful of the intense heat and exploding ammunition, Dr. Thorpe rushed into the wreckage, hacking his way through burning debris to rescue a fellow officer whom he succeeded in carrying out from what would have been a funeral pyre. Seconds later the burning ship exploded with a terrific impact, but the doctor and his charge were already safe. Dr. Thorpe graduated from Tulane University of Louisiana School of Medicine, New Orleans, in 1938 and entered the service Aug. 13, 1942.

#### Major Carl D. Makart

Major Carl D. Makart was recently awarded the Silver Star for gallantry in action. As soon as enemy bombs had set fire to an ammunition dump at Humboldt Bay, Dutch New Guinea, Dr. Makart, a regimental surgeon in the medical corps of the Fighting Forty-First Infantry Division, established an aid station near the scene and worked throughout the night until the following afternoon, taking care of the casualties. While performing his duties, Dr. Makart was in constant danger of being hit himself by shrapnel from flying bombs. Formerly of Chicago, Dr. Makart graduated from Creighton University School of Medicine, Omaha, in 1938. He was commissioned into the service Sept. 9, 1941, and was promoted to captain on Feb. 28, 1942, and to rank of major on Jan. 24, 1943.

#### Colonel Otis O. Benson Jr.

The Legion of Merit was awarded by the War Department to Col. Otis O. Benson Jr., formerly of Tower, Minn. The citation accompanying the award reads: "In his capacity as chief of Aero Medical Research at Wright Field from Sept. 6, 1940, to July 15, 1943, he was responsible for successfully developing, testing, and standardizing all items of medical equipment used in connection with military aviation. His professional skill and organizing ability made it possible for his unit, during a period of rapidly changing requirements, to succeed in applying previously known principles of aviation medicine to the practical situations of modern warfare and solving new problems arising from unexpected developments in aerial combat. Dr. Benson graduated from Rush Medical College, Chicago, in 1930 and entered the service July 31, 1931."

#### Captain Amos V. Persing Jr.

The Bronze Star was recently awarded to Capt. Amos V. Persing Jr., formerly of Watsonville, Pa., for heroic achievement in action during the period Nov. 21, 1943, to Jan. 9, 1944, in Italy. He led his battalion medical section often under enemy artillery fire in treatment of wounded personnel. During a ten-day period, 500 rounds of artillery shells burst within the battalion area. This action took place at Cassino. Dr. Persing, on this and other occasions in which casualties were heavy, calmly and with great efficiency carried on his treatment of the wounded. Dr. Persing's action under fire reflects great credit on himself and the military service. Dr. Persing graduated from the University of Cincinnati College of Medicine in 1929 and entered the service Aug. 13, 1942.

#### Captain Louis J. Feves

The Soldiers' Medal was recently awarded to Capt. Louis J. Feves, formerly of Pendleton, Ore. The citation accompanying the award reads: "for heroism displayed in the Gilbert Islands on Jan. 21, 1944. With complete disregard for his own safety, he aided in the rescue of injured and recovery of deceased crew members of an airplane that had crashed on a heavily mined reef. This act of heroism reflected great credit on himself and the military service. Dr. Feves graduated from the University of Oregon Medical School, Portland, in 1935 and entered the service July 9, 1942."

#### Colonel Frederick J. Frese

Col. Frederick J. Frese, formerly of Yonkers, N. Y., was recently awarded the Legion of Merit for "exceptionally meritorious conduct in the performance of outstanding services in the South Pacific Area from Sept. 27, 1942, to June 1, 1944. Dr. Frese graduated from St. Louis University School of Medicine in 1938 and entered the service on completion of his internship in 1939."

#### Captain George H. Lage

A Presidential Citation has been issued to the parachute infantry unit to which Capt. George H. Lage, formerly of Portland, Ore., was attached as surgeon for their work in spearheading the invasion of France and the taking of Carantan. Dr. Lage graduated from the University of Oregon Medical School, Portland, in 1939 and entered the service Sept. 22, 1942.

#### Captain Edward J. Doherty

Capt. Edward J. Doherty, formerly of Woodhaven, N. Y., was recently awarded the Silver Star and the Purple Heart for a leg wound which he sustained at Cherbourg. Dr. Doherty graduated from New York Medical College, Flower and Fifth Avenue Hospitals, New York, in 1934. He entered the service Aug. 7, 1942, and was sent to England in February 1944.

#### Colonel Walter S. Jensen

Col. Walter S. Jensen was recently awarded the Legion of Merit for "exceptionally meritorious conduct in the performance of outstanding services from July 31, 1941, until Oct. 5, 1942. Dr. Jensen graduated from the College of Medical Evangelists, Loma Linda, Calif., in 1924 and entered the service Oct. 22, 1925."

# ORGANIZATION SECTION

## Washington Letter

(From a Special Correspondent)

Oct 23 1944

### Federal-State Program of Vocational Rehabilitation

Details of the expanded vocational rehabilitation program under the Federal Security Agency recently initiated by Congress in amendments to the Vocational Rehabilitation Act (Public Law 113 78th Congress) were outlined for THE JOURNAL today. They provide for federal aid to enable state boards of vocational education and state agencies for the blind to furnish disabled persons with all services necessary to render them employable or more advantageously employable. These services include medical and surgical care, hospitalization, physical and occupational therapy, prosthetic appliances, vocational counseling and training, maintenance during training, occupational tools and equipment, placement in employment and other necessary services.

Mentally as well as physically disabled persons are now eligible for rehabilitation. Except for certain groups of war disabled civilians and federal employees injured in line of duty, persons receiving physical restoration services or maintenance grants must be in financial need. (It was emphasized that rehabilitation of veterans with service connected disabilities is conducted through the separate program under the U. S. Veterans Administration.)

The Federal Office of Vocational Rehabilitation is responsible for establishing standards in the various areas of services for technical assistance to the states and for certification of funds on the approval of state plans for vocational rehabilitation meeting the requirements of the authorizing act of Congress. On request the Surgeon General of the U. S. Public Health Service has assigned Senior Surgeon (R) DeWitt A. Clark as chief medical officer and three other medical officers to assist in the organization of the physical restoration activities. A national professional advisory committee composed of representatives of fields of medicine actively concerned with rehabilitation, hospital administration, public health nursing, medical social work, physical therapy and occupational therapy has been appointed by the federal security administrator to assist the Office of Vocational Rehabilitation in the technical phases of physical restoration service.

State agencies have been advised of policies to be followed in organizing the physical restoration phases and similar professional advisory committees are being appointed by all state rehabilitation agencies to guide them in establishing and maintaining professional standards for physical restoration.

Medical diagnosis and treatment of disabled persons under care of state rehabilitation agencies is limited to physicians licensed to practice medicine and surgery and otherwise qualified by training and experience to perform the specific services required. Criteria for the designation of medical specialists may include certification by the appropriate American medical specialty boards, fulfillment of the training and experience requirements for admission to examination by such boards, state agency standards for the qualification of physicians in particular specialties or approval of individual specialists by the state professional advisory committee. Rates of remuneration for physicians, nurses, dentists, physical therapists and other medical personnel for services in physical restoration are being established by state agencies in consultation with their professional advisory committees and will be similar to rates paid for similar work under state supervision such as crippled children or workmen's compensation or under federal supervision such as that of the Veterans Administration or the U. S. Employees Compensation Commission. State rehabilitation agencies must purchase hospital care at inclusive rates. In approving state standards for hospital facilities the Office of Vocational Rehabilitation will for the present be guided by the list of hospitals approved by the American College of Surgeons. Preference will be given to hospitals having more than 100 beds with well developed specialty services, medical social service, physical

therapy and occupational therapy in view of special requirements. Eligible to receive the service are any person in the United States, District of Columbia, Puerto Rico and Hawaii who has a disability that is (1) a substantial employment handicap (2) static or (3) remediable to a substantial extent in a reasonable time. Said a spokesman, Vocational rehabilitation is designed to conserve the working usefulness of the civilian disabled. In restoring a disabled person to productive work he is being transferred from the public assistance rolls to the payrolls of industry by which he resumes his status as a self-supporting member of the community.

## Medical Economic Abstracts

### Progress of Medical Service Plans

To form a basis for mutual comparison the various medical society prepayment plans were asked by the Bureau of Medical Economics for as recent a financial report as it was possible to give. Some of the principal items of the reports received are given here. Copies of these reports in full are available for administrators of all existing and proposed plans.

**Surgical Care, Inc.**—This was organized late in 1942 to serve Jackson County, Mo., and Wyandotte County, Kan. Its contracts covered surgery, obstetrics, anesthesia and x-ray. On Jan. 31, 1944 it had a membership of 3,525 males and 5,144 females including subscribers and dependents. Its income from subscribers up to Jan. 31, 1944 was \$23,448 of which it expended \$18,323.96 and now has a surplus of \$5,124.04.

**Medical Expense Fund of New York, Inc.**—According to recent advice (THE JOURNAL, May 27, p. 296) the Medical Society of the State of New York has unanimously endorsed the merger of the Community Medical Care, Inc., a medical insurance affiliate of the Associated Hospital Service which has 43,000 subscribers and the Medical Expense Fund of New York, Inc. with 1,200 subscribers. The new group will be known as United Medical Services.

**Medical Service Association of Pennsylvania**—This was organized in June 1940 and serves the state of Pennsylvania. It offers only surgical contracts and as of Dec. 31, 1943 it had 3,086 subscribers and 5,631 dependents making a total of 8,717 entitled to service. Its income to the date given was \$45,722.02 and expenditures \$45,796.57, showing a loss of \$74.55 on operation. It had on hand a reserve of \$25,631.72.

## Society Proceedings

### COMING MEETINGS

- American Academy of Pediatrics, St. Louis, Nov. 9-11. Dr. Clifford G. Grulee, 636 Church St., Evanston, Ill., Secretary.  
American Society for the Hard of Hearing, New York, Nov. 10-12. Mr. Raymond H. Greenman, 1337 Thirty-Fifth St., N.W., Washington 7, D.C., Managing Director.  
Annual Conference of State Secretaries and Editors, Chicago, Nov. 17-18. Dr. Olin Weir, 535 N. Dearborn St., Chicago, Secretary.  
Association of Military Surgeons of the United States, New York, Nov. 24. Col. James M. Phalen, Army Medical Museum, Washington 25, D.C., Secretary.  
Central Neuropathologic Association, Chicago, October 1. Dr. Ernest M. Hamme, 1124 Tower Medical Arts Bldg., St. Paul 2, Minn., President.  
Central Society for Clinical Research, Chicago, Nov. 3-4. Dr. Carl A. Moore, 602 S. Euclid Ave., St. Louis 10, Secretary.  
Midwestern Section of American Federation for Clinical Research, Chicago, Nov. 2. Dr. Richard H. Evans, University Hospital, Ann Arbor, Mich., Secretary.  
New York State Association of Public Health Laboratories, Albany, Nov. 17. Mrs. Mary B. Kirklin, New Scotland Ave., Albany 1, Secretary.  
Puerto Rico Medical Association of Santurce, Dec. 1-17. Dr. F. Martinez Rivera, P. O. Box 3866, Santurce, Secretary.  
Southern Medical Association, St. Louis, Mo., Nov. 13-16. Mr. C. P. Loranz, Empire Building, Birmingham 3, Ala., Secretary.  
Western Surgical Association, Chicago, Dec. 1-2. Dr. Arthur R. Metz, 20 E. Superior St., Chicago, Secretary.

## Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES NEW HOSPITALS EDUCATION AND PUBLIC HEALTH)

### CONNECTICUT

**Society Programs**—The Future of Prepayment Medical Plans was discussed before the Fairfield County Medical Association in Stamford October 4 by Dr Louis H Bauer, Hempstead N Y. Other county medical programs in the state during October included

Hartford County Medical Association October 24 Hartford symposium on the treatment of burns from the circus fire  
Litchfield County Medical Association October 3 Washington Lieut. Comdr William E Neff Jr (MC) Medical Experiences in Guadalcanal and Major Charles C Verstandig M C The Landing at Casablanca

Middlesex County Medical Association October 12 Cromwell Dr John R Paul New Haven Virus Diseases in the Present War  
New Haven County Medical Association October 26 Waterbury Dr Percy S Pelouze Philadelphia Gonorrhea and Its Treatment and Karl I Heizer Ph D Chronic Illness in Connecticut

New London County Medical Association October 5 Norwich Dr Meredith I Campbell New York Common Urinary Tract Infections in Children

Folland County Medical Association October 17 Somers Dr Francis C Bble New Haven The Treatment of Infections with Penicillin  
Windham County Medical Association October 19 Putnam Dr William F Salter New Haven Recent Advances in Therapy

### ILLINOIS

**Meeting of Bacteriologists**—The fall meeting of the Society of Illinois Bacteriologists will be held at Huxley's Restaurant Chicago, November 3. The speakers will be

Stewart A Koer Ph D and Grace R Baird M A Chicago Bacterial Destruction of Nicotinic Acid  
Joseph Ziehm Ph D Chicago Viruses Causing Pneumonia and Laboratory Methods of Recognizing Them  
Robert R Tulton Ph D Chicago Thermophilic Bacteria and Aerobic Decomposition of Soluble Carbohydrates in Distillery Effluent

**District Meeting**—The Illinois State Medical Society sponsored a postgraduate conference for central Illinois in cooperation with the seventh district at the Hotel Orlando Decatur October 26. In addition to a series of round table discussions the following spoke

Dr Oswald P J Falk St Louis Recognition and Management of Coronary Disease  
Dr Frederick W Slobe Chicago Industrial Surgery  
Dr Clarence A Neymann Chicago The Present Day Treatment of Syphilis of the Central Nervous System  
Major Paul I Shellenberger M C Amesbury  
Lieut Col Willoughby I Richardson M C Neuropsychiatric Problems and the War

### Chicago

**The D J Davis Lectureship**—Henry B Ward Ph D professor of zoology emeritus University of Illinois, will deliver the annual D J Davis Lecture at the University of Illinois College of Medicine November 13 at 1 o'clock in the afternoon. His subject will be Medical Zoology in America's First Century. The lecture was established in 1943 by the associates and friends of Dr Davis on his retirement as dean at the medical school.

**Dr Strecker to Give Pasteur Lecture**—Dr Edward A Strecker professor of psychiatry University of Pennsylvania School of Medicine Philadelphia will deliver the seventeenth annual Pasteur Lecture of the Institute of Medicine of Chicago November 2 at the concluding session of the Institute of Medicine's Postgraduate Assembly on Nervous and Mental Diseases at the Palmer House (THE JOURNAL September 9, p 114). Dr Strecker's subject will be War Psychiatry and Its Influence on Postwar Psychiatry and Civilization.

**Medical Talks**—On October 22 Dr Louis R Limarzi discussed Blood—The Human Life Line the first in a series of lectures now being given at the Museum of Science and Industry on Sunday afternoons. Others in the series will include

Dr Robert S Berghoff Your Heart What You Should Know About It October 29  
Dr Clifford L Bartholomew Your Diet in Health and Disease November 5  
Dr Carroll C L Birch Bugs Are Worse Than Bullets November 12  
Dr W W Bauer Director Bureau of Health Education American Medical Association Stop Annoying Your Children November 19  
Dr Leo K Campbell Too Fat Too Thin November 26

**Committee on Allocation of Dogs from City Pound**—A committee has been appointed to advise Dr Herman N Bundesen president of the Chicago Board of Health in the allocation of dogs from the city pound for medical experi-

mentation purposes. Members of the committee include Dr Ole C Nelson, medical director of the Cook County Hospital; Rev Preston Bradley, pastor of the Peoples Church; Mrs Charles Petkus vice president of the Illinois Citizens Animal Welfare League; Wesley A Young, DVM, managing director of the Anti-Cruelty Society; and

R Wendell Harrison Ph D associate dean of biologic sciences at the University of Chicago

John J Shemin Ph D dean of the Chicago Medical School  
Seaver A Tarulis D O head of the Chicago College of Osteopathy  
Dr Raymond B Allen dean of the University of Illinois College of Medicine

Dr Italo F Volini dean of Loyola University School of Medicine  
Dr George H Gardner assistant dean of Northwestern University Medical School

### INDIANA

**State Medical Election**—Dr Jesse E Ferrell, Fortville was named president-elect of the Indiana State Medical Association at its annual meeting in Indianapolis, October 5, and Dr Nelson K Forster, Hammond was inducted into the presidency. Dr Arthur F Weyerbacher, Indianapolis was reelected treasurer and Mr Thomas A Hendricks Indianapolis executive secretary for his twentieth term. French Lick was selected as the site for the 1945 convention.

### KENTUCKY

**Cancer Control Program**—The Kentucky General Assembly at its 1944 session appropriated \$15,000 for each of the next two years with the stipulation that these funds be made available to the state department of health for use in connection with the program of the Field Army and the Kentucky division of the American Cancer Society. A number of meetings have been held between Dr Francis Guy Aud Louisville, chairman, executive committee of the Kentucky division; Dr Philip E Blackerby, Louisville, state health commissioner and the general chairman of the Kentucky Field Army, to consider distribution of the funds. Prior to the appropriation, diagnostic cancer clinics were established in Louisville, Lexington and Middlesboro. The Campbell-Kenton County Medical Society has authorized the establishment of a diagnostic cancer clinic at the William Booth Memorial Hospital, Covington, in collaboration with other hospitals, and consideration is now being given by local societies for the establishment of similar diagnostic clinics at Paducah, Owensboro and Ashland, according to the *Kentucky Medical Journal*. Applications for admission to the clinics will be made through the local boards of health. The funds appropriated by the assembly will be made available for the payment of hospital services of patients who remain in affiliated hospitals for treatment, it was stated.

### MICHIGAN

**State Medical Election**—Dr Vernon M Moore Grand Rapids was chosen president-elect of the Michigan State Medical Society at its annual meeting in Grand Rapids in September, and Dr Andrew S Brunk, Detroit, was inducted into the presidency. The 1945 session will be held in Detroit September 19-21.

**Bequest for Graduate Medical Education**—The late Dr Andrew P Biddle, Detroit, formerly president of the Michigan State Medical Society who died August 2, bequeathed about \$40,000 to the society's Foundation for Post-Graduate Medical Education. The late physician has been a leader in the postgraduate medical program directed by the state medical society which for a number of years has been presenting an annual oration bearing his name.

**Public Health Conference**—The twenty-fourth annual meeting and the third wartime Michigan Public Health Conference will be held at the Hotel Pantlind, Grand Rapids November 8-10. Among the speakers will be John M Hepler CE, Lansing president of the Michigan Public Health Association; Dr William DeKleine, state health officer Lansing; and Henry F Vaughan, Dr PH Ann Arbor, dean School of Public Health University of Michigan. One of the features of the meeting will be a progress report of the mosquito survey now being conducted by the state department of health.

**Hospital Prizes**—At a staff meeting of Mount Carmel Mercy Hospital Detroit September 20 four interns and residents received prizes for papers presented for their graduation. Dr Joseph W Geppert and J Earle Estes received first and second prize for interns respectively, for their work on 'Acute Pancreatic Necrosis' and 'A Case of Spontaneous Hypoglycemia'. For the residents first and second prizes respectively went to Drs Leonard J Janis and John Dedinsky for their work on 'A Handful of Valuable Suggestions'.



(greeting the oncoming extern and intern) and Science vs. Art of Medicine in the Treatment of Fracture of the Patella. First prize in both groups was \$100 and second \$50.

**Faculty Changes**—Dr Henry Field Jr has resigned as professor of internal medicine University of Michigan Medical School, Ann Arbor to enter private practice in Buffalo and to serve as associate professor of internal medicine at the University of Buffalo School of Medicine. Dr Field who graduated at Harvard Medical School Boston in 1920 had been a member of the Michigan faculty since 1926 when he had been named assistant professor of internal medicine. He had been professor since 1941. Dr Carl A. Moyer, assistant professor of surgery at Michigan resigned effective September 1 to accept a position as director of surgery at the William J. Seymour Hospital, Elmore. Before obtaining his degree of medicine at Michigan in 1937 Dr Moyer had served in the departments of physiology, anatomy and pharmacology. In 1943 he received the Henry Russel Award which is presented annually to a member of the university for outstanding work. (THE JOURNAL June 12 1943, p. 454)

## NEW YORK

**Competition for Prize Essays**—The Merritt H. Cash Prize and the Lucien Howe Prize are open for competition for presentation at the 1945 meeting of the Medical Society of the State of New York. The Lucien Howe Prize of \$100 will be presented for an original contribution on some branch of surgery preferably ophthalmology. The author need not be a member of the Medical Society of the State of New York. The Merritt H. Cash Prize of \$100 will be given to the author of the best original essay on some medical or surgical subject. Competition is limited to the members of the Medical Society of the State of New York who at the time of the competition are residents of New York State. All essays must be presented not later than Feb. 1, 1945 and sent to Dr Charles Gordon Heyd, chairman of the committee on prize essays of the state medical society, 292 Madison Avenue, New York 17.

## New York City

**Oswald Avery Honored**—Dr Oswald T. Avery, for thirty years a member of the staff of the Rockefeller Institute for Medical Research and since 1943 emeritus member received the gold medal of the New York Academy of Medicine for distinguished service in medicine at a meeting October 5. Presentation was made by Dr Arthur Treborn Chace, president of the academy, and the citation acknowledged that Dr Avery's investigations have led to discoveries and great advances in the science of bacteriology.

**Compensation Committee Created**—The formation of a medical practice committee by Edward Corsi, state industrial commissioner was announced October 6. The new unit will have jurisdiction over all physicians and surgeons practicing in workmen's compensation cases in New York City with the exception of Richmond County. Dr Francis M. Conway, New York, was named chairman and Drs Edwin Welles Kellogg, New York and Joseph Raphael, Brooklyn, were named associates. The creation of the committee was authorized by an act of the 1944 legislature that gave control over compensation practice to the state industrial commissioner according to the New York Times. Heretofore all controls over physicians practicing in these cases were under the supervision of county medical societies. The new law however was said to be the outgrowth of the exposure of the kickback racket.

**First Human Rabies Death in Eight Years**—The occurrence of a case of human rabies in the Bronx, the first recorded in the borough for more than eight years, was disclosed October 9. The victim, a woman aged 53, contracted the disease as a result of being bitten by her own dog August 25. She died September 13. Official announcement of the death was withheld by the city health department until the completion of special laboratory tests confirming the diagnosis of rabies. The woman and her daughter were both bitten on the hand while handling the dog August 25. The same day while the animal was being taken to an animal shelter, the dog caused a severe laceration on the woman's hip. She was immediately given antirabic treatment, and a series of injections had not been completed when she first became ill. She was hospitalized September 10 and became rapidly worse until she died September 13. On October 16 the antirabies quarantine which has been in effect in the Bronx since March 30 was ordered by Health Commissioner Ernest L. Stebbins extended throughout the city.

**The Salmon Lectures**—Brigadier John R. Rees, consulting psychiatrist to the British army and medical director of the Tavistock Clinic (the Institute of Medical Psychology) will deliver the Salmon Lectures for 1944 at the New York Academy of Medicine, November 20-22. The title of his lectures will be "The Frontiers Extend: Opportunities, Emergencies, and The Way Ahead." Following the lectures at the academy, Dr Rees will tour the country in the following itinerary:

| Date        | Place       | Co-Sponsor                                      |
|-------------|-------------|---|
| November 25 | New Orleans | New Orleans Society of Neurology and Psychiatry |
| November 26 | San Antonio | Hogg Foundation for Mental Hygiene              |
| November 27 | Houston     | and various medical groups                      |
| November 30 | Los Angeles | Los Angeles Academy of Medicine                 |
| December 1  | Boston      | Massachusetts Psychiatric Society               |
| December 7  | Montreal    | Medical Chirurgical Society of Montreal         |

The Salmon Committee on Psychiatry and Mental Hygiene, appointed by the council of the New York Academy of Medicine annually, invites a prominent specialist in the field of psychiatry, neurology or applied sciences who has made the greatest contribution to his specialty during the preceding year to deliver the lecture series.

## MONTANA

**Plague Infection**—Plague infection has been proved in a pool of 50 fleas from 20 prairie dogs, *Cynomys ludovicianus*, collected on July 26 on a ranch 20 miles northwest of Hardin according to *Public Health Reports*.

## OHIO

**Physician Wills Fund to Academy**—The Academy of Medicine of Cincinnati has received more than \$7,000 under the will of the late Dr. Meyer K. Amdur, who became a member of the academy Nov. 17, 1942 and who died July 15, 1943. It is reported that two other items in the will may eventually yield several hundred dollars more for the academy's benefit.

**University Postgraduate Day**—The eleventh annual postgraduate day of the Medical Institute of the University of Toledo will be held November 3 at Toledo. Among the speakers will be:

- Col. Joseph C. Bell, M. C., Roentgenographic Chest Studies, a Series in the Percy Jones Hospital and Rupture of the Intervertebral Disk with Extrusion of a Portion of the Disk into the Spinal Canal.
- Cause of Low Back and Lower Extremity Pain.
- Col. Byrl R. Kirklin, M. C., Place of the Cholecystogram in the Diagnosis of Gallbladder Disease and Gastrointestinal Conditions, Keynote by A. Ray.
- Dr. Ursus V. Portmann, Cleveland, Irradiation in Cancer of the Breast.
- Dr. Lawrence Reynolds, Detroit, Pseudo Fractures and Some Medical Legal Problems in Connection with General Practice.

A feature of the meeting will be a memorial session in honor of the late Dr. John T. Murphy.

## PENNSYLVANIA

**Hospital News**—Under a building program for which contracts were let September 27, a new power plant and alterations to the main hospital building of the George F. Getzinger Memorial Hospital, Danville, will be constructed. The alterations will include expansions to the obstetric department and increase the bed capacity for mothers from 20 to 37 and the infant bassinets capacity from 20 to 35. The fourth floor of the main hospital building will be devoted entirely to a suite of two delivery rooms and four labor rooms, quarters for the preparation of sterile supplies and sleeping quarters for staff physicians on obstetric service. The estimated cost will be about \$300,000.

## Philadelphia

**Portrait of Dr. Hatfield**—An oil portrait of Dr. Charles J. Hatfield, president of the Philadelphia Tuberculosis and Health Association, has been hung in the Henry Phipps Institute, the gift of friends throughout the country to honor him for his forty years service in the field of tuberculosis. Dr. Hatfield is secretary of the National Tuberculosis Association and one of its founders.

**Personal**—Theodore Anton Phillips, director of medical department sales of the J. B. Lippincott Company, has been appointed director of medical and scientific publications of the Blakiston Company. Dr. Edward B. Krumbhaar, professor of pathology in the University of Pennsylvania School of Medicine and Graduate School, has been elected an honorary fellow of the Royal Society of Medicine, London, in recognition of his distinguished services to science.

## Pittsburgh

**Special Society Elections**—Dr John D Sturgeon Jr Uniontown is president of the Pittsburgh Pediatric Society. Dr Joseph S Baird vice president and Dr Christian J Stoecklein secretary-treasurer. Dr Kenneth E Appel Philadelphia was chosen president elect of the Pennsylvania Psychiatric Society at its sixth annual dinner meeting at the University Club September 21, and Dr George W Smeltz was installed as president. Dr LeRoy M A Maeder, Philadelphia is secretary and Dr Ralph L Hill, Wernersville the immediate past president. Speakers at the meeting included Comdr James M Henninger (MC) on 'Navy' Psychiatry with Particular Reference to the South Pacific' and Lieut Col Baldwin L Keves, M C, 'Psychiatry in the Middle East'.

## TENNESSEE

**Dr Diggs Goes to Cleveland Clinic**—Dr Lemuel W Diggs since 1938 associate professor of medicine at the University of Tennessee College of Medicine, Memphis has accepted an appointment as clinical pathologist in charge of the clinical laboratories of the Cleveland Clinic, Cleveland, effective January 1. Dr Diggs graduated at Johns Hopkins University School of Medicine, Baltimore, in 1926 and was for three years a member of the department of medicine at the University of Rochester School of Medicine and Dentistry, Rochester, N Y. He has been directing his attention to sickle cell anemia.

## GENERAL

**Anesthesia Session Planned**—Investigators wishing to present material for clinical research before the Eastern section of the American Federation for Clinical Research at a meeting in Boston December 9 are urged to communicate with Dr Orville T Baile, Harvard Medical School 25 Shattuck Street, Boston, before November 15. An abstract of not over two hundred words should be submitted.

**Louis Dublin Serves as Temporary Head of Red Cross**—Louis I Dublin, Ph D, New York, second vice president and statistician of the Metropolitan Life Insurance Company on October 2 became temporary executive officer of the American Red Cross and will serve in this capacity until the return of Basil O'Connor who is now on an inspection tour of Red Cross operations in France and Great Britain. Dr Dublin is on loan to the Red Cross for a limited period. His normal assignment is as assistant to Mr O'Connor acting as coordinator of the various operating divisions of the Red Cross. In his new appointment Dr Dublin will devote full time to Red Cross activities.

**Annual Forum on Allergy**—The seventh annual Forum on Allergy will be held in the Hotel William Penn, Pittsburgh, January 20-21. A feature of the meeting will be the first award of the Marcelle Prize established by the Marcelle Cosmetics Inc, Chicago, in 1944 to be awarded to the author of the best paper on allergy appearing in the American medical literature during the year. The first prize will be for \$350 and the second for \$150. Physicians attending the session will have access to twelve study groups in addition to special lectures, motion pictures, demonstrations, symposiums and panel discussions. On Friday evening preceding the forum the American Association of Allergists for Mycological Investigation will hold its annual meeting at which time the results of its cooperative research on allergy to fungi will be reviewed.

**Meeting of Anesthetists**—The American Society of Anesthetists will meet in the Rice Hotel, Houston, November 2 and at the University of Texas Medical Branch, Galveston, November 3 as guests of the Texas Association of Medical Anesthetists. In addition to clinical demonstrations and round table discussions the following will speak.

Dr Robert L Sander, Memphis, Tenn., Surgeon Anesthetist, Relationship.  
Dr Hubert R Halkoway, San Francisco, The Postoperative Ambulatory Patient.  
Lieut Col William J Winter, M C, and Comdr Jarvis C Young, blood (MC), War Anesthesia.  
Dr Ralph M Waters, Madison, Wis., Imperfections of Inhalation Anesthesia.

At the dinner meeting Thursday evening speakers will include Dr Ernst W Bertner, Houston, on 'Anesthesia in the Development of Surgery' and Chauncey D Leake, Ph D, Galveston, 'The Centennial of Anesthesia'.

**Award in Mental Hygiene Created**—The Albert and Mary Lasker Foundation Inc has established the Lasker Award of \$1000 to be given annually through the National Committee for Mental Hygiene for outstanding service in the

field of mental hygiene. The new award will be conferred at the annual meeting of the committee in the autumn of each year. The purpose of the award is to recognize significant contributions to promoting mental hygiene and to making the broad field and program of mental hygiene more familiar to the general public. Each year the award will be made for a contribution in some special aspect of the field of mental hygiene which seems to be of most immediate and current significance. The recipient of the award will be selected by an anonymous jury chosen annually for its competence to judge accomplishment in a particular field. The award this year will be for mental hygiene work related to the war. The recipient will be chosen from among leaders who have done work in the general enhancement of the mental health of the men and women of the services both while in service and during the period of rehabilitation so far as developed at the time. The work must either have been completed or have been tested and won general acceptance within the year preceding the granting of the award. Recipients will not necessarily be limited to persons in the United States. If some outstanding contribution has been made abroad in a particular field the award will be made jointly with the leading mental hygiene organization of that foreign country.

**Industrial Hygiene Foundation**—The ninth annual meeting of the Industrial Hygiene Foundation of America will be held at the Mellon Institute, Pittsburgh, November 15-16. The theme of the meeting will be "Postwar Industrial Health". Among the speakers will be

Dr Hallowell Davis, Boston, Protection of Workers Against Noise.  
Dr Leonard E Himler, Ann Arbor, Mich., Practical Psychiatry in Industry.  
George R Hill, Ph D, Salt Lake City, Effectiveness of Tail Sticks in Minimizing Air Pollution from Industrial Plants.  
Lieut Col Theodore F Hatch, S C, Upper Limits of Tolerance to Heat and Humidity.  
Francis R Holden, Ph D, and W C L Hemeon, M S, Pittsburgh, Findings from Foundation Surveys of War Plants.  
Dr George W Wright, Syracuse, Lake N Y, Medical Aspects of Compensation for Partial Disability from Silicosis.  
Theodore C Waters, Baltimore, Legal Aspects of Compensation for Partial Disability from Silicosis.  
Marshall Dawson, Washington, D C, Second Injury Funds as Employment Aids to the Handicapped.  
Andover Brown, New York, Legal Developments in 1944 Respecting Industrial Health.  
Andrew Court, Detroit, The Economic Basis of Health.  
William M Cramer, D Sc, Washington, D C, Sickness Indemnification.  
Nathan Simon, D PH, Ann Arbor, Mich., Medical Expense Indemnification.  
Dr Carl M Peterson, Secretary, Council on Industrial Health, American Medical Association, Chicago, Recent Developments in Pre-placement Physical Examinations.  
A P Abbeart, executive secretary, National Industrial Sanitation Association, Increasing Importance of Industrial Health in Industrial Relations.

One session on 'Putting the Disabled Veteran Back to Work' will be presided over by Dr Clarence D Selby, medical consultant, General Motors Corporation, Detroit.

**Academy of Pediatrics**—The American Academy of Pediatrics has designated its meeting at the Hotel Jefferson, St Louis, November 9-11, as a Wartime Conference on Child Health. One session will be devoted to the control of rheumatic fever with the following speakers: Drs Alexander T Martin, New York; Rene Wegria, New York; Alexis T Hartmann, St Louis; Ann G Kuttner, Irvington, N Y; T Duckett Jones and Benedict F Massell, Boston; Col Leonard G Rowntree, M C, John George Fred Hiss, Syracuse; George M Wheatley, New York; Betty Huse, Washington, D C; Paul F Dwan, Minneapolis; Louise F Galvin, Richmond, Va; and Clark H Hall, Oklahoma City. Other speakers on the program will include

Dr Midge T Macklin, London, Ont., Erythroblastosis Lethalis.  
Dr Gerardo Varela, Jacuba, Mexico, Bacterial Dysenteries.  
Dr Crover J Powers and Paul L Boissvert, New Haven, Conn., Age as a Factor in Streptococcoses.  
Dr Wallace E Herrell, Rochester, Minn., Penicillin Its Use in Pediatrics.  
Dr Leslie Nelles Silverthorne, Toronto, Whooping Cough.  
Dr Hattie E Alexander, New York, Treatment of H Influenzae Infections in Children.  
Dr John A Toomey, Cleveland, The Neuropathies.  
Ernest Carroll Faust, Ph D, New Orleans, Arthropod Borne Diseases.

A special feature of the meeting will be a symposium on parenteral therapy conducted by Dr Hartmann and Drs Allen M Butler, Boston; Luther Emmett Holt Jr, Baltimore; and Sam Z Levine, New York.

**College of Surgeons Expands Graduate Training Program**—The American College of Surgeons announces the appointment of Major Gen Charles R Reynolds, M C, retired former surgeon general of the U S Army, as consultant in graduate training in surgery and of Dr George H Miller, dean and professor and head of the department of medicine, American University of Beirut, Beirut, Lebanon, as

ductor of educational activities. The appointments are part of an expanded program of graduate training in surgery of the college. Both physicians will have offices at the Chicago headquarters of the college. The department of graduate training in surgery is under the direction of Dr. Malcolm T. MacEachern, Chicago chairman of the administrative board of the college. It will be responsible to the committee on graduate training in surgery and to the board of regents. In addition to General Reynolds and Dr. Miller the staff of the department will consist of Dr. Paul S. Ferguson, director of surveys, three assistants who conduct the surveys and the field representatives conducting the regular hospital standardization surveys under the direction of Dr. Earl W. Williamson, assistant director of the college who aid as required in the graduate training program. The latter is a development of the basic work of the college in stimulating the improvement of hospital service. General Reynolds is leaving his position as director of the Pennsylvania state bureau of tuberculosis control, Harrisburg, Pa., where he has been serving for the past four years to accept the new appointment. He was commandant of the Army Field Service Medical School, Carlisle Barracks, Pa., from September 1923 to 1931 and surgeon general of the Army for a four year term beginning 1935.

**Western Surgical Association.**—The fifty-second annual meeting of the Western Surgical Association will be held at the Drake Hotel, Chicago, December 1-2. At the annual dinner Friday evening, the president of the association, Dr. Willis D. Gatch, Indianapolis, will speak on the "Prospects of Our Association." Other speakers will be Dr. Herman J. Kreischner, President American Medical Association, Chicago, and Capt. E. Eric Larson (MC) on "The Medical Aspects of Our War in the Pacific." Among other speakers on the program will be:

Dr. Francis L. Clough, San Bernardino, Calif., "Malaria Lost."  
Dr. Neil J. MacLean, Winnipeg, Man., "The Technique for Closure of the Ring of Postoperative Abdominal Hernia."  
Dr. Jacob B. Bertram, Indianapolis, "Interesophageal Dissection of the Arm."  
Dr. Edwin R. Schmidt, Ralph M. Waters and Noel A. Gillespie, Madison, Wis., "Postoperative Death."  
Dr. Arnold S. Jackson, Madison, Wis., "Thyroid in the Treatment of Hyperthyroidism."  
Dr. Martin C. Lundem, Salt Lake City, "Thyroidectomy by the Open Tracheal Method."  
Dr. Herbert H. Davis, Omaha, "Ammonia Acids Used Intravenously in Surgical Patients."  
Dr. Earl C. Padgett, Kansas City, Mo., and John H. Caskins, "Use of Skin Flaps in the Repair of Severe or Ulcerative Defects over Bone and Tendons."  
Dr. Louis F. Good, Fairbury, Neb., "Origin and Growth of the Adenoma of the Glands of Langerhans."  
Dr. Stanley R. Maxcy and Col. Harry I. Bundy, M. C., "Rejection of Pancreas for Hyperinsulinism."  
Dr. Warren H. Cole and John T. Reynolds, Chicago, "Resection of the Duodenum and Head of the Pancreas for Carcinoma."  
Dr. Thomas C. Orr, Kansas City, "Enucleocholecystectomy for Carcinoma of the Ampulla."  
Dr. J. Dewey Bisgard, Omaha, "Gastric Resection for Certain Acute Perforated Lesions of the Stomach and Duodenum with Diffuse Soiling of the Peritoneal Cavity."  
Dr. Stuart W. Harrington, Rochester, Minn., "Surgical Treatment of Pharynx (Esophageal) Diverticulum (Review of 140 Cases)."  
Dr. Robert I. Sanders, Memphis, Tenn., "Review of One Hundred Subtotal Gastrectomies for Benign Ulcer."  
Dr. Henry K. Ransom, Ann Arbor, Mich., "Gastrojejunocolic Fistula."  
Dr. Claude I. Dixon and Raymond J. Benson, Rochester, N.Y., "Management of Sigmoidal Carcinoma Involving the Urinary Bladder."  
Dr. Owen H. Wagonstein, Minneapolis, "Preservation of the Sphincters and Intestinal Continuity in Operation for Carcinoma of the Rectal Ampulla."  
Dr. Charles C. Johnston and L. H. S. Curdhan, Detroit, "Peripheral Nerve Injury in Association with Fractures of Long Bones."  
Dr. David Davis, George L. Perret and Walter W. Carroll, Chicago, "Repair of Peripheral Nerves in the Presence of Extensive Soft Tissue and Bone Injuries of the Extremities."  
Dr. Henry W. Meyerding, Rochester, "Chronic Sclerosing Ostitis: Differential Diagnosis."  
Dr. Kellogg Speed, Chicago, "Treatment of Infected Pin Operations for Fractures of the Neck of the Femur."  
Dr. Edwin S. Henderon, Rochester, "Status of the Bone Graft in Ununited Fractures of the Neck of the Femur."  
Dr. Glen Lynn Chely, Denver, "Leiodid Excretion of Atrialium Cup Arthroplasty of the Hip Joint."

**Southern Medical Association.**—The thirty-eighth annual meeting of the Southern Medical Association will be held at the Municipal Auditorium and the Jefferson Hotel, St. Louis, November 13-16, under the presidency of Dr. James A. Ryan, Covington, Ky., who assumed the position on the death May 2 of Dr. William I. Wootton, Hot Springs, National Park, Ark. The first general public session has been designated "President's Night" at which Dr. Ryan will discuss "The Public's Obligation to the Medical Profession." Other speakers will include Dr. Herman J. Kreischner, President American Medical Association, Chicago, on "The Progress of Medicine During the Past Fifty Years," and Major Albert I. Stone, G. S. C., Beaufort, and Mumf. A feature of this meeting will be the presentation of the Leslie Dana Gold Medal by the St. Louis Society for the Blind to Miss Linda Neville.

Lexington, Ky. (THE JOURNAL July 8 p. 750). A second public session Wednesday evening will be devoted to "Medicine in the War" at which the speakers will be Capt. Alphonse McMahon (MC) on "Civilian Tropical Disease Problems," Following Demobilization, Col. Howard A. Ruk, M. C., "New Horizons in Medicine," and Rear Admiral Luther Sheldon Jr. (MC) "Naval Medicine in the War." Among the many speakers on the program which is further divided into general clinical and sectional sessions are:

Dr. William C. MacDonald, St. Louis, "Thyroid in the Management of Hyperthyroidism."  
Dr. Vincent de P. J. Derbes, Hugo T. Engelhardt and Theodore A. Walters, New Orleans, "Management of Mierames."  
Dr. George T. Harrell Jr., Dr. William L. Venning Jr. and William A. Wolff, I. D., Winston-Salem, N. C., "Treatment of Rocky Mountain Spotted Fever."  
Dr. John T. Howard, Baltimore, "Experience with the Castro-Cope over a Period of Six Years."  
Dr. Charles F. Mohr, Baltimore, "Results of Penicillin Treatment in Neurosyphilis."  
Capt. Arthur C. Allen, M. C. and Dr. Sophie Spitz, M. C., "Pathology of Scrub Typhus (Tsetsumugamushi Fever)."  
Dr. Walter S. Lawrence and Walter W. Robin, Memphis, "Radio-sensitive Paraneoplastic Tumors: Case Reports."  
Dr. Harry S. Berron, Washington, D. C., "Cantor-Bern Sensitivity Case Report."  
Capt. Frederick A. Jostes (MC), "Physical Medicine: Its Importance in Any Rehabilitation Program."  
Col. John C. Burch, M. C. and Lieut. Col. Herbert C. Fisher, M. C., "Appendicitis Mortality."  
Dr. Robert A. Knight, Memphis, "Treatment of Fractures of the Tibial Condyles."  
Capt. Lamin A. Gray, M. C., "Treatment of Gonorrhea in the Female with Penicillin."  
Dr. James A. Seaman, Springfield, Mass., "Endocarditis as a Factor in Urologic Infections."  
Dr. Victor K. Allen, Tulsa, Okla., "Irradiated Tissue as a Port of Entrance for Torula Encephalitis."  
Dr. Murdock S. Egan, Atlanta, Ga., "Magnetic Removal of Foreign Bodies from the Food and Air Passages Under Fluoroscopic Guidance."  
Dr. Stuart C. Cullen, Iowa City, "Use of Curare in Anesthesia."

Other features of the session will be a symposium on the essentials of medical education participated in by:

Dr. Edna P. Lehman, Charlottesville, "Cultural Values in Medical Education."  
Dr. Jacques P. Gray, Richmond, Va., "Undergraduate Curriculum in Medicine."  
Dr. Hiram W. Kostmayer, New Orleans, "Medical Education Above the Undergraduate Level."  
Dr. Cornelius O. Bailey, Los Angeles, "Postwar Medical Education."  
Dr. Victor Johnson, Secretary, Council on Medical Education and Hospitals, American Medical Association, Chicago, "Graduate Training After the War."  
Miss Marion A. Murphy, Librarian, Washington University School of Medicine Library, St. Louis, "The Effects of the War on the Medical School Library."

During the meeting of the Southern Medical Association other groups holding sessions will be the southern branch of the American Public Health Association, the National Malaria Society, American Society of Tropical Medicine, American Academy of Tropical Medicine and the southern chapter of the American College of Chest Physicians. The thirtieth annual meeting and dinner for women physicians of the Southern Medical Association will be held November 15.

## FOREIGN

**Personal.**—Dr. Alan N. Drury, director of the Foster Institute, London, has been named honorary secretary of the advisory board to the Bent Memorial Trustees, the group sponsoring the memorial fellowships for medical research.

**Academy of Medical Sciences in Russia.**—An Academy of Medical Sciences of the Union of Soviet Socialist Republics has been organized, the *British Medical Journal* reports. It is to be set up under the People's Commissar for Health and will have three departments: medical biology, hygiene, microbiology and epidemiology and clinical medicine.

## Deaths in Other Countries

**Israel J. Kligler, Ph.D.** formerly an associate of the Rockefeller Institute for Medical Research, died in Jerusalem, September 23. Dr. Kligler, who had held the Jacob Epstein chair of bacteriology and hygiene at Hebrew University since 1926, came to Palestine in 1943 as head of the malaria research unit sent by Hadassah, the Zionist women's organization. Dr. Kligler, who was born in Austria in 1889, received his doctor of philosophy degree at Columbia University in 1915.

## CORRECTION

**Therapeutic Effect of Para-Aminobenzoic Acid in Louse Borne Typhus Fever.**—In the paper by Leonians et al. in THE JOURNAL, October 7, the authors request that the following correction be made in table 6 on page 354. The average of the B group should be changed from 18 to 27.

## Foreign Letters

### LONDON

(From Our Regular Correspondent)

Sept 30, 1944

#### Chair of Child Health Established in London

With Lord Nuffield's approval the trustees of the Nuffield Foundation have allocated \$50,000 a year for ten years to provide a chair of child health in the University of London, an offer which has been gratefully accepted by the trustees of the university. This grant will enable a postgraduate institute of child health to be created for teaching and research on all aspects of child health. It is proposed that the institute shall be associated with the principal children's hospital in this country—the Hospital for Sick Children Great Ormond Street London—and with the obstetric department of the British Postgraduate Medical School at the Hammersmith Hospital. Lord Nuffield and the trustees of his foundation believe that the promotion of child health must have a prominent place in the organization of the future health services of the country. They appreciate that the development of research and training in this sphere requires new and enlarged facilities. They desire that the exceptional resources of the University of London for postgraduate education and research may be developed in a manner which will make the new Institute of Child Health worthy of the capital city of the empire.

The provision of academic centers for the teaching of child health has already been undertaken in several provincial universities, and the Nuffield Provincial Hospitals Trust has within the last three years made a substantial contribution to the University of Durham to assist in creating a chair of child health at King's College Newcastle-on-Tyne. Edinburgh has had such a chair since 1931, and another has just been established at Liverpool by collaboration of the university with the city council. The title of the new chair is noteworthy. This country has never been backward in the study of pediatrics. On the contrary it has made great advances in that subject. But Hospital or Department for Diseases of Children has always been the designation for the institution concerned. Now the idea has become popular that the medical profession has been too preoccupied with the treatment of disease, and that prevention or the preservation of health should have a more prominent place as an objective. Calling the government's projected scheme a National Health Service instead of a National Medical Service is a case in point.

#### The Doctor's View of the Proposed National Health Service

Under the caption 'The Doctor's View' Lord Dawson, president of the British Medical Association reviews the government's proposals for a national health service in a letter to the *Times*. The medical profession, he says, has realized that the growth of medical knowledge was outstripping the organization of medical practice and for nearly twenty-five years has put forward plans to improve the availability of its services. There is little dispute over objectives then but there are differences about methods. The profession insists on a substantial share in the planning and administration of the proposed service at every level. Lord Dawson states: "The service should be guided by those persons both medical and lay who have expert knowledge. Do local authorities know anything about medicine? No. How can they plan and administer unaided hospital services? In the war we use expert guidance. Why attempt to do otherwise with medicine which becomes more complex year by year?"

We accept the proposal that this nationwide service which spends public money must be under theegis of a minister responsible to parliament. Lord Dawson says, but we claim also that, for the service to be efficient, the medical profession must have a responsible share in its planning and administration. To effect this at the center would be relatively easy if the two sides were like minded, but local administration has inherent difficulties because its present shape and the proposed service would be misfits, it is claimed. Since the reconstruction of local government will be impossible amid pressing postwar problems and it is undesirable to delay laying the foundations of the service it is acknowledged that we must seek a provisional, "make do" administration, provided skilled guidance is secured and provided the voluntary hospitals are ensured equality of opportunity and private practice is given full freedom. These requirements would be met if medical and other skilled persons were made partners with the elected representatives of the people on the local bodies. The profession seeks to share in, not to dominate the work of planning and execution.

Experience has shown that advisory committees standing outside the executive body are futile, the letter continues. The inadequacy of local bodies as now constituted, to administer highly technical services is well known. But extraneous forces obstruct satisfactory settlement. One political school desires to seize this opportunity for furthering its ideology, which would mean whole time employment for medical men as part of the civil service paid by salary. The impact of this influence, in the face of the government's repeated assurance that it has no such intentions undermines confidence. Lord Dawson points out. Regarding the voluntary hospitals, suggestions are being made to transfer the administration of all hospitals to a central board. These suggestions are unfortunate. It is most important to take advantage of the knowledge interest and local patriotism of each area and put responsibility on it. Central control would take the heart out of local government and lead to inanimate uniformity. The smooth running of a coordinated hospital service for each area under university influence is the foundation of any comprehensive service the president's letter concludes.

#### The Dalton Centenary

John Dalton who founded modern chemistry by putting the atomic theory on a quantitative basis, worked in Manchester where he taught mathematics and physics. He contemplated entering the medical profession but the expense was too great. He had a defect of color vision now known as "daltonism," which he turned to account by producing his theory on the subject. The centenary of his death has fallen this year. It is therefore fitting that a Manchester physician, Dr E. M. Brockbank who has made Dalton's life a study has published a book entitled 'John Dalton—Some Unpublished Letters of Personal and Scientific Interest with Additional Information about his Colour Vision and Atomic Theories'. When the 1929 meeting of the British Medical Association was held at Manchester Dr Brockbank, president of the Section of the History of Medicine gave an address on 'John Dalton—Experimental Physiologist and Would-Be Physician'. He had access to Dalton's letters and other relics and has made a thorough study of the subject.

#### Research at Oxford and Cambridge by Chinese

Five Chinese professors have arrived in Britain and will be the guests of certain colleges of Oxford and Cambridge. Ching Tsu-King, professor of the history of science at the Central China University will reside in Christ's College Cambridge to study that subject. Yin Hung-Chang, professor of plant biochemistry at the Associated Southwestern Universities (Tsing Hua) Kuming will do research at St John's College Cam-

bridge Fan Tsen-Chung head of the foreign languages department at the National Central University, Shapingpa, will do research in English literature, with special reference to English knowledge of China, and reside at Balliol College, Oxford Chang-Hui-Wen, head of the department of public administration and political science at the Central University of China, will study public administration at Corpus Christi College, Cambridge R C Fang, head of the foreign languages department, Wuhan University Kiating, will do research in English literature at Trinity College, Cambridge

## BUENOS AIRES

(From Our Regular Correspondent)

Sept 15, 1944

### Quinine and Malaria

Quinine is available in Argentina in scanty amounts. It is sold to the public only for malaria therapy and when public health authorities approve its use for other purposes. The government recently appointed a committee, as a branch of the National Department of Public Health, for studying the possibilities of obtaining quinine substitutes. A fund of \$15,000 was awarded for the studies. Drs Carlos A. Alvarado, head of the National Antimalarial Department, Prudencio Santillan, secretary of the department, Cecilio Romano, head of the Instituto de Medicina Regional of the University of Tucuman, and Horacio Deseole, head of the Lillo Institute of Tucuman, are the main members of the committee. The preliminary essays gave promising results. Further botanic and pharmacologic researches are progressing.

The government recently awarded \$150,000 to the national department for expenses incurred in the antimalarial crusade in the central and northern regions of the country. Regulations for free distribution of antimalarial drugs and plans for the crusade were submitted to the government by Dr Carlos A. Alvarado, head of the National Antimalarial Department, and were approved. A batch of 400 larvogenic fishes was recently sent to the National Antimalarial Department by the Rockefeller Institute.

### Beta Vulgaris and Pollinosis

Drs L. Herraiz-Ballesteros and J. V. Monticelli recently lectured before the Argentine Society of Biology. They said that the coastal variety of *Beta vulgaris* grows abundantly near Bahía Blanca in Buenos Aires. The plant produces large amounts of pollen between October and December up to the end of the second week of December. Its pollen is the most frequent causal agent of pollinosis in the region, as shown by the results of skin tests, which were done on 150 patients with pollinosis. The pollinosis section of Bahía Blanca is heavily loaded with the pollen of *Beta vulgaris*, which fulfils Thomson's postulates. Pollination of this dicotyledonous herb precedes or accompanies pollination of gramineous plants. The fact is of importance, they said, especially in connection with therapy of the disease.

### Brief Items

Pamphlets for education of the public on poliomyelitis are being distributed to the public by the government of Buenos Aires. The measures for preventing the disease are explained.

A celebration was held recently at the Faculty of Medicine of La Plata, which recently reached its twenty-fifth anniversary.

Drs Armando Marotta and Nicanor Palacios Costa were recently appointed president and numeric member of the Academia Nacional de Medicina of Argentina. The library of the academy was officially opened on this occasion. It has more than 40,000 volumes.

Dr Carlota Pereira de Queiroz of Rio de Janeiro recently delivered a lecture at the National Academy of Medicine of Buenos Aires. She spoke on the applications of hematologic examination to social medicine.

## BELGIUM

(From Our Previous Correspondent)

Sept 21, 1944

### Gratitude of the Belgians

The people of Belgium deeply appreciate the liberation of our country by the Allies. They have shown their patriotic enthusiasm for the cause of liberation and their admiration for your army. We, the Belgian physicians wish to express also our deep gratitude to your country and our admiration for your army. We are now able to see for ourselves on our reconquered soil the amazing organization of war surgery that has been built up by the Allies at the front. Because of our experience with the hospitals during the war of 1914-1918 we can appreciate the progress achieved in the care of the wounded, and we propose to learn from contact with your medical officers the advances in war surgery that have given such good results in this war.

I wish to write a few words regarding our experiences during the occupation. The practice of all Belgian physicians was regulated by a dictatorial order which had many arbitrary rules (for authorization to practice, location of physicians and similar matters). Fortunately these regulations were received generally with inertia, and 90 per cent of physicians continued practicing without openly protesting against the regulations, suffering vexation, to be sure, but practically ignoring their existence.

As for the Belgian medical press, two journals continued to be published: one in Flemish and one in French. Some of the material of medical journals which were suppressed by the invaders was provisionally published by the International Office of Medical Military publications in the *Archives médicales Belges* from May 10, 1940. We never could obtain any medical literature except from Germany. All papers were suppressed by the invaders. The literature that we received consisted of medical items from Swiss journals sent to us in envelopes as if they were letters.

The nightmare is over now. The medical profession and the rest of the country are ready to resume their normal place in the world.

## Marriages

ROBERT PAYNE BECKWITH JR., Roanoke Rapids, N. C. to Lieut. Nancy Margaret Kimbrough of Romney, W. Va. August 8.

WILLIAM FRANCIS KIELY, Birmingham, Ala., to Miss Margaret Helene McMenamin at San Francisco, September 25.

ARNOLD W. BROCKMOLE, Evansville, Ind., to Miss Martha Frances Jakubiak of St. Louis in Cleveland, September 9.

EUGENE LEONARD WATKINS, Worcester, Mass., to Miss Victoria Pauline Peake of Brooklyn, September 23.

EDWARD MORSE SHEPARD to Miss Elizabeth Wendell Yates, both of New York in Nantucket, Mass., September 5.

HUBERT J. THOMAS, Dallas, Texas, to Miss Joella Hender son of Burkett in Wichita Falls, July 12.

GEORGE F. McALLIFFE, North Vernon, Ind., to Miss Sally C. Edelen of Bardstown, Ky., April 15.

LAURENCE BRUGGERS, St. Anne, Ill., to Miss Edith Lois Fuller of Amesbury, Mass., July 31.

IRVING E. BENVENISTE, Los Angeles, to Miss Angela Gower Cole of Minot, N. D., August 6.

GEORGE PLATT PILLING IV, Philadelphia, to Miss Barbara Bosworth of Denver, October 2.

FREDERICK YATES to Mrs. Lou E. Cunningham, both of Washington D. C., September 9.

EUGENE B. BROWN, Columbia, Mo., to Miss Marian Helen of Evanston, Ill., recently.

RODNEY CHARLES TURNER, Norfolk, Va., to Miss Mary Anna Ayers, September 3.

LAWRENCE IMBERT NORRISTOWN Pa. to Miss Lois Fisher of Harrisburg, July 5.



## Deaths

**Charles St John Butler** \* Medical Director Rear Admiral, U S Navy, retired Bristol Tenn., University of Virginia Department of Medicine Charlottesville, 1897, entered the medical corps of the U S Navy as a lieutenant (jg) in 1900 advanced through the various grades to that of rear admiral in 1935 retired on April 1 1939 instructor in bacteriology and tropical medicine intermittently at the U S Naval Medical School from 1907 to 1921 and commanding officer from 1921 to 1924 and from 1927 to 1932, formerly professor of tropical medicine at George Washington University School of Medicine Washington D C and Hahnemann Medical College and Hospital Philadelphia, commanding officer U S Naval Hospital Brooklyn, from 1932 to 1935 director general of public health of the republic of Haiti from 1924 to 1927 commanding officer of the U S Naval Medical Supply Depot in Brooklyn 1935-1936 and the U S Naval Medical Center in Washington from 1936 to 1938 detached March 31, 1939 as president of the naval retiring board and board of medical examiners and naval retiring board for officers of the medical corps specialist certified by the American Board of Internal Medicine served as a member of the medical board of the National Research Council the Subcommittee on Medical Research the National Malaria Committee the National Advisory Health Council the scientific board of the Gorgas Memorial Institute of Tropical and Preventive Medicine the American Association for the Advancement of Science the Washington Academy of Sciences the American Association of the History of Medicine the American Society of Clinical Pathologists and the Association of Military Surgeons of the United States member and past president of the American Academy of Tropical Medicine New York Society of Tropical Medicine American Society of Tropical Medicine the Washington branch of the Society of American Bacteriologists and the Helminthological Society of Washington, honorary member of the Society of Medicine, Haiti fellow of the American College of Surgeons American College of Physicians and the New York Academy of Medicine decorated with the medal of honor and merit of Haiti received a letter of commendation from the U S Navy Department for service in World War I awarded the LL.D degree by the Emory and Henry College in 1932, author of 'Syphilis Sive Morbus Humanus' died October 7, aged 69, of cerebral hemorrhage

**Edward Shearman McSweeney** \* New York Bellevue Hospital Medical College New York, 1898, member of the American Association for Thoracic Surgery American Association of Industrial Physicians and Surgeons, American Trudeau Society and the National Tuberculosis Association fellow of the American College of Physicians, specialist certified by the American Board of Internal Medicine formerly demonstrator of anatomy and lecturer on tuberculosis treatment and convalescent care at the New York University Medical College formerly medical superintendent of the Sea View Hospital in Castleton Corners, N Y, and the Tuberculosis Sanatorium of the New York City Department of Health in Ossville N Y, served as medical director of the New York Telephone Company for many years on the board of visitors of the New York State Hospital Ray Brook chairman of the medical board Tuberculosis Preventorium for Children Farmingdale N Y consulting physician to the Grasslands Hospital, Valhalla N Y Mary Immaculate Hospital Jamaica and St John's Long Island City Hospital Long Island City served on the medical board of the Stony Wold Sanatorium Lake Kushaqua, N Y Workmen's Circle Sanatorium, Liberty N Y and the Sanatorium Gabriels in Gabriels, received the degree of doctor of public health from New York University in 1921, died September 17, aged 66, of coronary thrombosis

**William Bradley Breed** \* Boston, Harvard Medical School Boston 1920 associate in medicine at his alma mater member of the committee on publications counselor and chairman of the war participation committee of the Massachusetts Medical Society, member of the New England Heart Association and the American Clinical and Climatological Society fellow regent and president of the board of governors of the American College of Physicians, associate editor from 1923 to 1937 and on the editorial board from 1937 to 1942 of the *New England Journal of Medicine*, specialist certified by the American Board of Internal Medicine, member of the honorary staff House of the Good Samaritan since 1920 on the staff and at his death member of the executive committee of the Massachusetts General Hospital, died in the Phillips House of the Massachusetts General Hospital August 21 aged 51, of carcinoma

**Jeremiah T Simonson** \* New York, New York Homeopathic Medical College and Hospital, New York 1891 emeritus professor of pediatrics at his alma mater, now known as the New York Medical College Flower and Fifth Avenue Hospitals past president of the American Institute of Homeopathy member of the American Academy of Pediatrics specialist certified by the American Board of Pediatrics Inc in 1941 received the gold certificate from his alma mater awarded to alumni who are still in active practice fifty years after graduation consultant on the staffs of the Pitkin Memorial Hospital Neptune N J Metropolitan Hospital and the Yonkers General Hospital, Yonkers, N Y consulting pediatrician to the Flower and Fifth Avenue Hospitals, where he died September 30 aged 74, of hypernephroma of the right kidney and coronary sclerosis

**Joseph Marshall Flint**, New Haven Conn Johns Hopkins University School of Medicine Baltimore 1900 for many years professor of principles and practice of surgery at the Yale University School of Medicine at one time professor of anatomy at the University of California, San Francisco fellow of the American College of Surgeons served overseas during World War I commander of the Yale University Medical Unit and later commanding officer of Mobile Hospital number 39 named liaison officer American Expeditionary Forces when he left the service had been cited for conspicuous and meritorious service and was decorated by the French government formerly chief surgeon at the New Haven Hospital and the New Haven Dispensary, died in Seal Harbor Maine September 16 aged 72 of coronary embolism

**Robert Law Cunningham** \* Los Angeles Johns Hopkins University School of Medicine Baltimore 1907 clinical professor of medicine at the University of Southern California School of Medicine specialist certified by the American Board of Internal Medicine, past president of the Clinical and Pathological Society now the Los Angeles Academy of Medicine Los Angeles Tuberculosis Association and the California Tuberculosis Association fellow of the American College of Physicians member of the American Trudeau Society and the National Tuberculosis Association served on the staffs of the La Vina Sanatorium La Vina, the Hospital of the Good Samaritan Barlow Sanatorium and Children's and St Vincent's hospitals, died September 10, aged 63, of coronary thrombosis

**Hugh Spencer McKeown** \* New York, Baylor University College of Medicine, Dallas, 1922 member of the American Academy of Ophthalmology and Otolaryngology fellow of the American College of Surgeons specialist certified by the American Board of Ophthalmology served as assistant clinical professor of ophthalmology at the Columbia University College of Physicians and Surgeons police surgeon at Bronxville and Westchester County attending surgeon at the Institute of Ophthalmology of the Presbyterian Hospital chief of the ophthalmologic service Lawrence Hospital Bronxville on the staff of the Vanderbilt Clinic died in the Harkness Pavilion September 14, aged 49, of coronary thrombosis

**Charles Henry Tilghman Lowndes** \* Medical Director Rear Admiral, U S Navy, retired, Durham, N C University of Maryland School of Medicine Baltimore 1888 entered the medical corps of the U S Navy as an assistant surgeon on April 12 1889 rose through the various grades to that of rear admiral in 1919 retired March 1 1929 on own application after thirty years service, formerly medical director of the Georgetown University Hospital, Washington D C author of 'Reports on Results of Indran Conditions on Various Operations' died in the Naval Hospital Bethesda Md September 25 aged 78

**Edward Luther Whitney** \* Walla Walla Wash Baltimore Medical College 1895 served as president of the Walla Walla Valley Medical Society specialist certified by the American Board of Internal Medicine fellow of the American College of Physicians, formerly professor of physiologic chemistry at his alma mater and associate professor of physiologic chemistry, pharmacy and clinical pathology at the University of Maryland School of Medicine member of the staffs of the Walla Walla General and St Mary's hospitals died September 13 aged 73 of bilateral hemiplegia

**Thomas Warren Allred** \* Nephi Utah Northwestern University Medical School Chicago 1923 served as county and city physician president and for many years a member of the county board of education died in the Payson City Hospital Payson, August 6 aged 57

**Alexander Locke Anderson**, Wolfville N S Canada Long Island College Hospital Brooklyn, 1898 practiced in Brooklyn for nearly forty years, died June 29, aged 70

**Louis Baer** \* Philadelphia Medico Chirurgical College of Philadelphia 1913 specialist certified by the American Board of Otolaryngology served an internship at the Garretson Hos



pital on the staff of the Mount Sinai Hospital died in the Pennsylvania Hospital August 4, aged 56

**Frederick Clifton Ballard** & Rushford N Y University of Buffalo School of Medicine 1898, for many years county coroner for more than twenty years on the board of education of Rushford serving at one time as president health officer and school physician on the staff of the Genesee Country Memorial Hospital, Fillmore died August 16 aged 68 of cerebral hemorrhage and cirrhosis of the liver

**Robert Lenox Barnes** & Columbus Ohio Starling-Ohio Medical College Columbus, 1910 associate of the American College of Physicians, member of the American Heart Association American Society for the Study of Arthritis and the Columbus Academy of Medicine on the attending staff, Mount Carmel Hospital, died August 2, aged 58 of cerebral hemorrhage

**Philip John Bartle**, Eugene, Ore Barnes Medical College, St Louis, 1896 member and past president of the Oregon State Medical Society past president of the Lane County Medical Society, member of the Pacific Northwest Medical Association served as president of the Oregon Association of Hospitals, for many years on the staff of the Eugene Hospital and Clinic died September 5, aged 70, of ruptured aortic dissecting aneurysm

**John A Biever**, Mount Joy, Pa, College of Physicians and Surgeons Baltimore 1885 died August 27 aged 86 of carcinoma of the liver

**William Henry Blanchette** & Fall River, Mass Baltimore Medical College 1896, served during World War I, major medical reserve corps, U S Army, not on active duty died August 1, aged 71

**Braxton B Blount**, Punta Gorda, Fla Louisville Medical College, Louisville, Ky, 1890 examiner for the local Selective Service Board died August 14, aged 79

**Walter William Brand** & Toledo, Ohio, Jefferson Medical College of Philadelphia 1894, fellow of the American College of Surgeons, honorary president of the Ohio Obstetrical Society, formerly health officer of Toledo, for many years on the staff of St Vincent's Hospital resigned as chief of staff in 1934 and as director of obstetrics in 1942 at the Women's and Children's Hospital, where he died October 2, aged 73 of cerebral thrombosis

**Henry George Crease** & Bakersfield, Calif, Jefferson Medical College, Philadelphia 1891, formerly owner of the Frimby Hospital, died August 15 aged 78

**Annie Sturges Daniel** & New York Woman's Medical College of the New York Infirmary for Women and Children New York 1879 for more than sixty years a member of the staff of the New York Infirmary for Women and Children, on the editorial board of the *Medical Woman's Journal* author of 'A Cautious Experiment' died August 10, aged 85

**Cyril Ostello Dozer**, Roseville, Ohio Eclectic Medical College, Cincinnati, 1919 member of the Ohio State Medical Association vice president of the school board served during World War I on the staff of the Bethesda Hospital, Zanesville, died in the Good Samaritan Hospital, Zanesville, August 21, aged 50

**Vernon King Stevenson Earthman**, Shelbyville Tenn Vanderbilt University School of Medicine Nashville, 1893, member of the Tennessee State Medical Association veteran of the Spanish-American War and World War I on the staff of the Rutherford Hospital, Murfreesboro died August 8, aged 72, of coronary occlusion

**Charles Edward Eaton**, Stanwood, Wash, McGill University Faculty of Medicine, Montreal, Que, Canada, 1904, member of the Washington State Medical Association served during World War I died at Camano Island August 21, aged 69

**Frank George Engelhardt**, Syracuse, N Y Syracuse University College of Medicine 1892 veteran of the Spanish-American War, died August 18 aged 73, of carcinoma of the esophagus and stomach

**Wallace J French**, Pike N Y University of Buffalo School of Medicine 1884, member of the Medical Society of the State of New York health officer of the town of Pike on the staff of the Wyoming County Community Hospital Warsaw died August 30, aged 85 of cerebral hemorrhage

**Alphonse Paul Gagnon**, Taunton Mass Tufts College Medical School, Boston 1921 member of the Massachusetts Medical Society and the American Society of Anesthetists Inc. served in internship at the Fall River City Hospital, Fall River examining physician of Selective Service Board num-

ber 148 formerly tuberculosis diagnostician on the board of health and chief of the staff of the Bay View Hospital in Fall River on the staff of the Morton Hospital where he died August 2 aged 52

**Clarence William Graser**, Buffalo University of Buffalo School of Medicine 1918 member of the Medical Society of the State of New York died in the Millard Fillmore Hospital August 20 aged 48 of cirrhosis of the liver

**Edward Melvin Green** & Harrisburg Pa University of Pennsylvania Department of Medicine Philadelphia 1890 member of the American Psychiatric Association fellow of the American College of Physicians member medical advisory board Pennsylvania Selective Service formerly on the staff of the Georgia State Sanitarium Milledgeville consultant in psychiatry and administration and for many years superintendent of the Harrisburg State Hospital died September 30 aged 76

**Ralph Hagan**, Los Angeles University of Southern California College of Medicine Los Angeles 1895 formerly police surgeon served during World War I on the staff of St Vincent's Hospital, where he died August 20 aged 72 of angina pectoris

**John Albert Hagemann** & Pittsburgh Columbus Medical College 1884 member of the American Academy of Ophthalmology and Otolaryngology specialist certified by the American Board of Otolaryngology formerly on the staff of the Pittsburgh Hospital died July 15 aged 81 of pneumonia

**Thomas J Heavey** Medway Mass Middlesex College of Medicine and Surgery Cambridge 1922 member of the Massachusetts Medical Society, died August 7 aged 54

**Harry Joseph Hill**, Waltham Mass College of Physicians and Surgeons, Boston 1910 formerly a medical missionary in China, served during World War I at one time on the staff of the Northampton State Hospital Northampton a member of the staff of the Metropolitan State Hospital died August 6 aged 59, of cerebral thrombosis general arterio sclerosis and diabetes mellitus

**Thomas Milton Hood** Clarksburg W Va Jefferson Medical College of Philadelphia 1880 honorary member and in 1905 president of the West Virginia State Medical Association, twice president of the Harrison County Medical Society, at one time assistant superintendent of the Weston State Hospital, Weston on the staffs of the Union Protestant Hospital and St Mary's Hospital, died, September 27 aged 91 of senility

**Lester Paul Hulick** & Mansfield Ill St Louis University School of Medicine, 1925 served an internship at the Missouri Baptist Sanitarium St Louis on the staff of the John and Mary E Kirby Hospital, Monticello, died August 20 aged 45

**Elmer C Huselton**, Pittsburgh, Jefferson Medical College of Philadelphia, 1884, formerly on the staff of the old Allegheny General Hospital, died August 24 aged 84 of heart disease

**Leon Downie Jay** & Waverly, Iowa State University of Iowa College of Medicine Iowa City 1910 fellow of the American College of Surgeons, on the staff of the St Joseph Mercy Hospital, died August 8 aged 58 of cerebral hemorrhage

**William Robert King**, Minneapolis Harvard Medical School Boston 1917, served an internship at the Peter Bent Brigham Hospital, Boston on the staff of the Abbott Hospital died August 10, aged 54 of cerebral hemorrhage

**Silvanus B Kirkpatrick**, Taylor, Texas Missouri Medical College, St Louis 1883 honorary member of the State Medical Association of Texas died in the Stromberg Clinic and Hospital August 4, aged 92, of uremia

**Danton Wyeth Landess**, Port Allen La University of Tennessee College of Medicine Memphis, 1930 member of the Louisiana State Medical Society, served as health officer and coroner of West Baton Rouge Parish a lieutenant colonel in the Louisiana State Guard, in which he had been commander of the seventh battalion an organizer and past president of the Port Allen Lions Club died in Our Lady of the Lake Sanitarium Baton Rouge August 21, aged 48

**Kevin David Lynch** & El Paso Texas Columbia University College of Physicians and Surgeons New York 1911 member of the American Urological Association president-elect and formerly vice president of the Southwestern Medical Association served in France during World War I on the staffs of the Hotel Dieu Sisters' Hospital, Providence Hospital and the Southwestern General Hospital, died June 2 aged 54 of hypertensive heart disease

Horace Cuiiford MacKerrow, Worcester Mass Leonard Medical School Raleigh N C 1904, University of Bishop College Faculty of Medicine Montreal Que Canada, 1905 died in the Palmer Memorial Hospital, Boston August 14 aged 64, of metastatic adenocarcinoma from the biliary tract

Rufus Henry Main, Barry, Ill Missouri Medical College St Louis 1894, member of the Illinois State Medical Society and its "Fifty Year Club" for eighteen years secretary of the Pike County Medical Society for many years member of the school board died August 20 aged 76

Daniel Joseph Maloney, Waterbury Conn New York University Medical College New York, 1896 past president of the Waterbury Medical Association on the staffs of the Waterbury and St Mary's hospitals, died August 4 aged 77 of carcinoma of the stomach and general arteriosclerosis

Herman Gustave Maul @ Denver, Denver and Gross College of Medicine 1910 Army Medical School, 1915, member of the American Roentgen Ray Society and the Radiological Society of North America, Inc formerly an officer in the medical corps of the U S Army major medical reserve corps U S Army not on active duty died August 13 aged 57 of injuries received when caught by a power saw

Caesar Peele McClendon, New Rochelle N Y University of Michigan Department of Medicine and Surgery Ann Arbor, 1903 died in Wells Maine August 31 aged 68 of heart disease

Joseph N Moore, Marshall N C University of North Carolina School of Medicine 1905 for many years county physician served as a member of the board of directors of the Aston Park Hospital Asheville died August 21 aged 60 of chronic myocarditis and carcinoma of the prostate

Andrews Rogers Columbus Ohio, Columbia University College of Physicians and Surgeons, New York 1901, since 1943 professor emeritus of obstetrics at the Ohio State University College of Medicine where he had been professor from 1916 specialist certified by the American Board of Obstetrics and Gynecology, Inc on the staffs of the Starling-Loving University Hospital Mount Carmel Hospital Franklin County Tuberculosis Hospital and the Grant Hospital, died August 6 aged 71

Robert E Ryle, Walton Ky Starling Medical College Columbus, 1896 member of the Kentucky State Medical Association died August 30, aged 72 of myocarditis and arteriosclerosis

John Gibson Sargent, Centralia Wash, State University of Iowa College of Homeopathic Medicine Iowa City, 1908, died July 26 aged 68

Henry Damon Smith @ Sanford Fla, University of Alabama School of Medicine, 1912, twice president of the Seminole County Medical Society died August 12, aged 54

William S Steele, Bluefield, W Va Baltimore University School of Medicine, 1893, died August 20, aged 76 of hepatitis

Charles Nicholas Stroube @ Roachdale, Ind, University of Louisville Medical Department, Louisville, Ky, 1897 died suddenly September 17 aged 75 of coronary occlusion

George Edwards Tooley, Seattle, Marion-Sims College of Medicine St Louis, 1901 member of the House of Delegates of the American Medical Association in 1908 formerly chief medical officer of the Veterans Administration Facility in Wichita Kan and on the staff of the Veterans Administration Facility in Lincoln, Neb, served during World War I died in August, aged 68, of myocardial infarct

Herman Luther Tutwiler, Patterson Va Medical College of Virginia Richmond 1900 member of the Medical Society of Virginia formerly vice president of the McDowell (W Va) County Medical Society and member of the West Virginia state legislature died July 29, aged 71

William Franklin Waggoner, Carrollton, Ill, Barnes Medical College St Louis 1903 member of the Illinois State Medical Society on the board of the Boyd Memorial Hospital, died in Macon Mo, July 14, aged 77

Thomas Francis Welch, Hartford Conn Georgetown University School of Medicine, Washington D C, 1904 member of the Connecticut State Medical Society president of the Hartford Medical Society in 1932 served as a member of the draft board of Hartford during World War I member and past president of the staff of St Francis Hospital, died July 19 aged 71 of cerebral thrombosis

Cephias John Wells @ Bartlesville Okla Louisville Medical College, 1894 died September 9 aged 79 of congestive heart disease

James Alexander White, Alexandria, La College of Physicians and Surgeons, Baltimore 1892 member of the Louisiana State Medical Society member of the board of directors and treasurer of the Louisiana College Pineville on the staff of the Baptist Hospital died May 23, aged 76 of coronary thrombosis

James Johnston Withers, Davidson, N C, Jefferson Medical College Philadelphia, 1909 served during World War I formerly a druggist on the visiting staff of the Lowrance Hospital Mooresville died July 30, aged 64 of coronary occlusion



CAPT LEO E APANASEWICZ  
M C A U S 1915-1944



CAPT JACOB T FARRIS  
M R C, U S Army, 1916-1944

## KILLED IN ACTION

Leo Edwin Apanasewicz, Cleveland St Louis University School of Medicine 1941 served an internship at St. John's Hospital began active duty as a first lieutenant in the medical corps Army of the United States on July 25 1942 later promoted to captain served in the North African and Italian campaigns died in an army hospital in England June 15 aged 28 of wounds received in Normandy on D day June 6

Jacob Thomas Farris, Richmond Ky Vanderbilt University School of Medicine, Nashville Tenn 1940 served

an internship in pediatrics at the Strong Memorial Hospital and the Rochester Municipal Hospital, Rochester, N Y, commissioned a first lieutenant in the medical reserve corps of the U S Army in June 1940, began active duty on Aug 25 1941, promoted to captain in January 1943 stationed at hospital in Fort Knox Kentucky, for one year and trained in various other posts in the U S Army before going overseas early in January 1944 landed with the invasion troops in Normandy on D day twice cited for bravery and awarded the Silver Star killed in France by shrapnel severing his spinal cord August 3 aged 27

## Bureau of Investigation

### DANGEROUS TO HEALTH

#### Because of Inadequate Warnings on Labels

[Editorial Note—These abstracts concern preparations which were specifically declared by the Food and Drug Administration of the Federal Security Agency to be misbranded because their labels failed to carry adequate warnings against giving them to children, or using them in the pathologic conditions in which they might be dangerous to health or to caution against unsafe dosages or methods or duration of administration or application, for the protection of the user. The abstracts that follow are given in the briefest possible form: (1) the name of the product, (2) the name of the manufacturer, shipper or consigner, (3) the date of shipment, (4) the composition, (5) the type of nostrum, (6) the reason for the charge of misbranding, and (7) the date of issuance of the Notice of Judgment.]

**Aurofectol Purpol No 22 and Purpol No 600**—Purpol Laboratories Inc. Baltimore. Shipped March 9 and 25 1942. Composition Aurofectol essentially a mixture of oils and phenols. Purpol Nos 22 and 600 both essentially mineral oil with small quantities of iodine chlor-butanol and menthol. Aurofectol adulterated because strength differed from that which label represented it to possess since it was not an antiseptic. Misbranded because label falsely represented that product would be efficacious in treating dermatitis, eczema, acute catarrhal inflammation of tympanic membrane, acute and chronic infections of external auditory canal, acute myringitis and eustachian otitis media, that it was an effective parasiticide and antiseptic in skin diseases and would produce desired results in treating infections of the skin of the external auditory canal. Purpol products misbranded because labels failed to warn adequately against use by children or in those conditions wherein products might be dangerous to health since frequent or excessive use might cause injury to the lungs. Purpol No 22 further misbranded because label falsely suggested that product was an effective treatment of acute and mild chronic infections of the nose would cause a depletion of the swollen mucous membrane, promote drainage, greatly improve ventilation and gradually diminish excess discharge regardless of its cause. Both Purpol products also misbranded because falsely represented to have bacteria destroying properties equivalent to phenol in the same strength and in the same type of oil. Purpol No 600 specially misbranded because of false statement. Used in the treatment of chronic suppurative infections of the nose. —[D D \ J F D C 759 September 1943]

**Luebert's Iron Tonic Compound Tablets**—A. G. Luebert, Wilmington, Del. Shipped May 17 and June 2, 1941. Composition essentially salts of iron and manganese, strychnine sulfate, arsenic trioxide, a phosphide and fish oil. Misbranded because label failed to warn against giving product to children and elderly persons in view of strychnine content or to caution against taking more than the recommended dose and against frequent or continued use because of strychnine and arsenic content. Further misbranded because of label misrepresentation that product would produce rich blood, good health, strong nerves and astounding vitality, give strength and vigor to the entire system, cleanse the blood after accumulations of winter months, benefit the weak, run down or depressed, produce proper activity of all organs and functions of the body, stimulate the nutritive functions, tone the digestive tract and benefit those conditions which call for an effective tonic such as loss of appetite and a tired run down feeling. Further misbranded because of false representation that these tablets were solely an iron tonic since they contained some additional drugs that were physiologically active. Also misbranded because label failed to declare quantity or proportion of strychnine sulfate and arsenic trioxide. —[D D \ J F D C 754 September 1943]

**Pond's Digestans and Pond's Laxative Pills**—Pond Pharmacal Company Inc., New York. Shipped Oct 8 and Nov 13 1941. Composition Digestans essentially sodium bicarbonate, peppermint oil, strychnine sulfate and extracts of laxative plant drugs including aloin. Laxative Pills essentially laxative plant drugs (including aloin and podophyllin) and small amounts of belladonna. Both articles misbranded because directions for use were inappropriate and inadequate for a laxative since they provided for continued administration which might establish the laxative habit. Further misbranded because though label cautioned user against taking laxatives in the presence of nausea, vomiting and abdominal pain, it failed to warn that such symptoms may be those of appendicitis, also misbranded because tablets contained strychnine but labeling failed to warn that not more than the recommended dose should be taken and that use by children and elderly persons might be especially dangerous. Misbranded further because warnings required by law were not conspicuous on the label. Misbranded again because of certain label misstatements regarding the action of ingredients of Digestans and because the Laxative Pills were not properly labeled as to active ingredients and quantity of contents. —[D D \ J F D C 76 September 1943]

**W. K. Sterline's Compound**—Webster K. Sterline trading as W. K. Sterline, Sidney, Ohio. Shipped Dec 30 1940. Composition alcohol 15 volume, 5.26 per cent and in each fluid ounce 13.25 grains of potassium iodide and 14.46 grains of sodium bromide. Misbranded because label failed to bear adequate warnings against giving to children or taking it in the pathologic conditions wherein it might be dangerous to

health or against use in an old age since because of presence of potassium iodide it should not be taken in case of heart disease or chronic cough or goiter and should be discontinued if a skin rash should appear frequently or continued use might lead to mental derangement, skin eruptions or other serious effects. Also dangerous to health because considering presence of sodium bromide product should not be used by those suffering from kidney disease. Misbranded also because labels failed to state that product should not be administered to children under 6 years of age and because they falsely declared the amounts of alcohol, potassium iodide and sodium bromide present. —[D D \ J F D C 750 December 1940]

### STIPULATIONS

#### Agreements Between Federal Trade Commission and Promoters of Various Products

Following are abstracts of stipulations in which promoters of patent medicines, medical devices and cosmetics have agreed following action by the Federal Trade Commission to discontinue certain misrepresentations in their advertising. These stipulations differ from the "Cease and Desist Orders" of the Commission in that such orders definitely direct the discontinuance of misrepresentations. The abstracts that follow are presented primarily to illustrate the effects of the provisions of the Wheeler-Lea Amendment to the Federal Trade Commission Act on the promotion of such products.

**Casafra**—In February 1944 Leo J. Dunn, trustee trading as Mason Drug Company, Boston, entered into a stipulation with the Federal Trade Commission regarding this product. In this he agreed to discontinue any advertisement which did not reveal that Casafra should not be taken when abdominal pain, nausea or other symptoms of appendicitis are present. It was provided however that future advertisements need contain only the statement: "Caution: Use Only as Directed if the instructions for use on the label should contain a warning to the same effect."

**Dr. Edgar Health Shoes and Dr. Edgar Health Cushion Shoes**—In March 1944 A. J. Schoenecker and Margaret Welsh, co-partners trading as A. J. Schoenecker Shoe Company, Milwaukee, stipulated with the Federal Trade Commission that they would no longer use the descriptions "Dr. Edgar Health Shoes" and "Dr. Edgar Health Cushion Shoes" in advertising branding or labeling the shoes that they sell or the world "Doctor" or its abbreviation either alone or with the word "Health" so as to imply that their shoes have been made in accordance with the design or under the supervision of a physician or contain special scientific orthopedic or health features which are the result of medical determination or services. They further agreed to discontinue representing through use of the word "Manufacturers" that they make the shoes that they sell or own and operate or directly and absolutely control the factory in which their shoes are made.

**Hennafoam Shampoo**—This is put out by Alfred Horowitz trading as Hennafoam Shampoo Company, New York City. In February 1944 he stipulated with the Federal Trade Commission that he would cease representing that the product has been tested or tested and approved by Good Housekeeping Magazine or any other organization which it owns or controls unless the tests have been made in such manner as to give reasonable assurance of its quality, nature and properties in relation to its intended use and to the fulfillment of the claims made for it.

**Kondremul with Non Bitter Extract of Cascara and Kondremul with Phenolphthalein**—These are products of the E. I. Patch Company, Boston. In February 1944 this concern entered into a stipulation with the Federal Trade Commission to discontinue any advertisement which did not reveal that the preparations should not be used when abdominal pain, nausea or other symptoms of appendicitis are present. It was agreed however that it would be sufficient for future advertisements to contain the statement: "Caution: Use Only as Directed if and when the directions for use on the labels should carry a warning to the same effect."

**Lashgro**—This is promoted by Beatrice Kornstein trading as Avlon Eye Company, New York. In February 1944 she stipulated with the Federal Trade Commission that she would cease representing by use of the trade name Lashgro or otherwise that her product causes the eyelashes to grow longer or thicker, will promote or in any way affect their growth or correct or remedy red, scaly eyelids.

**Stevens Mineral Water, Stevens Concentrated Mineral Water and Stevens 50-50 Water**—These were the subjects of a stipulation entered into with the Federal Trade Commission in March 1944 by E. A. Stevens of Dray Springs, Ky., in which he agreed to discontinue the following misrepresentations in the advertising: "That these waters are an effective treatment or relief for stomach trouble, acute or chronic nephritis, uricemia, engorged liver or kidneys, rheumatism, gout, gallstones, dropsy, appendicitis and some other ailments; that the waters are a cure for chronic constipation or a treatment for that condition in excess of temporarily relieving it; or that the physiologic effects of the preparation are greater than those of a saline laxative and a weak antacid." He further agreed to discontinue any advertisement which represented that the use of these waters was safe or which failed to reveal the potential danger in using them when abdominal pain, nausea or other symptoms of appendicitis are present. The stipulation provided however that when the potential danger in their use was noted on the label the advertisement need contain only the warning: "Caution: Use Only as Directed."

## Correspondence

### POWDER FOR SURGICAL GLOVES

*To the Editor*—An editorial in *THE JOURNAL* September 23 entitled *Exit Talcum from the Surgical Scene* has provoked considerable comment among industrial hygienists. There you make the statement that "These lesions [the talc granulomas] are permanent because the body does not have adequate reparative power against talcum which is essentially a silicate and which therefore induces a silicosis."

I would question the validity of the assumption that a silicate can cause silicosis, and several people have already written me to protest against your generalization. All experimental evidence derived from study of pure silicates indicates that as a class these minerals do not dissolve within the body to liberate their component silica with resultant fibrosis. In fact most of the silicates are inert materials and only a few of them, like asbestos and possibly mica, may be irritating because of peculiar physical properties. These experimental results, based on the study of pure minerals, are not always applicable to the mixtures encountered in industry. Many dusts are named for their major component but analysis reveals that they contain significant quantities of quartz that may be responsible for pulmonary reactions noted in chest roentgenograms.

In the case of talc I know that contamination with quartz is responsible for some of the alleged reactions in the lungs. In other instances nomenclature is at fault and the inhaled minerals actually consist of mixtures of tremolite, anthophyllite (both fibrous silicates), serpentine and either granular or fibrous talc. The fibrous minerals produce the peculiar bodies found in asbestosis and in my opinion pulmonary reaction to these so-called talcs is due to their fibrous structure rather than to their silica content. They produce granulomas only when the particles are fairly large, 20 microns or more in length. Grinding them to 3 microns or less in maximum diameter renders them comparatively inert so that tissue reaction is limited to simple phagocytosis. With crystalline silica, whose action is known to be chemical, the reverse is true and the finer the quartz the more irritating it becomes.

The talcum powder granulomas of the peritoneal cavity are obviously foreign body tubercles, for all observers have mentioned the detection of refractile mineral particles. The size of these particles is not usually mentioned but they must obviously be quite large to be detected under the biologist's polarizing microscope. Petrographic examination of one commercial talcum for hospital use revealed particles and fibers ranging in size from 150 microns downward. This material consisted of fibrous tremolite and particulate talc, dolomite and serpentine. Other samples contained varying amounts of quartz. Experiment demonstrates that intraperitoneal injection of the untreated powder will produce foreign body tubercles. After regrounding to size 3 microns and under (the size at which quartz exerts its specific effects) intraperitoneal reaction is limited to phagocytosis. Fibrosis develops only about large accumulations of the powder and this is a nonspecific reaction against the mass of foreign body. Regardless of particle size reactions to talc are not progressive.

For the reasons cited I cannot subscribe to your explanation of the talc granuloma. Reparative power is involved only in the sense that the tissues have walled off an insoluble foreign body. I can discover no reason for considering such reaction an attempt to repair a chemical injury. The hypothesis that body fluids attack silicates and leach out the bases to leave silica in active form finds no support in controlled experimental observation.

LEROY L. GARDNER, M.D., Saranac Lake, N. Y.  
Director, Saranac Laboratory for Study of Tuberculosis

*To the Editor*—I have been much interested in the discussion going on for some time about a substitute for talcum powder in operating room gloves.

Why do we need any substitute? If gloves are dry and hands are dry, as they should be, and the gloves are the right size, any foreign material unnecessarily introduced into the field is an added danger. I have been wearing rubber gloves in the operating room for over forty years and have never used any kind of glove powder. In these days of constantly changing operating room nurses I have to be on the alert to escape the avalanche of talcum with which I am constantly threatened, but so far I have valiantly held my ground and have gone into the operating room with fingers that are cleaner and have a better tactile sense.

This tendency to get rid of an evil thing by substituting another evil thing is a common fault in everyday thinking. There is no need to have a substitute for a nuisance.

DANIEL THOMAS QUIGLEY, M.D., Omaha

### 'GETTING PATIENTS OUT OF BED EARLY IN THE PUERPERIUM'

*To the Editor*—On page 839 of *THE JOURNAL* of July 22 Dr. Morris L. Rotstein of Baltimore makes the statement that during the blitz of 1940-1941 London maternity patients delivered in hospitals were allowed up a day after labor and sent home on the second or third day post partum. He adds that "no ill effects resulted from this mode of treatment."

It would seem that Dr. Rotstein is under some misunderstanding for although one half of the institutional confinements in London take place in hospitals directly under my control and I am in close touch with the voluntary hospitals responsible for the remaining institutional births in London, I have never heard of such a routine. The true facts may interest your readers. During the whole war period, all expectant mothers who could be persuaded to leave London were evacuated at the eighth month to country maternity homes organized by the Ministry of Health and there they were retained until the usual fourteen days after confinement. At the end of this period they were discharged to country billets with their infants but many returned soon after to their homes in London especially if the blitz was not active.

Of the mothers who could not be persuaded to leave London those who were normal medically and whose homes were suited for confinements were expected to have their babies at home. This is the usual prewar custom in England and we did not depart from it during the blitz, but of course enemy action rendered many houses unsuitable and added to the pressure on our beds. Further, all hospitals retained the fourteen day period during the early part of the war, but many (including the London County Council's hospitals) were obliged to reduce the mothers' stay to ten or twelve days as accommodation was reduced by bombing or by necessary air raid precautions. Any woman who had to be sent home earlier (which very rarely happened and never before the seventh day) was conveyed by ambulance and a visiting nurse was sent to care for her. It is also true that in two areas of London where hospital accommodation became very short the women were (and are still) transferred by ambulance to a suburban hospital with excellent accommodation on the fourth day but they are not expected to go home till the twelfth day. No bad effects have been reported but the arrangement is much disliked by the women and will be abandoned directly events permit. It is probably a garbled version of this plan which has reached Dr. Rotstein.

May I add that we have had many attempts in the last forty years to introduce a shortened puerperium into English mid-

watery practice but they have never taken hold. The present tendency is to insist more firmly than ever on six to seven days in bed and a total fourteen days of rest and exemption from household duties with a longer convalescence still after complicated confinements. The value of graduated physical exercises during the antepartum period and from the third or fourth day of the puerperium is of course widely appreciated.

ALLEN DAVEY, M.D.

Medical Officer of Health, London County Council

## Bureau of Legal Medicine and Legislation

### MEDICOLEGAL ABSTRACTS

**Chiropractic Practice Acts. Revocation Proceedings Not Barred by Failure of the Licensate to Renew License.**—The state of Iowa in February 1943 instituted proceedings to revoke Otterholt's license to practice chiropractic in Iowa, charging that the chiropractor was guilty of wilful and repeated violations of the Iowa laws relating to the practice of the healing arts. It was alleged that the chiropractor had repeatedly not confined his practice to chiropractic and had treated his patients 'with electric and other machines' which is not the proper practice of chiropractic but is the practice of medicine and surgery for which he has no license. It was also alleged that the chiropractor was guilty of fraud and misrepresentations as to his skill and ability 'in using a machine termed a 'Pathoclast of no therapeutic value and falsely representing its therapeutic value'. The chiropractor moved to dismiss the action, questioning the authority of the state to institute the action and the constitutionality of the state laws relating to the healing arts. Under the applicable Iowa law every license to practice a profession expires annually on the 30th day of June but can be renewed without examination on application accompanied by the legal fee at least thirty days prior to the expiration of the license. The chiropractor permitted his license to expire and did not apply for a renewal thereof. Subsequently he amended his motion to dismiss and contended that since he no longer was licensed to practice the action should be dismissed because the question of cancellation of his license was now moot. The trial court sustained the motion on ground that cause of action has ceased to exist. The state accordingly appealed to the Supreme Court of Iowa.

The chiropractor, said the Supreme Court had the right to practice chiropractic by virtue of the license granted by the state acting under its police power. Such practice involves the health and safety of the citizens of the state and practice under such license is subject to all reasonable conditions and regulations. Among such conditions is the requirement of annual renewal. This court on many occasions has sustained the right of the state to regulate the practice of the healing art and the constitutionality of the laws on the subject now in force. Through the license to practice granted the chiropractor by the state subject to the regulations referred to the chiropractor is the possessor of a valuable privilege or right 'which cannot be denied or abridged in any manner except after due notice and a fair and impartial hearing before an unbiased tribunal'. *Gilchrist v. Biering* 14 N. W. (2d) 724. The state cannot by issuing only annual licenses ingeniously thwart those precious rights and once an annual license is issued to a [licensate] unless he has violated some of the provisions of the statute applicable to his profession he is entitled to the renewal of his license as a matter of right.

The Supreme Court did not agree with the holding of the trial court that the cause of action against the chiropractor had ceased to exist when the chiropractor failed to renew his license. There is a marked difference said the court, between a license to practice a profession and a mere renewal of that license. As was said by this court in *Gilchrist v. Biering* supra

This is because a dentist, doctor, lawyer or the member of any other profession does not devote the years of study and preparation necessary to qualify as a practitioner merely that he may be accorded the right to practice for one year. When he qualifies for the practice he does so for life. That right cannot be taken from him except by due process of law.

The certificate entitling the chiropractor to practice is a finding by the duly constituted authority that he has the necessary character and qualification to practice chiropractic. The mere failure to renew annually does not lessen the value of that license except for the lapsed period before the renewal. The chiropractor is still the owner of the license and may be reinstated and continue the practice of chiropractic without examination subject as always to the supervisory power under which he previously exercised it, such right to practice being evidenced by its renewal. All benefits of his license did not expire on July 1, 1943. His rights under the original license are of value. To deprive him absolutely and finally of the right ever to practice is much more serious than the mere suspension of that right either voluntary or compulsory. Contrary to the procedure in renewal in which one who is not an offender against the rules regulating the practice is entitled to a renewal as a matter of right one who has had his license revoked must commence anew by making an original application for another license. *Hanson v. State Board of Medical Examiners* 220 Iowa 377 260 N. W. 68.

We do not consider the question involved moot merely because the chiropractor is not at present making full use of his license to practice. As stated in 3 American Jurisprudence 306.

It may be noted that the question whether a provision in a decree confers a particular right upon a party is not rendered moot on appeal merely because such party testified at the trial that he did not expect to exercise such right.

To hold otherwise places in the hands of the accused practitioner himself the power to escape the penalty provided by law for a violation of the rules governing the conduct of his practice no matter how gross his misconduct may have been. The cause of action has not ceased to exist so long as there remain rights undetermined and all matters involved in the action have not been adjudicated. We are satisfied that the cause of action has not ceased to exist.

The Supreme Court accordingly ordered the cause to be returned to the trial court for trial on the merits.—*State v. Otterholt* 13 N. W. (2d) 220 (Iowa 1944).

## Medical Examinations and Licensure

### COMING EXAMINATIONS AND MEETINGS

#### BOARDS OF MEDICAL EXAMINERS BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Examinations of boards of medical examiners and boards of examiners in the basic sciences were published in THE JOURNAL, Oct. 21, page 515.

#### NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS. Parts I and II. Various centers. Nov. 13-15. Part III. Various centers. October. Exec. Sec. Mr. F. S. Elwood. 225 S. 15th St. Philadelphia.

#### EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY. New York. June 8-9. Final date for filing application is March 12. Sec. Dr. George W. Lewis. 66 E. 66th St. New York 21.

AMERICAN BOARD OF INTERNAL MEDICINE. Written. Feb. 19. Final date for filing application is Dec. 15. Asst. Sec., Dr. W. A. Werrell. 1501 University Ave. Madison, Wis.

AMERICAN BOARD OF NEUROLOGICAL SURGERY. Spring 1945. Final date for filing application is Feb. 1. Sec. Dr. Paul C. Bucy. 912 S. Wood St. Chicago 12.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY. Written. Part I. Various centers. Feb. 3. Sec. Dr. Paul Titus. 1015 Highland Bldg. Pittsburgh 6.

AMERICAN BOARD OF OPHTHALMOLOGY. New York. June. Chicago. October 1945. Final date for filing application is Dec. 1. Sec. Dr. S. Judd Beach. 56 Ivy Road. Cape Cottage. Maine.

AMERICAN BOARD OF PEDIATRICS. Oral. New York. April 14-15. Final date for filing application is Dec. 15. Chicago. May 19-20. Final date for filing application is Jan. 19. Sec. Dr. C. A. Aldrich. 115 1/2 First Ave. S.W. Rochester. Minn.

AMERICAN BOARD OF RADIOLOGY. Oral. New York. June 3. Final date for filing application is May 1. Sec., Dr. B. R. Kirklin. 102110 Second Ave. S.W. Rochester. Minn.



## Current Medical Literature

### AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1944 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents for one and 18 cents for three periodicals are required). Periodicals published by the American Medical Association are not available for lending, but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (\*) are abstracted below.

#### American Heart Journal, St. Louis

28 133-268 (Aug) 1944

- Measurements of Circulation in Patients with Multiple Arteriovenous Connection. J. A. Kennedy and C. S. Burwell—p. 133
- Fusion Beats and Their Relation to Syndrome of Short PR Interval Associated with Prolonged QRS Complex. I. S. Butterworth and C. A. Poundexter—p. 140
- On Apical Sounds and Murmurs in Aortic Regurgitation. A. A. Lusa—p. 156
- Unusual Effect of Interpolated Ventricular Premature Systoles. I. N. Katz, R. J. Langendorf, and S. J. Cole—p. 167
- Relation of Neurocirculatory Asthenia to Graves Disease. E. Moschowitz and S. S. Bernstein—p. 177
- Further Observation on Deep Qs of Electrocardiogram. Anne Mary Jule—p. 190
- Peripheral Blood Flow and Other Observations in Coarctation of Aorta. H. J. Stewart, Helen S. Haskell, and W. F. Evans—p. 217
- Differentiation of Electrocardiographic Changes Produced in Dog by Prolonged Temporary Occlusion of Coronary Artery from Those Produced by Postoperative Pericarditis. R. H. Baxley and J. S. La Due—p. 2
- Effect of Dehydration Produced by Mercupurin on Plasma Volume of Normal Person. R. H. Lyon, A. L. Meyer, and S. D. Jacobson—p. 247

**Electrocardiographic Changes in Coronary Occlusion and Postoperative Pericarditis.**—Baxley and La Due describe experiments on dogs which were devised to test the interpretation offered by Blumgart and his co-workers concerning the prolonged electrocardiographic changes associated with experimental temporary occlusion of a coronary artery. The authors present a method by which the electrocardiographic changes due to experimental coronary occlusion may be differentiated from those caused by the associated postoperative pericarditis. They show that the changes in the final ventricular deflections which are due to experimental temporary coronary occlusions of fifty minutes or less vanish completely within thirty minutes after cessation of occlusion and that the changes which appear on and after the first postoperative day are caused by local postoperative pericarditis. The duration of the electrocardiographic changes which immediately follow cessation of occlusions of fifty minutes or less is directly proportional to the duration of the occlusion. There are no differences in the magnitude or in the kind of electrocardiographic changes which are produced by acute local ventricular ischemia and injury on the one hand and by local postoperative pericarditis, on the other. The former occur during and for a brief time after temporary occlusion. For the most part the latter occur on and after the first postoperative day. The site of generation of the electrical effect which account for the two etiologically different groups of changes is different, i.e., the electrical effects associated with occlusion are generated in the muscle ordinarily irrigated by the occluded artery, whereas those associated with postoperative pericarditis are generated by the muscle adjacent to the local epicarditis which results primarily from the trauma of dissection of the coronary artery and from the trauma caused by the sutures which are used to close the pericardial sac. These observations differ decidedly from those of Blumgart and his co-workers. The authors ascribe the differences to the use by the other investigators of extremity leads only. It is important not to rely entirely on extremity leads for an evaluation of the electrocardiographic changes which occur in association with animal experimentation.

#### American Journal of Medical Sciences, Philadelphia

208 141-280 (Aug) 1944

- Use of Gelatin Solutions in Treatment of Human Shock. D. D. Kozoff, H. Popper, F. Steigmann, and B. W. Volk—p. 141
- Increase in Plasma Volume Following Administration of Sodium Salt. R. H. Lyons, S. D. Jacobson, and N. L. Avery—p. 148
- Orientation of Army Psychiatrist. P. Haun—p. 154
- Convulsive Shock Therapy in Involutional States After Complete Failure with Previous Estrogenic Treatment. A. E. Bennett and C. B. Wilbur—p. 170
- Endocrine Factor in Homosexuality. Report of Treatment of 4 Cases with Androgen Hormone. J. A. Lurie—p. 176
- \*Sulfamerazine (2 Sulfanilamide 4 Methylpyrimidine). II. Sulfonamide Concentrations in Blood of Man Produced by Small, Daily Oral Doses of Sulfamerazine, Sulfamethazine, Sulfadiazine, and Sulfathiazole. A. D. Welch, P. A. Mattie, E. S. Koelle, and A. R. Laiten—p. 187
- Studies on Bone Marrow in Vitro. II. Effect of Hemoglobin and Red Cell Stroma on Explanted Bone Marrow. M. Rachmilewitz and A. Rosin—p. 193
- Cardiac Arrhythmias in 1000 Cases of Pulmonary Tuberculosis. T. T. Lev and A. L. Bobb—p. 201
- Significance of Marked Left Axis Deviation of Electrocardiogram. J. M. Faulkner and C. N. Duncan—p. 205
- Development of Hypertension Associated with Lesions of Kidney. H. O. Mosenthal—p. 210
- Studies on Morphology of Adrenal Cortex and on Excretion of 17 ketosteroids in Hypertensive Patients. M. Bruger, J. A. Rosenkrantz, and B. E. Lowenstein—p. 212
- Factors Influencing False Positive Serologic Reactions for Syphilis Due to Smallpox Vaccination (Vaccinia). G. O. Favorite—p. 216
- Phosphorus Poisoning. Report of 16 Cases with Repeated Liver Biopsies in Recovered Case. J. S. LaDue, J. R. Schenken, and L. H. Kiker—p. 223
- Acute Meningococcal Encephalomyelitis. W. B. Wartman and J. C. Hanger—p. 234
- Mumps Epidemic in Small Trunk Force. H. Derman and E. W. Lellen—p. 240

**Sulfonamide Concentrations in Blood.**—The experiments by Welch and his collaborators were designed to compare concentrations of sulfonamide produced in the blood of normal human subjects by daily administration of a single small dose of sulfamerazine, sulfadiazine, sulfamethazine, or sulfathiazole. Observations were made on the average sulfonamide concentrations produced in the blood of 8 normal men by daily 1 Gm doses of these drugs. The concentration in the blood following maintenance doses of sulfamerazine fell from a daily maximal value of about 65 to a minimal value of about 35 mg per hundred cubic centimeters with sulfadiazine from about 35 to about 15 with sulfamethazine from about 4 to less than 1, and with sulfathiazole from about 2 to less than 1 mg per hundred cubic centimeters. Sulfamerazine administered in single 0.5 Gm daily doses maintained a concentration in the blood which fell gradually from a level of approximately 4 to a level of about 2 mg per hundred cubic centimeters. Emphasis is placed on the rapid absorption and gradual elimination of sulfamerazine, which make possible the maintenance of a concentration in the blood with single daily doses of only 0.5 to 1 Gm, that is probably sufficient for certain chemoprophylactic purposes. The data presented, as well as clinical experience with sulfamerazine, indicate that adequate therapeutic concentrations in the blood should be maintained by the administration of smaller total daily doses than with other sulfonamides, these doses can be given on the basis of only two or three divided doses daily.

**Significance of Great Left Axis Deviation.**—While it is generally recognized that moderate deviation of the electrical axis of the heart to the left is a common finding in normal persons, its frequency approximating 20 per cent there appears to be little agreement as to the significance of the less frequent but by no means rare pattern of great left axis deviation in which S is of greater amplitude than R. Faulkner and Duncan studied clinical records of 200 consecutive cases exhibiting this pattern. The records revealed that 51.5 per cent had no left ventricular enlargement. Measurements of the heart from tele-roentgenograms in 97 cases were within normal limits in 35. The heart was normal anatomically in 8 of 27 cases subjected to necropsy. There was a definite increase in the incidence of the pattern in the older age groups. The authors conclude that great left axis deviation in an otherwise normal electrocardiogram is a normal variation which, though encountered with increasing frequency with advancing age cannot be correlated with ventricular enlargement, coronary disease or myocardial disease.



## American J Obstetrics and Gynecology, St Louis

48 149-298 (Aug) 1944 Partial Index

- Pelvic Model Manikins to Show Pelvic Shape and to Demonstrate Labor Mechanisms H C Moloy —p 149
- Herpes Gestations with Report of 2 Cases and Survey of Literature C W Mueller and W A Japp —p 170
- Oral Substitution Therapy with Ethinyl Estradiol and Alpha Estradiol I E Harding —p 181
- Hysterosalpingography Routine Aid in Gynecologic Diagnosis P Bernstein —p 189
- Validity of Two Hour Rat Test for Human Pregnancy E J Farri —p 200
- Status of Infant at Birth as Related to Basal Metabolism of Mother in Pregnancy L W Soutag L I Reynolds and Virginia Torlet —p 208
- Experimental Basis for Chemotherapy of Trichomonas Vaginalis Infections H R E Trusell and C Johnson —p 215
- Salmonella Cholerae Suis Bacteremia During Pregnancy E R Neter I A Siegel and Phyllis Clark —p 222
- Control of Menorrhagia by Prolactin H S Kupperman P Fried and I Q Hair —p 228
- Cesarean Section Under Continuous Caudal Anesthesia Supplementary Report C B Full and J C Ullery —p 235
- Acute Pelvic Thrombophlebitis Treated with Continuous Caudal Anesthesia G J Ellis and J B Sheffery —p 241
- Vaginal Antisepsis Comparative Study of Limerphen Solution in 910 Consecutive Deliveries K R Cates —p 246
- Vitamin and Endocrine Therapy in Nausea and Vomiting of Pregnancy B F Hart W T McConnell and Alice A Pickett —p 251
- Further Studies on Intrauterine Sulfanilamide Packs W E Brown —p 254
- Eclampsia Without Convulsions Hypertension or Contractions R A Reis and E A Bernick —p 257
- Report of 67 Consecutive Postpartum Sterilizations I Diamond —p 260
- Frenkel Tumor of Ovary Associated with Sarcinomatous Change in Fibromyomatous Uteri B R Austin and C W Ramsey —p 265
- Spontaneous Postpartum Disappearance of Massive Condylomata Acuminata of Vulva W Foster —p 266

**Continuous Caudal Anesthesia in Acute Pelvic Thrombophlebitis**—During the past six months Ellis and Sheffery have used continuous caudal anesthesia in 10 cases of acute pelvic thrombophlebitis with excellent results. Two typical cases are reported. The authors feel that the caudal method has several advantages over the regional sympathetic block of the first second third and fourth lumbar sympathetic ganglions. Regional injection requires four punctures, caudal but one. The continuous bathing of the sympathetic chain for several hours is preferable to the one injection technique necessitated by the regional block method. In caudal nerve block it is possible to tell when the needle is correctly placed by the classic signs such as sciatic pain progressive regional anesthesia sphincter relaxation and vasodilatation of the extremities. In sympathetic nerve block one cannot be sure that all the ganglions have been correctly injected. In acute thrombophlebitis the authors give 30 cc (low caudal) every hour until four doses have been given. This intermittent method of injection has the advantage that if there is a tendency for the vasoconstriction to reestablish itself after the effect of the drug wears off the impulse can be immediately released again by the next injection.

## American Journal of Psychiatry, New York

101 1-140 (July) 1944 Partial Index

- Current Trends in Military Neuropsychiatry M J Farrell and J W Appel —p 1
- Psychiatry in the British Army J H Rees —p 20
- Psychiatrist Looks at Child Psychiatrist K M Bowman —p 23
- Role of X Rays in Study of Local Atrophic Lesions of Brain A E Childs and W Penfield —p 30
- Observations on Patterns of Anxiety D I Crumond —p 36
- Clinical and Electroencephalographic Studies Correlations of Mental Electroencephalographic and Anatomic Changes in Cases with Organic Brain Disease H Straus —p 42
- Insulin Shock Therapy After Seven Years I D Bond and F D Laver —p 62
- Group Psychotherapy Superior Method of Treating Larger Numbers of Neurotic Patients S B Hadden —p 68
- Development of Research Program in Mental Deficiency Over a Fifteen Year Period K H Haskell —p 73
- Nature of Psychogenic Cure C P Oberndorf —p 91
- Quantitative Use of Rorschach Method in Stability and Disability Ratings Which Show Clinical and Psychometric Correlations W D Koss —p 100
- Styptic Neurosis F C Thorne —p 105
- Effect of Electric Shock Therapy on Cerebrospinal Fluid Pressure Protein and Cells J S I Jacob —p 110
- Review of Psychiatric Progress in Ibero-America A C Pacheco Silva —p 115

## American Journal of Tropical Medicine, Baltimore

24 221-280 (July) 1944

- Renewed Clinical Activity in Naturally Induced Malaria M I Boyd and S F Kitchen —p 221
- Observations on Possible Uterine Effects of Compensatory Fixation Temperature in Early Diagnosis of Yellow Fever Alma Leclowagora and E H Tennette —p 225
- Yellow Fever Control During War C I Williams —p 24
- Consideration of Certain Problems Presented by Cases of Stranguria in E D Palmer —p 249
- Behavior of Trichomonas Vaginalis in Semi-solid Medium M I Horne —p 255
- Vitamin C and Ability to Work in Hot Environments A Henschel H I Taylor J Broek O Nickelsen and A Keys —p 259
- Medical Care in Belgian Congo C A Flood and W Sherman —p 267
- Apparatus to Facilitate Feeding of Insects of Laboratory Animals A Packchauran —p 275

## Vitamin C and Ability to Work in Hot Environments

—According to Henschel and his associates clams have been made that large ascorbic acid intakes are of immediate benefit in exposures to high temperature of relatively short duration. The authors report 3 series of studies on 44 normal young men under rigidly controlled conditions of diet physical work and environment. The ascorbic acid intake was set at two levels, 20 to 40 mg and 520 to 540 mg. Particular attention was paid to (a) cardiovascular functions (b) performance of standard physical tasks (c) psychomotor functions and (d) ascorbic acid in sweat blood plasma and urine. The performance of muscular work was studied in dry heat up to 122 F. The stay in the heat varied from three hours to four days. Comparisons were made between performances on a diet restricted in ascorbic acid intake and a diet supplemented by 500 mg of ascorbic acid daily. The dietary differences were maintained for periods of four to seven days. Pulse rates in rest and in work rectal temperatures vasomotor stability tests rates of sweating general observations and subjective reports all failed to demonstrate significant advantage for the men receiving supplements of ascorbic acid. Psychomotor tests and strength tests likewise failed to show any advantage in the ascorbic acid supplementation. There apparently was a slight gain in flicker fusion frequency related to the extra intake of vitamin C. Daily sweat losses were 5 to 8 liters but the total loss of vitamin C in the sweat is negligible. Heat exhaustion occurred with equal frequency in the vitamin C restricted and supplemented groups.

## American Review of Soviet Medicine, New York

1 485-588 (Aug) 1944

- Lazymes and Coenzymes Review of Biologic Catalysis J O Paine —p 485
- Possible Relationship in Animals Between Tumor Susceptibility and Stability of Tissue Proteins A A Orekhovich —p 517
- Cancer of Stomach A A Bocharov —p 552
- New Method of Treating Tetanus Ima S Stern —p 550
- High Frequency Electric Current in Treatment of Alcoholic Hallucinoses K A Gruenberg —p 544
- War Neuroses in Army and in Civilian Life T I Yudim —p 553

**New Method of Treating Tetanus**—Stern points out that the hematoencephalic barrier may prevent certain therapeutic substances from reaching the nerve centers. She proposed to treat tetanus by injecting the antitetanus serum into the cerebrospinal canal through a cisternal puncture. Precautions must be taken to force the solution under predetermined pressure into the ventricles by inserting the needle at a proper angle to prevent the fluid from flowing into the subarachnoid space. Injection of the serum into the subdural or subarachnoid spaces does not produce the desired effect as the serum then returns to the blood stream without affecting the nerve centers. Animal experiments and veterinary practice demonstrate that when the symptoms of tetanus are manifest serum should be injected not only intramuscularly or intravenously but also into the ventricles by cisternal puncture. She usually injects 15,000 American units by cisternal puncture and from 30,000 to 50,000 American units intravenously or intramuscularly. This course may be repeated if necessary but it is usually adequate. For the cisternal injection the patient is placed in a modified Trendelenburg position with the head somewhat lower than the body. At the moment of puncture the head is brought forward so that the chin rests on the sternum. The occipital protuberance and the spine of the atlas are palpated as landmarks. The needle is inserted at an acute angle between the two points and

directed inward in the midline. This point places the needle in the first cervical interspace. Resistance is felt at the dura. A relationship has been found to exist between the circumference of the patient's neck and the average depth of puncture. A neck circumference of 40 cm corresponds to a puncture depth of 49 mm; a neck circumference of 39 cm to a puncture depth of 47 mm; and so on. After from 10 to 20 cc of cerebrospinal fluid has been withdrawn, an equal quantity of antitetanus serum warmed to body temperature is introduced. Six cases are described in which this method was used. As a rule, signs of lockjaw began to disappear twenty-four hours after cisternal injection of antitetanus serum. In cases of incipient tetanus, a single cisternal injection of the serum was enough to control further development of the process, to effect a general improvement and to mitigate the symptoms of tetanus.

### American Review of Tuberculosis, New York

50 85-184 (Aug.) 1944

- \*Syphilis and Pulmonary Tuberculosis in Negro. R. Hoffman and G. C. Adams—p. 85
- Nutrition in Tuberculosis as Evaluated by Blood Analysis. H. R. Getz, Irene S. Westfall and H. J. Henderson—p. 96
- Epidemiology of Remuculation Tuberculosis. Epidemiologic Importance of Course of Bacilli and Route of Invasion in Remuculation Type of Pulmonary Tuberculosis. F. M. Pottenger—p. 112
- Tuberculous Pneumonia. D. O. Shields—p. 122
- Recent Advances in Campaign Against Tuberculosis. R. G. Ferguson—p. 131
- Compulsory Hospitalization of Open Cases of Tuberculosis. A. L. Banu and A. V. Cadden—p. 136
- Tuberculosis Rejection. E. Bunta—p. 147
- Mediastinal Herniation in Artificial Pneumothorax. Case Report of Bilateral Mediastinal Herniation in Bilateral Pneumothorax and Herniation of Extreme Size and Unusual Type. I. D. Bobrowitz—p. 150
- Effect of Promin on Experimental Tuberculosis. A. R. Armstrong, M. V. Rie, C. C. Lucas and P. H. Greey—p. 160
- \*Sulfanilamide and Sulfapyridine in Experimental Tuberculosis. C. R. Smith—p. 163
- Bactericidal Action of Stilbestrol on Tubercle Bacilli. C. H. Faulkner—p. 167

**Syphilis and Pulmonary Tuberculosis**—Hoffman and Adams report the results of serologic tests for syphilis on 1,705 tuberculous Negroes admitted consecutively to a sanatorium. There were 507 with positive serologic reactions; an incidence of 29.7 per cent of coexisting syphilis and tuberculosis. The bases for comparison were the amount of pulmonary involvement and the predominant type of tuberculous lesion on admission and the percentage of deaths occurring in both groups in relation to the admission classification. There was no significant difference in the amount of pulmonary disease, the predominant type of tuberculous lesion or the percentage of deaths in the negative and positive serologic groups. The difference in the percentage of syphilis between the minimal and the far advanced tuberculosis groups was less than 7 per cent and could not be used to infer that syphilis lowered the resistance to tuberculosis. The presence of syphilis does not alter the course of pulmonary tuberculosis. Before a tuberculous patient is subjected to antisyphilitic treatment his tuberculosis prognosis must be good. The presence of pregnancy and syphilitic contagiousness are the only exceptions. Proof that the use of an arsenical causes tuberculosis to flare up in any 1 case is extremely difficult if not impossible. The use of fractional doses of arsenicals because of fear that full doses may activate tuberculosis is empirical and defeats the purpose of the antisyphilitic treatment. The authors gained the impression that tuberculosis is hardly ever the cause of a false positive reaction.

**Nutrition in Tuberculosis as Evaluated by Blood Analysis**—Getz and his associates report the results of a nutritional study of 457 tuberculous and nontuberculous patients attending an outpatient chest clinic. Each assay included a determination of blood hemoglobin, serum proteins, plasma carotene, serum calcium, serum phosphorus and serum phosphatase, as well as plasma ascorbic acid, vitamin A and erythrocyte sedimentation rate. The authors correlate the analyses with the presence or absence and character of tuberculosis and of the individual deficiencies with one another. The subjects were men between 20 and 45. Men with active pulmonary tuberculosis were deficient in ascorbic acid, vitamin A, hemoglobin and serum albumin in the order listed. All nutritional deficiencies were more extensive and profound in tuberculous than in nontuberculous sub-

jects. Subjects with far advanced tuberculosis were especially deficient in ascorbic acid, serum albumin, hemoglobin, vitamin A, carotene and serum calcium in the order listed. Nontuberculous men from the same population group were deficient in ascorbic acid, hemoglobin, vitamin A and serum albumin, but to a lesser degree. Persons with arrested tuberculosis had nutritive levels essentially the same as nontuberculous men. There was more active tuberculosis in the oldest age group (40 to 49) and less of it was in the minimal stage than was found in the younger age groups. Age and hemoglobin showed a negative correlation; the hemoglobin level remained constant as the age advanced. Tuberculous and nontuberculous subjects alike had normal plasma levels of carotene in the presence of abnormally low vitamin A levels, a fact indicating that carotene conversion was inadequate. The plasma ascorbic acid level showed a positive correlation with the erythrocyte sedimentation test when the maximum five minute drop was used, but no correlation was observed when the total sedimentation in one hour was used. The erythrocyte sedimentation rate showed a positive correlation with the serum albumin concentrations. This fact is believed to give the sedimentation test new significance.

**Sulfanilamide and Sulfapyridine in Experimental Tuberculosis**—Smith reports observations on four groups of guinea pigs. He found that sulfanilamide causes complete inhibition of tubercle bacillus cultural growth at a dilution of 1:1,000; sulfapyridine causes some inhibition at 1:5,000, complete at 1:1,000. Guinea pigs treated with 340 mg of drug divided into five daily doses showed blood levels of 10 to 30 mg per hundred cubic centimeters falling off to lows of 1 to 5 mg per hundred cubic centimeters during the night. Sulfanilamide levels rose more rapidly than those of sulfapyridine but were less well sustained at night. Following infection with tubercle bacilli, the sulfanilamide and sulfapyridine treated animals were slower in the development of allergy than the controls. There was distinctly less tuberculosis in the sulfanilamide and sulfapyridine treated animals than in the controls and less in the sulfapyridine treated than in the sulfanilamide treated animals. These differences were shown by fewer and smaller tubercles in the visceral organs, by less caseation in viscera and internal lymph nodes and by smaller spleens and smaller internal lymph nodes. The average arbitrary units of disease per animal were 9.6 for the controls, 6.5 for the sulfanilamide treated and 4.2 for the sulfapyridine treated group. The local lesions on the other hand, including sites of inoculation and inguinal lymph nodes were as large in the treated as in the control groups or larger.

### Annals of Internal Medicine, Lancaster, Pa

21 173-366 (Aug.) 1944

- \*Glycosuria in Meningitis. F. Ferguson and D. Barr—p. 17
- Waterhouse-Friderichsen Syndrome. Observations on Association of Adrenal Insufficiency and Report of 4 Cases. S. W. Coggriff—p. 187
- \*Meningococcal Meningitis. Sulfadiazine Therapy. (Review of 20 Cases). E. H. Grieco and A. M. Cove—p. 194
- Meningococemia Without Meningitis. Study Made at Struthers Hospital. Fort George, C. Merde, Maryland. H. W. Potter, K. D. Reid and I. H. Bronstein—p. 200
- Medical Problems in Middle East. C. T. Sams—p. 215
- Heterophile Antibody Reaction in Infectious Mononucleosis. R. E. Kaufman—p. 230
- Atypical Coronary Disease in Young People. J. Weinstein—p. 257
- Syphilis and Diabetes Mellitus. Long Term Clinical Study. I. S. Perkin—p. 272
- Cirrhosis of Liver. Analysis of 71 Cases. I. D. Fagin and I. M. Thompson—p. 285
- Some Notes on Transmission of Heart Murmurs. S. A. Levine and W. B. Likoff—p. 298

**Glycosuria in Meningitis**—Ferguson and Barr reviewed records of 72 patients with meningitis admitted to New York Hospital, 30 of whom showed glycosuria. Fourteen of the 30 had received infusions of dextrose solution at some time before the appearance of glycosuria. In the remaining 16 patients cause for the glycosuria other than the meningitis itself was not evident. Glycosuria was encountered in meningitis caused by the meningococcus, the pneumococcus, the staphylococcus, the tubercle bacillus and in 1 case in which the causative organism was not isolated. Glycosuria was accompanied in many instances by ketosis, hyperglycemia and diminished tolerance to sugar. Glycosuria was transient, disappearing in all cases and persisted beyond the third day in only 3 of the 16 cases. Coma with glycosuria and ketosis at the onset of meningitis may mark

the signs of meningeal involvement lead to a diagnosis of diabetic acidosis and cause serious or fatal delay in instituting appropriate treatment for the meningitis.

**Sulfadiazine in Meningococcic Meningitis.**—Grice and Cove review the clinical features of 20 consecutive cases of meningococcic meningitis observed in the course of a year at the Station Hospital, Fort Totten, New York. The cases were sporadic. Sulfadiazine and its soluble sodium salt was the only sulfonamide utilized. Polyvalent antimeningococcus serum was administered intravenously in 1 of the earliest cases in conjunction with chemotherapy. Such a severe reaction ensued that thereafter the use of serum was abandoned. As soon as the diagnosis was verified, an initial dose of 5 Gm of sodium sulfadiazine in 100 cc of distilled water was administered intravenously. Subsequent doses of 2 Gm were then given regularly every four hours for the next twenty-four hours either orally or intravenously as determined by the patient's ability to ingest or retain the medication. Then 1 Gm doses were given every four hours until the temperature returned to normal and from this point on four times daily for the next seven days. With this medication adequate blood concentrations were attained and satisfactory clinical responses resulted. The Waterhouse-Friderichsen syndrome was diagnosed clinically in 1 case. The use of adrenal cortex extract was a life saving measure in this instance. This survival on substitutional therapy augurs well for this much dreaded complication. Two deaths resulted in this series of 20 cases. One occurred within less than twelve hours after the onset of the disease, the other four days after admission. Necropsy in the latter revealed a severe bilateral hemorrhagic necrosis of the adrenals.

**Heterophile Antibody Reaction in Infectious Mononucleosis.**—The present concept is that there are three types of sheep cell agglutinins: those in normal serum absorbed by guinea pig kidney but not by beef erythrocytes, those in the serum of patients with infectious mononucleosis absorbed by beef erythrocytes but not by guinea pig kidney and those in the serum of persons treated with horse serum absorbed by both guinea pig kidney and beef erythrocytes. In this country the Paul Bunnell and Davidsohn methods are standard procedures. Kaufman describes changes made in the Davidsohn technique the net result of which is that the test is simplified is just as accurate and gives considerably quicker results. Telephoned reports can be given within one hour of the time of arrival of the serum in the laboratory if speed of diagnosis is important which it occasionally is in a questionable case of infectious mononucleosis thought to be acute appendicitis, meningitis, typhoid, mumps or diphtheria. So much time is saved by these modifications in technique that many more specimens can be examined in a day. During a three year period 83 proved cases of infectious mononucleosis have been investigated. In the diagnosis of this disease there are three aspects to consider: the clinical, the hematologic and the serologic. It is felt that if any two of them are definite the diagnosis may be considered established. Tests were performed in 78 of 83 cases of infectious mononucleosis. It is believed that agglutination in a dilution of 1:25 with the correct differential absorption tests is a positive reaction. A positive test supports the diagnosis of infectious mononucleosis, but a negative test does not rule it out. The reaction may become positive as early as the third day but sometimes not until the second month or not at all. The reaction usually remains positive for two to four months.

### Archives of Physical Therapy, Chicago

25 455-506 (Aug) 1944

- Future Development of Physical Medicine (M. Tierol)—p. 455  
Treatment of Bronchial Asthma by Intensive Breathing Therapy (H. I. Weiser)—p. 461  
Pneublation of Convalescent Industrial Carpalities with Physical Medicine (H. D. Storms)—p. 469  
Fluorescence Test for Real and Apparent Death in Warfare (I. De Ment)—p. 472  
Army Rehabilitation Program for Blind and Deafened (C. C. Hillman)—p. 478  
Trunk Test (R. C. Berson and R. I. Angelucci)—p. 482

**Breathing Therapy in Bronchial Asthma.**—Werner treated asthmatic patients who had failed to respond to other treatments by breathing therapy. His intensified breathing therapy consists of massage, rhythmic compressions of the

thorax and breathing exercises. Intensive gymnastics are of special importance. These include sports (boxing, judo, calisthenics) associated with regulated breathing. The exercises must be performed daily over a period of months or even years. Dyspnea is produced by physical strain during each treatment but with the aid of the acquired technique of respiration it is soon breathed away. The patient learns how to master dyspnea by concentration and regulation of respiration. Courage training, boxing apparatus gymnastics and increased efforts during the course of treatments increase self confidence in the asthmatic patient. Intensified breathing therapy should be supervised by the physician. The vital capacity, expiration time and breathme span were always considerably increased during the course of treatments. The absolute value for vital capacity cannot be taken as a criterion for a prognosis. Prognostic conclusions can be drawn from curves derived from the vital capacity and expiration time measured during each treatment. In the study reported, the minimum time of observation after treatment was twelve months. It was possible to keep 13 among 39 juvenile asthmatic patients free from attacks; they were under observation for three and one-half years. The disease in 10 of these 13 had lasted for more than two years before the treatment was instituted. Ten of the 29 children continued to show improvement. Six remained unimproved. Of 10 asthmatic adults, 1 was freed of attacks, 5 improved and 4 were not affected.

### Archives of Surgery, Chicago

49 1-74 (July) 1944

- \*Early Ambulation Following Section of Anterior Abdominal Wall. Analysis of 426 Personally Conducted Cases (H. Nelson)—p. 1  
Cystic Tumor of Iliopsoas Bursa. Report of 2 Cases (V. R. Stephen)—p. 9  
Clinical Observations on Tissue Temperatures (Pathologic and Therapeutic Effects) (K. Safford Jr. and M. B. Nathan)—p. 12  
Effect of Experimental Fracture on Bone Dentin and Enamel Study of Mandible and Inisor in Rat (B. G. Sarnat and I. Schour)—p. 23  
Peritoneal Tap (L. R. Kaufman, W. P. Eeles and I. Mule)—p. 39  
Alkaline and Acid Phosphatase Levels in Serum of Dogs After Ligation of Common Bile Duct (J. L. Carr and I. S. Foote)—p. 44  
Local Implantation of Gelatin in Wounds (J. A. Sinclair and B. Douglas)—p. 47  
Carcinoma Hemangioma of Lung (Arteriovenous Fistula). Report of Case with Successful Treatment by Pneumonecomy (W. E. Adams, T. J. Thornton Jr. and I. Lillian Liebelherger)—p. 51  
Review of Urologic Surgery (A. J. Scholl, I. Himmman, A. von Lichtenberg, A. B. Hepler, R. Gutierrez, G. J. Thompson, E. A. Cook, E. Wildbolz and V. J. O'Connor)—p. 59

**Early Ambulation Following Abdominal Section.**—Nelson reports observations on 426 personally conducted cases. As soon as the patient has fully recovered from the effects of anesthesia the bed is sharply tilted so that the head is elevated. After this position has been maintained for a time the bed is leveled and the patient assumes a sitting position on the side of the bed with the feet resting on a chair. In this position he breathes deeply and coughs frequently. He then lies down, and the head of the bed is again sharply elevated. After a second period of rest he is assisted to stand and is conducted to the bathroom, where the bladder is practically always emptied without difficulty. If his condition is good he sits up in a chair for a time before returning to bed. Those who are oversensitive to the pain of the first rising or who are unduly apprehensive are made to practice sitting at the edge of the bed with intervals of rest after each attempt, until they are strong enough and willing to walk to the bathroom. The majority of patients walked on the day of operation or within the first twenty-four hours. The incidence of immediate and delayed complications in this series was minimal. Of the three partial disruptions of a wound two occurred in patients whose wounds had been closed with catgut and for whom early ambulation had not been authorized. Only two incisional hernias were observed. The single fatality in the series was due to cerebral thrombosis. Good results depend on the strict observance of contraindications as well as of indications. Contraindications to early ambulation are: 1. Failure to observe the prerequisites of optimum healing of wound, including failure to carry out the tenets of Halsted as to the closure of a wound, the use of suture materials other than wire or cotton and the existence of deficiencies or vitamins and hypoproteinemia. 2. Conditions such as shock, peritonitis, active hemorrhage, cardiac failure, pneumonitis and impending

or actual thyroid crisis 3 Potential or actual complications including gross contamination infection hemorrhage and dehiscence 4 Pregnancy in which abortion is feared 5 Extreme debility for which ambulation is deterred until there is some restoration of strength and muscle tone as a result of sitting up 6 Second stage of a thoracolumbar sympathectomy, after which the patient because of sudden alterations in the vascular system, cannot immediately tolerate the upright position 7 Lack of adequate and intelligent nursing supervision The advantages of early ambulation include the lowered incidence of postoperative complications particularly pulmonary and vascular complications the lower incidence of nausea vomiting and abdominal distention the earlier return of normal function of the bladder and the bowel the maintenance of normal muscle tone the psychologic effect on the patient's morale and mental status the acceleration of convalescence and the earlier return of working ability and the economic savings to the patient and the hospital

**Peritoneal Tap**—Kaufman and his associates say that their interest in peritoneal tap was stimulated when they began an exhaustive study of perforation of peptic ulcers in an effort to reach an early diagnosis by administering methylene blue by mouth and recovering the dye by peritoneal puncture Peritoneal tap is performed with a number 18 or 19 gage needle 21 inches long through a small procaine hydrochloride wheal in the midline below the navel or to either side or in the epigastrium Peritoneal tap is a practical and safe procedure which requires extreme care in removal of the peritoneal contents and study of the smears and which affords evidence of the peritoneal reaction present by a simple and rapid laboratory study In children the procedure serves to differentiate streptococci and pneumococci peritonitis from appendicitis While a positive result of a tap is of diagnostic value a negative result should be disregarded, especially in the face of other diagnostic signs a negative result indicates usually only failure to obtain fluid which is present Peritoneal tap should be reserved for selected cases presenting confusion in diagnosis and the interpretation of the smear must be painstaking In cases in which perforated peptic ulcer is suspected when diagnostic data are confusing and likely to lead to exploratory laparotomy the recovery by peritoneal tap of methylene blue previously introduced into the stomach will establish the exact diagnosis While the results of the procedure were of definite clinical value in only 14 of their 22 cases, the diagnosis in all of these presented great difficulties and could be established accurately only by exploratory laparotomy The tap in these cases established data that determined diagnosis and aided definitely in treatment as well as in evaluation of prognosis

**Cavernous Hemangioma of Lung**—Adams and his associates stress the rarity of hemangioma of the lung pointing out that the case reported by them was the first in more than 240,000 admissions at the University of Chicago Clinics in the last fifteen years, and more than 4,380 necropsies at the same institution did not reveal another such lesion A man aged 24 entered the University Clinics complaining of frequent nosebleeds and colds over the last two or three years He also had suffered from generalized cyanosis and clubbing of the fingers and toes for at least sixteen years A roentgenogram of the chest revealed a large irregularly shaped circumscribed opacity in the left lung and a small one in the right lung There were associated compensatory polycythaemia polycythemia and hyperhemoglobinemia After removal of the left lung the status of the blood approached the normal and the patient returned to work Most investigators who have reported cases similar to the 1 presented here have described the lesion as a cavernous hemangioma A careful study of the microscopic sections made from the specimen removed from their patient revealed only normal pulmonary tissue surrounding the three separate mesothelium lined cavities found in the left lung On the basis of the pathologic picture the lesions are really arteriovenous aneurysms or fistulas The pulmonary lesion produced a great compensatory change in the quality and the quantity of the blood Polycythemia (7,200,000 cells) was present before operation with a corresponding increase in red cell mass (hematocrit reading 82 per cent) and hemoglobin (23 Gm per hundred cubic centimeters) The blood volume was approximately two times the

normal amount, the increase being entirely in the red cell mass After the removal of the left lung, all of the blood was diverted to the right side and was aerated as it passed through the right lung The red cell count fell more than 2,000,000 within two days and has remained at a high normal level The hemoglobin content was reduced from a preoperative level of 23.0 Gm to the present level of 15.7 Gm per hundred cubic centimeters The hematocrit reading was likewise reduced from 82 to 54 per cent The estimated total blood volume fell from 12,750 cc (preoperative) to 6,900 cc by the second postoperative day, this reduction being entirely in the erythrocytes Ten days later the blood volume was 6,350 cc, a value which is approximately normal Although only 4 similar cases have been previously reported the condition in others has probably gone undiagnosed and been treated as polycythemia vera When clubbing of the fingers and the toes is present, some pulmonary lesion should be suspected and a roentgen examination of the lungs made A correct diagnosis may be readily established on the basis of altered values of blood oxygen and the finding of an opacity in the lung on roentgen examination

## Bulletin of Johns Hopkins Hospital, Baltimore

74 321-426 (June) 1944

- Effect of Testosterone Propionate on Arterial Blood Pressure Kidneys Urinary Bladder and Inters of Growing Dogs S. S. Blackman Jr. Caroline Bedell Thomas and J. E. Howard—p. 321  
Experimental Hypertension from Section of Moderator Nerves Relationship of Acute Pressor Response to Development and Course of Chronic Hypertension Caroline Bedell Thomas—p. 333  
\*On Isolation and Properties of Fluorescent Factor F from Human Urine V. A. Najjar Virginia White and D. B. McScott—p. 378  
Laboratory Diagnosis of Nicotinic Acid Deficiency An Improved Procedure for Determination of F (N-Methyl Nicotinamide Derivative) in Urine V. A. Najjar—p. 392  
\*Case of Pellagra Developing on Hospital Ward in Patient Receiving Vitamin B Complex D. W. Roberts and V. A. Najjar—p. 400  
Anti-Blacktongue Activity of N-Methyl Nicotinamide Chloride V. A. Najjar Margaret M. Hammond Mary Allen English Maria B. Wooden and Carolyn C. Deal—p. 406

**Fluorescent Factor F in Human Urine**—Najjar and Wood described in 1940 the presence in urine of a substance with a characteristic bluish fluorescence the excretion of which was related to the availability of nicotinic acid being increased in proportion to the nicotinic acid intake This substance, designated as F, was regularly absent from the urine of patients with pellagra In this paper Najjar and his associates show that the highly fluorescent compound F obtained on treating urinary eluates with alkali and butanol is apparently derived from a precursor which shows only a slight bluish fluorescence The procedure used—alkalization and butanol extraction—serves to convert this precursor into the highly fluorescent compound F The identity of the urinary precursor is not yet completely established The highly fluorescent substance F, formed from the urinary precursor, appears to be a butyl ether of N-methyl nicotinamide alpha-carbinol

**Pellagra Developing in Hospital Patients Receiving Vitamin B Complex**—Roberts and Najjar report the history of a girl aged 12 Between August 1942 and April 1943 the patient's weight decreased from 78 pounds (35 Kg) to 60 pounds (27 Kg) The most conspicuous symptom during this period was anorexia Although offered a liberal diet containing cereal eggs bacon green vegetables, meat, potatoes and a quart of milk daily only small amounts of the quantity offered were taken The patient was frequently nauseated and at times vomited after meals Following admission to the hospital in April 1943 the patient continued a downward course Therapy consisted in a high caloric diet supplemented with orange juice and a liquid extract of yeast given in doses of 4 cc per day to furnish the B complex The hemoglobin fell to 8 Gm but responded well to a transfusion In spite of the supportive measures the patient continued to lose weight gradually Eight weeks after admission it was noticed that a symmetrical brown pigmentation had developed on the backs of the hands, extending up to the knuckles, where it was sharply demarcated from the pale skin beyond Brown pigmented areas were likewise noted over the calluses of the elbows The suspicion of pellagra was borne out by the tongue which was red notably at the margins, and showed atrophy of the papillae The diagnosis was confirmed by studies of the excretion of the fluorescent

factor  $\Gamma$  (N-methyl nicotinamide derivative) in the urine. Some light on the pathogenesis of the pellagra was obtained from a consideration of the vitamin content of the yeast extract which had been used in treating the patient. It was found that the daily dose which the patient had been getting contained 0.3 mg of thiamine and 10 mg of riboflavin but only insignificant amounts of nicotinic acid. The authors suggest that an obscure intestinal disorder, perhaps of the nature of a regional ileitis, interfered with intestinal absorption to an extent sufficient to cause pellagra. It is pointed out that certain commercial yeast extracts do not supply sufficient quantities of nicotinic acid.

### Bulletin New York Academy of Medicine, New York 20 427-470 (Aug) 1944

\*Jaundice Following Administration of Human Serum Harvey Lecture  
March 16, 1944 J W Olphand—p 429  
Major Therapeutic Trends in American Psychiatry J C Whitehorn  
—p 446  
Shoulder Pain and Disability D M Bosworth—p 460

**Jaundice Following Administration of Human Serum**  
—Olphand shows that jaundice following administration of materials containing serum of the homologous species has been observed repeatedly both in man and in the lower animals. It is still unknown whether this type of jaundice is identical with naturally occurring so called infectious hepatitis. The author presents the results of a sample survey of an epidemic of jaundice occurring subsequent to vaccination against yellow fever in the Virgin Islands in 1942. Jaundice was produced experimentally (1) by the inoculation of two lots of yellow fever vaccine containing human serum, (2) by the inoculation of small amounts of filtered serum from each of 3 persons and of a serum pool from 9 persons all of whom had previously received yellow fever vaccine containing human serum and (3) by inoculation of serum from 1 person who had early spontaneously occurring jaundice. Two serums which were icterogenic when inoculated subcutaneously failed to produce jaundice by the intranasal route. Persons of all four Moss blood groups and both Rh positive and Rh negative persons were found to be susceptible. Susceptible persons did not give uniform local skin reactions to icterogenic serums. The jaundice producing agent is filtrable and survives drying in vacuum, storage for long periods in serum at 4 C and heating to 56 C for one-half hour in the dried state. The agent was found to be present in the blood during the prejaundice period but not two and one-half months after the disappearance of jaundice. The icterogenic agent is apparently inactivated by short exposure to ultraviolet irradiation. Transmission of jaundice by ordinary contact apparently did not occur during this experiment. Attempts to produce jaundice in experimental animals were unsuccessful. Antigens prepared from human livers and from chick embryos failed to fix complement in the presence of serums obtained after recovery from jaundice.

### Bull of the U S Army Med Dept, Washington, D C 79 1-122 (Aug) 1944

Anesthesia in Combat Zone G Shortz—p 60  
Cutaneous Leishmaniasis D Ball and R C Ryan—p 65  
Oral Rehabilitation Case Report R C Reichert—p 74  
Herniated Nucleus Pulposus Improvement in the Operative Technique  
R C L Robertson and W G Peacher—p 76  
Surgical Problems in Buna Campaign A Thorndike—p 77  
Vaccinia Occurring at Short Intervals C A Munim—p 82  
Inspection of Fish of Pacific Northwest E W Bloomquist—p 84  
Diagnosis of Dengue C V LeRoy and H A Lundberg—p 92  
\*Experimental Use of Penicillin in Treatment of Sulfonamide Resistant  
Gonorrhea R J Murphy—p 101  
Modified Orthopedic Table Constructed in Field V Mayer—p 105  
Psychoses in Army Follow Up Study N Q Brill and E F Walker  
—p 108

**Penicillin in Sulfonamide Resistant Gonorrhea**  
—Murphy treated 306 cases of sulfonamide resistant gonorrhea with penicillin. Of this number 262 cases were cured following the first trial on penicillin. Thirty-four failures following the first treatment were treated again according to another schedule with recovery in all but 3. These 3 were treated again and now responded. The treatment consisted of a total of 100,000 units given over a twelve hour period in five doses of 20,000 units.

The foremost clinical observation was the persistence of urethritis following treatment. The character of the discharge changed from a purulent to a thin watery one. The mucous membrane of the urethra remained inflamed glistening and moist beyond the time of disappearance of the watery discharge. In the majority of cases it was about one week after treatment before all evidence of the infection disappeared. In spite of the persistence of discharge and inflammation all subjective symptoms such as dysuria, polyuria, hematuria and nocturia usually had subsided by the time the last treatment had been administered. The urine after becoming clear, remained cleared in the majority of cases throughout the entire follow up period. Only 1 patient had a generalized urticaria five days following treatment which persisted for three days. Gonorrheal conjunctivitis is cured by the intramuscular administration of penicillin. Acute suppurative prostatitis responds slowly but favorably. Four cases of gonorrheal arthritis with concomitant gonorrheal urethritis showed no benefit from penicillin and in every case following the cure of the urethritis other treatments for the arthritis were required.

### Canadian Medical Association Journal, Montreal

51 99-194 (Aug) 1944

Social Implications of Scientific Research I I Williams—p 99  
\*Further Studies on Relationship of Corneal Vascularization to Riboflavin  
Deficiency J F McCreary, J V V Nicholls and I I Williams  
—p 106  
\*Closed Plaster Method in Prevention of Shock After Burns L A  
Sellers and E S Goranson—p 111  
Wartime Pressures D E Cameron—p 114  
Epidemic Jaundice A Somerville and J S Clark—p 120  
Problem of Nasal Medication with Particular Reference to Trime HCl  
0.1 per Cent T Gollom—p 123  
Vertigo J P Boley—p 126  
Condyloma Acuminatum or Genital Warts in Female (Report of Case)  
H Dover—p 132  
Medical Education Interns and Residents J C Mackenzie—p 134  
Typhoid Epidemic in Southern Alberta F W Cershow—p 135  
Tuberculosis Concepts Then and Now D F McRae—p 139  
First Aid and Transportation in Cases of Fracture or Suspected Fracture  
of Spine G P Howlett—p 142  
Procedures Recommended for Organization and Operation of Blood  
Bank Part II Procedures L J Rhea, O F Denstedt, A Bertrand  
G J E van Dorsser and P H Greeve—p 144

**Corneal Vascularization and Riboflavin**—McCreary and his associates report studies to determine whether or not a slit lamp examination and the photographic procedure give comparable data and to throw further light on the effect of riboflavin on corneal vascularization and symptoms of eye fatigue. The results obtained from photographing the corneo-scleral junction with the ophthalmic camera and by an examination with a slit lamp are not significantly different. A study to demonstrate the effect of riboflavin on corneal vascularization has been carried out using both photography and the slit lamp examination. The subjects studied were 41 students in the photographic division of the Canadian Air Force who had been provided with a ration containing when served 29 mg of riboflavin per day for a period of one year. Approximately one-half of the subjects were given a supplement of 3.3 mg of riboflavin three times a day for two months and the others received placebos. There was no consistent change in corneal vascularization in either the treated subjects or the controls. The instillation of a simple irritant in the conjunctival sac caused collapsed, functional blood vessels in the cornea, transitional zone and conjunctiva to become engorged. As far as this study shows, it seems that a uniform peripheral corneal vascularization is not a safe basis for a diagnosis of riboflavin deficiency existing at the time of examination. Such a lesion may be due to riboflavin deficiency, but the deficiency could have occurred at any time previous to the examination. Also these blood vessels could have been reactivated by some cause other than lack of riboflavin.

**Closed Plaster Method in Prevention of Shock**—According to Sellers and Goranson mortality from shock was greatly reduced when plastering was carried out immediately after the burn. They report a series of experiments designed to show whether any benefit in this respect can be derived from later application of plaster or from pressure dressings. It was found that immediate application of plaster bandages



decreases the mortality rate and hemoconcentration to a great degree. Some benefit in this respect accrues from application within one hour. Immediate application of plaster is more effective in decreasing the mortality rate from shock than is the immediate application of pressure dressings. As these experiments were performed with animals and under laboratory conditions conclusions drawn from them should be accepted with reservations as to direct clinical application.

### Georgia Medical Association Journal, Atlanta

33 201-236 (July) 1944

Hypertension Examination of Patients H. M. Davison H. Bowcock and E. Vogl—p. 201  
Medical Conservation of Manpower in Shipyard R. L. Brown—p. 208  
Georgia's Postwar Public Health Program T. F. Abercrombie—p. 213

33 237-264 (Aug.) 1944

Ulcers of Stomach and Duodenum A. W. Allen—p. 237  
Penicillin in Acute and Chronic Infections A. L. Evans—p. 249  
Psychoanalysis Christ versus Freud E. S. Osborne—p. 251

### Journal of Clin Endocrinology, Springfield, Ill

4 229-286 (June) 1944

\*Thiouracil Treatment in Hyperthyroidism E. B. Astwood—p. 229  
Treatment of 26 Thyrotoxic Patients with Thiouracil and Review of Toxic Reactions in All (135) Reported Cases T. H. McGavack, A. I. Gerl, Mildred Vogel and D. Schwimmer—p. 249  
Human Pregnancy Test Based on Color Reaction of Pregnanediol in Urine H. S. Guterman—p. 262  
Protein Bound Basal Iodine in Patients with Thyroid Disease I. Correlation with Basal Heat Production B. E. Lowenstein M. Bruger and J. W. Hinton with technical assistance of S. Member—p. 268  
Case of Probable Pan Hypopituitarism Following Postpartum Pituitary Necrosis S. J. Glass—p. 273

**Thiouracil Treatment in Hyperthyroidism**—Astwood reviews observations on 62 persons who have been given repeated doses of thiouracil. Eleven had normal thyroids, while 51 had hyperthyroidism. Large nodular goiters were not common. Forty one of the 51 cases were considered to be diffuse hyperplastic goiter with hyperthyroidism. In 8 of these iodine had been given shortly before thiouracil. The administration of 0.2 to 0.6 Gm of thiouracil daily in two doses quickly controlled all the manifestations of hyperthyroidism in previously untreated cases. The metabolic response was slower in most cases of toxic nodular goiter in iodine treated diffuse hyperplastic goiter with hyperthyroidism and in normal persons. A temporary enlargement and increased vascularity of the thyroid gland was noted in some cases. Exophthalmos usually improved slowly. Iodine still exhibited its characteristic effect on patients both during and after thiouracil therapy. Serious side-effects consisting of granulocytopenia and drug fever occurred in about 10 per cent of the cases during the early weeks of therapy. Adequate treatment continued for longer than six months, was attended by a high incidence of lasting remissions.

**Thiouracil in Thyrotoxic Patients**—McGavack and his associates observed 4 male and 22 female patients while under treatment with thiouracil. Fourteen of the patients were hospitalized, while the other 12 made no change in their usual routine of living. The patients were followed for periods ranging from six days to nine months. Characteristic effects in the adequately treated patient included a lowering of the basal metabolic rate, a decrease in pulse rate, a narrowing of the pulse pressure with diminution in the systolic figure, an increase in weight and an elevation of the value for total blood cholesterol. The size of the thyroid was moderately decreased under treatment with thiouracil, and creatinuria was diminished. No variations in blood chlorides, sodium or potassium were observed. Tests of liver function failed to show abnormality before or during treatment. A table lists the incidence of toxic reactions in 109 cases in which thiouracil had been given which had been previously reported by others and in the 26 here presented. The total of 135 cases studied to date there were 16 patients who exhibited a toxic or hypersensitivity reaction. Of these 16 patients had severe toxic reactions. One died of cystitis, the other a fever and a rash. The authors think that results of this study are sufficiently promising to warrant use in cases of toxic hyperplasia.

tive procedure. However, in this connection the toxic action must ever be kept in mind, and the clinician must be prepared to change his course when faced with early signs of unfavorable reaction.

### Journal of Clinical Investigation, Boston

23 417-606 (July) 1944 Partial Index

(Chemical and Immunologic Studies on Products of Human Plasma Fractionation I. Characterization of Protein Fractions of Human Plasma E. J. Cohn, J. L. Oncley, L. E. Strong, W. I. Hughes Jr and S. H. Armstrong Jr—p. 417  
Id II Electrophoretic and Ultracentrifugal Studies of Solutions of Human Serum Albumin and Immune Serum Globulins J. W. Williams, Mary L. Petermann, G. C. Colovos, Martha B. Goodloe, J. L. Oncley and S. H. Armstrong Jr—p. 433  
Id III Amino Acid Composition of Plasma Proteins C. Brand, Beatrice Kassel and L. J. Sidel—p. 437  
Id IV Study of Thermal Stability of Human Serum Albumin G. Scatchard, S. T. Gibson, L. M. Woodruff, A. C. Bitchelder and A. Brown—p. 445  
Id V Influence of Nonpolar Anions on Thermal Stability of Serum Albumin G. A. Brillou, P. D. Boyer, J. M. Luck and F. C. Lum—p. 454  
Id VI Concentrated Human Serum Albumin C. A. Janeway, S. T. Gibson, L. M. Woodruff, J. T. Heyl, O. T. Bailey and L. R. Newhouser—p. 463  
Id VII Clinical Use of Concentrated Human Serum Albumin in Shock and Comparison with Whole Blood and with Rapid Saline Infusion A. Courmand, R. P. Noble, E. S. Breed, H. D. Lauson, E. del Baldwin, G. B. Pinchot and D. W. Richards Jr—p. 491  
Id VIII Treatment of Shock with Concentrated Human Serum Albumin Preliminary Report J. V. Warran, E. A. Stead Jr, A. J. Merrill and E. S. Brannon—p. 506  
Id IX Concentrations of Certain Antibodies in Globulin Fractions Derived from Human Blood Plasma J. F. Enders—p. 510  
Id X Use of Concentrated Normal Human Serum Gamma Globulin (Human Immune Serum Globulin) in Prophylaxis and Treatment of Measles J. Stokes Jr, E. P. Maris and S. S. Gellis—p. 531  
Id XI Appraisal of Isohemagglutinin Activity L. L. DeGowin—p. 554  
Id XII Fibrin Clots, Fibrin Films and Fibrinogen Plastics J. D. Terry and P. R. Morrison—p. 566  
Id XIII Fibrinogen Coagulum as Aid in Operative Removal of Renal Calculi J. E. Dees—p. 576  
\*Id XIV Note on Use of Fibrinogen and Thrombin in Surface Treatment of Burns C. A. Z. Hawn, E. A. Bering Jr, O. T. Bailey and S. H. Armstrong Jr—p. 580  
Id XV Development of Fibrin Form as Hemostatic Agent and for Use in Conjunction with Human Thrombin E. A. Bering Jr—p. 586  
Id XVI Fibrin Films in Neurosurgery with Special Reference to Their Use in Repair of Dural Defects and in Prevention of Meningo-cerebral Adhesions O. T. Bailey and F. D. Ingraham—p. 597  
Id XVII Effects of Leeching Possible Blood Substitutes on Serum Protein Regeneration and Weight Recovery in Hypoproteinemic Rat P. R. Cannon, Eleanor M. Humphreys, R. W. Wissler and L. E. Lrazier—p. 601

**Fibrinogen Coagulum in Removal of Renal Calculi**—Dees describes a new aid in the removal of small free stones from the renal pelvis at open operation. By the simultaneous injection of solutions of fibrinogen and thrombin, a strong coagulum which completely fills the pelvis and enmeshes all free stones is produced. On withdrawing this coagulum through the usual pyelotomy incision, all free stones should be removed. Fragmentation of calculi and trauma to the kidney are thus avoided. This operative procedure has been carried out on 21 patients without demonstrable ill effect.

**Fibrinogen and Thrombin in Surface Treatment of Burns**—Hawn and his associates point out that when large quantities of purified human fibrinogen and thrombin became available through the fractionation of human plasma to prepare albumin for the armed forces, studies were undertaken to develop from these proteins which constitute important components in the natural mechanism for the protection of wounds, a dressing which would meet the specifications for an agent for the surface therapy of burns. They present observations on surgically denuded areas of animals and burns on human beings which suggest that human fibrinogen and thrombin mixtures have no deleterious effect on normal processes of repair. The use of preformed fibrin films prepared from the proteins involved in the natural coagulation mechanism is described in a small series of second and third degree burns. Such films are suitable for many programs of surface therapy. It is significant that such films, particularly in the form of roll bandage, are highly efficient fibrinogen-thrombin dressings, due to simplicity and speed from the standpoint of application and lack of bulk from the standpoint



## Journal of Lab and Clinical Medicine, St Louis

29 785 888 (Aug) 1944

- \*Clinical Use of Phthalylsulfathiazole E J Poth and C A Ross—p 785  
Acute Toxicity of Commercial Penicillin H Welch C W Price J K Nielsen and A C Hunter—p 809  
Actinomycosis Report of Case with Bilary Chest Lesions A M Harris and J B Priestley—p 815  
Local Eosinophilia in Malignant Neoplasms A J Gill—p 820  
Subacute Bacterial Endocarditis Confined to Pulmonic Valve with Malformed Leaflets R J Roger—p 825  
Note on Possible Allergic Factor in Altitude Sickness Julia Baker—p 831  
Effect of Heparin on Phagocytosis Observations on *P. Lophurra* in Chick R H Rigdon—p 840  
Effect of Gonads and Adrenals on Absorption of Subcutaneous Sesame Oil C E Tobin—p 850  
Effect of Bile Acids on Biliary Excretion of Nearsphenamine and Mapharsen I H Annegers I E Snapp A C Ivy and A J Atkinson—p 853

**Clinical Use of Phthalylsulfathiazole**—Poth and Ross say that an extensive study covering twenty acylated sulfonamides in an attempt to find substances possessing antibacterial properties and being poorly absorbed from the alimentary tract has resulted in the synthesis and discovery of several compounds fulfilling these specifications. They report experiences with phthalylsulfathiazole, a condensation product of sulfathiazole and phthalic anhydride. It is an antibacterial agent of considerable interest and of therapeutic possibilities when activity restricted to the alimentary tract is desired. Approximately 5 per cent of the orally administered therapeutic dose is excreted in the urine. Ordinarily the concentration of the drug in the blood does not exceed 15 mg per hundred cubic centimeters. As compared to their respective bacteriostatic activities when measured by their ability to suppress the coliform organisms phthalylsulfathiazole possesses roughly twice the activity of succinylsulfathiazole. In the absence of diarrhea and ulcerated lesions in the bowel a single daily dose of phthalylsulfathiazole will effectively lower the coliform organisms in the feces. The vegetative forms of *Clostridia* are greatly reduced following the oral administration of phthalylsulfathiazole and stools are rendered odorless without ordinarily producing a diarrhea. The drug is likewise an effective bacteriostatic agent locally in the bowel, as is indicated by the alteration of the coliform bacteria in the presence of a watery diarrhea. An extensive study of absorption and excretion has shown that an average of 5 per cent of the oral therapeutic dose of phthalylsulfathiazole is excreted in the urine. Analyses of stools reveal that the content of phthalylsulfathiazole and a "free" diazotizable degradation product chemically similar to sulfathiazole varies between wide limits and that this "free" compound may maintain a concentration of 1250 mg per hundred grams. The authors describe preliminary trials of phthalylsulfathiazole in nonspecific diarrheas, bacillary dysentery, chronic ulcerative colitis and for the preoperative preparation of the large bowel. The drug appears particularly well tolerated by patients having ulcerative colitis and is quite effective in inducing and maintaining prolonged remissions. Severe toxic manifestations have not been encountered in patients with ulcerative colitis even though the therapy has continued for several months. Phthalylsulfathiazole can be maintained in high concentration in the diseased alimentary tract with low concentrations in the blood. It is suggested that the action of succinylsulfathiazole and phthalylsulfathiazole may not be due either wholly or in part to the formation of sulfathiazole by simple hydrolysis. As indicated by the alteration of the coliform flora in the bowel of man phthalylsulfathiazole in half the dosage is as effective as succinylsulfathiazole.

## Journal of the Mount Sinai Hospital, New York

11 63 136 (July-Aug) 1944

- William Henry Welch Lectures II: Location and Pathologic Locations of Liver I C Mann—p 65  
Newer Advances in Knowledge of Leptitis B B Crohn—p 7  
Lessons on Biology of Disease F Moenchowitz—p 23  
Massive Pulmonary Embolism II: Based on Post-mortem Studies of 88 Cases I L Neufeld and S H Klein—p 27  
Life's Later Years Studies in Medical History of Old Age I D Zeman—p 97  
Intracranial Meningioma A T Kravitz D Waller and I C Gomez—p 105

## Journal of Oral Surgery, Chicago

2 193 288 (July) 1944

- Development of Treatment of Jaw Fracture L L Schwartz—p 193  
Soft Tissue Surgery B E Luck—p 222  
Cleft Palate J W Kemper—p 227  
Osteotomy for Correction of Mandibular Malrelation of Developmental Origin R O Dineman—p 250  
Plastic Operation for Lengthening Congenitally Short Upper Lip Preliminary Report I F Ford—p 260  
\*Monocytic Leukemia with Oral Manifestations Report of Case L J Aseltine—p 266  
Maxillary Cyst Report of Case T W Coggan—p 268  
Ludwig's Angina and Anesthetic Complications A H Frank—p 271  
Ameloblastoma Report of Case A H McDonald—p 275  
Multiple Cementoma J L Bradley—p 278

**Monocytic Leukemia with Oral Manifestations**—An 66 year old patient who was hospitalized with the complaint of "sore mouth" had been treated by his dentist and physician for Vincent's infection since the onset of the oral symptoms eight weeks previously but there had been no improvement. Over the gingival tissues and in the mucobuccal fold were several large ulcers that were extremely tender to palpation. Their periphery was irregular with marginal inflammation. Examination of the neck revealed a lymphadenopathy of the submaxillary and superficial cervical glands. There was also bilateral inguinal lymphadenopathy. The liver and spleen were enlarged a full hand's breadth below the costal margin. Over the trunk and extending onto the legs were painless areas of elevation and induration surrounded by hemorrhage. The blood picture showed a red blood cell count of 2,100,000 and hemoglobin of 51 per cent. The white blood cell count was 102,000 with the cells predominantly immature monocytes. The diagnosis was (1) acute monocytic leukemia (2) leukemia cutis (3) secondary anemia, (4) ulcerative leukemic stomatitis. The patient died a few days later. Aseltine stresses that progressive weight loss, persistent oral ulceration, malaise, pallor and skin lesions, any one or a combination of these, should arouse suspicion of a blood dyscrasia. Patients with blood dyscrasias exhibit decreased or little resistance against infection following the removal of teeth, and local necrosis results. The leukocytes are immature and unable to combat infective organisms and so surgical intervention is definitely contraindicated.

## Journal of Pediatrics, St Louis

25 1-104 (July) 1944

- Tibial Bone Marrow Infusions in Infancy H I Arbeiter and J Greengard—p 1  
Bone Marrow Infusions as Routine Procedure in Children T Meola—p 13  
Treatment of Poliomyelitis W B Snow—p 17  
Dust Bronchitis J A Toomey and C L Peterling—p 2  
\*Pneumonia, Pneumothorax and Emphysema Following Ingestion of Kerosene E P Scott—p 31  
Treatment of Meningococcal Meningitis and Septicemia Sulfathiazole Sulfanilamide and Serum Therapy C W Cory C E Abbott Jr and E C Trzaskowski—p 35  
Treatment of Pertussis with Isophane Hypersensitive Human Serum I E Schenck and J G M Bullock—p 49  
Significance of Single and Multiple Shigella Infections in Institutionalized Children O Fel enfeld and Viola Mae Young—p 56  
Spontaneous Subarachnoid Hemorrhage in Infants and Its Relation to Hydrocephalus S C Babson—p 68  
Analysis of Children's Eating Habits A L Baldwin—p 74  
Psychologic Care of Children with Pulmonary Tuberculosis J I Kendig Jr—p 79

**Pneumonia, Pneumothorax and Emphysema Following Ingestion of Kerosene**—Scott reports the clinical history of a boy aged 2 who was admitted to the hospital two hours after he had ingested from 1 to 2 ounces of kerosene. Before bringing him to the hospital his parents gave him some cream, which caused him to vomit. Because of his apparent pulmonary edema he was given an immediate continuous infusion of 500 cc of 20 per cent glucose followed by 10 per cent glucose in distilled water. In addition he was given oxygen continuously and caffeine with sodium benzoate. A saline enema followed by a rectal tube was used to relieve the abdominal distention. No gastric lavage was performed. Within two hours the child was conscious. The next morning his temperature had risen to 103.2 F but he was alert and a bland diet was taken well. In view of the rise in temperature with an elevated white blood cell count it was thought advisable to administer sulfathiazole.

His temperature became normal three days after admission and remained so until discharge. The roentgenograms revealed aspiration pneumonia, bilateral pneumothorax with possible bronchopleural fistula on the right, and soft tissue emphysema. Treatment was symptomatic except for the sulfathiazole medication. On the seventh day a roentgenogram revealed that the left pneumothorax was clearing. Both lungs had become more homogeneous. The heart was almost in the midline and the soft tissue emphysema was less severe. The patient made an excellent convalescence. Pulmonary manifestations following the accidental ingestion of kerosene are common in young children but this is probably the first case reported with complications such as pneumonia, pneumothorax and emphysema.

**Lyophile Human Serum in Pertussis.**—Schemblum and Pullowa report observations on 23 patients who were selected for treatment because they were considered critically ill with pertussis as judged by their age, the severity of the attacks or paroxysms, apnea, cyanosis and emesis and the presence of pneumonic complications. The dried serum, the equivalent of 20 cc of whole hyperimmune pertussis serum was dissolved in 10 cc of sterile distilled water and this was concentrated to 50 per cent. Serum was administered intramuscularly to 22 patients; 17 of these patients received three 20 cc doses, 4 received four 20 cc doses and 1 received a single 20 cc dose. Another patient received one 40 cc dose intravenously, as suggested by McGinness and his associates. The response of the young infants was apparently better than that of the older children. This may have been due to the fact that the age and weight of the patient were not considered in the dosage given. Sixteen of the 23 patients treated were under 1 year of age. None of these infants died. The 2 children who died were in the 1 to 2 year age group and were moribund when treatment was begun. Treatment early in the course of pertussis was effective. Two patients treated in the eighth and ninth weeks of illness had a good response. There were demonstrable circulating agglutinins following the administration of the serum. Lymphocytosis was suppressed after the administration of the serum. Eleven patients who had pneumonic involvement were treated with the serum in addition to sulfadiazine. There was no extension or recurrence of the pulmonary involvement and no development of pneumonia after a full course of serum therapy.

### Journal of Thoracic Surgery, St. Louis

13 271-356 (Aug.) 1944

- Current Observations on War Wounds of Chest. B. N. Carter and M. I. DeBakey—p. 271.  
War Wounds of Chest Observed at Thoracic Surgery Center, Walter Reed General Hospital. B. Blades and D. J. Dugan—p. 294.  
Trends and Practices in Thoracic Surgery in Mediterranean Theater. L. D. Churchill—p. 307.  
\*Thymectomy in Treatment of Myasthenia Gravis. Report of 20 Cases. A. Blalock—p. 316.  
Intrapleural Infection with *Clostridium Welchii*. T. H. Poppe—p. 340.  
\*Agenesis of Lung. A. R. Valle and E. A. Graham—p. 345.

**Thymectomy in Myasthenia Gravis.**—Blalock reports the results obtained in 20 patients with myasthenia gravis on whom total thymectomy was performed. The duration of illness varied from seven months to twelve years. Four of the patients had had partial remissions. The preoperative neostigmine requirements ranged from 75 to 910 mg daily. Only 2 of the patients had a thymic tumor. Most of the others presented a persistent two-lobed thymus which on microscopic examination showed lymphoid hyperplasia with germinal center formation. Four of the patients have died since operation, three of the deaths occurring in the early postoperative period. Of the 16 remaining patients, 3 are well, 5 are considerably improved, 5 are moderately improved and 3 have shown little if any improvement. The early and sustained improvement which has been shown by some of the patients makes it difficult to escape the conclusion that thymectomy was at least partly instrumental in causing the alteration. Unfortunately there is no known method by which one may predict the degree of improvement which may be expected to follow the operation. The results in these cases suggest that the best chances of recovery are to be expected with patients who have not had the disease for an extended period. The 4 patients who no longer require neostigmine had had myasthenia gravis for a year or less.

**Agenesis of the Lung.**—Valle and Graham present the histories of 2 living patients with agenesis of the lung. One case that of a white woman aged 41 was proved by an exploratory thoracotomy after a clinical diagnosis was made of massive atelectasis of the left lung due to complete block of the left main bronchus. The other case, that of a white boy aged 5 years, is presumed to be agenesis of the lung since the physical examination showed asymmetry of the chest, absence of breath sounds and flatness to percussion on the left side. Also the x-ray film showed complete opacity on the left with displacement of the trachea toward that side, and the bronchogram showed a complete block of the left main bronchus. A bronchoscopy was performed which confirmed these findings. Review of cases from the literature indicates that absence of a lung is not incompatible with life nor does it preclude a long life. This fact is not surprising in view of what is well known now about the postoperative course of a patient after pneumonectomy. Of the 39 cases collected from the literature, 25 were of children under 12 years of age. Eleven patients lived to be more than 19 years of age and 3 were 58, 65 and 72 years, respectively. Both of the authors' patients are living and are in fairly good health at the time of this communication.

### Kansas Medical Society Journal, Topeka

45 233-268 (July) 1944

- Pulmonary Suppurative Disease: Surgical Management. O. T. Chigett—p. 233.  
Continuous Spinal Anesthesia. G. Owens—p. 240.  
Medicolegal Aspects of Traumatic Neuroses. L. A. Carmichael—p. 247.  
45 269-304 (Aug.) 1944  
Thinking Ahead in Public Health. C. C. Applewhite—p. 269.  
Meningococcal Meningitis and Waterhouse-Friderichsen Syndrome. H. W. Day—p. 273.  
Ureteral Calculus—Uroscopologic Complexes. O. W. Davidson—p. 275.

### Kentucky Medical Journal, Bowling Green

42 191-214 (July) 1944

- Miliary Lesions in Lung. O. O. Miller—p. 193.  
Neurovascular Lesions of Extremities. A. W. Allen—p. 195.  
Pregnancy with Acute Poliomyelitis. Case Report. Alice L. Wakefield—p. 199.  
Eighteen Months Experience on Induction Board. J. T. Moran—p. 200.  
Preliminary Report of Committee for Study of Infant Mortality in Louisville. Margaret A. Limper—p. 205.  
Undulant Fever. H. S. Irizier—p. 209.

### Maine Medical Association Journal, Portland

35 135-152 (July) 1944

- Residential Address. O. I. Larson—p. 135.  
Infectious Venereal Diseases. P. R. Briggs—p. 137.  
Some Remarks About Aschheim-Zondek Pregnancy Tests. From Poscoe B. Jackson Memorial Laboratory, Bar Harbor, Maine. Elizabeth I. Chete—p. 139.

35 153-172 (Aug.) 1944

- Medical Metamorphosis. A. P. Leighton—p. 153.  
\*Brown-tail Moth: Its Life Cycle, Types of Skin Lesions Produced by Its Larvae. Report of Case of Recurrent Generalized Urticaria Resulting from Contact with Poisonous Hairs and Its Subsequent Desensitization. C. W. Steele and W. H. Sawyer Jr.—p. 157.

**Recurrent Urticaria Resulting from Contact with Brown-tail Moth.**—According to Steele and Sawyer the brown-tail moth (*Nyctima phaeorrhoea*) reappeared in great numbers in central Maine during the summers of 1940, 1941 and 1942 with a corresponding increase in the number of cases of dermatitis traceable to contact with it. The caterpillars of this insect feed chiefly on foliage of the apple and related species but may also be found on oak, willow and other common hardwood trees and shrubs. The caterpillars cause both serious poisoning to many human beings and severe economic losses through defoliation of orchards, shade trees and woodlots. In the case reported an unusually high degree of skin sensitivity was shown to the poisonous products of the brown-tail moth larvae. Poisonous material from the brown-tail moth caterpillars from the adult moth or from the nests, when it came in contact with the man's skin produced an immediate severe generalized urticarial response. A test dose of an extract of poisonous material produced a skin reaction. Injections were given at five day intervals through the various dilutions until the maximal dose of the most concentrated solution had been given. Soon after

injections were begun the patient reported that the urticaria was decreasing. He continued to break out locally when exposed but a generalized eruption did not appear. Two months after completion of the desensitization treatment he reported that he had obtained good symptomatic relief and that the urticaria had practically disappeared. The authors believe that even better results might be obtained if it was possible to make up the desensitization extract from the full grown larvae or from barbed hairs obtained from such caterpillars.

### Tennessee State Medical Assn Journal, Nashville

37 215-254 (July) 1944

- Demonstration of Gonococcus Culture H Spitz—p 215  
Management of Gonorrhea in General Practice J L Morgan—p 216  
Present Status of Rapid Treatment of Syphilis R H Kampmeier—p 219  
Management of Some Common Phases of Late Syphilis in Practice P H Kampmeier—p 222  
Practical Aspects of Management of Lymphogranuloma Venereum C H Mann—p 224

37 255-290 (Aug) 1944

- War-time Health Education V Johnson—p 255  
Physiology of Thyroid Gland and Treatment of Exophthalmic Goiter W C Chaney—p 261  
DDT Powder for Destruction of Body Lice A L Ahnfeldt—p 263  
Standing Orders for Nurses in Industry Council on Industrial Health American Medical Association—p 266

### United States Naval Med Bulletin, Washington, D C

43 209-408 (Aug) 1944 Partial Index

- Prevention of Flash Burns by Protective Glove Film G B Fauley and A C Ivy—p 209  
Traumatic Rupture of Spleen C M Perisho and M Steiner—p 216  
Polycystic Disease of Kidneys S S Leiter and I L Waterman—p 223  
Ambulatory Program Following Operation for Unruptured Appendicitis C A Lauer and R K Kerr—p 232  
Low Back Pain Subluxations of Apophysal Joint and Fractures of Anterior Facets W C Scott—p 234  
Tendon Repair T C Cole—p 241  
Reception and Treatment of Casualties Aboard an Assault Transport B Gillespie and J C Owens—p 245  
Working Rules in Field Supplementary Suggestions on Care of Wounded E Holman—p 253  
Central Manifestations of Early Bilirubin R H Fogel and P W Huntington Jr—p 265  
Acute Infectious Hepatitis V W Logan—p 271  
Posterior Gonococcal Urethritis D H Pattison and R A Burhaus—p 278  
Treatment of Cerebrospinal Fever with Penicillin Preliminary Report D H Rosenberg and P A Arling—p 281  
Toothache in Low Pressure Chamber I W Brickman—p 292  
Intrathecal Anesthesia for Dental and Oral Surgery W B Johnson Jr and E R Ruzicka—p 304  
Trench Mouth Aboard a United States Navy Auxiliary Vessel D S Tancito—p 308  
Analysis of Psychiatric Patients Transferred to United States from War Overseas B C T A Williams—p 311  
Psychometric Procedure for Screening Mental Defectives H M Hildreth I A Wheeler Jr and S B Williams—p 316  
Study of Albuminuria in Applicants for Naval Enlistment W A Murphy—p 321  
Occupational Therapy in Naval Hospital H V Hughes and I O Parker—p 325

#### Treatment of Cerebrospinal Fever with Penicillin—

Of the 31 cases of cerebrospinal fever constituting the basis of this report by Rosenberg and Arling 22 were proved to be meningococcal in origin. In the remaining 9 patients the clinical picture and findings in the spinal fluid were characteristic of meningococcal meningitis, but the stained smears as well as cultures of the spinal fluid and blood did not reveal organisms. Whereas the majority of patients in this series recovered following only one or two intrathecal injections of penicillin (10,000 to 20,000 Oxford units) in the more severe forms of meningitis larger amounts were necessary. As little as 20,000 Oxford units given intravenously over a four hour period, together with one intrathecal injection of 10,000 Oxford units resulted in recovery in 2 instances. The amount of penicillin required by different patients will vary with the number type and virulence of the organisms as well as with the immunologic reaction of the host and will be indicated by the clinical and bacteriologic responses. As the clinical picture presented by the patients with bacteremia was indistinguishable from that observed in many patients with negative blood cultures it is contended that penicillin should be administered both parenterally (intravenously or intramuscu-

larly) and intrathecally to all patients with cerebrospinal fever. It is of paramount importance to continue penicillin intrathecally until recovery is assured. Penicillin need be administered parenterally only during the first twenty-four to forty-eight hours of treatment or for shorter periods in the milder forms of infection.

### Virginia Medical Monthly, Richmond

71 395-444 (Aug) 1944

- Rickettsial Disease in Virginia H H Henderon and Katharine Wood Walke—p 397  
Agranulocytic Angina—A Drug Hazard E I Copley—p 416  
One Day Treatment of Sulfonamide Resistant Acute Gonorrhea with Penicillin Preliminary Report S C Pace Jr and L L Hemoff—p 423  
Treatment of Sulfonamide Resistant Gonorrhea with Report of 11 Cases Cured C C Tyler—p 425  
Ectopic Pregnancy H H Ware Jr W C Wynn and E C Schelin—p 428  
Diagnosis and Treatment of Primary Atypical Pneumonia A D Offutt—p 431  
Health and Government F L Apperly—p 4

**One Day Treatment of Sulfonamide Resistant Acute Gonorrhea with Penicillin**—Pace and Hemoff report that 30 cases of sulfonamide fast acute gonorrhea became bacteriologically negative within twelve hours after treatment with penicillin was instituted. Two of the patients had had three courses of sulfathiazole 11 two courses of sulfathiazole while 17 had had one course. One hundred thousand units of penicillin was given in five divided intramuscular doses of 20,000 units each at three hourly intervals as a complete course of therapy. No toxic effects were noted blood counts and urinalysis done at three, twelve, twenty-four and forty eight hour intervals were normal urethral smears and cultures taken at three hour intervals during the course of treatment became negative within a period of twelve hours.

### West Virginia Medical Journal, Charleston

40 245-276 (Aug) 1944

- Traumatic Injuries of Kidneys C C Prather—p 245  
Sporadic Meningococcus Meningitis Report of 2 Cases W I Boggs—p 248  
Emergency Maternity and Infant Care Program A J Tesser—p 254  
Distribution of Pain in Lesions of Upper Urinary Tract Report of Cases T B Washington—p 257

40 277-308 (Sept) 1944

- Some of the Uses of Cutis (Derma) Graft Transplant in General Surgery Orthopedic Surgery and Gynecology J E Cannaday—p 277  
Accidents of Pregnancy S A Cosgrove—p 283  
Some Dangers of Venoclysis in Cardiovascular Disease P A Houston—p 292

**Uses of Cutis (Derma) Graft Transplant**—The term "cutis graft" means skin from which a thin layer of epidermis has been removed with a skin graft razor. Cannaday suggests that the reason this material is not utilized more widely in this country is the misconception that it is likely to cause epidermoid cysts. There is no record of the development of epidermoid cyst following the use of cutis graft. The cutis graft is gradually infiltrated with and is replaced by connective tissue, so that finally the graft takes on the characteristics of the structure that it replaces. In a hernial repair it is converted into fibrous tissue that resembles aponeurotic tissue, and when used to replace tendon it is rapidly converted into tissue resembling tendon. When used in the reconstruction of joints like the hip and knee joints it takes on the characteristics of normal joint lining. Cutis graft tissue can be used anywhere that fascia lata or other aponeurotic tissue has been used in the past. The author and his associates in the Charleston General Hospital have made use of cutis grafts in a total of 72 cases. The list includes several types of hernia, operations to suspend the uterine cervix for the relief of prolapse, wobbling knees fractures of the patella, replacement of torn dura support of the bowel in sigmoid colostomy and the like. Cutis may be used in all cases in which the use of fascia or tendon might be indicated with the expectation of better results. It heals rapidly and well has great vitality is able to survive under adverse conditions, possesses great tensile strength has a good blood supply gradually assumes the function of the part it replaces and is readily available. Its greatest value perhaps is in the repair of large incisional hernias.

## FOREIGN

An asterisk (\*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

## Archives of Disease in Childhood, London

19 43 98 (June) 1944

- Incidence of Rickets in Wartime. British Paediatric Association—p. 43  
 Survey of Rickets in Lincolnshire (Parts of Kesteven). R. W. B. Ellis and Audrey E. Ellis—p. 42  
 Statistical Analysis. P. Stocks—p. 48  
 Incidence of Rickets in Children Attending Hospitals in Bristol from September 1938 to May 1941. B. D. Corner—p. 68  
 Observations on Tuberculous Meningitis. J. McMurra—p. 87  
 Analysis of Fate of Premature Babies in Warwickshire for 1942 and 1943. C. F. Brockington—p. 93

**Incidence of Rickets in Children Attending Hospitals in Bristol**—Corner describes investigations on the prevalence of rickets among infants under the age of 2 years who were attending hospitals in Bristol during the period from September 1938 to May 1941. Particular emphasis has been laid on the diagnosis of mild rickets during the first six months of the infant's life as at that stage prophylactic measures would be most useful. Since the clinical diagnosis of rickets is apt to be uncertain in mild cases, the plasma phosphatase was estimated and correlated with the clinical evidence. X-rays were used in only a few cases and serum phosphorus and calcium estimations were available in some cases. Microscopic examination of the ribs post mortem was carried out in a few cases. Evidence of rickets was searched for in 820 children in the age range of 2 weeks to 2 years. Rickets in which there were clinical signs and either x-ray evidence or an increase in the plasma phosphatase above 15 units was found in 31.4 per cent of the children. A further 3.9 per cent of patients may be considered to be early cases since they showed no clinical evidence of rickets but the phosphatase was raised above 15 units. Some clinical signs suggestive of rickets were shown by 14.5 per cent of children but other investigations were negative. There is a correlation between an increase in the plasma phosphatase and definite enlargement of the costochondral junctions, but when the enlargement is only slight the phosphatase is below 15 units in 81 per cent of cases so that slight enlargement of costochondral junctions alone is not diagnostic of rickets. The incidence of rickets was greatest during the period six to nine months, when it was 52 per cent and from twelve to eighteen months, when it was 48 per cent. Below the age of 6 months there were 26.2 per cent of definite cases. The incidence of rickets is 5 per cent lower in breast fed infants than in artificially fed infants. There is little difference in the incidence of rickets in infants who were fed on dried milk, milk mixture or sweetened condensed milk. The incidence of rickets in children who had received vitamin D supplement which however often contained less than 400 units in the daily dose was 10 per cent higher than in the other cases. The incidence of rickets did not show a definite relationship to rate of gain in weight except in the youngest group of infants. The incidence of rickets in twin and premature infants is not greater than the average for the whole age range but in the youngest group of patients the incidence is doubled in the twin and premature infants. There appeared to be a definite relationship between the incidence of rickets and the type of antepartum diet of the mother. The incidence of rickets was greatest when the mother's diet was poor. Accessibility of direct sunlight and economic status of the family play a considerable part in the incidence of rickets.

**Tuberculous Meningitis**—McMurra investigated two aspects of tuberculous meningitis: (1) the question why it does not arise in every case of tuberculous bacillema and (2) with what frequency the bovine type of tubercle bacillus occurs in tuberculous meningitis. Eleven patients with tuberculous meningitis were examined to determine the pathogenesis of the condition. It appeared that tuberculous meningitis commonly arises as the result of the extension into the subarachnoid space of a focus in the meninges or in the juxtameningeal tissues. This focus is blood borne and may or may not be one of the foci of military tuberculosis. Cerebrospinal fluids from 26 cases of tuberculous meningitis have been examined. Tubercle bacilli were found microscopically in 20 and strains have been isolated

in 24. Of the 24 strains isolated, 7 were of the bovine type and the other 17 of the human type. All the bovine strains occurred in the 20 children under 15 years of age. The source of infection with the bovine strains could not be established.

## British Journal of Dermatology and Syphilis, London

56 107-150 (May-June) 1944

- Reticuloses. W. N. Goldsmith—p. 107  
 Lymphadenoma. Its Etiology and Its Skin Lesions. E. C. Warner—p. 129

## British Medical Journal, London

2 67-102 (July 15) 1944

- Current Progress in Sterilization of Air. S. Mudd—p. 67  
 Intravenous Barbiturates in Treatment of Hysteria. C. Lambert and W. L. Rees—p. 70  
 Two Cases of Gunshot Wound Resulting from Unusually Large Missiles. Recovery. R. Charles—p. 73  
 Modification of Invagination Method of Intestinal Anastomosis. J. B. Hogarth—p. 75  
 Method of Locating Mobile Renal Calculus at Operation. B. W. Goldstone—p. 77

2 103 136 (July 22) 1944

- Some Problems in Riboflavin and Allied Deficiencies. H. S. Stannus—p. 103  
 Two Years of Military Psychiatry in Middle East. H. B. Craigie—p. 105  
 Diagnosis and Treatment of Lesions Due to Vesicants. W. E. Chiesman—p. 109  
 Rupture in a Supposed Lower Segment Cesarean Section Scar. D. W. James—p. 112  
 Meigs' Syndrome. Hydrothorax and Ascites in Association with Fibroma of Ovary. A. C. Clay, R. N. Johnston and L. Samsom—p. 113

## Lancet, London

2 97-130 (July 22) 1944

- Actual Experience in Relation to National Health Service. S. Dudley—p. 97  
 \*Dissection Lobectomy for Bronchiectasis. Review of 100 Cases. T. H. Sellors, V. C. Thompson and G. Quist—p. 101  
 \*Influenza A Outbreak of October-December 1943. C. H. Andrewes and K. E. Glover—p. 104  
 Vocational Aspects of Neurosis in Soldiers. A. Lewis and K. Goodyear—p. 105  
 Finger Exerciser for Burned Hand. M. C. Oldfield and C. J. King—p. 109  
 Hydronephrosis as Cause of Prolapse. P. C. Mallam—p. 110  
 Successful Suture of Finger Flexor Tendon. R. M. Jones—p. 111

**Dissection Lobectomy for Bronchiectasis**—Sellors and his collaborators point out that the dissection method of lobectomy has the advantages over the tourniquet method that the possibility of secondary hemorrhage is much diminished by individual ligation of artery and vein; the chances of fistula formation are diminished by careful closure of the bronchus; sepsis in the hilar stump is eliminated and the removal of the lobe can be said to be total rather than subtotal, which is the case in the tourniquet operation. A further problem in the evolution of the operation is the closure of the bronchus. When a reliable method of bronchial exclusion and the avoidance of fistula is discovered lobectomy will have reached all the standards required of clean aseptic surgical technique. The 100 cases reviewed here were a consecutive series in which dissection lobectomy was done for suppurative bronchiectasis. The operative mortality was 6 per cent and good results were obtained in 83 per cent. The most striking feature of the postoperative course has been the low incidence of pulmonary sepsis and this is probably due to elimination of the hilar slough inevitable with tourniquet lobectomy. The incidence of postoperative atelectasis was high (29 per cent) but secondary pyogenic infection was exceptional. Pleural adhesions tend to lower the incidence of massive collapse but their most important function is to expedite resolution of this condition. The commonest postoperative infection was tuberculosis which developed in 7 cases, being fatal in 3. Pulmonary lobectomy by dissection is unquestionably a great advance on the tourniquet operation.

**Influenza A Outbreak of October-December 1943**—According to Andrewes and Glover there occurred during the last quarter of 1943 in Britain the most widespread outbreak of influenza since the early months of 1937. Clinically the epidemic was mild. The small amount of influenza prevalent in the early months of 1943 was largely due to influenza virus B but in April and in most of the summer months localized outbreaks occurred chiefly in service units and serologic test

(Hirst's technique) indicated that virus A was concerned. Hirst tests on serums obtained from patients who had respiratory infections between October and December yielded a high percentage of A positives. No rises in titer against influenza B virus was found. The strains isolated readily infected ferrets but were not easily adapted to mice. The serologic evidence indicates that at least 72 per cent—and perhaps 90 per cent—of the cases of influenza studied from October to December 1943 were due to influenza A virus. If the material available was a fair sample of that to be found in the country generally, this was a fairly pure A outbreak. Influenza virus B played no apparent part. Influenza of a similar type prevailed in the United States in the autumn of 1943 and also was predominantly of type A.

### Medical Journal of Australia, Sydney

1 477-500 (May 27) 1944

Rh Factor Laboratory Aspects Rachel Jakobowicz and Lucy M. Bruce —p 477

\*Importance of Rh Factor in Obstetrics Vera Krieger —p 480  
Rh Factor Ethnological Aspects R. T. Simmons and others —p 483  
Time Saving Mastoidectomy Dressing J. R. Hutcheon —p 485

1 549-572 (June 17) 1944

Experimental Empiricism in Chemotherapeutic Research E. Singer —p 549

Rh Factor in Blood of Australian Aborigines R. T. Simmons, J. J. Graydon and Patricia Hamilton —p 551

Some Reflections on Annesia Psychiatric and Forensic C. L. Ewan —p 554  
Medical Applications of Maze Test S. D. Porteus —p 558

1 573-596 (June 24) 1944 Partial Index

Scope of Mental Testing D. W. McElwain —p 573  
Contribution of Mental Tests to Medicine J. V. Ashburner —p 575  
Asphyxia in Newborn W. K. McIntire —p 580  
Solar Radiation and Pernicious Anemia in South Australia J. B. Thiersch —p 583

**Rh Factor in Obstetrics**—Krieger reviews work on the Rh factor carried out at the Women's Hospital in Melbourne. Rh negative blood tests were made on the blood of all pregnant patients whose previous history had shown evidence of miscarriage or stillbirth. Four hundred and eighty six such patients were tested between May and October 1943, and 101 (21 per cent) were found to have Rh negative blood. The author reviews the results of tests for Rh antibodies during and after delivery on mothers with Rh negative blood. With regard to the frequency of erythroblastotic children from mating of persons with Rh positive and Rh negative blood, the author finds that not all the babies of a mother with Rh negative blood and a father with Rh positive blood have Rh positive blood. Since the Rh factor is transmitted as a mendelian dominant, the fate of the children depends on the father's being homozygous or heterozygous for the factor. Furthermore, not every mother with Rh negative blood will produce isoantibodies to the Rh factor, and the amount of antibodies formed in any one pregnancy varies considerably. The mildest form of erythroblastosis, the hemolytic anemia of the newborn, may not be diagnosed as such unless attention has been directed to the possibility of its presence. Mild forms of erythroblastotic icterus may be classified as a rather severe ordinary icterus neonatorum if no special investigations are made. Although nothing can be done to prevent the action of Rh substance from the baby from producing Rh antibodies in the mother, or the passage of these antibodies through the placenta into the fetal circulation, the testing for the Rh factor and for Rh antibodies is necessary for several reasons, for instance for proper blood selection, should either mother or child require a transfusion. The Rh factor should be investigated not only in women whose past history suggests the occurrence of erythroblastosis but in all women attending antepartum clinics at maternity hospitals. The question of the production of sufficient suitable typing serum is all important. Many difficulties are experienced in obtaining blood from the patients even when a high titered serum has been detected. There is the fact that the titer of antibodies usually decreases rapidly. This necessitates the taking of blood from the patient within a week or two after her confinement. The patient or her doctor may object to this. There is also the question of variability of titer and polyvalence in serum from these patients.

### Monatsschrift für Psychiatrie und Neurologie, Basel

108 177-232 (Oct.) 1943

Anatomoclinical Study of Complex Hyperkinetic Syndromes Late Post Traumatic Dementia with Proximal Rigidity and Tremor G. de Morier and L. A. Bogaert —p 177

\*Nonconvulsive Electric Treatment in Depression P. Plattner and H. Lohm —p 200  
Intramolecular Dermoid Cyst L. Baka, L. Benedek and A. Tulai —p 222

**Nonconvulsive Electric Treatment in Depression**—According to Plattner and Lohm it has been generally accepted that convulsions in the form of epileptic attacks are indispensable for the success of electric and other shock treatments and therefore the aim has always been to avoid incomplete attacks. The unpleasant complications such as wrenching of muscles and fractures were accepted as inevitable or attempts were made to minimize them by posture. Others, particularly American investigators, studied the possibility of reducing the convulsions by the use of curare or magnesium sulfate. The authors also unsuccessfully tried the use of magnesium sulfate but then decided to try weaker currents to avoid convulsions completely. They produced absences (temporary suppression of mental function) by passing a current of 60 volts for 0.1 second. The patient loses consciousness for only a few seconds and often is unaware that treatment has been given. More than 50 patients who on the average passed through 20 absences never experienced unpleasant sensations. A number of illustrative cases are reported. The authors conclude that for combating the depressive syndrome by electric irritation of the brain the elicitation of motor manifestations is superfluous and that the essential factor is that other probably sympathetic centers are stimulated. The convulsive manifestations may be undesirable secondary effects. It was found that arteriosclerotic and senile depressions can be effectively treated by the use of weaker currents that are tolerated even by old and fragile patients. Stronger currents are necessary in climacteric, involutional and endogenous depressions and such currents may produce convulsions and epileptic attacks but to avoid the risk of fractures phenobarbital can be given, which does not interfere with the therapeutic effect of the electric current.

### Rev Argent-Norteam de Cienc Med, Buenos Aires

1 831-926 (Feb.) 1944 Partial Index

\*Three Tests for Differential Diagnosis of Jaundice Lola Moyano Lopez —p 833

Traumatic Rupture of Spleen H. I. Dry —p 885

**Three Tests for Differential Diagnosis of Jaundice**—Moyano Lopez performed tests of total blood bilirubin, phosphatemia and the Hanger test on 321 patients with jaundice. She concludes that the blood bilirubin test is of greatest value in recognizing parenchymal involvement of the liver. The blood phosphatase test is sensitive and reliable in the diagnosis of bile tract obstruction. Hanger's test is of moderate value in the diagnosis of alterations of the liver parenchyma. The average normal value of blood phosphatase in adults varies from 15 to 4 Bodansky units. Lower figures indicate a bad prognosis. Blood phosphatase is slightly increased in the course of hepatitis. It may reach an average value of 10 Bodansky units. A lowering of blood phosphatases approaching normal values in the course of hepatitis together with a lowering of the figures of blood bilirubin and a decrease of the Hanger test indicates a favorable course of the disease. A sudden acute increase of blood bilirubin to very high values after a drop to 50 or 90 mg of bilirubin per thousand cubic centimeters of blood together with unchanged results of the blood phosphatases and Hanger's tests indicate a fatal prognosis. If blood bilirubin reaches high figures and then drops to 80 or 90 mg and remains at these levels while the blood phosphatase increases beyond 10 Bodansky units and the Hanger test increases the case is one of hepatitis complicated by bile tract obstruction. In a case of jaundice if blood phosphatase is slightly above 10 Bodansky units, blood bilirubin about 200 to 300 mg per thousand cubic centimeters and Hanger's test is faintly positive, jaundice is due to an old obstruction which has affected the liver in such a way as to lead to hepatitis.

## Book Notices

**The Pathogenesis of Tuberculosis** By Arnold R. Rich M.D. Associate Professor of Pathology The Johns Hopkins University School of Medicine Baltimore Cloth Price \$10.50 Pp 1 008 with 90 illustrations Springfield Illinois & Baltimore Charles C. Thomas 1944

This timely book by Rich, well qualified by training and experience to present the subject of pathogenesis of tuberculosis, is written clearly and in orderly style. It incorporates the basic factors and principles which influence the occurrence of tuberculous infection or determine its progression or arrest. An analysis within the present limits of our knowledge up to 1940, about the time the bibliography ends, considers the influence of each of those factors on the pathogenesis of the disease. This compilation of the literature brings into a unified whole the basic and interdependent but scattered and isolated facts contributed by bacteriology, immunology, pathology, clinical observation, experimental investigation, epidemiology and genetics. The book is broader than previous treatises on tuberculosis alone and includes an analysis of the basic principles that govern infection and resistance in general. Whenever a stand is taken, it is based on the first hand examination of original papers, to which there are 1,417 references, or from the author's personal experiences. In the author's words in the preface, "Those who deal with the manifold problems of tuberculosis in their work or teaching are faced continually with the need of a survey," such as this book presents. The author has endeavored to present the principles of native and acquired resistance and hypersensitivity, as far as they are understood at present in a manner that will enable those who are not specialists in immunology to understand them readily.

Without becoming too critical, it is hoped that the author will not be content to let this issue stagnate before revamping it at regular intervals for new editions and will seek the advice of others qualified in this field. The shortcomings of single authors for extensive volumes should be recognized. However, full credit should be given Rich for the stupendous task he has performed in preparing a volume on the pathogenesis of tuberculosis the equal of which has never before appeared in English. His subject is driven methodically toward a goal beginning with the relations of the chemical constituents of the bacillus to pathogenesis in which he displays chemical capability. The types of bacilli, variations in form and potentialities are well defined. Under virulence he points out that the study of the bacilli from human sources is not adequately fulfilled nor can we regard different forms of spontaneous disease as being specifically determined by the degree of virulence of the infecting bacilli. Native resistance is elaborately considered in four complete chapters to the conclusion of its mechanism. Following local tissue resistance, hypersensitivity and its mechanism are dwelt on leading into the problem of specific and nonspecific desensitization, this chapter will require radical modification in new editions because of the uncertain status of this phase of tuberculosis prior to 1940. The mechanism of acquired resistance is fully detailed and climaxed by a good chapter on the factors that influence resistance. The influence of the number of bacilli impresses one with how a simple phase of tuberculosis still requires elucidation. Finally the problems responsible for the characteristics of tuberculous lesions and symptoms, exogenous or endogenous reinfection and the application of the principles of pathogenesis as illustrated by tuberculosis of the lungs, meninges and serous cavities complete the picture of tuberculosis sufficiently to conclude with the decline in the mortality and the future outlook, which becomes the expression of the author as to the importance of each of the major factors. Rich does not appear to contribute to the view that tuberculosis will be self extinguished with the mortality curve trend. He feels that "the disease that still kills more than twice as many individuals as any other single cause of death during this (15 to 44 years of age) particularly productive and enjoyable period of life span can hardly be jubilantly regarded as being nearly conquered." To the latter view most tuberculologists and investigators will certainly contribute at present. Such a view also attests the need for this volume and it is doubtful whether any single author could have done a better job with

so complex a problem as the pathogenesis of tuberculosis and all its implications than Rich did.

The volume is well composed and is worth possessing. It will help students and medical men to a better understanding of tuberculosis.

**Simplified Diabetic Management** By Joseph T. Beardwood Jr. A.B. M.D. F.A.C.P. Associate Professor of Medicine Graduate School of Medicine University of Pennsylvania Philadelphia and Herbert T. Kelly M.D. F.A.C.P. Associate in Medicine Graduate School of Medicine University of Pennsylvania Fourth edition Cloth Price \$1.50 Pp 172 with 9 illustrations Philadelphia London & Montreal J.B. Lippincott Company 1944

As a manual for the diabetic patient, this volume covers the ground thoroughly and in a manner both concise and clear. The present edition is somewhat revised, notably by the addition of a section on the newer insulin preparations with prolonged action. The inclusion of crystalline insulin among the latter is a rather surprising lapse in an otherwise accurate presentation. The authors present two systems of diet calculation, the unit method and the percentage method. Both are clearly and simply explained and accompanied by the appropriate tables of food values. However, it is apparent that the authors have abandoned their earlier use of the diet prescription chart based on the "line ration schemes" of Lawrence and of Christian and O'Hara. In view of this it is rather strange that, although all reference to it has been removed from the text, the chart is still included in the volume and is still featured in the blurb on the dust cover.

**Conferencias do curso de aperfeiçoamento da psiquiatria de guerra (organizado pelo Prof. A. C. Pacheco e Silva sob os auspícios da Faculdade de medicina da Universidade de S. Paulo e dos fundos universitários de pesquisas para a defesa nacional)** Paper Price Cr \$30.00 Pp 304 with 11 illustrations São Paulo 1943

The volume presents the twenty-two lectures given during 1943 in a postgraduate course on war psychiatry organized by Dr. Pacheco e Silva, professor of psychiatry in the University of São Paulo. Dr. Pacheco e Silva and fifteen of his colleagues have embodied a thorough study of the various applications of psychiatry to the problems of war, considering first the general scheme of examinations they proceed to the various clinical pictures as met in a military setting, then to such problems as malingering, laws and regulations, and mental hygiene, individual and collective. The volume is substantial evidence of the foresight and progressive scholarship of our psychiatric colleagues in Brazil.

**The Woods Hole Marine Biological Laboratory** By Frank R. Lillie Cloth Price \$4 Pp 284 with 28 illustrations Chicago University of Chicago Press London Cambridge University Press 1944

The Woods Hole Marine Biological Laboratory is a unique institution located on the south shore of Cape Cod on a spit of land between Buzzards Bay on the one side and Vineyard Sound on the other. It is a research and collecting institute joined by strong ties to departments of zoology in many of the country's leading universities. Its importance to medicine lies in its fundamental contribution to an allied science and in the not inconsiderable number of physicians who have received early biologic training in this laboratory. Professor Lillie has been closely connected with the laboratory since its earliest days, and it is both fortunate and appropriate that he should be the author of this welcome history of its scientific and economic development.

**Leukopenia and Agranulocytosis** By William Dameshek M.D. Clinical Professor of Medicine Tufts College Medical School Boston Edited by Henry A. Christian M.D. M.D. LL.D. Clinical Professor of Medicine Tufts College Medical School [Reprinted from Oxford Loose Leaf Medicine with the Same Page Numbers as in That Work] Cloth Price \$17.50 Pp 841 852 New York London & Toronto Oxford University Press 1944

This monograph summarizes the present knowledge of conditions in which the leukocyte count is decreased. The material is timely for as Dr. Christian says in the preface, "interest in leukopenia and agranulocytosis has been increased markedly in the present period because not infrequently both appear as toxic manifestations of the therapeutic use of sulfonamide drugs. The subject matter is well arranged and presented, and the bibliography of 152 references is selected from the rather extensive literature on the subject. Of especial value are the sections on etiologic factors and on treatment.



## Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

### MORTALITY OF BREAST AND BOTTLE FED INFANTS

To the Editor—Can you give me information on the proportion of women who can nurse their babies? Most physicians now seem to advise bottle feeding as at least equally desirable. What is the comparative mortality at breast and bottle fed babies?

Mabel D. Murphy M.D. Glendale Calif.

ANSWER—Sanford (Various Complementary Feedings Used During the Neonatal Period *THE JOURNAL*, Aug 5, 1939, p 470) in a study of 4,622 infants during the newborn period found that 14 per cent of the mothers were unable to nurse their babies. 30 per cent required some complementary feeding and 56 per cent were able to give their babies sufficient breast milk by the end of the tenth day of life. Statistics on the mortality of breast and bottle fed babies are open to criticism unless they represent the same group and environment and are large enough and cover a long enough period of time to make a fair comparison. In the Infant Welfare Society of Chicago from 1924 to 1929 in 20,000 babies under 1 year of age in which 91.5 per cent were completely or partially breast fed and 8.5 per cent artificially fed, the mortality was 11 per thousand. Of this mortality 66 per cent were artificially fed, 27.2 per cent partially breast fed and 6.7 per cent completely breast fed. In the same organization in 1943, 6,702 babies under 1 year of age were cared for with approximately the same proportion of feeding. The mortality has now dropped to 4 per thousand but still of this mortality 65 per cent were artificially fed, 28 per cent partially breast fed and 7 per cent breast fed.

### DIFFERENTIAL DIAGNOSIS OF APICAL OPACITIES

To the Editor—A soldier aged 23 was hospitalized four months ago and carefully studied because of the presence of infiltrative lesions of both lung apices. Diagnosis of atypical pneumonia was finally made. The patient has now been asymptomatic for about three months. He states that he feels well and his general appearance is that of a person in good health. However there is no x-ray evidence that the lesions are either regressing or progressing. Other data are negative. Would this man be qualified for full duty or light duty or should he be hospitalized until the lung lesions have disappeared?

Lieutenant M. C. A. U. S.

ANSWER—What led to the discovery and careful study of the abnormal shadows in the lungs? Were they discovered during and after an acute sickness resembling virus pneumonia? If the soldier actually had a form of virus pneumonia the residual changes in the lungs are probably of no importance and he would be qualified for full duty. Residual shadows are common after virus pneumonia because of the interstitial location of the lesions. Nevertheless, it is unusual for changes to persist so long and in both apices. Under the circumstances mentioned, unless the acute attack was observed, it is not safe to make a diagnosis of virus pneumonia in retrospect simply because of the changes recorded, as apparently was done. The abnormality may have been present for a long time before. The roentgenogram made at the time of induction should be reviewed for comparison.

Pulmonary tuberculosis is a strong possibility as the cause of the apical densities, and the case should probably be regarded as such until proved otherwise. Further appropriate investigation along this line is advised. Virus pneumonia and pulmonary tuberculosis are sometimes difficult to differentiate, as recently discussed by Yaskalka (*Ann. Rev. Tuberc.* 49:408 [May] 1944). The management of a suspected case of tuberculosis is fully covered in Army Medical Regulations.

### GAUZE SPONGE IN ABDOMINAL SURGERY

To the Editor—Please give an opinion on the use of the small dry gauze sponge in the abdominal cavity. If intestines are held and they slip will such a sponge cause adhesions?

J. Louis Waldner M.D. Loveland Colo.

ANSWER—It is not possible to predict whether or not in any given case adhesions will form following an operation. Traumatizing the peritoneum favors formation of adhesions. If the intestine is to be held for any length of time, it would be preferable to use a wet sponge rather than a dry gauze sponge, as suggested in the query.

### HOMOSEXUALITY AND ENDOCRINE IMBALANCE

To the Editor—At one of our clinical conferences we discussed the subject of homosexuality. It was the opinion of one of the medical officers that recent work has shown an excess of estrogen in the blood, spinal fluid and urine in a large number of homosexuals of both overt and latent types. This was disputed by another medical officer who claims that recent work at Hartford, Baltimore and Philadelphia has failed to show any such findings. In view of the fact that our medical references are inadequate I take this opportunity to ask the following questions: 1. What is the latest concept concerning the estrogen content in (a) homosexuals overt type and (b) homosexuals latent type? 2. What is the latest work done on this subject where was it done and what are the findings? 3. Is the treatment of homosexuals purely a psychiatric problem, an endocrine problem or both? 4. What percentage of homosexuals do show endocrine imbalance and what type imbalance is it?

M. D. Washington

ANSWER—Surprisingly little quantitative laboratory work has been reported in the study of homosexuality from an endocrine point of view. The most recent publication is by Abraham Myerson and Rudolph Neustadt (*Bisexuality and Male Homosexuality: Their Biologic and Medical Aspects* *Clinics* 1:932 [Dec.] 1942). This article provides in addition to discussion an adequate bibliography of the other recent work. These authors agree fundamentally with the conclusions of C. A. Wright (*Al. Record* 154:60 [July 16] 1941) that the commonest pattern in the urinary excretion of male homosexuals is a relative increase in estrogenic substance and decrease in androgenic substance. This is not always an absolute increase or decrease from the normal pattern. Myerson and Neustadt state that "it becomes necessary in all endeavor to point out certain serious shortcomings in the chemical studies of urine: (1) Urine is an excretion and therefore, cannot adequately measure endocrine activity; (2) the methods are imperfect and for example do not measure testosterone but only its breakdown products; (3) inert chemical substances, so far as sexual activity is concerned participate in the color reactions, and so some falsification of the values occurs; (4) the patients do not live under standard experimental conditions. Nevertheless and despite all these shortcomings certain clinical facts are correlated to the urinary findings in definite ways so that diagnostic facts of importance emerge.

It should be noted that the conclusions of Wright and his group have been vigorously challenged by A. C. Kinsey (*Homosexuality: Criteria for a Hormonal Explanation of the Homosexual*, *J. Clin. Endocrinol.* 1:424 [May] 1941). The objections raised are on the basis of inadequate grounds for statistical conclusions by the authors. Kinsey produces evidence of a frequent homosexual tendency among males who also have heterosexual interests and capacities but contributes no further information about the hormone picture.

It is manifestly too soon in the process of endocrine study of this field to answer the question about the percentage of homosexuals who show endocrine disturbance, let alone to decide how frequently homosexuality is an endocrine, how frequently a psychiatric, problem. Myerson and Neustadt feel that they see evidence of endocrine disturbance in 53 per cent of all cases of overt male homosexuality examined as compared to a similar endocrine disturbance in not more than 25 per cent of other cases studied. They are unable to come to any conclusion as to which is primary—the psychologic or the endocrine disturbance.

### PSORIASIS

To the Editor—For several years I have had moderate psoriasis at times it is clear and again it becomes severe. It is worse at present on the scalp and the arms and legs. Exposure to sunlight less effectively to ultraviolet radiation daily for thirty days practically eliminates the psoriasis. However it is impossible for me to do that being so busy. Have large doses of vitamin D by mouth given equivalent results to those obtained by daily exposure to sunshine? Would it be advisable to take the oily vitamin since most patients with psoriasis have a high cholesterol? Would the oil increase the cholesterol? The studies on lipocain which were demonstrated at the session of the American Medical Association in Cleveland were encouraging but I have seen no reports on that since lipocain is available to the general practitioner as yet? What suggestions can be offered for the treatment of this stubborn disease?

M. D. Iowa

ANSWER—Cedar and Zon (*Treatment of Psoriasis with Massive Doses of Crystalline Vitamin D and Irradiated Ergosterol* *Pub. Health Rep.* 52:1580 [Nov. 5] 1937) treated 15 patients with psoriasis, all between 30 and 50 years of age and all with old psoriasis resistant to treatment. They were given pure crystalline vitamin D in sesame oil 50,000 units to the capsule containing 5 minims (0.3 cc) of sesame oil six capsules per day. These were taken between meals to avoid any augmentation of their action by milk products in the diet as suggested by Lewis (*J. Pediatr.* 8:308 [March] 1936). Of these patients 11 were cleared of lesions in from six to twelve weeks of treatment. The blood calcium was estimated at intervals and was

seen to increase slowly in all but 1 case. It reached 12 mg per hundred cubic centimeters in some and up to 16 mg per hundred cubic centimeters in other. Three untoward reactions were seen in the tenth to the twelfth week of treatment: anorexia, nausea and urinary frequency. These reactions occurred after the lesions of the skin had cleared and they disappeared on cessation of treatment. Patients with calcified pulmonary tuberculosis as evidenced by roentgen examination were excluded from this group to avoid possibility of absorption of the protective calcium. Six patients had mild recurrences in from eight weeks to five months after treatment had been stopped. One of these responded to a second and again to a third course of treatment for eight to ten weeks. Four other cases had remained clear of lesions three to eight months after the end of the treatment.

Neither vitamin D nor lipocain can produce results to equal those of actinotherapy in the treatment of psoriasis. Most dermatologists get better results from the Goeckerman treatment than from any other one method. O'Leary (Goeckerman Method of Treating Psoriasis *Canad W A J* 48:34 [Jan] 1943) describes it in detail as practiced in the place of its origin. The ointment consisting of

|                    | Gm or Gc |
|--------------------|----------|
| Crude coal tar     | 20 to 40 |
| Zinc oxide         | 20       |
| Corn starch        | 500      |
| Petrolatum to make | 1000     |

is applied thickly and a suit of cheap underwear is worn over it. Once a day the ointment is removed except for a thin film and the ultraviolet light given through this film enough to cause a slight erythema. The dose is increased daily to maintain the erythema without causing blisters. Then the patient spends one half to two hours in a bath at 95 F. After this the ointment is again applied. Every other day autohemotherapy is given the series ending with the fifth treatment. On the scalp in place of the coal tar ointment one containing 5 per cent ammoniated mercury and salicylic acid is used. This course of treatment necessitates a stay in the hospital for two weeks. Most dermatologists find the hospital treatment hard to sell to their patients who prefer a longer course of milder treatment compatible with continued work. Keim's modification calls for application of a 2 to 10 per cent crude coal tar in ethyl alcohol emulsion base before retiring and in the morning a tar bath. At the doctor's office undiluted solution of coal tar is painted on each lesion before the ultraviolet treatment is given.

#### HARRIS DRIP PROCTOCLYSIS—GAS PAINS

To the Editor—What is the present status of the Harris drip used post-operatively? Does it reduce distention? How much water is absorbed by this method in twenty-four hours? Does it produce peristalsis in the small intestine? If it does is not this harmful in the presence of peritonitis? What are gas pains? Can you tell me when the original paper on this method was published? Frances B. Doyle M.D. Brooklyn

ANSWER—The Harris drip unlike the continuous drip proctoclysis first introduced by the late Dr. John B. Murphy, has never been adopted extensively by the profession and many experienced surgeons and clinicians are unfamiliar with it. The available literature on this method is conspicuous by its extreme paucity. In the light of current methods of preoperative preparation and postoperative treatment its present status must be considered as obsolete in large measure. There are no available recorded observations on the influence of the Harris drip on distention or on its influence on peristalsis in the small bowel. The late Joseph Blake of New York in a discussion of the postoperative treatment of infective peritonitis (Nelson Loose Leaf Surgery 5, pp 22-23) regarded the Harris method as superior at that time.

There appear to have been few authoritative experimental or clinical observations with respect to the factors underlying the production of gas pains. Such gas pains have been attributed to a variety of causes including preoperative or postoperative purging, the excessive use of opiates, the nature of the anesthetic, rough handling of tissues during operation, too early or too late feedings and the like. A conventional discussion of the subject is found in Cuttings' Principles of Preoperative and Postoperative Treatment (New York: Paul B. Hoeber Inc. 1932, pp 311-342). However, Mendes Ferreira's roentgenologic observations on human subjects (*Proc Staff Meet Mayo Clin* 13:222 [April 6] 1938) greatly discount the importance of gas in the genesis of postoperative abdominal pains so that the expression gas pains is in all probability a misnomer. No reference has been found to any published original paper on the Harris method.

#### INDUSTRIAL EXPOSURE TO MERCURIOS CHLORIDE

To the Editor—A problem has arisen in a drug manufacturing business. The main product is a venereal disease prophylactic. The women who fill the tubes and clip wipe and pack them naturally get calomel ointment (33½ per cent) on their hands but they are instructed to wash their hands well with soap and warm water using a brush at noon and again before leaving for home in the evening. Until recently no employee has complained of mercurial poisoning. One employee after six weeks of this work was confined to bed for ten days complaining of pains in various joints especially the knees, ankles and spine. She also had diarrhea but no soreness of the gums. At the time of her illness she had just completed a course of eight injections twice weekly of synodal. Another employee about 45 years of age after three weeks work complained of stiffness and pains in the joints especially in the legs but no soreness of the gums or diarrhea. I insisted that these 2 women were not suffering from mercurial poisoning because of the lack of typical symptoms of mercurial poisoning: their careful personal hygiene, the lack of abrasions on the hands, the shortness of time of employment and the fact that there have been no other cases among many employees since 1921.

R. M. Nicholson M.D. Los Angeles

ANSWER—The manifestations reported do not suggest mercury poisoning. Joint pains and diarrhea are sometimes present in mercury poisoning but not as the most characteristic features. On the other hand, the absence of stomatitis and gingivitis by no means rules out mercury poisoning since their absence is frequent. Mercurous chloride is so insoluble that neither mercury dermatitis nor systemic involvement often occurs. Trivial absorption through the skin may take place, but absorption from the lungs after inhalation of mercurous chloride dust has been denied. In pharmaceutical houses many thousands of man days have been devoted to the manipulation of this substance without the causation of mercury poisoning. One large manufacturer reports that over a period of years not a single instance of either mercury dermatitis or systemic poisoning from mercurous chloride has appeared among the workers handling this substance.

Even after intramuscular injection of calomel as in the treatment of syphilis absorption is not certain. Andrews states that the insoluble salts such as calomel are so slowly and irregularly absorbed that their use is attended by hazards of prolonged ineffectiveness due to failure of absorption or prolonged over dosage due to tardy absorption. Directly in contact with the skin mercurous chloride infrequently causes skin pigmentation which may be persistent.

It appears to be true that when mercury poisoning arises from mercurous chloride, in most instances, some fortuitous event has led to the transformation to the mercuric state. A wide variety of chemicals effect this change but such chemicals are not likely to be on hand under the circumstances of the operations mentioned in this query. On a theoretical basis, long exposure of calomel to sunlight may change the state of calomel to mercury bichloride, as may also long continued elutriation.

In this instance mercury poisoning is regarded as improbable from the information furnished, but various steps might be utilized to eliminate uncertainty. Quantitative determination of mercury should be made on both urine and blood. However such determinations do not represent simple laboratory tests. The quantity of mercury in the atmosphere, should atmospheric mercury be suspected, may be measured through the use of the General Electric mercury detector. Most important of all thorough clinical examinations should be carried out, following the procedures indicated in United States Public Health Service Bulletin 263, published in 1941 and entitled "Mercurialism and Its Control in the Felt-Hat Industry."

#### ESTROGENIC HORMONE THERAPY AND CANCER

To the Editor—Has it been proved that overuse of estrogenic substances might induce cancer? I have been using 15 cc five times monthly of the 10,000 international units. Is this correct or overuse?

Louis L. Sherman M.D. Oakland Calif

ANSWER—Estrogenic substances may induce cancer in animals. There are records of cases in man which suggest that tumor formation has followed estrogenic therapy. However the true dangers have not been definitely outlined; they have merely been suggested, so that all who use estrogenic therapy should do so with caution. Regarding the prescribed dosage it is difficult to say whether this represents overuse without knowing how long it has been continued and under what conditions. New and Nonofficial Remedies suggests a dosage for estrogenic substances of from 2,000 to 20,000 international units injected one or more times weekly, depending on the response of the patient. After relief has been produced, dosage should be lowered to a maintenance level. Dosage varies for other conditions such as kraurosis vulvae and gonorrheal vaginitis in children.

# The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL 126, No 10

CHICAGO, ILLINOIS  
COPYRIGHT 1944 BY AMERICAN MEDICAL ASSOCIATION

NOVEMBER 4, 1944

## THE RADIOLOGIC ASPECT OF THE UROLOGIC PROBLEM

CHAIRMAN'S ADDRESS

ROBERT A. ARENS, MD

Director, X-Ray Department, Michael Reese Hospital

CHICAGO

A decade and a half ago, intravenous or excretory urography was introduced by Swick<sup>1</sup> and von Lichtenberg,<sup>2</sup> who simultaneously published the results of their investigations with iopax (uroselectan) and its action with reference to the urinary tract in the *Klinische Wochenschrift* in November 1929. This work received confirmation from Heritage and Ward<sup>3</sup> early in 1930 in England and was soon further confirmed in this country by a host of investigators. The value of the procedure was quickly recognized and it was promptly adopted as a routine examination. The usual difficulty of obtaining an adequate source of supply of the necessary drug was rapidly overcome. From an initial dose intravenously given, of 300 cc administered by using six 50 cc syringes or by buret, our chemical confreres shortly were able to develop a satisfactory solution so concentrated that it could be put up in 20 cc sterile ampules making the method available to the profession at large. The success of the method depended on the excretion of an iodine fast radical with the urine, from the kidneys. This made it possible to outline the urinary tract since the iodine radical gave a density to the excreted urine almost comparable to retrograde pyelographic mediums. At first the iodine content was not sufficient to cast entirely satisfactory shadows, but today, with intravenous solutions available with an iodine content of from 40 to 70 per cent very satisfactory results are produced.

The method of making this examination is now too well known to warrant a detailed explanation. Let it suffice to say that it is simple and safe if a few precautions are observed. Our standard routine is to start with a scout film or a KUB film. The patient is thoroughly purged the evening before and the intravenous injection is made the following morning without breakfast. We feel that purging is exceedingly important, for an intestinal tract full of food or feces can well interfere with proper visualization of even large calcific stones in the kidney, ureter or bladder. This was again impressed on us recently when a scout or

survey film taken just prior to an intended examination showed a large stone in the left ureter, but because of intestinal contents small stones in the lower calyx of each kidney were not visualized. (This patient was not prepared.) Fortunately, since we make it a routine practice never to proceed beyond the scout film examination unless we feel that the entire urinary tract is satisfactorily visualized, these stones were revealed without difficulty in another KUB film after adequate preparation. After a satisfactory scout film has been obtained, our routine consists of roentgenograms made at five, fifteen and thirty minutes. We feel however, that each case is a law unto itself and therefore each film is checked after development and the routine changed accordingly, if necessary with exposures made at varying intervals even up to twenty-four hours. Routine is maintained only in cases which are obviously normal.

The method is not without its difficulties and hazards. Severe reactions have been encountered after injection of the medium with a few fatalities patients who died apparently as a direct result of the intravenous injection. Pendergrass reported a series of twenty-six deaths out of approximately 661,800 cases, in addition to 11 previously reported. However, an analysis of his survey would indicate that only ten of these twenty-six deaths occurred directly as a result of the procedure. It is true that the other 16 patients had had an excretory urography done, but the statistics would indicate that they undoubtedly died from some other concurrent condition rather than that their deaths were due per se to the method. Pendergrass's figures show that in his series of cases including the entire 26, only 0.0039 per cent showed a lethal reaction. If one can eliminate sixteen of the deaths classified as delayed, in which there is a question as to the cause of death being the intravenous medium, then the actual figures are exceedingly low, somewhere in the neighborhood of 0.0014 per cent instead of 0.0039 per cent as claimed. Other reactions are fairly common, such as flushing, nausea, urticaria, itching, venospasm, pain in the shoulder, sense of constriction in the pharynx, phlebitis and cerebral irritation. Hypersensitivity simulating anaphylactic shock may also be present. It appears from the literature and from personal contact with radiologists, that the present methods of preexamination sensitivity tests such as making an intradermal mouth or conjunctival test regardless of whether they are negative or positive, are not satisfactory criteria as to whether the patient will or will not react to the application of the drug. It is my understanding that the reactions which have occurred have been due more to extraneous material contained in the glass ampules than to the solutions per se and this has now been rectified. I agree entirely with the suggestion of Pendergrass that in each room where the urographic study is to be made a try should

Read before the Section on Radiology at the Ninety-Fourth Annual Session of the American Medical Association, Chicago, June 15, 1944.

<sup>1</sup> Swick M. Darstellung der Niere und Harnwege im Röntgenbild durch intravenöse Einbringung eines neuen Kontraststoffes des Uroelectans. *Klin. Wochenschr.* S 2087, 1929.

<sup>2</sup> von Lichtenberg A. and Swick M. Klinische Prüfung des Uroelectans. *Klin. Wochenschr.* S 2089, 1929.

<sup>3</sup> Heritage K. and Ward R. O. Excretion Urography. *Brit. M. J.* 1-14, 1930.

be available containing epinephrine 1:1,000, atropine sulfate, caffeine with sodium benzoate and sterile hypodermic syringes for immediate use if necessary. It seems, however, that in the past several years while reactions more or less severe have occurred, no lethal sequelae have been reported.

The method appears to be a safe one, barring unforeseen allergic or chemical reactions, which might apply to any medication or preparation given intravenously.

Due consideration must be given to contraindications, and extreme care must be employed in using contrast mediums for patients with "severe liver disorders, nephritis exudative diathesis and severe uremia".<sup>4</sup> Also the method should be used with caution for patients with pulmonary tuberculosis, hyperthyroidism or hypertension and for patients with a history of allergy.

The usefulness of excretory urography is immediately apparent when one considers the cases in which a study of the urinary tract is indicated but the passage of the cystoscope or of shadowgraph catheters is impossible, contraindicated or undesirable. The value of excretion urography was immediately realized. Here we had a method particularly adaptable in those cases in which we were dealing with pin point ureteral orifices, many times impossible to locate in the bladder, or, having passed a catheter, to meet suddenly an apparent ureteral obstruction, finding it impossible to pass the catheter up into the renal pelvis. Another group of cases which give the urologist difficulty in retrograde pyelography are those of ureteral stricture, a small urethral meatus, prostatic hypertrophy, severe bladder hemorrhage or fistula in which ureteral catheterization is impossible or contraindicated. Without excretory urography it is almost impossible to determine the presence of certain genitourinary diseases or anomalies in young children and infants. While I feel today that bilateral simultaneous retrograde pyelography is a safe procedure especially when using the same contrast medium that is injected intravenously, many urologists still hesitate to make this type of examination. Many radiologists still hesitate to make this type of examination and consequently fail to examine the opposite apparently normal kidney. It is good, sound practice to visualize the unsuspected kidney whenever possible, but to obtain information relative thereto necessitates a second catheterization, which is not always desirable. Excretory urography may supply this information. In woman, pressure on the bladder by an enlarged uterus due to fibroids, pregnancy or the like, or pressure from altered pelvic adnexa makes it difficult or impossible to pass a shadowgraph catheter, and here again excretory urography may prove to be a very satisfactory method of determining the status of the urinary tract.

Those conditions which have been well shown in a characteristic manner by excretory urography include the positive findings of pyonephrosis, hydronephrosis, ureteropelvic kinks with obstruction due to aberrant vessels or adhesions at the ureteropelvic junction with obstruction anywhere in the ureter, renal tuberculosis, polycystic kidney, traumatic kidney, congenital absence of a kidney, ectopic kidney, neoplasm, horseshoe kidney, double renal pelvis, double ureters, radiolucent calculi in either the kidney, ureter or bladder, ureteral polyp,

hypernephroma, anomalies, carcinoma of the bladder or tuberculosis of the bladder. Excretory urography, however, is not entirely a substitute for retrograde catheterization with pyelography, but there are many occasions on which it elicits certain information obtainable in no other way. Many cases in which cystoscopy and the passage of shadowgraph catheters are contraindicated can be easily handled by the new method, and information can be gleaned that would otherwise be impossible to secure. On the other hand, intravenous pyelography alone is often sufficient and, in addition, gives a good idea of renal function.

An important diagnostic factor, not commonly considered, is the differential diagnosis of shadows in the right upper quadrant, especially between gallstones and renal calculi. These stones often simulate one another in their structure and density. When this occurs, proper rotation films following excretory urography may differentiate one from the other. If there is a gallstone present it is invariably possible to rotate this shadow entirely out of and away from the kidney contour, thereby definitely ruling it out as a renal calculus.

It is of the utmost importance that the radiologist and the urologist collaborate to the fullest possible degree to obtain the best results from excretory urography. It is only by close team work between the two that the best interests of the patient are conserved, and the closer the liaison the more the value of the procedure. The radiologist should have at his command the history and the laboratory findings and in the light of these latter, many times he may suggest additional films, under different conditions, the nature of which he has learned through his appreciation of the reaction of normal renal anatomic and gross pathologic conditions of the urinary system, when subjected to the influences of opaque mediums.

#### SUMMARY

It may be of value to call attention to a few fundamental maxims of urinary tract examination which it might be well to bear in mind.

1 Proper and adequate preparation of the gastrointestinal tract is an essential prerequisite to satisfactory roentgenograms of the urinary tract.

2 An ideal roentgenogram of the urinary tract is one which shows the detail, including the kidney outlines.

3 The kidneys are too often obscured by material in the gastrointestinal tract which may be so dense as completely to vitiate stone shadows.

4 Failure to visualize a urinary calculus (KUB films) does not signify that a stone may not be present. There are radiolucent calculi that cast no shadow.

5 Even a large calcific ureteral stone may not register a shadow on the film when it lies over the ala of the sacrum. Even large calculi in this location have been missed.

6 A scout film of the urinary tract is usually only the first step in a proper x-ray examination.

7 There is no controversy between excretory urography and retrograde pyelography. Either one or the other with a scout film or all three combined, may be necessary before a satisfactory result can be obtained.

8 It is as important to visualize the normal renal pelvis as the pelvis of the suspected kidney.

<sup>4</sup> Pendergrass, E. P., Chamberlain, G. W., Godfrey, E. W., and Burdick, E. D.: A Survey of Deaths and Unfavorable Sequelae Following the Administration of Contrast Media. *Am. J. Roentgenol.* 48: 754 (Dec.) 1942.

9 The use of modern intravenous pyelographic mediums for bilateral simultaneous retrograde pyelography has made the procedure a safe one

10 A suspect stone shadow, apparently in contact with a shadowgraph catheter, may prove to be outside the ureter or kidney, when rotation films are made

11 Do not judge stone shadows in the right upper quadrant and within the kidney outline too hastily. They may prove to be gallstones

12 Lack of excretion (excretory urography) from one kidney does not necessarily mean a "dead kidney." A small stone in the ureter may produce a calculous anuria even though the stone may not be visualized. It has been noted that renal function has been restored within five minutes after a ureteral calculus has been passed into the bladder

With reasonable precaution excretory urography, in experienced and competent hands, is a safe and valuable procedure and one which frequently gives information obtainable in no other way

2839 Ellis Avenue

## THE MEDICAL DIRECTION OF HUMAN DRIVES IN WAR AND PEACE

MAJOR GENERAL DAVID N W GRANT

The Air Surgeon  
WASHINGTON, D C

The greatest challenge which faces the medical profession today, in my opinion, is the physical and psychologic rehabilitation of the returning war veteran as a member of his community

Three years ago the medical profession was called on to mobilize its ranks for service in the armed forces. We did so. How well we met that challenge is being demonstrated in the high quality of medical service we are delivering every day on every front. This was a second challenge—the performance of our mission as doctors at war—and we shall continue to accept it and concentrate our energies on war medicine until the last wound is healed

In the Army Air Forces, however, we have accepted rehabilitation, psychologic as well as physical, as a function of war medicine. Our Convalescent Training Program has proved that this task should begin as soon as the soldier is hospitalized and should continue without interruption until he is able, and knows he is able, to resume a useful life as a soldier or a civilian. Our success in this direction, which places the primary responsibility for rehabilitation within the military organization, has demonstrated that the over-all problem of human reconversion—the task of converting soldiers back to citizens—is not waiting an end of war. They are returning in thousands from the beachheads of Salerno, Anzio, Tarawa, Normandy and Saipan and from the airdromes of England, Italy, Burma and the Pacific. For many of these sick and wounded the war is already over. This current situation may be regarded as a pilot run on the immense rehabilitation project to come when millions of war veterans are restored to civilian environment

By this I do not mean that millions will be disabled. The physically handicapped will be numerous, too

numerous, unfortunately. The job of physical restoration and mental readjustment of the physically disabled is clearcut. It is being tackled in an organized and effective manner by the Army, the Navy, the Veterans Administration, the American Medical Association and the many civilian and government agencies associated in the Baruch Committee on Physical Medicine

### THE PROBLEM OF REHABILITATION

My point is that in comparison to those with outright disabilities, a far greater proportion of our returning war veterans will be able bodied but psychologically different from the civilians who left their communities to enter military service two, three or four years before. They have different attitudes, different feelings, different emotions, different drives, and they present a problem of rehabilitation which is complicated and obscure. The nature of their problem is difficult to understand and complex in its solution. While these differences in behavior fall within the field of psychiatry, they do not apply merely to the neuropsychiatric casualty—the case of frank war neurosis, or operational fatigue—as it is known in the AAF. More specifically, I am speaking of the war veteran who would be classed as normal by any ordinary physical or mental standard but whose attitudes and drives have been altered by the impact of war

From the time he was inducted, this man's foremost desire has been to get home again. He craves it through the rigors of training and the terrors of battle. He is nonetheless loyal and he fights nonetheless well because of his human yearning to go home. But when he goes, when he is again among his relatives and his friends in his home town, he may be engulfed with the feeling that everything is changed, that he somehow has been cheated. He feels disappointed, disillusioned, depressed and dissatisfied. He may be tense and restless and even wish he was back in combat. His lost feeling may express itself in an attitude of resentment and hostility toward the people and the community he loves. He may come to feel more like a victim of these people than their hero

What has happened to this man is not hard to understand. It has received some public attention, but the story needs to be made a part of a national educational campaign. Such a program must start with the elimination of the widespread misunderstanding which exists in the mind of some physicians as well as the general public as to the significance of terms like "psycho-neurosis" and "neuropsychiatric casualty" and as to the nature of military psychiatry. In the first place for most of us physicians the methods of psychiatry seem mysterious, esoteric and incomprehensible. Where other medical specialists may see and palpate the hernia by physical examination, find a kidney stone or an ulcer by reading an x-ray film or identify typhoid by a bacteriologic test, the psychiatrist can diagnose a functional disturbance of the central nervous system only by a qualitative analysis of changes in the patient's behavior and personality. While to most of us this interpretation of illness from actions and reactions seems an intangible way of making a medical diagnosis, you will see, if you think about it, that it is a social practice in which we indulge every day. Constantly we are judging one another by the deviations of the subject's conduct from the conventional. We reach glib conclusions that Joe is "a crazy guy" or Jack "acts funny."



But we accept them and maybe even admire them. We excuse the man who has a spell of being crabby, jittery, seclusive, bellicose or eccentric as being somehow different than usual and let it go at that. But if Joe or Jack goes to a psychiatrist we may change our minds, because psychiatrists are commonly identified with the treatment of the mentally disordered and unbalanced, and we think that any one who needs a psychiatrist must be pretty badly off. All of us, of course, have an instinctive distrust and aversion for the insane. Actually, the psychiatrist probably agrees with us that Joe or Jack "acts funny," but he calls it a psychoneurosis or functional nervous disorder which to him doesn't even imply a psychosis or insanity. But the damage is done because the person is in the hands of a psychiatrist, and Joe or Jack is tagged with a name which the American public has come to think of in terms of weakness.

This impression makes it difficult for the public to believe that soldiers who have been labeled as "NP"—or neuropsychiatric—are no different from other people who get the jitters or become upset in difficult and harassing situations. By any working standard these men were accepted as normal in their communities which is the environment to which they usually are best adapted. Even those who were rejected for military service at the outset on neuropsychiatric grounds tend to fall within normal standards as far as their civilian environment was concerned. In it they were capable of making good social and occupational adjustments but in a military environment of discipline, regimentation, insecurity and hardship they did not look like good fits. Outside of the comparatively small group of soldiers who were psychoneurotic or less frequently psychotic but were able to get by the induction examination the war psychiatrist is dealing with a normal person in an abnormal environment.

This is the message that the physician, the relatives, the friends, the employer and the community of the war veteran should hear. Whether he is labeled a neuropsychiatric casualty or is discharged for some other reason or is merely home on leave, any differences in his behavior probably comprise a hangover from his normal reactions to an abnormal way of living—and dying.

What war has done is to call on this individual to accept the abnormal idea that self preservation is less important than self sacrifice—that there is a distinction between killing a man in peacetime and killing him in war. Conditioned throughout his formative years to seek security and comfort to love peace and freedom, the raw recruit is quickly and brutally exposed to a system which, first in training and then in combat, subordinates his personal security to that of the group, continually replaces comfort with hardship and strain, offers him peace only as the distant reward for making war, and demeans that freedom is preferable to authoritarian discipline and regulation.

It is difficult for the individual to adapt himself to this military deflation of his ego, to this superimposition of the group ego on and frequently against, his will. All men are alike in that they have feelings and in that these feelings may run into emotional conflict with other feelings which are equally acceptable. In our fliers we have observed a number of basic conflicts. The most obvious is that of the fear of destruction conflicting with the compulsion to fight. The individual's instinct says flee, but the will of the group says fight. There

is the very real conflict between one's sense of duty, or patriotism and one's worries over one's wife and child. There is the conflict in the desire to stick by your friends in the squadron when your ego tells you to "save yourself." And there are conflicts arising from a feeling that your friend in the ball turret or in the wing position was killed because of some personal failing on your part. One of the most interesting conflicts observed in our fliers has nothing to do with the man's peacetime conditioning but with his complete acceptance of flight as a normal environment. He loves to fly. He is the "natural," and you will hear him say "Doc, I'd rather fly than eat." He means it. The airplane gives him a lift spiritually as well as aerodynamically. To get up there in the sky and look down on the earth inspires in him a sense of majestic freedom, a kinship with the gods. But a conflict arises from his discovery that as the result of combat flying the thing he loves seems bent on destroying him.

Can these soldiers who have faced tensions and stresses far beyond any peacetime demand on their organism be regarded as mentally suspect because they carry the anxieties they have developed in combat back home with them? You know the answer is no. They have reacted normally to an essentially inhuman environment and in most cases have made remarkably good adjustments to their military environment up to a point where no man could be expected to endure much more. They are not failures because they may have developed certain symptoms of anxiety. Each man has his individual tolerance point for military stress. The basic soldier, uprooted from the local environment and transplanted in the training camp, may not be able to make the adjustment. The flier, who has made every adjustment from the original load imposed on him in the aviation cadet center throughout the two years it takes him to complete his flight training, in a few instances may not be able to make the final adjustment to combat flying.

But the great majority of them do, and they fly their missions twenty-five, fifty or more, carrying their anxieties into battle and out again. They are the strong and the successful. But when they have completed their tour of duty and returned to the United States, they bring their differences in behavior with them.

These men have been poured into a mold, the mold of war, and to remove them from it requires adjustments as profound as those they were forced to make when they changed from civilian to military environment. They present all degrees of difficulty in adjusting to the peaceful, prosaic and trivial circumstances of home life after learning to live in a fighting group which so orders their life that it can give all or take all with one word from one commander. One man, flexible, resilient, may come home, take his wife on a fishing trip and settle down to being "good old Bill" again without so much as a harsh word. Things are different, but he can "sweat" anything out. Another highstrung race horse of a man perhaps finds that the releases he found in combat are boiling over in hostility toward his mother's solicitation or in a desire to punch the nose of every civilian he sees on the street.

There will be every gradation in the changes which war has wrought in the behavior of these men, because of the differences in their drives, their conditioning, their physiology and their attitudes. Any man forced to conform to an environment in which he does not fit well develops nervous tension and therefore psycho-



neurotic symptoms. The greater the incompatibility between his personality and the environmental stresses the greater the tension and the more severe his symptoms. The longer the stresses are continued the more worn out he becomes from the tension.

The individual's personality can be described as having the characteristics of the curved leaf in a spring such as found in an automobile. If the spring is forced to conform to a curve either greater or less than that to which it was molded, the spring is under tension. The greater the discrepancy from the natural curve the greater the tension and the more the steel is fatigued.

Like the various leaves in the spring, each individual has his own curve and will have to be bent in varying amounts to fit in the curve of tension imposed by combat. If the tension has been sufficient to fatigue his personality, he may be slow to spring back to the shape in which his original environment molded him.

This is the challenge we face each time a war veteran returns home—to see that he has full opportunity to spring back to his original personality curve. Given a little time and a little help most of them will. The original curve of that spring is strong, and removal of abnormal stress and tension is curative in most cases. But the changes from an environment of tension to one of relaxation is a radical one and in instances in which the fatigue of the personality has been great, special help must be given in making the adjustment.

What we are dealing with is the problem of fitting individuals into groups—individuals who express themselves in some sort of work—groups designed to produce in some fairly specific manner. Perhaps at first glance this does not seem like a medical problem. In the experience of the Army Air Forces it is. The AAF Medical Service has found a direct relationship between a man's health and the group to which he is assigned. If he is not doing the right job or the group is not doing its job he tends to become unhappy and inefficient, and these characteristics may be manifested in various breakdowns in his health. If after breaking down he is not reoriented as a member of a productive group his recovery is slow and perhaps incomplete.

#### COMBAT FLYING

In dealing with the highly specialized occupation of combat flying, we have developed a program in aviation medicine which I feel introduces a new concept in medical practice or at least brings previously unrelated branches of science into a medical focus.

Our first interest in the flier is the matter of selection. Each candidate must have the physical capacity. The medical examination for flying performed by the flight surgeon emphasizes not only general mental and physical fitness but also normal function in vision, hearing, equilibrium and personality. Each man must also have the psychologic aptitude for learning to fly. Our aviation psychologists have developed the most comprehensive mass psychologic testing program in history—all for the purpose of fitting the individual into the occupational group where he has the greatest chance of succeeding. This wartime demonstration indicates that an entire industry or even an entire nation could make progress by determining an individual's physical capacity and psychologic aptitudes and then turning him for the task for which he is best fitted.

Our second interest in the flier is the preservation of his physical and psychologic fitness to fly. A flight surgeon is assigned to each squadron. The flight surgeon through his participation in the working environment of his patients occupies a position which is rather unique in medicine, although it has some precedent both in the country doctor who was a power in his community and in the industrial surgeon, who is interested in occupational diseases and hazards. One of the flight surgeon's main interests is the prevention of operational fatigue, the occupational disease of the flier. The syndrome of operational fatigue made up of a composite of emotional and fatigue symptoms is a product of chronic tension and physical tiredness manifesting itself in a state of anxiety. It is a destroyer of individual efficiency and laterally group morale. Any contribution to morale aids in the prevention of operational fatigue and nothing contributes more to morale than good leadership. The fitness of the individual for his job depends on physical capacity and psychologic aptitude, but the fitness of a group of fit individuals depends more than anything else on the intelligence manifested by the leadership in directing the group toward the logical utilization of its abilities. It has been one of the most profound observations of the war, I think, that not only the efficiency but also the health of a group is affected by the quality of leadership. Medical officers have observed both in the Air Corps and in the Infantry that weak leadership is reflected in a high neuropsychiatric casualty rate and strong leadership in a low rate. Thus you see that treating the sick individual is secondary to the function of treating the healthy group so that its members will not become sick.

Our final interest in the flier is the restoration of his physical capacity and psychologic aptitude for productive work after he has become sick. This is the function of the AAF Convalescent Training Program. We operate five convalescent hospitals where the flier returning from combat with a physical disability or with operational fatigue may be given the special attention needed for his rehabilitation. The first objective is to salvage him for further military service for he, after all, is the man who was a success and not a failure in his military occupation. If it is not possible to rehabilitate him for resumption of flying duty, an attempt is made to retrain him for ground duty. Only as a last resort is he discharged back to civilian life. If this is necessary, every effort is made to prepare him for this change of environment.

Convalescent training is fourfold in its approach. It aims at physical reconditioning, psychiatric restoration, vocational reorientation and resocialization. If it's a job the man is worrying about we help him find a job to his liking. If he has a family problem we try to work it out with his wife. In fact, because of the husband-wife problems rising out of changes in the patient's behavior we have established orientation courses for wives of returning war veterans.

As an example of what can be done if the group makes an effort to rehabilitate its own members I will cite results obtained at one of our convalescent hospitals in a series of cases of severe operational fatigue. By severe I mean that these individuals returned from successful completion of their combat tours with such symptoms as restlessness, tension, tremor, overactivity of the sympathetic nervous sys-

tem, psychosomatic disturbances, anxiety states phobias, depression, guilt reactions, inability to concentrate, mental confusion, weight loss, insomnia, battle dreams irritability, startle reactions, loss of appetite or aggressive impulses. All were in need of psychiatric treatment in addition to rest, physical reconditioning and general reorientation. The results among officer flying personnel was restoration of 61 per cent to full flying duty, 8 per cent to limited flying duty and 27 per cent to ground duty. This made a total of 96 per cent rehabilitated in military service. Owing to less incentive the full flying duty restorations among the enlisted flying personnel were much lower. 28 per cent. An additional 6 per cent were restored to limited flying duty and 48 per cent sent back to ground duty, making a total of 82 per cent rehabilitated in military service.

In considering these results it should be noted that in a psychiatric case the individual's desires are an important factor in deciding whether he should fly again or not. The fact that two thirds of the flying officers and one third of the enlisted men who had suffered severely from the stresses of their combat environment are willing to go back is significant of the potentialities of a medical approach based on the relation of the individual's capacities and aptitudes to the occupational group. After all, these men had made their sacrifice, and it might be expected that none of them would care to return to an environment which had caused them distress. I believe that a great many of our fliers once the end of the war has relieved them from the abnormal tensions of combat, will realize that they are completely conditioned to a flying environment. They will then be normal men in normal environments.

#### REDIRECTION OF ENERGIES FROM WAR TO PEACE

As for the rest, we have directed the drives of these war veterans into winning a war and now face the responsibility of redirecting their energies into peace. You may feel that this war veteran is the problem of somebody else—of the psychiatrist, the psychologist, the sociologist. He is, indeed, their problem, but he is everybody's problem—the problem of his government, his community, his employer, his relatives, his friends and his doctor. No one should be better qualified by reason of scientific training and humanitarian interest than the physician to give direction to a national program which will redirect the drives of these men into socially constructive, individually satisfying channels.

The medical profession, I am convinced, has a profound opportunity stemming from the task of reorienting these men in their group. This is the development of a new type of preventive medicine seeking to improve the individual's health and efficiency by his orientation in an intelligently directed group in which he has the aptitude and desire to work. In this field, which we may for the moment call industrial community medicine, lies the challenge of transplanting to the soil of civilian industry some of the constructive discoveries we have made in the prosecution of a technological war.

In reality, the family doctor now becomes the specialist and strangely enough his specialty has already been defined in medical terminology. He is a specialist in orthogasia, which literally means the conditioning of man to normal function and adjustment.

Headquarters Army Air Forces

## PENICILLIN IN OPHTHALMOLOGY

LIEUTENANT COLONEL JOHN E. L. KEYES

MEDICAL CORPS, ARMY OF THE UNITED STATES

After the accidental discovery by Fleming<sup>1</sup> in 1929 of the inhibitive effect of penicillium mold on staphylococci in vitro, no effort was made to apply this knowledge in a clinical way until the studies begun by Howard W. Florey and his co-workers in 1940. Since then the organic acid formed by *Penicillium notatum* and named penicillin has been extensively investigated.

Observations on the use of penicillin in the treatment of ocular diseases in man have been published by Abraham,<sup>2</sup> the Floreys,<sup>3</sup> Keefer,<sup>4</sup> Mary Florey,<sup>5</sup> Keyes,<sup>6</sup> Sorsby,<sup>7</sup> Lyons,<sup>8</sup> Griffey<sup>9</sup> and Cashell.<sup>10</sup>

Material for this communication was derived from the special penicillin research center at Bushnell General Hospital, from private communications of medical officers of the Army and from medical literature on penicillin. No effort was made to compile statistics by treating a number of similar cases with penicillin. Research, which was essentially clinical, was directed toward establishing the sphere of usefulness of penicillin as an ophthalmic drug. The information presented in this report is tentative and subject to modification as our knowledge of penicillin increases.

More than 20 bacteria clinically sensitive to penicillin have been described. The following penicillin sensitive pathogens are encountered in ocular diseases: *Streptococcus alpha*, *beta* and *gamma*, *Staphylococcus aureus* and *albus*, *Neisseria gonorrhoeae*, *Neisseria intracellulalis meningitidis*, *Neisseria catarrhalis*, *Pneumococcus*, *Corynebacterium diphtheriae* (mitis), *Clostridium welchii*, *Actinomyces bovis*, *Treponema pallidum* and diphtheroids. Grouped according to penicillin sensitivity, the most highly sensitive organisms are the (beta) hemolytic streptococci, gonococci and some strains of staphylococci. *Streptococcus viridans* (alpha), *Streptococcus anhemolyticus* (gamma) and the remaining organisms named are less sensitive. Staphylococci vary from extreme sensitivity to extreme resistance. Resistant strains are frequently found in skin and superficial wounds. Coagulase positive staphylococci are presumed pathogenic.

It has been observed by Walker<sup>11</sup> in mixed infections, in which organisms resistant to penicillin are

From the Surgical Service, Eye, Ear, Nose and Throat Section, Bushnell General Hospital.

Read in a symposium on "The Use of Penicillin in the Treatment of Diseases of the Eye, Ear, Nose and Throat" before the joint meeting of the Section on Ophthalmology and the Section on Laryngology, Otolaryngology and Rhinology at the Ninety-Fourth Annual Session of the American Medical Association, Chicago, June 16, 1944.

<sup>1</sup> Fleming, A. On the Antibacterial Action of Cultures of a Penicillium, with Special Reference to Their Use in the Isolation of B. Influenzae. *Brit J Exper Path* 10: 226 (June) 1929.

<sup>2</sup> Abraham, E. P., Chain, E., Fletcher, C. M., Gardner, A. D., Heatter, N. G., Hennings, M. A. and Florey, H. W. Further Observations on Penicillin. *Lancet* 2: 177 (Aug 16) 1941.

<sup>3</sup> Florey, H. E. and Florey, H. W. General and Local Administration of Penicillin. *Lancet* 1: 387 (March 27) 1943.

<sup>4</sup> Keefer, C. S., Blake, F. G., Marshall, E. K., Jr., Lockwood, J. S. and Wood, W. B., Jr. Penicillin in the Treatment of Infection. A Report of Five Hundred Cases. *J A M A* 122: 1217 (Aug 28) 1943.

<sup>5</sup> Florey, Mary. Penicillin. *Brit M J* 2: 656 (Nov 20) 1943. *Lancet* 2: 639 (Nov 20) 1943.

<sup>6</sup> Keyes, J. E. L. Recent Advances in Clinical Ophthalmology. *Ohio State M J* 39: 1110 (Dec) 1943.

<sup>7</sup> Sorsby, A. Ophthalmia Neonatorum. *Brit M J* 2: 723 (Dec 4) 1943.

<sup>8</sup> Lyons, C. Penicillin Therapy of Surgical Infections in the U. S. Army. A Report. *J A M A* 123: 1007 (Dec 18) 1943.

<sup>9</sup> Griffey, W. P. Penicillin in the Treatment of Gonorrheal Conjunctivitis. Report of a Case. *Arch Ophth* 31: 162 (Feb) 1944.

<sup>10</sup> Cashell, G. T. W. Treatment of Ocular Infections with Penicillin. *Brit M J* 1: 420 (March 25) 1944.

<sup>11</sup> Walker, J. M. Personal communication to the author.

present with organisms sensitive to penicillin that the destruction of the sensitive bacteria by penicillin aided in the healing process if the sensitive bacteria were virulent pathogens. If the resistant bacteria were responsible for the virulence of the infection, penicillin therapy was less beneficial.

#### APPRAISAL OF PENICILLIN

Great care has to be exercised in appraising the efficacy of penicillin in a given ocular infection. The unavoidable error of clinical observation is high. Many ocular diseases are self limiting. Any therapeutic agent employed in such a disease may be credited erroneously with expediting recovery or causing a cure. Two illustrative cases are described.

A case of acute bilateral conjunctivitis secondary to nonhemolytic *Staphylococcus albus* and Koch-Weeks bacillus was treated by instillations of penicillin 1,000 units per cubic centimeter in one eye and 3 per cent solution of sodium sulfathiazole in the second eye. Negative cultures and a clinical cure were obtained in seven days. The staphylococcus was sensitive to both drugs, the Koch-Weeks bacillus was resistant to both drugs. A second case of bilateral acute conjunctivitis secondary to hemolytic *Staphylococcus albus*, coagulase negative, was treated in a similar manner. Conjunctival cultures were negative in four days, and clinical recovery was achieved in nine days. The result in these 2 cases of acute conjunctivitis offered little choice between the use of penicillin and of sodium sulfathiazole. Both patients were hospitalized. Sodium sulfathiazole probably would have been the drug of choice in office practice.

Penicillin is the drug of choice in the treatment of gonorrheal ophthalmia. The Floreys<sup>3</sup> had startling success with penicillin in a case of gonococcal ophthalmia neonatorum. "The gonococcal case of ophthalmia neonatorum had shown no response to three and a half weeks' sulfapyridine and irrigation. The discharge was profuse even under quarter hourly irrigations. Penicillin (1,200 units per cubic centimeter) was dropped into the eye hourly. In twelve hours the pus had much diminished and in two days it had gone, the eyes were open and the conjunctivae white. No gonococci were seen in films made eight days later, after penicillin had been discontinued for forty-eight hours. No recurrence was reported." Sorsby<sup>7</sup> and his co-workers reported that they had cleared the conjunctiva in thirty-six hours with penicillin therapy of gonococcal ophthalmia neonatorum. Griffey<sup>9</sup> successfully treated a man aged 24 suffering from sulfonamide resistant gonorrheal ophthalmia and gonorrheal urethritis of forty-six days' duration. "Therapy consisted of intramuscular injections of 25,000 units of penicillin sodium every three hours for a total of ten injections." Cultures of *Neisseria gonorrhoeae* were grown from the eyes and the urine. Similar cultures taken after five and one-half hours' treatment were negative for gonococci. Local therapy was confined to atropine as a mydriatic. Final vision was normal bilaterally.

These results contrast favorably with those reported by Sorsby and Hoffa<sup>12</sup>. They treated 60 cases of gonorrheal ophthalmia in children with sulfonamides and reported a clinical cure in three days in 51.7 per cent of

the cases and in eight days in 90 per cent of the cases. Sulfapyridine, sulfathiazole, sulfamezathine and sulfadiazine were given internally. These results were unusually good previous to the advent of penicillin therapy.

Penicillin should be given preference also in the treatment of streptococcal and sensitive staphylococcal infections. Some strains of staphylococci are resistant to penicillin. Cross infection is a frequent occurrence. If the new organism is not sensitive to penicillin and assumes virulence, the progress of penicillin therapy will be altered unfavorably. Walker<sup>11</sup> is of the opinion that loss of virulence under treatment by a strain of staphylococci resistant to penicillin is problematic. Several chronic orthopedic cases were treated for three different periods with rest intervals. The bacteria did not become penicillin fast. He encountered one organism that became resistant under treatment.

A case of resistant *Staphylococcus aureus* infection is reported briefly.

A soldier with chronic ulcerative blepharitis, subacute conjunctivitis and pyoderma of his face was found to have hemolytic *Staphylococcus aureus* coagulase positive in cultures from lesions of the conjunctivae, eyelids and face. A solution of sodium penicillin, 1,000 Oxford units per cubic centimeter of isotonic solution of sodium chloride, was instilled into both eyes every two hours for thirty days. During this period of treatment the right eye on one occasion and the left eye on two occasions coincidental with a temporary increase in the facial infection, became acutely red and superficial marginal ulcers of the cornea developed. It was discovered that this strain of staphylococci was resistant to penicillin in concentrations of 10,000 units per cubic centimeter on a seeded nutrient agar plate. The organism was mildly sensitive to sodium sulfathiazole in 3 and 5 per cent solutions in vitro. The strength of the penicillin drops was increased to 10,000 Oxford units. The patient complained of considerable local irritation and at the end of thirty-six hours withdrawal of the treatment was contemplated. The brand of penicillin was changed and further treatment was well borne. Penicillin 10,000 units per cubic centimeter was continued every two hours for seven days. At this time conjunctival cultures from the right eye showed nine colonies of hemolytic *Staphylococcus aureus* coagulase negative, and from the left eye diphtheroid organisms. Cultures from both eyes were sterile four days later. The blepharitis had disappeared. The lower palpebral conjunctiva was mildly congested. The facial pyoderma, which had not been treated, was quiescent. The patient was referred to a dermatologist for treatment of his skin.

One month previous to treatment of his blepharitis-conjunctivitis this patient was treated with penicillin parenterally for a left mastoid infection, from which were cultured a beta hemolytic streptococcus and a nonhemolytic *Staphylococcus albus*.

The possibility of desensitization of the strain of staphylococci found in the eyelids and conjunctiva by previous penicillin therapy has to be considered, even though staphylococci were not demonstrated in the mastoid. The prolonged exposure of the nonsensitive pathogen to penicillin may have reduced its virulence, but remissions occur in this disease.

The treatment of meningococcal conjunctivitis with sulfonamide compounds, both locally and orally, has been favorably reported by Theodore and Kost<sup>13</sup>. Eight patients with this disease so treated were clinically and bacteriologically cured in not more than

<sup>12</sup> Sorsby, A. and Hoffa, Elizabeth L. The Sulfonamides in Ophthalmia Neonatorum. *Brit. M. J.* 353 (March 11) 1944.

<sup>13</sup> Theodore, F. H. and Kost, P. F. Meningococcal Conjunctivitis. *Arch. Ophthalmol.* 31: 245 (March) 1944.

five days each. Local application of penicillin could not offer much improvement on this record. Penicillin administered parenterally is not secreted in the tears or cerebrospinal fluid, therefore this method of treatment would not be applicable.

The toxin of diphtheria is not neutralized by penicillin. Diphtheria antitoxin should be administered also in the treatment of diphtheritic conjunctivitis. Penicillin is an auxiliary to other known methods of treatment of gas gangrene. Walker<sup>14</sup> reported gratifying success in several cases of actinomycosis with parenteral administration of penicillin. Mahoney<sup>14</sup> and Bloomfield<sup>15</sup> have reported sensitivity of *Treponema pallidum* to penicillin. Riba<sup>16</sup> confirmed their results with penicillin parenterally and intrathecally in cases of early syphilis and neurosyphilis. Diphtheroid organisms are seldom virulent. They are susceptible to local penicillin therapy.

#### ILLUSTRATIVE CASE REFERENCES

**Ulcerative Keratitis**—Local and systemic penicillin therapy is indicated in acute severe ulcerative keratitis in the presence of a sensitive organism. In chronic indolent corneal ulcerations, local penicillin therapy should be given a trial. Penicillin sometimes has a beneficial effect and hastens the termination of prolonged stubborn corneal ulcerations. Two illustrative cases are summarized briefly.

A white soldier aged 21 acquired an ulcerative keratitis of his left eye in March 1943 secondary to unidentified trauma. There was a diffuse central corneal opacity which stained widely

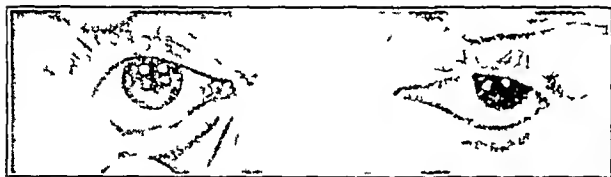


Fig 1—Chronic ulcerative blepharitis, subacute conjunctivitis and pyoderma of the face secondary to coagulase positive hemolytic *Staphylococcus aureus*. The organism was resistant to penicillin 10,000 units per cubic centimeter *in vitro*. The photograph was taken at the beginning of treatment.

with fluorescein on April 29, 1943. The eye was red and painful. The corneal ulceration progressed. Photophobia, lacrimation, headache and ocular pain were constant. The corneal epithelium would not regenerate. Conjunctival cultures showed the presence of a gram negative bacillus and a gram positive bacillus, unidentified. Vision was reduced to hand movements. Enucleation of the eye was seriously considered. Instillation of penicillin 250 units per cubic centimeter, 3 drops in the left eye every fifteen minutes for two hours and thereafter every half hour was begun on May 25. On June 4 dosage frequency was reduced to every three hours between 7 p. m. and 9 p. m. Penicillin therapy was discontinued on June 19. Twenty-four hours after treatment was instituted there was definite clinical improvement. The ciliary flush had diminished and the crater of the corneal ulcer was smaller. Forty-eight hours after treatment pain had diminished to such an extent that the patient stated he felt more comfortable than he had felt for a long time. The corneal ulcer slowly healed, forming a vascularized interstitial scar. The conjunctival cultures grew many organisms. *Staphylococcus albus*, gram positive and gram negative bacilli, diphtheroids and spore bearing bacilli were noted. There was still slight staining of the cornea on June 9. On June 16 the left eye was white, the patient was symptom-

tree and the cornea did not stain. Vision of the left eye was ability to count fingers at a distance of 1 foot. A relapse did not occur. It is reasonably certain that this eye was saved by penicillin therapy.

An officer aged 28 suffered a chemical burn of both eyes and eyelids on December 8, 1943. The left eye healed with minimal corneal opacities and vision of 20/30—2. The right



Fig 2—Patient illustrated in figure 1 one month after local treatment with penicillin 1,000 units per cubic centimeter. His blepharoconjunctivitis has improved considerably. *Staphylococcus aureus* is still present. The facial infection was not treated.

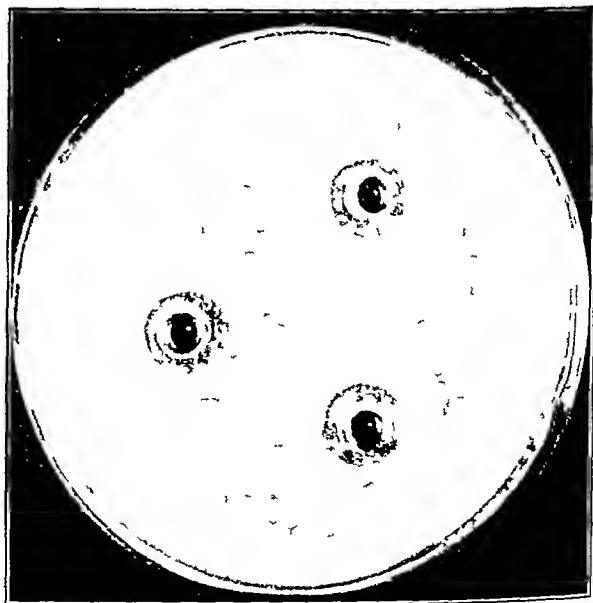


Fig 3—Nutrient agar cup plate seeded with *Staphylococcus aureus* in the same case as figures 1 and 2. The cups contained a solution of penicillin 10,000 units per cubic centimeter. The inhibition rings are minimal. Growth would have been inhibited on most of the plate with a sensitive organism.

14 Mahoney, I. F., Arnold, R. C. and Harris, A. Penicillin Treatment of Early Syphilis. A Preliminary Report. *Am. J. Pub. Health* 33: 1387 (Dec.) 1943.

15 Bloomfield, A. L., Rantz, L. A. and Kirby, W. M. M. The Clinical Use of Penicillin. *J. A. M. A.* 124: 627 (March 4) 1944.

16 Riba, L. W. Personal communication to the author.

cornea remained insensitive, with a low grade superficial ulceration, great photophobia and profuse lacrimation. A hordeolum appeared on the lower left eyelid on Feb. 29, 1944. Conjunctival

cultures revealed the presence of nonhemolytic *Staphylococcus aureus*, coagulase positive, and nonhemolytic *Staphylococcus albus*, coagulase negative. Local penicillin therapy was instituted to prevent infection of the cornea. Three drops of sodium penicillin 1,000 units per cubic centimeter was instilled hourly in the right eye. Treatment was discontinued on March 5. The hordeolum was incised and healed rapidly. The cornea did not become infected. Sensation returned to the cornea during penicillin therapy. A small indolent superficial ulcer was still present when penicillin was discontinued. The corneal ulcer did not heal, and symptoms of irritation remained. On March 17 *Staphylococcus aureus* coagulase negative was cultured from the conjunctiva. There was evidence of an acute pharyngitis and cervical adenitis. Local penicillin therapy was resumed every two hours. Atropine mydriasis was maintained. Treatment was discontinued on April 4, at which time the right cornea did not stain. Photophobia and lacrimation had diminished greatly. His right eye was more comfortable than it had been for weeks. Conjunctival cultures were negative. The right cornea stained slightly on two occasions after penicillin was discontinued. Vision was 20/30—2 in each eye on May 13.

This case illustrates the advisability of obtaining and maintaining a sterile conjunctiva in the presence of chronic corneal disease. Penicillin therapy was apparently discontinued too soon in the first instance. No other medication afforded such prompt objective and subjective relief.

**Keratitis Dendritica**—Two patients with monocular keratitis dendritica recurrent in scarred corneas were treated with penicillin locally and scopolamine mydriasis, without closing the eyes. Penicillin 1,000 units per cubic centimeter every two hours was used in both cases. Cultures in the first case were sterile. At the end of twenty days of treatment there still remained a small staining area on the cornea. A cross infection by a gram negative bacillus resembling the Koch-Weeks or influenza bacillus occurred. The remaining ulceration of the cornea was treated twice by topical application of 95 per cent alcohol, after which final healing was obtained. The second patient was infected with hemolytic *Staphylococcus aureus* and an unidentified gram negative bacillus. Penicillin therapy was terminated after twenty-three days by a relapse of malarial fever. At this time there remained a small staining area on the cornea. The cornea healed immediately after subsidence of the malarial attack. Conjunctival cultures were sterile after seven days therapy. This patient has since relapsed. The presence of a nonhemolytic *Staphylococcus albus*, coagulase negative, was demonstrated. The ulceration progressed under topical applications of alcohol. Penicillin therapy was resumed. A minimal staining area finally healed when the eye was patched. Subjective symptoms were minimal in both patients, although the pupil of the diseased eye was dilated and the eyes were unpatched. No increase occurred in previous corneal scarring. The value of the penicillin therapy was problematic. The element of the curative advantage of hospitalization cannot be overlooked.

**Chronic Blepharoconjunctivitis**—Several patients were treated locally with penicillin solution alone and combined with penicillin ointment. A staphylococcus was the chief infective agent in most instances. The majority of these patients responded promptly to treatment. A few relapses occurred. The patients were

treated again with penicillin locally with good results. One instance of complete resistance to penicillin was encountered. It is doubtful that penicillin will cure noninfected allergic conjunctivitis.

**Orbital Cellulitis**—Several cases of orbital cellulitis were seen in consultation with the ear, nose and throat section. Early and large doses of penicillin parenterally gave satisfactory results when the causative agent was sensitive to penicillin. Unless orbital cellulitis and cavernous sinus thrombosis are seen early and react favorably to heroic treatment with penicillin surgical intervention is required also. A more detailed report of this type of disease belongs to the ear, nose and throat practitioner.

**Trachoma**—Unsatisfactory results were obtained in 1 case of bilateral trachoma secondary stage, treated with penicillin 1,000 units per cubic centimeter locally every two hours for nine days. The disease progressed during treatment. Expression of the follicles with Knapp's roller forceps followed by local and systemic sulfonamide therapy brought immediate improvement.

**Penetrating Injuries**—The studies of von Sallmann and Meyer<sup>17</sup> suggest the inadequacy of local treatment by instillation of penicillin drops on the cornea and in the lower conjunctival cul-de-sac in the treatment of experimental acute suppurative intraocular infections in rabbits. It is recommended until further clinical and experimental evidence is available that the technique of Cashell<sup>18</sup> and Grant<sup>18</sup> be followed in treating injured eyes. They instilled penicillin directly into the anterior chamber, with favorable results.

Cashell<sup>18</sup> "irrigated" the anterior chamber in 2 cases of perforating injury. The end results were good. A postoperative infected cataract, treated for thirty-three days, was included in this group. In 3 other cases "definite infections of the anterior chamber cleared with penicillin, but chronic cyclitis supervened. These eyes were excised.

Grant<sup>18</sup> reported striking improvement in an eye suffering from exudative iridocyclitis secondary to a penetrating wound and treated with penicillin thirty-four days after injury. Aqueous, 0.25 cc was withdrawn from the anterior chamber through a hollow needle and replaced by an equal amount of penicillin solution 250 units per cubic centimeter. Forty-eight hours later recovery had begun and marked the turning point in saving the eye. Further penicillin treatment was not required.

Adequate penicillin treatment of an infected perforating eye injury or a metastatic eye infection entails combined parenteral, local and intraocular medication. Continuous intravenous drip of 200,000 Oxford units in twenty-four hours or in less acute cases intramuscular injection of 25,000 units at three hour intervals is recommended. Local therapy may consist of instillation of penicillin 1,000 units per cubic centimeter half-hourly or hourly, supported by the withdrawal of aqueous and replacement by penicillin 1,000 units per cubic centimeter of isotonic solution of sodium chloride. The withdrawal of aqueous when a high level of penicillin in the blood has been obtained should give a maximum secretion of penicillin in the secondary

17 von Sallmann L and Meyer K. Penetration of Penicillin into the Eye. Arch Ophth 31:1 (Jan) 1944.

18 Grant R B Jr. Per oral communication to the author.

aqueous, if such secretion occurs. It is doubtful that more than 0.4 cc of aqueous can be replaced by penicillin. The removal of penicillin from the anterior chamber by natural filtration and dilution by the remaining aqueous and the secondary aqueous would give a primary dilution of not more than 200 units per cubic centimeter of aqueous with further rapid dilution. The effective level of penicillin in the aqueous and the rapidity with which this level is reduced by normal drainage have not been ascertained.

*Prophylaxis in Eye Injuries*—The use of penicillin as a prophylactic measure in eye injuries is a justifiable empirical measure. Other therapeutics also should be employed.

An aviator aged 21, who suffered a contusion of his left eyeball, presented an instance of such therapy. The cornea was abraded. There was a hyphema. Vision was reduced to 5/100. Conjunctival cultures revealed hemolytic *Staphylococcus albus* coagulase positive. Four days after injury, treatment was started with penicillin 15,000 Oxford units intravenously every three hours and 3 drops of 1,000 units of penicillin per cubic centimeter of isotonic solution of sodium chloride instilled in the left eye half-hourly for eight doses and then hourly. Treatment was continued for six and a half days. The pupil was dilated and a small posterior synechia broken by scopolamine. A diffuse deep interstitial haze developed on the temporal side of the left cornea concurrent with increased hemorrhage in the anterior chamber. The eye culture was negative in one day. On completion of penicillin therapy the corneal haze was reduced to a small linear peripheral scar. The vision in the left eye was 20/20 slowly. The interior of the eye was normal.

This officer presented a therapeutic problem. His training was within one month of completion. There was clinical evidence of severe trauma to his left eye. A pathogenic organism was present in the conjunctival cul-de-sac of his injured eye. This eye manifested a severe inflammatory reaction involving the conjunctiva, episclera, sclera, cornea and iris. There was a choice of therapy between artificial hyperpyrexia and penicillin. Penicillin was chosen because of the presence of a hemolytic *Staphylococcus albus*, coagulase positive.

*Recurrent Post-Traumatic Iritis*—The history of an injured soldier with iritis was enlightening.

A white soldier aged 20 was injured by a dynamite explosion in November 1943. On Feb 29, 1944 he reported with iritis of his left eye. Examination revealed bilateral corneal scars and traumatic cataracts. There was evidence of previous iritis of his right eye. Sand had perforated his left eye. Conjunctival cultures were sterile. Penicillin was administered intramuscularly, 25,000 units every three hours for four and a half days and reduced to 15,000 units for two days. Mydriasis by atropine was maintained. Recovery was prompt. No sequelae remained. A slightly discharging left amputation stump was not affected by penicillin therapy. On March 20 iritis recurred in his left eye. Treatment of this attack of iritis consisted in keeping the pupil dilated with scopolamine for six days. An aqueous flare, which was present in both attacks had then disappeared. The blood vessels of the iris were still slightly engorged. Ocular pain disappeared after twenty-four hours of treatment in both attacks of iritis.

This patient exemplified the difficulty of clinical research. It is doubtful that penicillin was of any benefit in this case.

#### MEDICATION AND DOSAGE

The following routes of administration are applicable in eye diseases.

*Local*—Instillation in the eye. Dosage 250 to 10,000 Oxford units dissolved in 1 cc of isotonic solution of

sodium chloride or distilled water,  $p_H$  7.7, administered hourly in acute conditions, every two hours in subacute conditions and not less frequently than every three hours. Cashell<sup>10</sup> reported good local results with less frequent and weaker dosage. He did not report any penicillin fast organisms developing during treatment. Fresh solutions kept in a commercial refrigerator deteriorate very slowly. It has been the practice to replace eye solutions, kept at room temperature, after forty-eight hours. The solutions are still potent in vitro.

*Ophthalmic ointment*. Dosage 250 to 500 units incorporated in a gram of ointment base. Commercial petrolatum or hydrous wool fat 25 per cent combined with cold cream 75 per cent showed a satisfactory zone of diffusion of penicillin in vitro on seeded plates. Penicillin ointment still showed appreciable penicillin activity after six months in a commercial refrigerator. Diffusion activity lessens appreciably after twenty-five days at room temperature. One specimen was still potent after forty-five days at room temperature.

*Intraocular*. Aqueous is withdrawn from the anterior chamber through a needle and replaced by penicillin. Local or general anesthesia is employed. Incomplete incision of the cornea at the site of puncture simplifies passage of the needle. Freshly prepared penicillin 500 to 1,000 units per cubic centimeter of isotonic solution of sodium chloride is used. Aqueous to the extent of approximately 0.4 cc may be withdrawn with impunity. The strength of the injected penicillin is immediately reduced by the remaining aqueous and is soon further reduced by removal by normal filtration and dilution by new aqueous.

*Parenteral*—Intramuscular. Dosage from 15,000 to 25,000 units in isotonic solution of sodium chloride or fractionally distilled pyrogen free distilled water injected into the thigh, gluteal or upper back muscles every three hours.

*Intravenous*. Intravenous solutions are made daily. Pyrogen free isotonic solution of sodium chloride and 5 per cent dextrose are used as solvents. Intermittent dosage 15,000 to 25,000 units injected slowly every three hours. Continuous drip dosage 200,000 units of fresh penicillin dissolved in 2,000 cc (2 liters) of saline or dextrose solution administered in twenty-four hours at a basic drip rate of approximately 30 drops per minute. Treatment may continue for several days. Larger doses have been given without ill effect. A dextrose solution is recommended in the presence of kidney disease to avoid possible anasarca.

*Intrathecal*. Riba<sup>10</sup> has found the administration of 25,000 units in 2.5 cc of isotonic solution of sodium chloride by replacing an equal amount of spinal fluid very satisfactory. The medication is repeated at forty-eight hour intervals or oftener in acute disease. Penicillin accumulates in the spinal fluid.

Staphylococcal infections require three or four times as much penicillin as streptococcal infections. Queen<sup>19</sup> has found the minimum effective blood level for the staphylococcus 0.3 unit per cubic centimeter of circulating blood. A concentration of 0.03 unit per cubic centimeter is sufficient for streptococcal infections. It has been the practice to continue reduced treatment for two or three days after a clinical cure has been obtained.



Penicillin may be discontinued sooner in acute infections than in chronic infections without fear of relapse. Penicillin is thermolabile. A  $p_H$  of 7 to 7.7 is recommended for solutions and ointments. Penicillin stock solutions should be refrigerated.

#### COMPLICATIONS

Most complications, such as phlebitis, pyrexia, pain at the site of injection, vascular and sympathetic disturbances and muscular cramps, have largely disappeared with the use of purer penicillin.

Generalized allergy with urticarial manifestations, with or without fever, has occurred. Thrombophlebitis may occur at the site of prolonged intravenous injection. Local allergy of a mild degree affecting the eyelids and skin below the eyes is easily controlled by covering the eyelids and skin with a neutral waterproof emollient.

An unusually severe allergic reaction was obtained, in 1 instance following instillation of 4 drops of sodium penicillin 1 000 units per cubic centimeter into both eyes at hourly intervals. There was evidence of redness and puffiness of the eyelids before the last drop was administered. The eyelids then became very red, hot and nearly closed by edema. The conjunctiva was acutely congested. The mucous membrane of the nose and throat was red, dry, painful and glossy. A temperature of slightly more than 100 F was carried for four days. The patient complained of malaise similar to that noted after an inoculation with antityphoid vaccine. He was hospitalized for a week. The penicillin used in this case was tested on another patient and on a rabbit with negative results. A skin patch test elicited a negative reaction. Cutaneous disturbances had been experienced by the patient on ingestion of certain sea foods, chocolate, strawberries and rice.

The complication of cross mixed infection in ocular diseases is not so important as in general infections but may retard recovery. There is evidence suggesting that with the extermination of a virulent penicillin sensitive organism present in a given case the remaining nonsensitive organisms are not very pathogenic.

Local irritation caused by the early batches of penicillin has disappeared with purification of the drug.

Inadequate early treatment with penicillin may cause reduction of sensitivity of the organism treated or even penicillin fastness.

In such cases intensive treatment with penicillin may be tried with some prospect of obtaining clinical improvement with lessened virulence of the organism. The combined or alternate use of sulfonamide drugs should be tried.

The criteria of successful penicillin therapy are speedy relief of a patient's symptoms and rapid subsidence of infection.

#### COMMENT

Penicillin is the drug of choice in the treatment of ophthalmic diseases secondary to infection with gonococci, streptococci and sensitive staphylococci. Penicillin should be given a trial in the treatment of diseases caused by *N. meningitidis*, *N. catarrhalis* and pneumococci. The use of penicillin is optional in the treatment of infections caused by *C. diphtheriae*, *C. welchii*, *Actinomyces bovis* and *Treponema pallidum*.

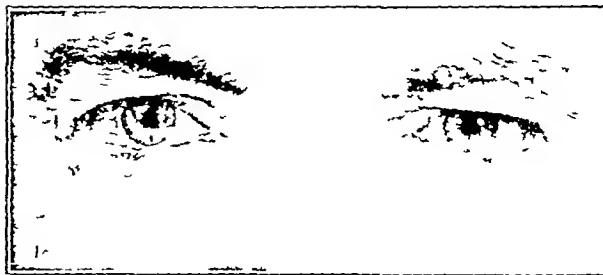


Fig 5—Acute allergy to local penicillin followed bilateral instillation of 4 drops of sodium penicillin 1 000 units per cubic centimeter. Acute edema of the eyelids, congestion of the sclera, conjunctiva and the mucous membrane of the nose and throat with pyrexia and malaise were manifested.

The relief afforded by penicillin when it is effective is usually prompt, in some instances startling and usually better than that afforded by other modes of medication. Considerable penicillin can be saved by identification of the bacteria present in a disease before treatment is instituted. A primary sensitivity test is recommended in chronic infections caused by staphylococci. An unfavorable early response to penicillin therapy suggests a reappraisal of the case. A virulent resistant organism may be present.

In diseases caused by a noninfectious process such as allergy the removal of a secondary infection by penicillin is helpful but obviously leaves the primary problem unsolved.

The use of penicillin as a prophylactic in certain intraocular operations and ocular injuries is recommended. Experience suggests that it is a better practice to give an overdose of penicillin rather than an underdose. It is anticipated that the dosage of penicillin will be stabilized in the near future, but as with all drugs, the dosage will be subject to modification in acute and resistant diseases.

Early and large doses of penicillin are indicated in orbital cellulitis secondary to infection in the paranasal sinuses and adjacent venous dual sinuses.

Penicillin solutions, because of their instability, do not lend themselves to office and home medication as readily as more stable drugs. Penicillin solution 1 000 units per cubic centimeter of isotonic solution of sodium chloride tested *in vitro* on a nutrient agar cup plate seeded with Oxford staphylococci produced an inhibition ring 45 mm in diameter. After twenty-one days at room temperature the diffusion ring was still 40 mm in diameter. Penicillin ointment is reasonably stable for at least a month at room temperature and for six months in a commercial refrigerator. There is a constant danger of contamination of penicillin by resistant organisms. Heat destroys penicillin, therefore resterilization is not feasible.

It is anticipated that in private practice penicillin will frequently have to be used in an empirical manner. In spite of this handicap it will be found that a valuable and dependable drug has been added to the armamentarium of the ophthalmologist.



Fig 4—Right eye of patient with bilateral acute conjunctivitis superimposed on a chronic follicular conjunctivitis and associated with a head cold. Alpha hemolytic streptococci and coagulase negative hemolytic *Staphylococcus albus* were present in both eyes. Conjunctival cultures were sterile after five days' local treatment with penicillin 1 000 units per cubic centimeter. Treatment was continued for eight more days because of turgid palpebral conjunctiva.

## THE USE OF PENICILLIN IN DISEASES OF THE EAR

CAPTAIN CLIFFORD A. SWANSON (MC), USN  
AND  
LIEUTENANT DANIEL C. BAKER JR (MC) USNR

Penicillin has been proved to be a very powerful antibacterial agent. Much has been written about its value in the treatment of many severe and previously often fatal infections. Until recently its use was restricted to overwhelming infections which did not respond to other forms of therapy. Lately the increased production of the drug has made enough available to permit its employment in more common infections, such as those of the ear.

Penicillin is a powerful antibacterial substance produced by *Penicillium notatum* in ordinary nutrient broth.<sup>1</sup> It is highly soluble, relatively unstable and easily destroyed by dilute acids. It is hygroscopic and rapidly loses its activity if exposed to air, but it retains its activity for twenty-four hours if absolutely dry. Penicillin is not affected by pus, blood, serum or the products of breakdown of tissue. The number of organisms has little effect on its bacteriostatic action. Penicillin inhibits the growth of bacteria while the body defenses, humoral and cellular, destroy the organisms.<sup>2</sup> Purified penicillin in dilution of 1:25,000,000 will completely inhibit the growth of *Staphylococcus aureus*<sup>3</sup> and is free from toxic reactions.

Hobby, Meyer and Chaffee<sup>4</sup> made studies of the susceptibility of various strains of many organisms to penicillin. The susceptible organisms are pneumococci, hemolytic *Streptococcus*, staphylococci, meningococci, gonococci, *Streptococcus viridans*, *Bacillus subtilis*, *Clostridium welchii*, *Clostridium septicum*, *Clostridium histolyticum*, *Bacillus sporogenes*, *Bacillus oedematiens*, *Bacillus sordelli*, lactobacilli and *Cryptococcus hominis*. Insusceptible strains are *Hemophilus influenzae*, *Escherichia coli*, *Salmonella paratyphi A*, *Salmonella enteritidis*, *Bacillus pyocyaneus*, *Bacillus fluorescens*, *Bacillus prodigiosus*, Friedlander's bacillus, *Staphylococcus albus* (1 strain), *Micrococcus albus* (1 strain), *Monilia albicans*, *Monilia krusei* and *Monilia caudata*. Gardner<sup>5</sup> has observed morphologic changes in all the rod shaped organisms that showed any inhibition by penicillin. These changes are attributed to a failure of fission, growth proceeds, but division and separation of the cells do not follow in due course.

Salts of penicillin, such as ammonium, sodium and calcium, have been prepared for clinical use. The quantity of the drug used is expressed in terms of the Oxford unit. The latter is defined as that amount of penicillin which when dissolved in 50 cc of meat

extract broth, just inhibits completely the growth of the test strain of *Staphylococcus aureus*.

According to Dawson and Hobby,<sup>8</sup> the establishment of correct dosage and frequency of administration are problems of great complexity. They recommend that the sensitivity of the infecting organism be tested when ever possible in cases which do not respond satisfactorily. Penicillin can be administered by continuous subcutaneous infusion, continuous intravenous injection, intramuscular injection, intrathecal injection and local instillation. The advantages and objections to these routes have been discussed by Bloomfield, Rantz and Kirby.<sup>9</sup> The more severe infections are treated by continuous intravenous injection, because a higher concentration of penicillin in the blood can be obtained. When the drug is injected intramuscularly, the blood level is lower but is more evenly sustained. If a single intravenous injection of penicillin is given about two thirds of it will be recovered promptly in the urine.<sup>10</sup> In his discussion in a symposium on "Antibiotic Agents," Keefer<sup>11</sup> reported that there was no universal agreement on dosage, best method of administration or duration of treatment, stating that the final answer

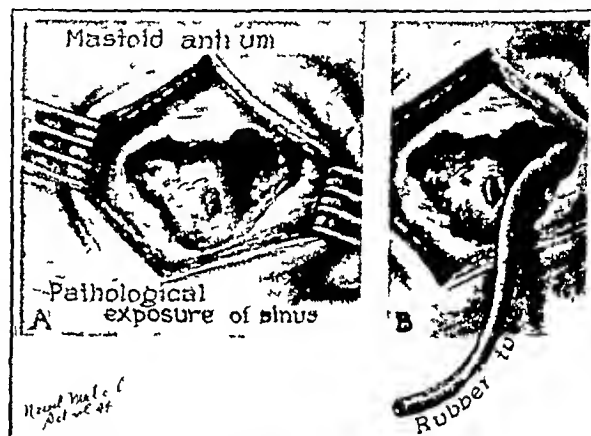


Fig. 1 (case 2)—A, mastoid cavity at completion of simple mastoidectomy; B, insertion of the rubber tube.

to these questions will come only from the study of more cases.

The Penicillin Committee at the National Naval Medical Center believes that the intramuscular administration of the drug is the most practicable. In order to ensure the therapeutic effectiveness of the drug this committee stresses the importance of two conditions: (1) the maintenance of adequate nutrition and a positive nitrogen balance in patients receiving the drug and (2) accurate preliminary bacteriologic studies to determine that the pathogen is an organism susceptible to the drug.

Infectious diseases of the ear can be effectively treated with penicillin because the anatomic structure of the ear permits the local administration of the drug and because the organisms causing most acute infections of the ear are usually in the group considered to be susceptible to the drug. Fowler<sup>12</sup> made a study of 452

The illustrations are the work of Lieut. L. Schlossberg, H(V)S, U.S.N.R.

This study was supervised by the Penicillin Committee of the National Naval Medical Center, Bethesda, Md.

Read in a symposium on "The Use of Penicillin in the Treatment of Diseases of the Eye, Ear, Nose and Throat" before the joint meeting of the Section on Ophthalmology and the Section on Laryngology, Otolaryngology and Rhinology at the Ninety-Fourth Annual Session of the American Medical Association, Chicago, June 16, 1944.

1. Fleming, A. On the Antibacterial Action of Cultures of a Penicillium with Special Reference to Their Use in the Isolation of *B. influenzae*. Brit. J. Exper. Path. 10: 226 (June) 1929.

2. Abraham, E. P., Chain, E., and Holiday, E. R. Purification and Some Physical and Chemical Properties of Penicillin. Brit. J. Exper. Path. 23: 103 (June) 1942.

3. Florey, H. W., and Florey, H. W. General and Local Administration of Penicillin. Lancet 1: 387 (March 27) 1943.

4. Abraham, E. P., and Chain, E. Purification of Penicillin. Nature (London) 149: 328 (March 21) 1942.

5. Hobby, Gladys L., Meyer, E., and Chaffee, Eleanor. Activity of Penicillin in Vitro. Proc. Soc. Exper. Biol. & Med. 50: 277 (June) 1942.

6. Gardner, A. D. Morphological Effects of Penicillin on Bacteria. Nature (London) 146: 837 (Dec. 28) 1940.

7. Florey, H. W., and Jennings, M. A. Some Biological Properties of Highly Purified Penicillin. Brit. J. Exper. Path. 23: 120 (June) 1942.

8. Dawson, M. H., and Hobby, Gladys L. The Clinical Use of Penicillin. J. A. M. A. 124: 611 (March 4) 1944.

9. Bloomfield, A. L., Rantz, L. A., and Kirby, W. M. M. The Clinical Use of Penicillin. J. A. M. A. 124: 627 (March 4) 1944.

10. Rammelkamp, C. H., and Keefer, C. S. The Absorption, Excretion and Distribution of Penicillin. J. Clin. Investigation 22: 425 (May) 1943.

11. Keefer, C. S. in abstract of discussion on the Clinical Use of Penicillin. J. A. M. A. 124: 636 (March 4) 1944.

12. Fowler, E. P., Jr. Medicine of the Ear. New York: Thomas Nelson & Sons, 1939, p. 157.

consecutive cases of acute otitis media. If his statistical analysis of the causative organisms in that series is considered representative of their relative incidence then 90 per cent of the organisms are susceptible to penicillin.

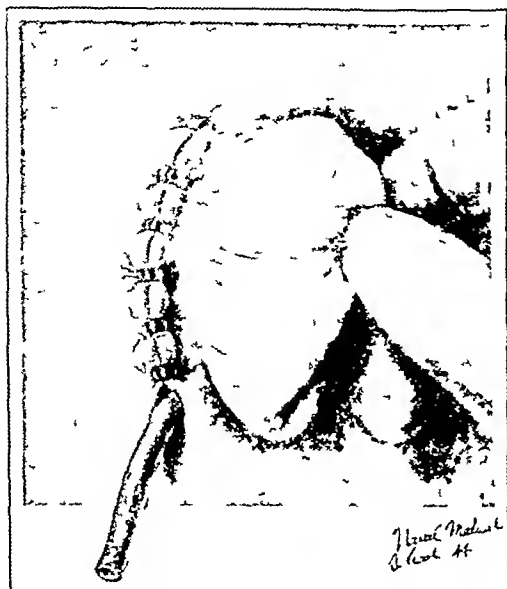


Fig. 2 (case 2)—Closure of wound for rubber tube

In this study the sodium salt was used. It was given either by continuous intravenous injection, intramuscular injection or local instillation. In 1 instance a combination of the intramuscular and local routes was used.

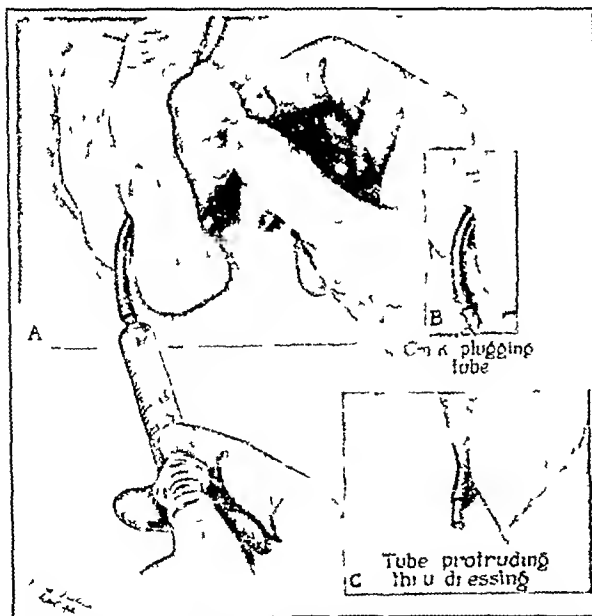


Fig. 3 (case 2)—A wound covered with gauze impregnated with penicillin ointment and injection of penicillin solution into mastoid cavity. B rubber tube sealed after injection of penicillin. C tube protruding through dressing in order to facilitate apiration of exudate and instillation of penicillin.

#### METHOD AND RESULTS

1. *Acute Otitis Media*—In acute otitis media, penicillin is administered by intramuscular injection. The amount of drug necessary to combat the infection will

vary according to its causative organism and severity. Staphylococcal infections, as a rule, require a greater amount of penicillin than those due to streptococci. The drug should be continued after the patient has appeared to recover to avoid possible relapse.

CASE 1—G. E. G. a white youth aged 18 was admitted to the hospital with the history of a sense of fullness in his left ear of one week's duration. His temperature was 100 F. Blood examination revealed red blood cells 4,700,000, white blood cells 12,450, hemoglobin content 13.5 Gm.

Examination showed severe congestion of the mucosa of both nasal chambers. The sinuses were clear. The left ear drum was red and thickened, and there was a pulsating discharge from a posterior inferior perforation. Cultures showed the organism to be a hemolytic streptococcus. He was given sulfadiazine 4 Gm initially and then 1 Gm every four hours. His left ear continued to discharge and eleven days later his temperature which had been normal, began to fluctuate between 99 and 101 F. The sulfadiazine level at this time was 11 mg per hundred cubic centimeters of blood.

X-ray examination of the mastoids revealed the right mastoid to be well developed, well aerated and apparently clear. The left mastoid showed a less degree of development than the



Fig. 4 (case 2)—Wound at the end of seven days showing clear sterile exudate being expressed from the rubber tube prior to its removal.

right and there was rather poor aeration of the cells. In the squamous portion of the left mastoid there was what seemed to be destruction of trabeculae between the air cells and many of these cells appeared to be filled with material of soft tissue density. The impression was destructive mastoiditis, left.

Sixteen days after onset of infection at the time when it appeared that a mastoidectomy would be necessary, penicillin was administered. Sulfadiazine was discontinued and the patient was given 20,000 units of penicillin intramuscularly every three hours day and night for a period of two weeks.

His temperature became normal twenty-four hours after the start of penicillin and the ear became dry on the seventh day of penicillin therapy, which extended over a two week period in all. At the end of this time his left ear drum returned to normal and the patient was discharged from the hospital. He received a total of 2,260,000 units of penicillin.

It would appear that penicillin was effective in sparing this patient an operation.

Fourteen additional cases of acute otitis media were successfully treated with penicillin. The pathogens obtained on culture from these patients are listed in the table. The penicillin was given by intramuscular injection. The amount of the drug required varied from

360,000 to 1,140,000 units per patient over a period varying from five to fourteen days

**2 Acute Mastoiditis**—When surgical intervention is done for acute mastoiditis it can be supplemented by penicillin administered either by intramuscular injection or by local instillation into the mastoid cavity. The Floreys<sup>3</sup> employed the latter method by means of controlled drainage in 22 cases of surgical mastoiditis. They inserted a rubber tube into the mastoid cavity and closed the incision completely except to accommodate the tube. Penicillin was then instilled into the cavity through the tube which was then sealed off. Afterward every six hours the exudate was aspirated from the cavity and fresh penicillin was instilled through the tube, which was again sealed. Free drainage was not allowed at any time. This routine was employed for a period of five days and an average of 17,300 units per case was required. The ear usually became dry within a period of five days, and primary healing resulted in 19 of the 22 patients. The second and third patients received the drug both intramuscularly and locally after the method of Florey with slight modification, the other only locally.

**CASE 2**—S. B. H., a white woman aged 25, was admitted to the hospital with the history of having had a discharging right ear for three weeks. She had received a total of 17 Gm of sulfadiazine and 50 Gm of sulfanilamide before entering the hospital. In the preceding week she had complained of noc-

#### Organisms in Fifteen Cases of Acute Otitis Media

| Organism   | No. of Cases |
|--|--------------|
| <i>Staphylococcus aureus</i>                                       | 2            |
| Hemolytic <i>Staphylococcus aureus</i>                             | 2            |
| Hemolytic streptococcus  | 8            |
| <i>Pneumococcus</i> type 1   | 1            |
| Hemolytic <i>Staphylococcus aureus</i> and hemolytic streptococcus | 2            |

turnal pain over the right mastoid and general malaise. Examination was negative except for the ear. There was a thick purulent discharge in the right canal. The ear drum showed a posterior perforation, and the mucosa of the middle ear was red and thickened. Pain was elicited on pressure over the mastoid.

X-ray examination of the mastoids disclosed that on the left side the mastoid cells were well aerated. On the right side the cells in the temporal portion of the mastoid were indistinct and the bony separations of the mastoid cells were poorly outlined and most of the cells appeared blurred. There seemed to have been definite bony destruction of the trabeculae separating some of the cells in this area.

The patient's temperature was normal on admission but fluctuated between normal and 99.2 F for the first few days. The sedimentation rate showed a fall of 31 mm at the end of an hour. Blood examination revealed red blood cells 3,000,000, hemoglobin content 10 Gm, and white blood cells 8,300. The urinalysis was negative.

She had lost 6 pounds (2.7 Kg) in three weeks and felt generally below par. Soon after admission she was given 30,000 units of penicillin intramuscularly every three hours. Three days after admission she was given a transfusion of 250 cc of whole blood. The following day a simple mastoidectomy of the right ear was performed. Operation revealed free pus, considerable breaking down of the mastoid cells in the region of the tip and over the lateral sinus, pathologic exposure of the sinus and thickening of its wall. A hemolytic streptococcus was cultured from the pus.

At the completion of the operation a small rubber tube of 14 French caliber was inserted into the wound, one end being left in contact with the antrum and the other end protruding through the incision to a length which permitted its opening

to lie outside the dressings. The incision was closed tightly except for the rubber tube passage. Fifteen cc of a solution containing 1,000 units of penicillin per cubic centimeter was injected through the rubber tube into the mastoid cavity, and the external canal was packed tightly with gauze impregnated with penicillin.

Thereafter, every six hours during a period of forty-eight hours the wound was aspirated and 3 cc of the penicillin solution was injected into the mastoid cavity via the rubber tube (for illustration of technique see figures 1 through 4). During the same period the patient received 30,000 units of penicillin intramuscularly every three hours. On the third day the instillation of penicillin into the mastoid cavity was discontinued but the rubber tube remained completely sealed off, so that there was no drainage at any time. Also on the third day the intramuscular injections of penicillin were reduced to 15,000 units every three hours. On the seventh postoperative day the intramuscular injections were discontinued and the rubber tube was removed from the mastoid cavity. On the eighth postoperative day the incision was healed, the middle ear was dry and the perforation of the ear drum had healed. The patient had no further trouble with her ear. During the course of her disease she received a total of 1,905,000 units of penicillin intramuscularly and locally. Penicillin caused no noticeable untoward reaction and appeared to have shortened her convalescence greatly.

**CASE 3**—C. J. S., a white man aged 25, was admitted to the hospital with acute appendicitis. An appendectomy was performed, and six days after operation he complained of a sore throat. On the seventh day he had severe pain and a serous discharge from his right ear. He was transferred to the eye, ear, nose and throat service the same day, with the diagnosis of acute otitis media, right ear. He was given sulfadiazine 4 Gm initially and 1 Gm every four hours afterward day and night. Cultures of the exudate from the right ear showed the presence of a hemolytic streptococcus. His right ear continued to discharge, and on the tenth day of the ear infection he had considerable pain over the right mastoid process and right facial paralysis. There was no x-ray evidence of a right mastoiditis. The sulfadiazine level at this time was 6 mg. He was given a blood transfusion of 250 cc, and a simple mastoidectomy was immediately performed. Operation revealed pus under pressure in the mastoid cells bordering on the digastric groove with no breaking down of the cells. At the completion of the operation a rubber tube was inserted into the wound, so that one end came in contact with the antrum and the other end protruded through the incision. The wound was closed except for the rubber tube passage. For eight days after operation once a day 3 cc of a solution containing 250 units of penicillin per cubic centimeter was instilled into the mastoid cavity through the rubber tube and sealed in. On the ninth postoperative day the rubber tube was removed. On the tenth day the facial paralysis began to disappear, and after two weeks the patient had almost complete restoration of motion in the right side of his face. After the operation there was no purulent drainage at any time from the mastoid wound. A total of 6,750 units of penicillin was used.

In this case penicillin appeared to shorten convalescence and hasten recovery from facial paralysis.

**3 Acute Labyrinthitis**—Penicillin can be administered by continuous intravenous injection for the treatment of acute labyrinthitis. In the following case treatment was successful by this means.

**CASE 4**—L. C. P., a white man aged 33, a physician, was admitted to the hospital on Sept. 10, 1943, with the history of having had vertigo, tinnitus and deafness of his left ear for one month and severe pain in his left ear for one week. In September 1942 he had had an osteomyelitis of his twelfth dorsal vertebra caused by hemolytic *Staphylococcus aureus* and successfully treated by operation and a sulfonamide drug. In March 1943 he had had empyema of the gallbladder caused by the same organism and successfully treated by surgery and a sulfonamide drug. In May 1943 he had had what appeared

to be an attack of Meniere's syndrome on the left side without any subsequent complaints until his present illness.

On admission his temperature was 99.4 F. He had nystagmus to the right on right lateral gaze and slight nystagmus to the right on upward gaze. There was no evidence of active

4 *Chronic Otitis Media*—In special instances chronic otitis media can be treated successfully by the local instillation of penicillin into the middle ear. The patient who has a chronic discharging ear caused by an organism susceptible to the drug and has a large perforation of the ear drum with no evidence of granulations or cholesteatoma is best suited for penicillin therapy. The pneumatic otoscope can be used to force the drug into the middle ear,<sup>13</sup> and the penicillin can be sealed into the ear by means of cotton impregnated with a bland ointment (see figures 5 and 6 for illustration of technique).

CASE 5—H. F. J., a white man aged 32, was referred to the outpatient department for treatment of a right chronic otitis media. For several years he had had continuous discharge from his right ear varying in amount. Examination showed a moderately thick tenacious discharge in the right external canal and a large anterior inferior perforation of the right ear drum; there was no granulation tissue. X-ray study showed evidence of a chronic mastoiditis on the right side. There was no evidence of a cholesteatoma. Over a period of years the patient had received different kinds of treatment including boric acid and alcohol drops, Sulzberger powder and sulfonamide powder. Cultures showed the presence of a *Staphylococcus aureus*.

He was treated in the outpatient department. A few drops of a solution containing 250 units of penicillin per cubic centimeter were instilled into the right ear while the patient's head was inclined to the left. The penicillin was forced into the middle ear through the perforation by means of a pneumatic otoscope. The canal was then filled with the penicillin solution and the drug was trapped in the ear by means of cotton impregnated with a bland ointment. The patient was given a small bottle of the solution to take home and was told to remove the cotton and to dry the canal after six hours. He was instructed to lie on the left side before

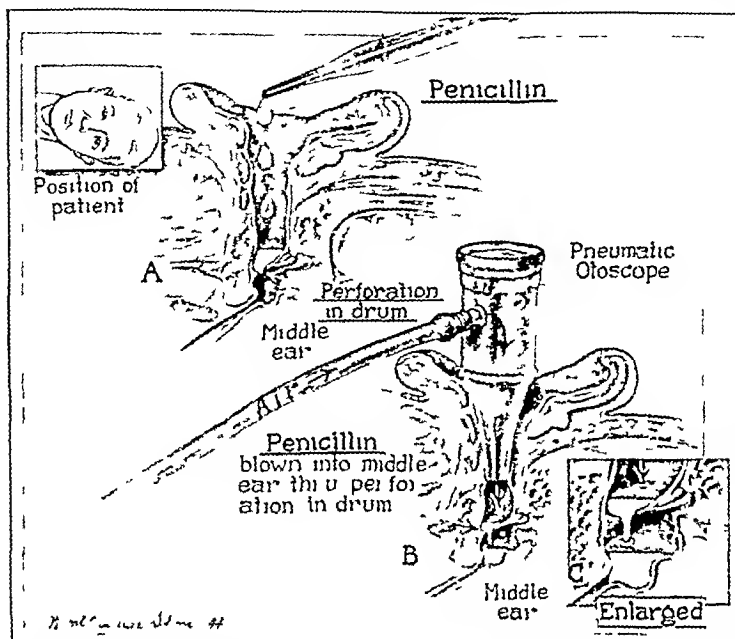


Fig 5 (case 5)—A, instillation of penicillin into the external canal; B and C, use of pneumatic otoscope in chronic otitis media.

disease in the nose and throat. His right ear was normal, his left ear drum was injected. The left ear was totally deaf. Blood examination revealed red blood cells 4,720,000, hemoglobin content 13 Gm, white blood cells 7,750. Blood culture and urinalysis were negative. During the first twenty-four hours his temperature fluctuated between normal and 99.4 F by mouth. He complained of severe pain deep in the left side of his head which could be controlled only by large doses of morphine. The neurologic examination was negative except for the labyrinthine disturbances. X-rays of the skull and mastoids showed no evidence of disease.

It was the opinion of the neurologic service that the patient had an osteomyelitis of the left petrous pyramid, with involvement of the labyrinth and that the infection was probably metastatic in origin.

The pain in his left ear became progressively worse and on his sixth hospital day a left myringotomy was performed with nitrous oxide-oxygen anesthesia. Clear fluid was obtained from the left middle ear. Cultures showed the organism to be hemolytic *Staphylococcus aureus*. In view of the history of previous severe infections with the same organism and the possibility that the middle ear disease might be secondary to cranial osteomyelitis, it was decided to give the patient penicillin. After the myringotomy, penicillin was begun by continuous intravenous injection and continued for five days. He got a total of 455,000 units. It is noteworthy that the patient was free from pain twenty-four hours after penicillin was begun and that his temperature returned to normal in forty-eight hours. His left ear was dry on the fifth day and his ear drum gradually returned to normal. Subsequent studies confirmed the total loss of hearing in his left ear and revealed a total loss of vestibular response to left caloric stimulation.

Apparently this patient had an acute labyrinthitis on the left side with the exudate working its way through into the middle ear. Its metastatic origin is supported by the identity of its causative organism with that of two previous infections, one of which was certainly hematogenous. He has been left with complete loss of cochlear and vestibular function on the left side. There has been no recurrence of tinnitus or vertigo.

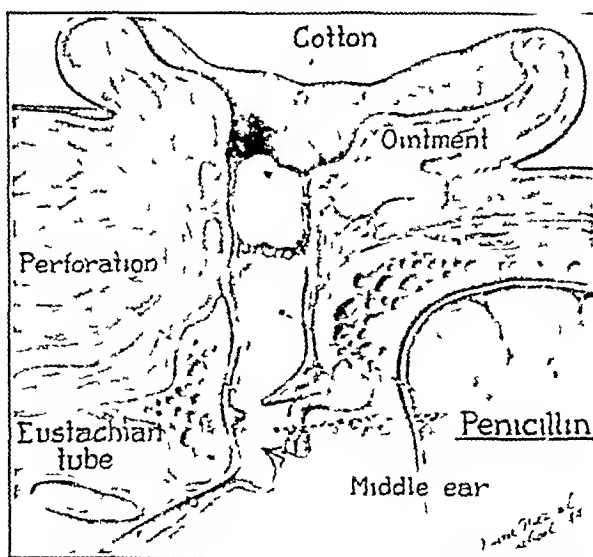


Fig 6 (case 5)—Penicillin sealed in external canal and middle ear by cotton impregnated with ointment.

going to bed and to instill a half medicine dropper of the penicillin solution into his right external canal and to trap the solution with cotton impregnated with ointment, placed at the external meatus. This routine was carried out for a period of

eight days. His ear became dry and has remained dry for a period of six months. A total of 10,000 units of penicillin was used. The drug had no effect on the perforation.

One other case of chronic otitis media due to *Staphylococcus aureus* was successfully treated by the same method, but several other cases did not respond satisfactorily.

#### SUMMARY

A study was made of the use of penicillin in diseases of the ear. The drug was found to be of value in the treatment of acute otitis media, acute mastoiditis, acute labyrinthitis and chronic otitis media. A technique was developed for the use of penicillin by local instillation into the external canal and middle ear as well as into the postoperative mastoid cavity.

Penicillin has been employed with substantial benefit in many instances in which other forms of therapy had failed. It was possible either to avoid surgical intervention for acute mastoiditis or to use the drug as a supplement to surgery with significant help.

When the drug is instilled into the mastoid cavity after operation, healing is prompt and the period of convalescence is shortened. Penicillin is the most powerful chemotherapeutic agent available to combat acute otitis media, acute mastoiditis and their complications.

### USES OF PENICILLIN IN DISEASES OF THE NOSE AND THROAT

CAPTAIN F J PUTNEY

MEDICAL CORPS ARMY OF THE UNITED STATES

Penicillin must not be used indiscriminately but its effectiveness in combating susceptible infections is benefiting practically every branch of medicine. We have employed it at Bushnell General Hospital since April 1943 chiefly in overwhelming infections and complications of ear, nose and throat diseases when life was endangered. In the entire series of 19 cases the organisms were those which are sensitive to penicillin, in general the group of cocci. This presentation will be limited to the 9 cases classified as instances of sinus complications.

Originally penicillin was administered intravenously either by repeated venous punctures every two hours or by continuous drip, but both of these methods have largely been supplanted by the intramuscular route. Continuous drip injection may be preferable for extremely ill persons with grave infections when a high prolonged blood concentration is desired. After the hazardous phase has subsided, intramuscular use may be substituted. In general the dosage we have employed was 25,000 units intramuscularly every three hours, which was reduced to 15,000 units as the patient improved, the three hour period being maintained. Penicillin used locally is also bacteriostatic, but we have not depended on local use alone and have usually combined local with systemic administration. The organisms in all except 1 of this group of cases remained sensitive to the drug. In 1 case the organism became penicillin fast after several weeks of treatment. When there has been no improvement in the appearance of a wound and continuation of purulent drainage after three

or four days of penicillin therapy, one should suspect that the organism is resistant to the drug and sensitivity tests are indicated. In our experience failure to respond to penicillin has been due to a resistant bacterial strain.

In the early stages of using this drug while endeavoring to determine its range of usefulness, large doses were employed for many weeks without other forms of treatment. The results were disappointing in that healing was not obtained even though immediate improvement was noted. The acute conditions have afforded the most gratifying results, while in chronic diseases the response has been hard to evaluate. In the chronic cases the infections could be controlled and most of the wounds sterilized while the patients were receiving penicillin, but after treatment was terminated the infection again became active. In osteomyelitis penicillin has not supplanted surgical procedures but helps materially in combating the disease. Adequate drainage by surgical intervention in addition to penicillin was necessary to effect a cure in the majority of our cases.

Penicillin has proved equally effective against sulfonamide resistant organisms. All of our patients were given only penicillin and none were treated by a combination of this drug and sulfonamides. Patients who had failed to respond to the sulfonamides improved under penicillin to the same degree as those that had not received sulfonamide therapy.

In this series of cases no toxic reactions to the drug either systemically or locally occurred. A few reactions such as hyperpyrexia and urticaria have occurred at our hospital, but except in a rare instance these have not constituted an indication for discontinuing treatment.

Penicillin was employed in the care of 7 cases of osteomyelitis, 5 involving the frontal bone, 1 the frontal and maxillary bones and 1 the superior maxilla. Three cases of orbital cellulitis secondary to sinusitis, 1 with osteomyelitis in addition, have also been treated.

In osteomyelitic infections granulations have been made healthy and draining purulent wounds have become sterile while the patients were receiving penicillin. It is now my feeling that the optimum time for operative measures in acute spreading osteomyelitis is during the period in which the infection has been checked by penicillin. However, it may well be that in certain acute cases if treated early and adequately the disease process may be stopped and healing will take place without radical surgical procedures. In the cases which continue to show progressive bone destruction after adequate therapy, surgical intervention may be accomplished with little risk after the wound has become dry and the cultures have become negative with healing of the surrounding cellulitis. It may require anywhere from one to two weeks of penicillin therapy to attain this state.

In chronic osteomyelitis of the frontal bone it is possible to obtain healing under penicillin therapy without resorting to extensive surgery, and a thorough trial of penicillin lasting over several months may be necessary. When there is no regression under this form of treatment it is my feeling that the involved sinus should be operated on and that this procedure in addition to penicillin therapy may prevent further extensive operations. The occurrence of exacerbations and failure of the disease to heal on discontinuing the drug may require removal of the entire frontal bone. Adequate, repeated and lengthy courses of penicillin treatment are believed to prevent this final step in some cases that might otherwise need radical intervention.

From the Ear, Nose and Throat Unit of the Surgical Service, Bushnell General Hospital, Brigham City, Utah.

Read in a symposium on "The Use of Penicillin in the Treatment of Diseases of the Eye, Ear, Nose and Throat" before the joint meeting of the Section on Ophthalmology and the Section on Laryngology, Otolaryngology and Rhinology at the Ninety-Fourth Annual Session of the American Medical Association, Chicago, June 16, 1944.



One word of caution should be presented regarding the roentgen examinations, for these findings may indicate improvement and healing while treatment is being given yet at operation extensive necrosis has been found.

Brain abscess, extradural abscess and orbital cellulitis occurred as complications in 3 cases of osteomyelitis without apparent bearing on the response to the drug. The abscess of the frontal lobe of the brain was treated by the method outlined by King modified to the extent that a catheter was inserted into the cavity and local irrigations with penicillin carried out. The extradural abscess presented no particular problem, for the patient had been receiving adequate doses of penicillin and at operation the pus contained no organisms.

The longest period of treatment was that of the patient with osteomyelitis of the superior maxilla and frontal bones. He received 7,375,000 units of the drug over a period of sixty-six days. At the end of this time radical removal of the frontal bone was done because of the failure of penicillin to eradicate the infection permanently.

Our experience with other nose and throat diseases has been limited to a few cases of suppurative sinusitis treated both locally and systemically and several cases of peritonsillar and lateral pharyngeal abscesses in which the drug was given intramuscularly. The infections of the pharynx usually recovered without incision but I do not recommend this method and I believe that healing would have followed more rapidly if drainage had been instituted. In a case of chronic purulent infection of the maxillary sinuses cultures became sterile but the discharge continued and at operation the membrane was thickened with chronic inflammatory changes present. Acute infections of the maxillary sinuses have been cured after several irrigations with penicillin even when the organism was a staphylococcus that had proved resistant to other forms of treatment. The strength of the solution employed locally was 250 units per cubic centimeter. Preliminary investigation of Vincent's infection of the mouth and tonsils indicates rapid healing with disappearance of organisms after a few days of systemic penicillin therapy.

*Complications of Paranasal Sinusitis Treated with Penicillin*

| Case | Complication                                     | Organism  | Treatment                                  | Result    |
|------|--|---|--|-----------|
| 1    | Osteomyelitis of maxilla                         | Strep (nonhemolytic)                                | Incision and drainage penicillin (general) | Recovery  |
| 2    | Osteomyelitis of maxilla and frontal bone        | Staph aureus (hemolytic)                            | Penicillin (local and general) surgery     | Recovery  |
| 3    | Osteomyelitis of frontal bone brain abscess      | Staph aureus (hemolytic)                            | Penicillin (local and general) surgery     | Recovery  |
| 4    | Osteomyelitis of frontal bone                    | Staph aureus (nonhemolytic) Strep (nonhemolytic)    | Penicillin (general)                       | Unchanged |
| 5    | Osteomyelitis of frontal bone orbital cellulitis | Staph aureus (hemolytic)                            | Penicillin (general) surgery               | Recovery  |
| 6    | Osteomyelitis of frontal bone epidural abscess   | Strep (nonhemolytic) Staph albus (hemolytic)        | Penicillin (local and general) surgery     | Recovery  |
| 7    | Orbital cellulitis                               | No culture  | Penicillin (general)                       | Recovery  |
| 8    | Osteomyelitis of frontal bone                    | No growth   | Penicillin (local and general) surgery     | Recovery  |
| 9    | Orbital cellulitis                               | Strep (hemolytic) Strep (nonhemolytic) Staph aureus | Penicillin (general) surgery               | Recovery  |

Prompt and complete healing was obtained in 3 cases of orbital cellulitis with vanishing of pain within the first twelve hours of treatment. After the first day orbital edema fixation and proptosis began to decrease, but the underlying disease in the sinuses remained unaffected and in 2 of the cases sinus surgery was essential. In the other case during the early acute stage of cellulitis before pus formation incision and drainage were not necessary the infection resolving under treatment. All of these patients had previously received sulfonamide therapy with little improvement.

One case of cavernous sinus thrombosis secondary to lateral sinus thrombosis and hemolytic streptococcus bacteremia was treated with the drug. Death occurred on the eleventh day of therapy even though the initial response to penicillin was satisfactory and there was considerable improvement for a week. Daily blood cultures were positive only before penicillin was started and on the sixth day of therapy. In the first two days 400,000 units of penicillin was given by continuous intravenous drip followed by 25,000 units intramuscularly every three hours thereafter. During the eleven days of treatment she received 2,335,000 units of the drug. At autopsy both lateral sinuses as well as both cavernous sinuses were thrombosed with an abscess of the cerebellopontine angle, so it is questionable whether surgical drainage would have altered the outcome.

I feel that at the present time penicillin in combination with adequate surgical treatment offers the most effective means of combating some of the serious and life endangering complications encountered in otolaryngology.

#### ABSTRACT OF DISCUSSION

ON PAPERS OF LIEUTENANT COLONEL RYAN OF  
CAPTAIN SWANSON AND LIEUTENANT BAKER  
AND OF CAPTAIN PUTNEY

MAJOR EMER A. MORISEK, M.C., A.U.S. In the hands of my associates and myself penicillin has been used in a dilution of 500 units per cubic centimeter. In cases of gonorrheal ophthalmia it was instilled locally, four drops every hour with negative conjunctival smears and cultures after twenty-four hours with no recurrences. Intramuscular injections were not given until after the ophthalmic infection was considered cured except in 1 case in which the genital gonorrhea was cured with intramuscular injections, followed two days later by gonorrheal conjunctivitis in a previously enucleated eye socket. The smears and cultures were negative after twenty-four hours of hourly instillations. In our first case, in spite of rapid recovery within twenty-four hours we continued instillations at three hour intervals for several days, and the patient developed a typical severe local allergic reaction. This reaction subsided quickly when instillations were discontinued. Even though negative smears and cultures of conjunctival scrapings may be obtained within twenty-four hours, the penicillin solution should be continued but at less frequent intervals, until three such consec-

tive daily examinations are reported as negative. We have also used penicillin to irrigate the lacrimal passages in cases of chronic suppurative dacryocystitis. 2 cc of the 500 unit solution being used daily. After the second irrigation the secretion became almost negligible, and after several days only clear, amber colored, watery fluid was expressed on pressure over the sac. This led us to institute similar daily irrigations beginning within twenty-four hours after dacryocystorhinostomy, with excellent results. Several cases of orbital cellulitis with proptosis have been seen in conjunction with the otolaryngologist, but in each instance penicillin was used intramuscularly, and in 1 case the abscess also was irrigated with the penicillin. Not only did the cellulitis respond rapidly, but the purulent nasal discharge from all the sinuses promptly cleared up within forty-eight to seventy-two hours. In 1 case the low grade chronic sinusitis recurred. My associate has also been particularly enthusiastic in cases of osteomyelitis of the frontal bone secondary to suppurative, frontal sinus disease. There is every indication that although intramuscular injections of penicillin were distinctly beneficial and were always used, the response, after periodic irrigations with penicillin, was immediate. However, it was found that even penicillin could not replace adequate surgical intervention and proper drainage. In 1 case, in which operation was performed before the advent of penicillin, the persistent drainage ceased immediately after local and intramuscular injection.

MAJOR WALTER J. AAGESEN, M. C., U. S. It is our practice to give 25,000 units of penicillin intramuscularly every three hours day and night for twelve to fourteen days. Especially is this true when the offending organism is the staphylococcus. Captain Plough, in our department of bacteriology, has demonstrated that the sensitivity of different strains of staphylococcus to the action of penicillin varies considerably. He showed that the plasma level of patients receiving 25,000 units of penicillin every three hours intramuscularly does not reach a level of 1 unit per cubic centimeter, which is definitely below the concentration required to kill certain strains of *Staphylococcus aureus*. After testing twenty strains of *Staphylococcus aureus* for susceptibility to the drug, he has shown that the most sensitive strain was killed in a plasma concentration of 0.02 unit per cubic centimeter, while the more resistant organisms were not killed in a concentration of 2 units per cubic centimeter. Although at the end of three hours penicillin was readily recoverable in the urine, plasma studies have shown that after 25,000 units intramuscularly the usual plasma concentration during the first hour goes no higher than 1 unit per cubic centimeter. It drops rapidly during the second hour and is not recoverable in the third hour. There is still some doubt as to whether we are really able to shorten the convalescence of the average uncomplicated case of acute surgical mastoiditis appreciably. In chronic mastoiditis, and especially in the acute case with complications (such as meningitis, septicemia or Bezold's abscess), I feel that the convalescence is definitely shortened by the use of penicillin. It will not eliminate pus when there is inadequate drainage, and surgery is still of primary importance. We have found the drug to be effective in acute otitis media. Penicillin has produced a most gratifying response in chronic otitis. Three of our cases of long standing—from eighteen to twenty-five years—dried up completely without healing of the perforation in a period of from twelve to fourteen days, with a total of 2,000,000 units of intramuscular penicillin. It is still too early to state definitely that these cases will continue to remain dry. We have found that penicillin is of no value in chronic otitis media complicated by cholesteatoma or aural polypoidosis, except in 2 cases in which these conditions had been eradicated by surgery. Especially did we find this true when there was infection of the bone. The intravenous route with its more even concentration, should be used until the infection has been brought under control, following which the intramuscular route can be substituted with maximum therapeutic effect. In bone infections even though large doses were maintained in the acute cases, the results were disappointing as far as complete healing is concerned without the use of surgery.

COMMANDER E. E. KOEBBE (MC), U. S. N. R. My associates and I have treated several hundred cases of early acute otitis media with penicillin and the results have been universally good. We use 15,000 units every three hours around the clock for

about seven days or until the drum has resolved and the landmarks return. Then we reduce it to 10,000 and keep that up three or four days, then 5,000 for three or four days. We have treated 22 cases of meningitis complicating otitic infection. As soon as the diagnosis is established by lumbar puncture and by neurologic findings, we give 15,000 units intrathecally. We do not repeat that oftener than twenty-four hours. In most of the cases we give it intrathecally for two or three days until the patient becomes conscious or until the meningitis is under control. Supplementing the intrathecal treatment we give intramuscularly 15,000 units every three hours. We have given 20,000 or 25,000, but in most cases 15,000 units is adequate. The treatment in several instances cleared up the otitis media, so that no surgery was done on the mastoid. In most of the cases of suppurative mastoiditis the laboratory reported a sterile culture when treatment with penicillin was administered for three or four days. With penicillin, at first supplemented by the sulfonamides, recovery occurred in all otitic meningitis cases. Encephalitis cases respond well to intramuscular injections. We have treated 15 cases of lateral sinus thrombosis. In all there was a positive blood culture or occlusion of the lateral sinus demonstrated by operation or both. We give penicillin only intramuscularly at least twenty-four hours before operation, and in many cases the culture from the thrombosed sinus is sterile at operation and we have had no positive blood cultures on any one treated with penicillin for twenty-four hours. Penicillin alone is inadequate in treating lateral sinus thrombosis. An operation is necessary, but in no case have we ligated the jugular vein. We have had septic emboli occur before operation but none after operation.

CAPTAIN ROBERT HENNER, Barksdale Field, La. I should like to call attention to the work of Schall in the use of heparin in venous thrombosis and tell of an instance of its combined use with penicillin in the case of cavernous sinus thrombosis. This patient was treated with sulfadiazine for about seventy-two hours and under this therapy became moribund and comatose and had a temperature of over 105 F. Institution of intravenous penicillin with the combined use of heparin in an intravenous solution caused the patient to develop rapidly a negative blood culture for the *Staphylococcus aureus* that was previously present, and in a period of over six weeks of recovery he was returned to full duty. We felt that penicillin offered the cure of disease only because the heparin was used in combination to provide local availability for the control of the infection.

CAPTAIN F. J. PUTNEY, M. C., U. S. I should like to confirm the observation that lateral sinus thrombosis must be operated on as well as treated with penicillin. My associates and I have treated 8 cases of sinus thrombosis, and in every one the sinus was opened, but in a goodly number we were unable to remove the thrombus in the lower end of the sinus at the jugular bulb, and likewise in these cases we did not ligate the jugular vein. We gave adequate doses of penicillin, and, fortunately, did not secure any septic thrombi. Uneventful recoveries occurred.

CAPTAIN C. A. SWANSON (MC), U. S. N. At the National Naval Medical Center, Bethesda, Md., the Penicillin Committee has now allowed us to use penicillin initially in acute otitis media in place of the sulfonamides. This should give us even better results. It was our experience in prepenicillin days that it takes mastoid wounds at least three weeks to heal. We have had only 3 cases in which penicillin was used locally in the mastoid wound and all 3 cases were healed in eight days. The Floreys in England are the investigators that first advocated the method I have described of controlled drainage. Their surgeon reported 19 out of 22 cases of primary healing in mastoid wounds.

LIEUTENANT COLONEL JOHN E. L. KEYES, M. C., U. S. Those of us in the armed services have had opportunities to study penicillin that were not available to our colleagues at home, therefore it seems only proper and right that we should pass on to them at this stage, when penicillin is becoming available to them, the result of our studies so that they may now join us in further study of the usefulness and limitations of this drug.

SULFONAMIDE THERAPY OF  
GONORRHEARESULTS IN 555 WOMEN MAINTAINED AT A  
VENEREAL DISEASE TREATMENT CENTER

RUTH BORING THOMAS, MD

WILLIAM E GRAHAM, MD

AND

GEORGE R CANNEFAX

Surgeon (R) Senior Surgeon and Assistant Bacteriologist Respectively  
United States Public Health Service

HOT SPRINGS, ARK

Although the number of gonococcic infections in women which have been treated with sulfonamides may run into the millions, there are few reports of results in groups of patients under good enough behavior and treatment control to make them a reasonable substitute for the laboratory animal whose lack has impeded study of this infection. The present material is therefore an example of what can be achieved in a group of women domiciled throughout in an institution where therapeutic efforts are directed toward improving their clinical condition and enabling them to pass bacteriologic tests of cure as early as possible, and where no patient is released as presumably cured until she can pass such tests. It is derived from the case records of 555 women, 200 Negro and 355 white, who were treated for culture positive gonorrhea at the U S Public Health Service Medical Center, Hot Springs, Ark., from December 1942 to April 1944. The mean age of this group is about 20 but a large number are still in their teens. Many types are represented, ranging from young school girls to professional prostitutes. Some are drawn from a wide area, although the greater part come from Arkansas and the adjoining states. The notably high incidence of a precarious family background is reflected in the unstable lives of these women. This background contributes its share toward their many brief marriages, lightly undertaken and soon terminated, and their uninhibited sexual behavior, whether married or single. The social unrest attendant on the war has played its part in their lives as well. Many come from small towns and villages, this being a predominantly rural state, and many have been apprehended in the vicinity of large military establishments, where they have migrated, to work sometimes as food handlers or in other poorly paid positions and consort with the soldiers for extra earnings and for pleasure. About three fourths of the total number are committed under the state quarantine regulations, which prescribe that they shall be held for treatment until noninfectious.

The admission history, which includes questions as to symptoms of gonorrhea, state of health of contacts and previous treatment, is often of very uncertain value from an epidemiologic standpoint or as an aid in establishing the diagnosis. A large proportion of the women are unaware of their infection until medical examination reveals it, and few give a history of symptoms. The most common complaints are lower abdominal pain and a vaginal discharge, though the latter complaint occurs as frequently in the nongonorrheal as in the gonorrheal patients. The incidence of clinically detectable pelvic changes is higher in these patients than the symptomatic history would lead one to expect. It has been our experience that a clinical diagnosis is of uncertain value and that the presence or absence of clinically recognizable urethritis or cervicitis particularly in the chronic

infections bears only a partial relation to the bacteriologic findings. Cervicitis and vaginitis from other causes are frequently encountered. This finding in conjunction with the vague histories often makes it impossible to date the onset of gonococcic infection or to determine its present stage. However, few of the infections in this group were considered acute.

On admission each patient received a physical examination and a spread and culture were taken from both urethra and cervix. Cultures were taken from Bartholin's glands or rectum only in the presence of clinical changes warranting suspicion of infection. Appropriate tests for other venereal diseases, complete blood counts and urinalyses were performed. Bacteriologic tests for gonococci were repeated every other day if negative until a total of six had been taken without interruption for the occurrence of a menstrual period. Indeed through much of the study an effort was made to take at least one culture during a menstrual period but experience has not shown this procedure to have great diagnostic value. After treatment and after six negative spreads and cultures performed over a two week period the gynecologic condition of each patient was determined by examination and if a frank urethritis or vaginitis was still present, an attempt was made to clear this up by local therapy. Treatment was not continued, however, until all clinical signs of cervicitis had disappeared, partly because in our experience these have little relation to the bacteriologic findings but chiefly because in a rapid treatment program such a long observation period is not feasible. For the same reason although no patients with acute or subacute pelvic inflammatory disease were released, some were discharged in whom the residual signs of such a process persisted.

After careful cleaning of the site removing the mucous plug and massaging the cervix, cultures were made by streaking the secretions on the surface of the medium. The medium used was proteose number 3 agar and hemoglobin (Difco) fortified with glucose to make a final concentration of 0.2 per cent. 1:800,000 crystal violet and 5 mg of para-aminobenzoic acid per hundred cubic centimeters. Glutamine<sup>1</sup> and liver extract growth accessory substances were added as suggested by Lankford.<sup>2</sup> Only a short time elapsed between the taking of the cultures and their incubation which was in an atmosphere of about 10 per cent carbon dioxide at a temperature of 35 C. After forty-eight hours the cultures were inspected and were sprayed with para-aminodimethylaniline monohydrochloride, and those colonies which showed a positive oxidase reaction were stained with Gram stain and examined under the microscope. Carbohydrate fermentations were done only in exceptional cases.

In the group under consideration treatment was never instituted except on demonstration of gonococci by culture at least once. In many instances gram negative intracellular diplococci were also found in the spreads. Every patient was treated with sulfonamides, even when there was a history of recent similar treatment. If the latter was given in the same type of institution as this center it was considered in determining sulfonamide resistance in a few of the patients treated subsequently with penicillin. All results reported in the sulfonamide group, however, were obtained by

1 Lankford C E and Snell E E. Glutamine as a Growth Factor for Certain Strains of *Neisseria Gonorrhoeae*. *J Bact* 45: 410 (March) 1943.

2 Lankford C E, Scott V and Cook W R. Some Aspects of Nutritional Variation of the *Gonococcus*. *J Bact* 45: 321 (April) 1943.

ourselves. Each dose of medication was ingested under the supervision of a responsible member of our personnel. Most patients received sulfathiazole in either of two systems: 1 Gm four times daily for five days or 2 Gm four times daily for two days and then 4 Gm daily for three days. In some instances sulfadiazine was substituted in the same dosage, but in our experi-

schedule or amount of sulfonamide treatment must take into account the proportion and distribution of the racial components in the group under consideration. Thus the total cures for the whole group of 555 sulfonamide treated women, shown in table 2, would have been higher if the proportion of Negro to white had been reversed.

TABLE 1—Results of Sulfonamide Treatment by Racial Group

| Method of Treatment | White (300) |    |         |    | Negro (200) |    |         |    |
|---------------------|-------------|----|---------|----|-------------|----|---------|----|
|                     | Cure        |    | Failure |    | Cure        |    | Failure |    |
|                     | No          | %  | No      | %  | No          | %  | No      | %  |
| 1st course 5 day    | 214         | 60 | 141     | 40 | 161         | 90 | 19      | 10 |
| 2d course 5 day     | 34          | 27 | 91      | 73 | 10          | 53 | 0       | 47 |
| Total cure          | 248         | 70 |         |    | 191         | 95 |         |    |
| Total failure       |             |    | 107     | 30 |             |    | 0       | 0  |

TABLE 2—Results of Sulfonamide Treatment in Entire Group

|               | After 1 Course |    | After 1 or 2 Course |    |
|---------------|----------------|----|---------------------|----|
|               | No             | %  | No                  | %  |
| Cure          | 395            | 71 | 439                 | 81 |
| Failure       | 160            | 30 | 100                 | 19 |
| Total treated | 555            |    | 539                 |    |

Second course not given to 16 failures after one course

ence it was no better than sulfathiazole. We adopted the larger dosage schedule to compare it with that so generally used: 20 Gm in five days. At first it appeared to produce more cures, but later experience did not bear out this impression and it was dropped because of the higher incidence of reactions. A period of five days elapsed between completion of a drug course and the taking of the first test of cure. If the culture was still positive and the white blood cell count not unduly depressed, a second course was given of either the same or the alternate drug. If this failed, the patient was considered sulfonamide resistant. In a few instances a third course was given alone but usually there was recourse to other measures, such as combining a sulfonamide with nonspecific protein therapy. This consisted of a series of intravenous injections of enough typhoid bacilli to produce a moderate febrile reaction every other day for five days. About one third of the patients thus treated became culture negative. If one focus of infection was found which could be eradicated, this was attempted, but often with indifferent results, particularly in the cervix, where deep cauterizations were not undertaken. When other measures failed, artificial fever, eight to ten hours, at 106.6 F, with 6 Gm of sulfathiazole administered during the preceding eighteen hours was used for 25 patients, with twenty-three known successes. After penicillin became available it was used in preference to other measures. In this series 10,000 units was injected intramuscularly every three hours for a total of 60,000 units. Failures were retreated with 20,000 units every three hours for a total of 120,000 units.

Part way through this study it became apparent that many of the maneuvers required to rid the white women of their gonococci were unnecessary in the Negroes. All the patients receiving artificial fever were white, as were all but 1 of those for whom penicillin was used. When case records were grouped on a racial basis the statistical differences shown in table 1 emerged.

Obviously, if such divergent results are shown to be the rule, any estimate of the effectiveness of a dosage

The initial advantage which the "intensive" sulfathiazole treatment scheme seemed to have over the "routine" may also be explained on a racial basis, since patients were treated just as they came and no racial differentiation was made in the tabulation of the early results. As shown in table 3, when this differentiation is made there is no statistically significant difference between the final results produced by these two methods.

This study includes, as well, 50 white women whose infection proved resistant to at least two courses, or a total of 40 Gm, of sulfonamide and who were treated with 60,000 units of penicillin. The results are shown in table 4.

Since the majority of patients were asymptomatic on admission, their reaction in this respect was no measure of the effectiveness of therapy. Some noticed a decrease in the amount of vaginal discharge. In others this remained unchanged, particularly in the presence of chronic cervicitis or nonspecific vaginitis, even though the gonococcus could no longer be recovered from the secretions. It may be noted, incidentally, that when vaginitis is associated with the presence of *Trichomonas vaginalis* the removal of clinical signs of this infection through treatment does not affect favorably the course of a gonococcal infection or make it easier to cure. Local treatment of the cervix by injection of a concentrated aqueous suspension of microcrystals of sulfathiazole with a fine needle directly into the cervical tissue, in a ring parallel to the cervical canal, failed in all of 5 cases.

In some complications of the adnexa and Bartholin's glands sulfonamides failed to produce improvement.

TABLE 3—Comparison of 'Intensive' and 'Routine' Treatment Methods

| Group | Intensive |      |    |         |    | Routine |      |      |         |    |
|-------|-----------|------|----|---------|----|---------|------|------|---------|----|
|       | Total     | Cure |    | Failure |    | Total   | Cure |      | Failure |    |
|       |           | No   | %  | No      | %  |         | No   | %    | No      | %  |
| White | 197       | 116  | 60 | 76      | 40 | 163     | 98   | 60   | 63      | 40 |
| Negro | 95        | 89   | 91 | 9       | 0  | 102     | 9    | 90   | 10      | 10 |
| Total | 290       | 205  | 71 | 85      | 29 | 265     | 107  | 71.5 | 73      | 29 |

TABLE 4—Results of Penicillin Treatment of 50 White Women

| Dosage   | Cure |    | Failure |   |
|--|------|----|---------|---|
|  | No   | %  | No      | % |
| 10,000 units every 3 hours for a total of 60,000 | 47   | 94 | 3       | 6 |

A larger number were improved clinically and symptomatically though still retaining gonococci in the cervix or urethra. Many patients with such complications were cured both clinically and bacteriologically. Chronic purulent infection of the urethra and paraurethral glands were apt to persist after gonococci could no longer be found by culture or spread. The patients themselves were practically never aware of such infections.

Reactions to sulfonamides were few and usually mild. In a number of instances sulfonamide therapy could

be completed by changing from one compound to another. Four instances of conjunctivitis occurred usually after completion of the course. The only serious reactions were 3 instances of ureteral blocking, all occurred in patients on the intensive dosage relatively early in the course and during very hot weather. After precautions were adopted to maintain an adequate fluid output, no more were seen. Early hematuria necessitated stopping the drug in 3 other patients.

## COMMENT

In spite of the impression, so long and so generally held, that gonorrhea in women is more difficult to cure than in men, the figures here presented indicate that under controlled conditions this is not the case. Our results are strikingly parallel to those reported by Turner and Sternberg<sup>3</sup> for the Army, both in the series as a whole and in the separate racial groups. Their figures and the recent discussion by Pelouze<sup>4</sup> emphasize and support an impression apparently held by some Southern clinicians for a long time, that gonorrhea in the Negro was easier to cure than in the white person. No explanation of this difference, the reality of which now seems well established, is offered. Whether it is due to the infection of Negroes in general with strains of gonococci more susceptible to the action of sulfonamides than those found in white patients or whether there is a higher racial immunity, cannot be decided without more evidence than we now have. If strain susceptibility is the reason, a reduction of the proportion of cures that can be obtained in Negroes with sulfonamides may be expected as the more susceptible strains die off, acquire sulfonamide resistance through exposure to sublethal concentrations of the compounds or are replaced by strains already resistant. If racial immunity is the explanation, its importance in problems of treatment and control is evident. Two important questions deserve further study, namely, whether the superiority of results with sulfonamides in Negroes will be maintained and whether the Negro race will respond relatively as much better to other treatment measures. At any rate, since much can be accomplished with the sulfonamides in women Negro or white, they remain a useful therapeutic weapon though not the most effective that has been or will be developed.

## SUMMARY

1. Results of sulfonamide therapy, chiefly sulfathiazole in 555 culture positive gonococcal infections in institutionalized women, are as follows. In 200 Negro women 90 per cent passed the tests of cure after one course of treatment and 95 per cent after two courses. In 355 white women 60 per cent passed tests of cure after one course of treatment and 70 per cent after two courses.

2. These results correspond closely to those recently reported with both Negro and white men in the Army.<sup>3</sup>

3. The evidence presented here indicates that under controlled conditions the bacteriologic cure of gonorrhea with sulfonamide compounds is as readily brought about in women as in men. This is true also for penicillin.

4. An explanation of the difference in response to sulfonamide therapy between Negro and white patients must await the results of further investigation.

Rapid Treatment Center

WARTIME EXPERIENCES IN HAWAII  
AFTER THE BLITZ ON  
PEARL HARBOR

F. J. PINKERTON, M.D.  
HONOLULU, HAWAII

In Hawaii as in the rest of the world the average person does not consider public health to be one's business, only when a major epidemic or disaster threatens does one become interested in helpful to and critical of the local health board. Let the threatened calamity be brought under control and Mr. and Mrs. Average Citizen again relax and become involved in more personal interests.

The definition of "public health" should be self-explanatory in that it is health for by and of the people and this simple fact should and must be recognized by people generally in communities throughout America—yes throughout the world. Public health cannot be left to the public health services or to the professional worker alone for it is the business of each one of us. It must be part of an overall community plan, as is fire protection or police protection. Laws must be enacted and violations must be punished. Public opinion must be aroused, and not only the medical men but every citizen must take an active interest. The interest of boys and girls at school, of the churches, of the employer and the employee must be aroused and the newspaper and radio must carry the banner under the leadership of the local health agencies, both public and private. Let it be fashionable or profitable to be healthy and a good start will have been made.

The local health official frequently operating with an inadequate staff, finds himself limited in the extent to which he feels able to go without public interest behind him. To get this he needs the help of volunteers. He needs community backing. Such a project as this might very well engage the attention and active participation of all the chambers of commerce in communities throughout America. It is important it is interesting it is profitable. Healthful communities are fine communities in which to live and work. It pays dividends not only through happier lives but also by reducing loss of man hours.

Notable among the worthwhile achievements concerning public health in the Territory for the past many years has been the work of the public health committee of the chamber of commerce. I have been chairman of this committee for the past eight years and as such have at all times tried to promote the best interests of the medical profession in its relation to the health and welfare of the community. Having served in key positions with the medical societies over the past twenty-five years as well as having managed the blood bank for the past three years, I have come to the conclusion that medical men individually and all too frequently collectively have shown an abysmal lack of interest and concern over the health affairs of their community. Our public health committee has more than adequate finances and has promoted such major projects as health legislation, mental hygiene reorganization of the leprosy program, dengue fever control, poliomyelitis control, mosquito and parasite control, plague control, tuberculosis surveys, the original prewar blood bank and numerous other investigations and studies of major or minor importance to the extent that more than a million dollars has been expended by

<sup>3</sup> Turner, T. B. and Sternberg, T. H. Management of the Venereal Diseases in the Army. J. A. M. A. 124: 135 (Jan. 15) 1944.

<sup>4</sup> Pelouze, P. S. Progress in the Wartime Management of Gonorrhea. Ven. Dis. Inform. 25: 42 (Feb.) 1944.

the chamber of commerce health fund over the past several years in the interest of making Hawaii a better place in which to live

The members of the medical profession have gradually come to accept and to appreciate the success of many of these projects, though at intervals in the past there has been keen opposition by them to some of the things which the members of the public health committee were endeavoring to do

Our public health committee of the chamber is a unique organization in that no other organization, to my knowledge, has such funds. During the great plague epidemic in 1900, at which time a large part of the city of Honolulu was destroyed by fire, the shippers inaugurated a system of collecting a voluntary tonnage contribution of varied amounts from all persons receiving freight across the wharves in Honolulu. This procedure had the sanction of the courts and has been continued. This income, amounting to as much as \$100,000 in one year, has been available to the chamber of commerce through its health committee to expend for health improvement in the Territory, chiefly in the city and county of Honolulu, so that our community is in a position to finance immediately any project which suddenly requires attention, such as an epidemic or disaster, ordinarily taken care of by taxpayers' funds but which would ordinarily not be available without slow and unwieldy special legislation. The members of this committee have full power to act and are subject to no regulation other than public opinion.

#### SHORTCOMINGS OF MILITARY RULE

A powerful influence on both the public and the private health of Hawaii and its peoples has been martial law and the blackout. On the day of the blitz, Dec 7, 1941, one of the first official acts of the governor was to declare martial law for the Territory. This was done before noon on December 7. Since that time there has been much controversy and no small amount of ill will created between the military and the civilian population regarding certain phases of the regulations. I think it is generally agreed that the civilians of the Territory were entirely favorable to the institution of martial law in the early days following the blitz. I wonder how many realize just what such a drastic regulation means to the way of life of any civilian who has not been accustomed to such regimentation. It means, in short, that everything a civilian does and says is subject to regulation by the military authorities. We in Hawaii have learned from experience that the military authorities fall far short in their understanding of proper methods to administer the purely civilian affairs of a community. While it is admitted that such drastic measures were necessary, it is also generally agreed that the methods of carrying out the necessary regulations were, many times, unnecessarily drastic and unreasonable. This naturally results when military officer executives are appointed who had had no experience with martial law on such a large scale nor any background or knowledge of the problems peculiar to that community. It is something that one is sorry to have endured, even though the experience probably has been valuable. One certainly becomes appreciative of its modifications.

All are no doubt familiar with the litigation relative to the operations of the provost court and the suspension of habeas corpus in Hawaii. Our experience with military rule convinces the large majority of us that

a commission form of government is not desirable for the people as a whole. On the contrary, our experience is the best recommendation for a continued form of democratic government. This must not be construed as a criticism of the military during the trying days after December 7. Those were critical times, and prompt and drastic action was required. There was not only the fear of attack from without but also the fear and uncertainty of attack from within, considering that we have in the Territory approximately 163,000 Japanese, 35,000 of whom are aliens and 64,000 of whom have been catalogued as enjoying dual citizenship.

One can readily understand how grave the situation might have been. Yet there has been little evidence of sabotage or organized effort to thwart the authorities in Hawaii. Immediately after war was declared on Japan the Army and Navy Intelligence, in cooperation with our own local police force and the Federal Bureau of Investigation, rounded up not only the Japanese but others as well who were known to have subversive leanings. Large numbers of these people were incarcerated as internees and subjected to a complete and thorough examination. Those found undesirable were sent either to the mainland for location in internment camps or to internment camps in the Territory. I think it is safe to say that every citizen in the Territory, regardless of racial descent, has some sort of an FBI record in the files. Some, of course have been investigated much more critically and completely than others—and the constant fear of investigation and subjugation caused a high percentage of apprehension and mass depression.

Immediately after December 7, under orders of the military governor, every person in the Territory, from the oldest to the youngest, was compelled to have a certificate of identification issued after a comprehensive examination, including fingerprinting. Regulations made it mandatory that at all times, day or night, an identification card must be in the possession of the individual to whom it was issued. Every one—and I do mean every one—with a few exceptions was vaccinated for smallpox and given a series of typhoid injections early in 1942 by military order. Booster shots for typhoid before June 15, 1944 have now been ordered by the civil government.

#### INCONVENIENCES OF THE BLACKOUT

The blackout has probably been the greatest objectionable feature, because during the winter months the total blackout regulations for the Islands started at sundown, which is in the vicinity of 6 o'clock, and lasted until as late as 7:15 in the morning. This meant that all houses had to be blacked out, and when I say blacked out I mean thoroughly and completely, because there was always a guard to see that one did not have even a slight crack of light showing from the premises. If any light showed there was often no warning, one was taken to the police station and the provost judge imposed a fine from \$25 up, depending on his disposition at the moment. The second or third offense meant a stiff fine, and in many instances jail sentences were imposed. The blackout in the Territory was total and complete. This, of course, was a great hardship on people of the poorer class, because their houses were not built for such arrangements and during the hot nights people would sit in one small blacked out room sweltering from the heat and lack of ventilation.



Strangely, this did not according to our public health records, increase our upper respiratory health conditions materially—a thing we could not understand although we feel that it has been a contributing factor to the increase in cases of tuberculosis. It did, however, produce an increased amount of mental illness and morbidity in that direction. There were several reasons for the enforcement of such a drastic rule: the fear of attack by airplanes or ships at sea, such a regulation completely prohibited people from gathering in groups; it saved electric power urgently needed in defense projects. No one could be on the street after blackout except those engaged in essential operations, and they had to be in possession of a pass which gave them this privilege. Under no conditions were aliens ever permitted on the streets after blackout.

Gradually this regulation has been modified to the point where the curfew begins at 10 o'clock and for the past month we have been permitted to leave our light on all night if we so desire. We are grateful for this privilege, and most of us subscribe to the argument that the blackout was probably a good thing in spite of the personal inconvenience it caused.

#### MENTAL HYGIENE

The physical health of any community is influenced by the mental health of its members, and this has been amply demonstrated in Hawaii since the war.

Some of our leading internists have this to say about internal upsets: "We are finding a great many more cases of general gastric and intestinal irritability associated with much evidence of vascular instability shown by swelling of the stomach and the intestinal or gastrointestinal membrane as shown by x-rays. This condition we have also found will be frequently associated with ulcer symptoms and frequently superficial ulceration which may go into deeper ulceration. The picture is variable. Quite sizable ulcers frequently disappear in the course of a few weeks, apparently recurring with increased mental worry or fretting over abnormal conditions. There are definitely ten times as many of these cases since the war. War and abnormal conditions have had a definite effect. Patients respond to treatment and rest."

It is suggested from our experience in Hawaii that there is more and more to the theory of an acute allergic phenomenon resulting from or associated with conditions of life which increase nerve tension. It is an interesting observation that when a patient is removed from the environment of extreme nervous tension many of his allergic symptoms disappear completely.

One large group of problems is that which includes the problems connected with the uncontrolled promiscuous employment of women who are the mothers of many small children. At the same time we have been receiving impressive documents from Washington entitled "The Children's Charter," setting forth all the precautions to be taken to insure proper mental health for children in wartime. We see our local federal agencies employing the mothers of as many as eight children, which children are then turned loose on the community without supervision and no children's organization had or was provided with the facilities for their care. A great deal of the damage to children resultant on this kind of occurrence is not shown in the juvenile delinquency statistics.

Another contributing factor has been the war workers brought here from the mainland. The recruiting program for these workers has been so handled as to

provide practically no consideration of the individual's history or ability to adjust to conditions here. A large number of emotionally immature persons have been brought to Hawaii, and they have not got along well. A number of psychopathic personalities, alcoholic addicts, feeble-minded persons and even psychotic individuals have been brought here by the federal agencies. The adverse conditions under which these war workers live contributed to the mental hygiene problem of this group.

Bad thinking on the part of the military and the local civilian government with regard to providing housing conditions for 75,000 people is responsible for the thousands who are living in tents, shacks and holes in the wall.

We are told that Honolulu is the most crowded city in the whole United States. It is quite as important to provide shelters for the civilian population as it is for the service personnel. Housing facilities for the civilians are woefully lacking in Honolulu.

It has been estimated by qualified observers that in Hawaii, just as it is reported to exist throughout the mainland, there is a very high percentage of inefficiency of voluntary war work among the civilian population.

#### PREPONDERANCE OF MEN

There is a general attitude of taking advantage of the benefits made possible by the war. I speak especially of the so-called volunteer workers. The great preponderance of the male population in our Territory is well known. Quoting from one of our best authorities, one does not have to look far to note the unhealthy effects of this on the women as well as on some of the men. This is not confined to young women; the woman over 35 has come into almost a second youth as far as masculine attention is concerned. The woman who has considered herself settled as a "wife and mother" has become socially more desirable and economically independent. When some women are suddenly given increased social status, desirability, importance and contacts always considered unavailable to her, it is not unusual to find her showing a new independence and lack of cooperativeness at home and at work. As far as the women are concerned, there seems to be a keen rivalry among the varied organizations requiring the wearing of a natty uniform. Private surveys involving thousands of men in the armed services indicate that only about 6 per cent of them demand female companionship while 42 per cent want more sports facilities, 40 per cent want more movies and other small groups want art, photography or music. The demand by this small percentage of the overwhelming male populace for the companionship of women very easily throws otherwise stable individuals into a state of self-aggrandizement and makes their contribution to the war effort secondary to their personal ambitions which they subscribe to under the guise of patriotism and with the license that goes with it. It therefore appears that a tremendous amount of woman manpower effort is being expended for an insignificant number of men in uniform—far in excess of rational and reasonable requirements and to the detriment of many other less alluring activities.

My remarks should be modified with respect to certain volunteers, both men and women, who are doing their jobs well and against whom no criticism should be leveled. However, if the social life that they are engaged in extracurricularly is so demanding and excessive as to render them inefficient in their full time

occupations, then the influence of the war in Hawaii has been definitely disastrous. I have a great respect and admiration for those women who are economically independent, who serve so efficiently and well in the various hospitals as nurses' aides. Many features of such work are distinctly undesirable and distasteful to women of this class, yet we find them putting in their capacity hours each day of the week and rendering an invaluable aid to the various institutions. People engaged in such activities do not need a brass band or self declaration to tell of their contribution to the war effort because their efforts are measured and recorded by the agency to which they are assigned. We call this type of service in Hawaii measured and measurable patriotism. There are many other organizations, connected and not connected with hospitals, doing equally superior work.

Owing to the preponderance of the male population and to the fact that many men are in Hawaii without their families and are lonely and eager for companionship, with plenty of money to spend, too often the wife has found release from a humdrum existence with a suddenly uncongenial husband and left her home and family for an adventure that is happier for the moment with a mainland war worker or a member of the armed forces. She is entertained and amused and she enjoys it thoroughly. The fact that such a relationship is temporary as well as immoral doesn't seem to matter. Naturally her actions and attitude have a profound effect not only on her children but on her friends and the community. She may think that she is "getting away with it" until the great awakening.

#### DIFFICULTIES OF READJUSTMENT AFTER EXILE

The thousands of local citizens who were practically forced to leave the Territory during the early days of the blitz are gradually returning to Hawaii at the pleasure and will of the Army and Navy. This has been probably one of the greatest disrupting factors but this disastrous state is gradually being corrected. Many men who sent their wives and children away soon after the blitz, with the best of motives, have found adjustments difficult to make with the long last returning of their wives and families.

#### EPIDEMICS

The tremendous number of defense workers and Army and Navy personnel which has flooded Honolulu has brought to our acute attention the grave problem of venereal disease control. Fortunately our local board of health has splendid cooperation with the health departments of both the armed services. Otherwise our excellent record could not have been achieved and maintained.

For many years Hawaii has had lower than average venereal disease rates. Long before the onset of the war, board of health regulations were issued which made it obligatory to report all new cases of venereal disease—civilian, Army or Navy—to the health department within twenty-four hours after diagnosis, along with information as to the suspected sources of the disease. Since the blitz a military order has been issued along the same lines. The health department assumes the function of investigating such suspected sources.

To prevent infection among the armed services, educational activities were sharply accelerated. Hundreds of thousands of pamphlets were provided by the health department for distribution to service men. Adequate

prophylactic facilities were provided by the Army and Navy and made available to civilians.

Along with efforts to reduce the incidence of disease in the many thousands of soldiers and sailors stationed in and advancing through Hawaii, case finding and educational activities for the civilian community have also been augmented.

Since the summer of 1942 there has been a decided increase in public interest concerning venereal diseases. Newspapers have devoted considerable news space and some editorials on the subject, and all radio stations in the Territory have provided free time for the release of venereal disease broadcasts. This change of public attitude was reflected in the passing of the Prenatal Blood Test Law by the 1943 session of the legislature.

In cooperation with the Department of Public Instruction classroom teaching about the venereal diseases has been instituted in the high schools. As far as possible this instruction is integrated with that concerning other communicable diseases. There has been a compulsory chest x-ray examination of all food handlers. A Wassermann test has been done at the same time in an effort to promote the control of venereal diseases.

Incidence of tuberculosis deaths in 1940 was 63 per hundred thousand based on a population of 426,654. In 1943 this had dropped to 56 per hundred thousand, based on an estimated population of slightly more than one-half million. This indicates that the effect of the war on the incidence of tuberculosis deaths has not been adverse.

However there is a definite increase in the number of tuberculosis patients in the Territory. It is estimated that in 1940 there were 1,474, whereas in 1943 this had increased to 1,949. The patients hospitalized in sanatoriums throughout the Territory were 860 in 1940 as against 1,063 in 1943.

Contributing factors of the increase are, of course, increased population and the large numbers of defense workers, the majority of whom had totally inadequate physical examinations. The majority of these people are located in and around Honolulu. There was also a large migration from the outside islands to Honolulu for war work. Overcrowding is probably the greatest single factor in this increased incidence of tuberculosis. The stress of modern living, prolonged physical and emotional fatigue, overcrowding, poor ventilation resulting from blackout restrictions, bad eating habits, lack of recreational facilities and overindulgence in alcohol greatly contributed to the increased number of cases of tuberculosis. Though an improved system of case finding has been adopted by the board of health, it is generally considered that this has not been the sole reason why so many new cases have been discovered.

Forty-three thousand 4 by 5 inch films have been taken since 1942, the majority of these being of the draftees and the food handlers who by law are compelled to submit to a chest x-ray examination. In Hawaii 2 per cent of our draftees presented x-ray evidence of tuberculosis, as did 3.5 per cent of the food handlers. It is estimated that there is a bed shortage for cases of tuberculosis in the Territory of approximately 1,000. Honolulu at the present time seriously needs from 400 to 500 additional tuberculosis beds. But if we had these additional beds we would not be able to supply personnel sufficient to care for the patients, as all of our formerly available help are now engaged in war work at fantastic salaries, and more glamor and excitement are attached to these war positions.

The following observation is interesting and has a direct bearing on the increased demand for medical care. An analysis of the statistics from our community clinic indicates that since 1939 the number of charity patients visiting this clinic has diminished more than 60 per cent though the cost of each individual visit is exactly double in 1943 what it was in 1939. In 1939 it cost us 78 cents per visit for 72 169 visits, while in 1943 it cost us \$1.57 each for 34 591 visits.

A dengue fever epidemic began in the Waikiki district in the early part of 1943. The total number of cases, exclusive of the military cases, was 1,485 as of May 3, 1944. Assisted by specially trained corpsmen of the U. S. Army, two hundred persons are constantly at work in the control of dengue.

An epidemic of poliomyelitis started early in 1943 and an emergency hospital was set up originally by the Office of Civilian Defense in April 1943 on the ground of the Shriners Hospital when there were 58 patients. On Sept. 1, 1943 the Emergency Poliomyelitis Hospital was formally taken over by the Aloha Temple of the Shrine and conducted as a separate institution from funds of more than \$200,000 donated by the public for the emergency. To date 100 patients have been admitted, the average daily cost per patient being \$17.25. The epidemic soon abated and at the present time there are but 4 active cases.

#### THE BLOOD BANK

So much has been said about the part played by the Civilian Blood and Plasma Bank at the time of the blitz that further information may be desired concerning the operation of the blood bank since that time. This bank was in operation for almost a year before the blitz.

One of our aims, when we could gather our forces together after the blitz, was to determine the blood type of every resident in Hawaii. We have fallen far short of that aim but are pleased to report that approximately 250,000 blood typings have been done. Our statistics clearly demonstrate that race influences the blood type of an individual, although we cannot determine race by blood. International averages show 43 per cent O, 40 per cent A, 12 per cent B and 5 per cent AB. Our percentages follow quite consistently, 36 per cent O, 39 per cent A, 18 per cent B and 7 per cent AB.

Owing to the blackout conditions and the military order forbidding citizens to be on the streets during the blackout hours, Honolulu was faced with the difficulty of providing emergency blood transfusions. So immediately after the blitz the blood bank, operating then under the direction and control of the Office of Civilian Defense, instituted a whole blood and plasma transfusion service readily available to all the hospitals in and near the city. At our main blood bank on the Queen's Hospital grounds donors were received, and after all the necessary laboratory work was done on the bloods they were then distributed to the various hospitals to be kept under refrigeration pending their need. This was a godsend to the people of Hawaii. Out of that emergency need we developed a lend-lease plan whereby blood from our central stores could be used at any time on any and all patients and in such quantities as were required the only condition being that this blood be replaced by a friend or member of the patient's family who was required to give his blood at the central bank. To date, approximately 30,000 donors have been received at the Honolulu Blood and

Plasma Bank. The excess of blood that is not used for whole blood transfusion is returned to the central bank within seventy-two hours and processed into plasma.

On Oct. 1, 1943 the operation of the blood bank under the Office of Civilian Defense was turned over to a board of directors of an organization chartered by the Territory and it has been maintained since that time on an independent self-supporting basis. We have enjoyed excellent cooperation from the Army and Navy medical departments. Approximately one half of our donors come from the people in the armed services who, of all people, have come to appreciate the importance of plasma and blood transfusions. No charge is made to the armed services for the use of blood or plasma. We give to the various hospital units and the ships at sea as much blood and plasma as they ask for without charge and without red tape. Our budget per month runs in the vicinity of \$5,000. This money is raised from service charges of \$5 per dose of blood and \$10 per dose of plasma when the amount borrowed is replaced, and from direct charges to patients who are unwilling or unable to send in donors to replace the blood or plasma used at the rate of \$20 per dose for blood and \$25 per dose for plasma. In these lucrative times when every one has money we have been faced with the situation on several occasions when we had more money than blood. People often prefer to pay us as much as \$300 for blood that has been used in an especially severe case than to send in, say, fifteen donors to replace it. On several occasions we have been compelled to use prison donors whom we pay \$10 for each donation. This is done only when our supply of donors runs short because of cash payments. In order to have a cash reserve for emergency needs as director of the blood bank I made a personal appeal to a few prominent business corporation heads, and within three days \$20,000 was donated, which we are using as a revolving fund on a reserve basis.

An interesting observation has been made with regard to the percentage of serologic tests done on all donors since the beginning of our bank. In the first year of operation more than 5 per cent of our donors showed a positive Kahn or Wassermann reaction. When such a report is found, in cooperation with the board of health, measures are immediately taken to put the patient under treatment and of course he does not return to the blood bank again because we have advised him that his blood is unsuitable, but we have accomplished a great public health benefit as a case finding agency among a large number of people who perhaps were ignorant of the fact that they had a syphilitic infection. With each succeeding year since our early days, there has been a noticeable drop in the percentage of positive Wassermann and Kahn reactions. Since December 1942 we have used the Kline exclusion test on all donors, and only those bloods which are Kline negative are used for whole bloods. Doubtful and positive Klines are checked by the Kahn standard test and those bloods which are negative Kahn are used for plasma.

We have built up a reserve of plasma to be used at a time of disaster, such as another blitz, and the Peacetime Blood and Plasma Bank, which has existed since Oct. 1, 1943, has accumulated a considerable reserve of plasma for local and emergency needs.

The blood bank has been responsible for making anti-Rh serum available to all service and civilian hos-

pitals The blood bank has itself done Rh testing on some 1 500 donors and has developed a register of Rh negative donors of all four blood types In this connection it is interesting to note that the percentage of Rh negative persons among Caucasians is the same as that found by the Certified Blood Donors Service, i e 15 per cent, but so far we have found only one Oriental who is Rh negative, and not any Filipino or Hawaiian-Oriental who is Rh negative

The blood bank has sponsored the use of specific substances A and B developed by Witebsky and his associates Ten cc of these substances is added to type O blood so that it can be given in emergencies when the patient's type is unknown, without cross matching We have also found that "treated O," as we call this blood when the substances are added, can be used for specific type patients without reaction and, in fact, to advantage when it is difficult to secure a compatible blood in subgroup patients We are now using more than 50 "treated O" bloods per month, out of a total of approximately 400 bloods per month

#### PROCUREMENT AND ASSIGNMENT

Since my appointment as chairman of the board of Procurement and Assignment Service for Physicians for the Territory of Hawaii we have met once each week for the purpose of determining the availability of physicians for military service or their essentiality to the community One major conclusion should be mentioned The board of the Procurement and Assignment Service feels unanimously that its responsibility in keeping a man out of the service if he desires to go in is even graver than it is in making him available for military service and forcing him into the Army or Navy when he does not want to go

The geographic location, the varied races involved and the new people that are constantly coming to Hawaii on defense projects have made our problem in Hawaii particularly and peculiarly difficult The facts that a large percentage of our population is of Japanese ancestry and that 30 per cent of the physicians of the Territory are of Japanese ancestry have made our problem in this regard unique Since Japan is our enemy, it is understandable that the Army and Navy are rather loath to accept commissioned officers of Japanese ancestry, even though they may be American born and have good records On the other hand, the board of the Procurement and Assignment Service is confronted with this great dilemma If the Japanese physicians are not acceptable to either of the armed services, and if our percentage quota of doctors per thousand of population is such that we can spare medical men for the services, then the ratio of doctors per thousand for the various racial groups will be thrown entirely out of balance if only our Caucasian doctors are accepted in the armed forces Such a situation then resolves itself to this conclusion that because they are Japanese they are literally enjoying protection and immunity and are being given a favored place in the scheme of things, since they are allowed to remain behind to build up lucrative practices which should belong to Caucasian citizens rather than to alien Japanese physicians or American born Japanese not acceptable for military duty

The operation of the Selective Service laws as now being conducted in the Territory make no racial distinctions Japanese are inducted alike with all the other races The board of the Procurement and Assignment Service finds it very hard to reconcile the attitude

of the Surgeon Generals in refusal to accept Japanese commissioned officers when they do accept in the Army Japanese draftees and volunteers The board of the Procurement and Assignment Service therefore has come to the conclusion that it cannot, in fairness to the citizens of Hawaii who also need good medical care, certify as available only a large number of Caucasians, to the detriment of the white population and to the distinct advantage of the Japanese race It is to be noted here, in fairness to the American born Oriental physician, that a large number of these boys are very desirous of entering the military service if for no other reason than to show the American public that they are good American citizens

To date 36 physicians from Hawaii have already entered the armed service, and 37 additional physicians have been certified as available Of this number 19 are Caucasian, 3 Chinese and 15 Japanese

All Hawaii has been rated as number 1 for critical wartime classification purposes From my remarks you can understand just how disastrous has been and continues to be the effect of the war on Hawaii As an outpost for national defense, as a supply port for all Pacific operations and as a rest and recreational zone for the millions of service men, you can readily understand the tremendous changes that must have taken place in our formerly peaceful islands

1013 Bishop Street

## Clinical Notes, Suggestions and New Instruments

### REACTIONS FOLLOWING MASS ADMINISTRATION OF SULFADIAZINE

COLONEL RUSSELL V LEE  
MEDICAL CORPS ARMY OF THE UNITED STATES

Because of the large number of persons involved and the importance of learning the frequency of reactions following the administration of sulfadiazine, this report seems justified As a prophylactic against pneumococcal, streptococcal and meningococcal infections 25,000 men and women were each given a single dose of 2 Gm of sulfadiazine during a five day period in December 1943 Thus an unusual opportunity was furnished for observing sulfonamide reactions

The drug was given under the supervision of a medical officer as a single dose of 2 Gm, in most cases immediately after breakfast Those receiving it were instructed to drink two glasses of water and to refrain from exercise and alcohol for twenty-four hours The men were instructed to report any untoward effects and, if known to be sensitive, were advised to refrain from taking the drug until such cases could be individually investigated As is inevitable, however, in such a large number of persons, a few who knew they had had reactions previously did take the drug, and these persons developed the most serious group of reactions

A total of 128 reactions (0.51 per cent) came to the observation of the medical officers Of these, 9 (0.036 per cent) were serious enough to require hospitalization Four more were listed as serious but hospitalization was not done, making a total of 13 (0.052 per cent) in this group An additional 115 (0.41 per cent) of "mild reactions" were seen in the dispensaries These can well be described by groups as (a) mild, cutaneous, (b) mild, general, (c) severe, cutaneous, (d) severe, general, and (e) serious, general

(a) *Mild, Cutaneous* (15 patients)—These were persons who exhibited a mild, generalized erythematous or follicular rash of short duration It is likely that there were a good many more of these that did not come under observation An interesting

The author is Chief of Professional Services AAF Regional Hospital Santa Ana Army Air Base Santa Ana Calif

feature was that almost all of these showed a greater or less degree of conjunctival injection which was a definite feature of the more severe cases. The only treatment advised was to take a large amount of water.

(b) *Mild, General* (100 patients).—These persons complained of a variety of symptoms, in the order of frequency malaise, nausea, diarrhea, vomiting and faintness, which were attributed, either by the patient or by the medical officer to the drug. It is not unlikely that other causes may have been operative in some of these men, and, in view of the fact that they were warned to be on the lookout for untoward symptoms, the psychic factor cannot be disregarded. Rest and a high fluid intake were the only therapeutic measures and all this group were well within twenty-four hours.

(c) *Severe Cutaneous* (4 patients).—Two of these patients developed an exfoliative dermatitis which required treatment over a period of days. Both of them had had previous reactions to the drug, 1 of them having developed an exfoliative dermatitis on a previous occasion when he had a local application of a sulfonamide in an ointment. Two others developed edema, somewhat suggestive of angioneurotic edema which however, yielded readily to injections of epinephrine.

(d) *Severe General* (6 patients).—It seems best to list these separately, with a brief summary of each case.

CASE 1.—The man received 2 Gm of sulfadiazine at 3 p m. Chills sensations occurred at 7 o'clock. He was admitted to the hospital at 9 p m with a temperature of 99.6 F, weakness, malaise, mental haziness and depression. No abnormal physical manifestations were observed except conjunctivitis. Treatment consisted of forced fluids. The temperature the next afternoon was 99.6 F. The patient was normal and asymptomatic on the third day. The most evident symptom was mental confusion.

CASE 2.—Two grams of sulfadiazine was administered at 2:30 p m. Chills occurred at 7 p m. The patient was hospitalized at 8 o'clock with a temperature of 99.6 F, clouded sensorium and conjunctival injection, but no rash. He had taken the drug in September 1943 and his temperature rose to 104 F afterward. He was afebrile and asymptomatic at twenty-four hours. Treatment consisted of forced fluids.

CASE 3.—A woman was given 2 Gm of sulfadiazine at 10 a m. She had pain in the eyes and lacrimation at 1 o'clock with chills and fever to 101 F. At 7:45 a generalized rash appeared, swelling of the eyelids and upper lip and a temperature of 102.4 F (maximum). The fever lasted thirty-six hours. At 4:30 p m there was generalized edema. By next day all swelling except that of the hands had disappeared. Forty-eight hours later the patient was practically normal again. She had taken a sulfonamide compound in July 1943 for otitis and had a rash at that time which lasted for three days and looked like measles but with no conjunctivitis at that time.

CASE 4.—The patient was given 2 Gm of sulfadiazine at 10 a m. He was admitted at 3 o'clock with headache, vomiting, loose stools, chills, fever, photophobia, a temperature of 103 F by evening, which was normal next morning, the skin showing a general blush and the conjunctivas much injected. In June 1943 he had been given sulfadiazine and developed "measles" two days after stopping the drug. It is not certain whether this really was measles or a reaction.

CASE 5.—Two grams of sulfadiazine was given at 9:30 a m. By afternoon burning and itching of the entire body occurred. At 4 p m the eyes were swollen. Physical examination showed considerable edema of the face, lip and orbital regions with edema extending down in the neck. The concentration of sulfadiazine was 41 mg per hundred cubic centimeters of blood. Epinephrine was given and the edema promptly subsided.

CASE 6.—Two grams of sulfadiazine was given at 9:30 a m. By noon intense general redness of the skin and pronounced edema of the feet and legs half way to the knee had developed with exfoliative dermatitis the next day. The patient had moderate general malaise, with a temperature of 99.6 F, anorexia and slight nausea. The dermatitis still persisted after two weeks. General symptoms subsided in thirty-six hours.

(e) *Serious, General* (3 patients).—CASE 1.—A man aged 31 was given 2 Gm of sulfadiazine at 4:30 p m. Headache,

dizziness and pains in the joints and legs had developed by 6:20 and fever at 7 o'clock with chills and generalized pains which were very severe, the legs were stiff. He was at his home. He went to bed at 11:30. His temperature was 102 F. He went to sleep. At 1:30 a m he vomited, his temperature was 104 F. He called the medical officer next morning and was admitted to the hospital semicomatose going on to coma, the temperature 104 F rising to 105.8. Physical examination showed general flushing of the skin, generalized edema, pronounced swelling of the finger tips and conjunctivitis. There was no pulmonary edema. The patient was comatose about six hours and then decidedly irrational. Breathing was difficult, with audible rhonchi. A generalized maculopapular rash developed. Intravenous dextrose was given, epinephrine and atropine with continuous oxygen inhalations. The patient came out of coma in about twenty-four hours. The temperature which reached the highest point 105.8 F rectally, twenty-four hours after the drug was taken dropped to 103 the next day, 99.6 the third day and was normal on the fourth day. The patient was critically ill for thirty-six hours but went on to complete recovery. He had taken sulfadiazine before in June 1943 when he developed a temperature of 104 F and a generalized rash, both of which cleared up promptly after the drug was stopped.

CASE 2.—Two grams of sulfadiazine was given at 6 p m. Next morning chills and fever had developed with general malaise and headache. The patient collapsed and entered the hospital at 7 p m. Physical examination showed slight edema of the skin of the face and lips, flushed face and red pharynx. The temperature was 104 F on entry, rose to 105.6 by evening and was normal the next day. The patient was treated with intravenous dextrose and epinephrine and went on to uneventful recovery in three days. Moderate stupor was present during the febrile period. There was no history of previous sulfonamide administration.

CASE 3.—Two grams of sulfadiazine was given at 9 a m. At 9:30 the patient became dizzy, and his throat was parched. At 10:30 he could not walk because of vertigo and became unconscious. He was admitted to the hospital at 1 p m with pain in the chest, dyspnea and delirium. Owing to misapprehension of his condition he was given two additional doses of sulfadiazine, 2 Gm and 1.5 Gm four hours later, and his condition became worse with coma and severe dyspnea. Sulfadiazine was stopped. He was given intravenous dextrose and his condition improved rapidly. His temperature fell to normal on the third day, and on the fourth day he was entirely normal. He showed a scarlet flush of the skin, edema of the eyelids and upper lip, and mild conjunctivitis. The concentration of sulfadiazine was 107 mg per hundred cubic centimeters of blood and 57 mg per hundred cubic centimeters of spinal fluid. He had two previous reactions to sulfadiazine in April 1943 and July 1943 on each occasion having fever, vomiting and stupor.

#### COMMENT ON SERIOUSLY ILL PATIENTS

The remarkable feature of these 3 cases was the high fever and the mental state, which ranged from coma through delirium to mild confusion. Patient 1 of this group was critically ill and might easily have died had not proper therapeutic measures been instituted. It is noteworthy that most of the seriously ill patients gave a history of previous administrations of sulfonamide drugs and previous reactions. As soon as close medical supervision was given to the administration of sulfadiazine and persons who were known to be sensitive were thereby discovered and prevented from taking the drug, there were practically no more of the serious febrile reactions.

#### SUMMARY AND CONCLUSIONS

After 2 Gm of sulfadiazine was administered to 25,000 persons, 0.50 per cent showed reactions, 0.036 per cent showed serious reactions and 3 patients were critically ill.

Treatment with intravenous dextrose and epinephrine was efficacious in the severe reactions.

No cases of urinary suppression or of agranulocytosis were observed.

A careful history of possible previous sensitization should be obtained before sulfonamides are administered.



## Council on Pharmacy and Chemistry

### PATHOGENIC BACTERIA, RICKETTSIAS AND VIRUSES AS SHOWN BY THE ELECTRON MICROSCOPE

THEIR RELATIONSHIPS TO IMMUNITY AND  
CHEMOTHERAPY

II RELATIONSHIPS TO IMMUNITY

STUART MUDD, M.D.

PHILADELPHIA

#### THE MICROBIOLOGIC SCALE OF PARASITISM

The bacteria rickettsias, pleuropneumonia-like organisms and viruses are the smallest and simplest known forms of life. These microscopic and ultramicroscopic forms may be arranged in a scale of diminishing size and complexity of organization. This scale in general parallels a scale of diminishing metabolic independence and of increasingly obligatory parasitism. No implication is intended that such an arrangement rests on genetic relationship. No preference is implied either between the hypothesis that the viruses represent primitive forms from which more complex forms of life have evolved<sup>76</sup> and the alternative hypothesis that the viruses are degenerate forms which have lost in their parasitic habit the means for their own independent existence.<sup>77</sup> Either hypothesis can be supported, but without decisive evidence. Arrangement of these minute forms in a microbiologic scale, even if somewhat artificial, however, does afford a certain rational continuity in the consideration of their structure and organization and of their relations to immunity and chemotherapy.

Bacteria are of course the largest of these microparasites. Bacteria have a definite cellular morphology. In metabolism bacteria range from autotrophic forms to highly parasitic forms. The autotrophic forms are capable of growth on an inorganic substrate and using either sunlight or oxidation of such material as sulfur or ammonia as a source of energy; they must therefore be fully endowed with the enzymes and metabolic systems essential for the synthesis of all the components of their protoplasm.<sup>78</sup> This protoplasm is as complex, however, as that of other bacteria and of higher forms of life.

The parasitic forms are deficient in one or many of the synthetic mechanisms essential to their growth and therefore dependent on their hosts to supply certain growth factors. The growth factors already known to be required by one or more parasitic bacteria include most of the amino acids, purines, pyrimidines, fatty substances (e.g. oleic acid), vitamins and more

complex substances (e.g. hemin and coenzyme for *Hemophilus influenzae*<sup>79</sup> and phthiocol for *Johnie's bacillus*)<sup>78</sup>

In pathogenicity bacteria range from free living forms which cause disease only through accidental ingestion of their toxic metabolic products, as in the case of *Clostridium botulinum*, through "opportunistic invaders" such as streptococci and staphylococci, to obligate parasites such as *Treponema pallidum* and *Mycobacterium leprae*, which have rarely if ever been cultivated in their virulent state outside the body. Defense against bacteria is feasible through specific active and passive antitoxic and antibacterial immune mechanisms and by means of currently available chemotherapeutic and antibiotic agents.

Rickettsias are smaller than bacteria but have essentially similar cellular morphology.<sup>80</sup> The pathogenic rickettsias have either lost or never achieved their metabolic independence, can be cultivated only in the presence of cells and are intracellular in their parasitic habit.<sup>81</sup> Specific preventive measures are in practice against rickettsial diseases but specific measures for treatment are not as yet known.<sup>80a</sup> Successful chemotherapy of louse borne typhus fever by para-aminobenzoic acid is also currently described.<sup>80b</sup>

The known viruses range in size from those of the psittacosis-lymphogranuloma group and the pox diseases, through influenza virus and the bacteriophages, down to the plant viruses, which are "macromolecules". A typical large virus, vaccinia, has been shown to have an essentially cellular morphology, with cell wall and differentiated inner protoplasm.<sup>81</sup> The bacteriophage particles, which are smaller than vaccinia, still have a complex morphology; they must be at or near the limit of cellular organization. The plant viruses, as far as now known, are giant molecules, the best studied of the macromolecular viruses appear to be composed solely of nucleoprotein.

The viruses are metabolically dependent on the cells within which they are obligate intracellular parasites. Specific active and passive prophylactic measures are in general very effective against virus diseases, but in general both specific immune and current chemotherapeutic measures are of very limited therapeutic value in viral diseases. Specifications for effective chemotherapeutic agents against viruses can be drawn up, however, and there are reasons for hoping that such agents may eventually be realized in practice as will be discussed later.

#### THE MORPHOLOGY OF THE MICROPARASITES IN RELATION TO IMMUNITY

Bacteria and rickettsias as examined by ordinary bacteriologic methods appear to be simple and structureless. Special methods, of course, may serve to demonstrate flagella, capsules and even cell walls.<sup>84</sup> But the long habit of observing such minute and apparently simple objects is often reflected in methods of dealing with bacteria in practice as though they were much

Dr. Mudd was chairman of the Committee on Applications of the Electron Microscope National Research Council 1940-1944.

The privilege of republishing certain of the electron micrographs was extended by the authors and the journals cited in the corresponding references in the bibliography and by the Williams and Wilkins Company, Baltimore.

The first instalment of this paper on Morphology by Stuart Mudd, M.D. and Thomas F. Anderson, Ph.D. appeared in THE JOURNAL October 28, p. 561. Illustrations referred to in the present paper which did not appear in the preceding instalment will appear in the reprints.

76. Boycott, A. E. The Transition from Live to Dead. The Nature of Filtrable Viruses. Nature London Supplement 123, 91-98 (Jan.) 1929.

77. Laidlaw, P. P. Virus Diseases and Viruses. The Rede Lecture 1938. Cambridge University Press.

78. Mueller, J. H. Nutrition of the Single Cell. Its Applications in Medical Bacteriology. Harvey Lecture to be published in the Harvey Lectures for 1943-1944. Series 39. Science Press, 1944.

79. Lwoff, A. and Lwoff, M. Studies in Cofactor Hydrogenases. Proc. Roy. Soc. London series B 122, 352-373 (May) 1937.

80. Pinkerton, H. Plotz, S. M. Anderson and Chambers.

80a. Successful treatment of murine typhus under rigorous experimental conditions has recently been described, however (Moragues, V., Pinkerton, H. and Greiff, D. Therapeutic Effectiveness of Penicillin in Experimental Murine Typhus Infection in *dba* Mice. J. Exper. Med. 79, 431-45, [April] 1944). The authors write: "The results would seem to justify a thorough clinical trial of penicillin in human typhus."

80b. Yeomans, Andrews and others. The Therapeutic Effect of Para-Aminobenzoic Acid in Louse Borne Typhus Fever. J. A. M. A. 126, 149 (Oct. 7) 1944.



simpler than they actually are. The vivid demonstration by the electron microscope of structural differentiation within the cells of bacteria rickettsias and even the larger viruses should lead to the further development of discriminating methods of using micro-organisms as diagnostic agents and as the means for producing active and passive immunity.

**Immunity Against Bacteria**—Diagnostic Reactions. Theobald Smith and Reagh<sup>81</sup> in 1903 demonstrated the structural and immunologic distinctness of the antigens, respectively, of the flagella and of the cell wall of *Salmonella cholerae-suis*. Analyses of the reactivities of the several flagellar and somatic antigens of more than a hundred intestinal pathogens of the typhoid-paratyphoid-food poisoning group are now available and are systematized in the Kauffmann-White or International schema<sup>82</sup> which is the current standard for classification and etiologic diagnosis within that group. Electron micrographs of the cells and flagella of typhoid bacilli and their modification by specific immune serums are shown in figures 47 and 48.

Avery and Heidelberger<sup>83</sup> demonstrated the structural and immunologic distinctness of the antigens respectively of the capsules and of the cells of pneumococci. The specific capsular polysaccharides proved to be the practically important antigens of the pneumococci. The diagnostic capsular swelling phenomenon,<sup>1</sup> the Francis skin test and the choice of type specific therapeutic serums are all based on the specific reactivities of the respective capsular polysaccharides. Electron pictures of the capsular swelling reaction are shown in figures 23 and 24.

A more recent example of a localized bacterial component used as a diagnostic reagent, in the preparation of which insight gained with the electron microscope was used, is the agglutinin of virulent *Hemophilus pertussis*, which is currently proving useful as a reagent for estimating susceptibility to whooping cough.<sup>84</sup> The pertussis agglutinin was at first prepared by methods predicated on the assumption that the cells of *H. pertussis* should first be disintegrated to liberate the agglutinin.<sup>85</sup> Later, reasoning that the agglutinin was a component of the surface of the cells of virulent *H. pertussis* led to the successful attempt to extract surface material directly from the intact bacterial cells.<sup>86</sup> This surface extraction provided the diagnostic agglutinin in better yield by a simpler procedure than the earlier method.

The pneumococcus capsular polysaccharide used in the Francis test and the agglutinin of *H. pertussis*, phase 1, used for estimating susceptibility to pertussis are of themselves nontoxic and give allergic skin reactions only as the result of the existence of antibodies

in the skin present in consequence of earlier injection vaccination or serum therapy. The pneumococcus or pertussis bacterial cells, since they are of complex composition and appreciably toxic, are not equally suitable for such specific diagnostic tests. The specific somatic surface antigens of the typhoid-paratyphoid-dysentery group are, on the contrary, inherently highly toxic<sup>87</sup> and are thus not suitable for such specific skin tests.

**The Preparation of Vaccines and Immune Serums**. The virulence of a pathogenic agent may be defined as its ability to cause disease, virulence is thus defined as synonymous with pathogenicity. Virulence or pathogenicity may be considered as comprising in some instances two factors, invasiveness and toxigenicity. Invasiveness obviously means the micro-organisms capacity to penetrate and subsist within the tissues of the host. Toxigenicity for the purposes of this discussion means the capacity to elaborate an exotoxin as exemplified by *Corynebacterium diphtheriae*, *Clostridium tetani*, *Cl. botulinum*, *Cl. welchii*, *Bacterium shigae*, *Streptococcus pyogenes* and *Staphylococcus aureus*. Invasiveness and toxigenicity may not always be separable in actual infection, the practical utility of considering these factors separately, however, arises from the fact that the immune mechanisms and therapeutic agents required to combat invasiveness and toxigenicity are distinct. This distinctness arises from the fact that the bacterial components against which the anti-invasive (antibacterial) and the antitoxic defensive mechanism are directed are structurally and chemically distinct.

**Anti-Invasive (Antibacterial) Immunity**. The ability of a pathogenic agent to establish itself on and to invade its host doubtless depends on the whole complex of relationships between parasite and host: the metabolic requirements of the pathogen in relation to the nutrition and oxygen tension provided in host tissues, the ability of the pathogen to withstand host defensive mechanisms, and so on. Specific active and passive immunity against invasiveness, however, is dependent primarily on the antigens at the surface of the pathogen. The first and essential step in the action of antibodies, whether actively or passively acquired, against the invading pathogenic agent is specific chemical combination with an antigen or antigens at the surface of the pathogenic agent. Agglutination, antibody-complement bactericidal action or phagocytosis by polymorphonuclear or mononuclear<sup>88</sup> phagocytes may follow as a consequence of this specific union of antibody with surface antigen, depending on the nature of the pathogen and the environing conditions. The antigens of the cell wall of the pathogenic agent in its virulent form are therefore the primary requisite of any diagnostic reagent or vaccine which is to detect or stimulate anti-invasive immunity. Since electron microscopy shows that the cell walls of bacteria and rickettsias form a relatively small fraction of the mass of the cells and since the inner protoplasm may be toxic, these facts have practical implications. It is perhaps not too rash to predict that purified surface antigens will increasingly come into use as diagnostic reagents and even as vaccines for active immunization.

<sup>87</sup> Weil A. J. Progress in the Study of Bacillary Dysentery, *ibid.* 46: 13-46 (Jan.) 1945. Morgan W. T. J., and Partridge S. M. An Examination of the O Antigenic Complex of Bact. Typhosum Br. J. Exper. Path. 23: 151-165 (Aug.) 1942. Perlman E., Binkley F., and Coebel W. Immunochemical Studies on Shigella Paratyphenteriae J. Bact. 47: 476 (May) 1944. Abstract.  
<sup>88</sup> Mudd S., McCutcheon M., and Lucke B. Phagocytosis Physiol. Rev. 14: 210-273 (April) 1934.

<sup>81</sup> Smith Theobald and Reagh A. L. The Nonidentity of Agglutinins Acting on the Flagella and on the Body of Bacteria J. M. Res. 10: 89-100 (Aug.) 1903.

<sup>82</sup> Bornstein S. The State of the Salmonella Problem J. Immunol. 46: 439-496 (June) 1943.

<sup>83</sup> Heidelberger M. and Avery O. T. The Soluble Specific Substance of Pneumococcus J. Exper. Med. 38: 73-79 (July) 1923. Avery O. T. and Heidelberger M. Immunological Relationships of Cell Constituents of Pneumococcus *ibid.* 35: 81-85 (July) 1923.

<sup>84</sup> Flosdorf E. W., Ielton H. M., Bondi A., and McGuinness, A. C. Intradermal Test for Susceptibility To and Immunization Against Whooping Cough Using Agglutinin from Phase I *H. Pertussis*, Am. J. M. Sc. 206: 421-425 (Oct.) 1943. Ielton H. M. and Flosdorf E. W. Clinical Results with the Use of Agglutinin from Phase I *Hemophilus Pertussis* as a Skin Test for Susceptibility to Whooping Cough J. Pediat. 22: 259-264 (March) 1943.

<sup>85</sup> Flosdorf E. W. and Kimball A. C. Comparison of Various Physical Means of Liberation of the Agglutinin from *H. Pertussis* in Phase I J. Immunol. 39: 287-295 (Oct.) 1940.

<sup>86</sup> Smolens, J. and Mudd S. Agglutinin of *Hemophilus Pertussis* Phase I for Skin Testing: Theoretical Considerations and a Simple Method of Preparation J. Immunol. 47: 155-163 (Aug.) 1943.

The pneumococcus polysaccharide used in the Francis skin test in pneumonia and the agglutinin of *Hemophilus pertussis* used in the diagnosis of susceptibility to pertussis have already been cited as examples of the use of specific surface components for susceptibility tests.

Type specific serologic reactivity, on which specific antibacterial immunity depends, may be determined by configuration either of a carbohydrate or of a protein component. The capsular polysaccharides of the various pneumococcus types are the classic examples of carbohydrate antigens which determine type. The surface somatic proteins ("M substance") of the various types of *Streptococcus pyogenes* are an example of type determination by protein antigens. In the case of the typhoid-paratyphoid-dysentery group, type specificity is determined by a phosphorus-containing polysaccharide-protein complex in which the carbohydrate component is type specific and the protein component is not type specific.<sup>82</sup> The characteristic antigenic reactivity (and toxicity) of the somatic antigens of this group appear, however, to be a property of the intact phosphorus-containing polysaccharide-protein complex and not of either the isolated carbohydrate or protein component alone.<sup>87</sup> In all cases known to me, however, the reactive configurations which determine type specificity and antibacterial immunity are peripheral,<sup>89</sup> i.e. are in the capsule, as in pneumococci, in the bacterial cell wall, as in *Streptococcus pyogenes* and the *Shigellas*, or in the bacterial cell wall and flagella, as in *Eberthella typhosa* and the *Salmonellas*.

Emphasis on the selection of pathogens in fully virulent form as a source of antigens for detecting or producing anti-invasive immunity perhaps requires further elaboration. Evidence is slowly accumulating from many sources to indicate that the specific pathogenic types of bacteria represent highly differentiated phases which are characteristically found under conditions of active and successful parasitism. These specific differentiated phases may, under favorable conditions, persist in culture. Usually, however, type specificity and pathogenicity tend sooner or later to diminish or be lost under artificial cultivation. Loss of type specificity usually proceeds *pari passu* with loss of an antigenic component at the surface of the parasite, for instance of the capsular polysaccharides of virulent pneumococci, the V<sub>1</sub> somatic polysaccharide of virulent *E. typhosa*, the M protein present in the cell wall of virulent *St. pyogenes*<sup>24</sup> or the agglutinin of *Hemophilus pertussis* in phase I,<sup>90</sup> loss of type specific surface antigen is usually correlated also with loss of invasiveness. Such nonpathogenic phases, which have lost the surface antigens associated with virulence, are obviously unsuited as immunizing agents to protect against invasion.

The ability to elaborate exotoxin (toxigenicity), on the other hand, may persist without relation to loss of type specific surface antigens and of the component of virulence on which depends the ability of the parasite to establish itself on and to invade its host.

**Antitoxic Immunity** The diseases which are primarily due to the production of exotoxin are those in which specific biologic prophylaxis and treatment have had their most conspicuous successes. Diphtheria, tetanus and to a less extent scarlet fever are cases in point. The exotoxin elaborated by the growing pathogenic agent passes out of the bacterial cell into the culture medium or host tissue and exerts its toxic action at a distance from its source. In diphtheria and tetanus early neutralization of the exotoxin by specific antitoxin usually suffices to permit recovery, the defensive mechanisms of the host in due course serving to eliminate the parasites themselves. In streptococcal and staphylococcal infection neutralization of the exotoxins does not of itself necessarily suffice to prevent tissue invasion by the streptococci or staphylococci themselves.

Exotoxin is ordinarily harvested from aged cultures in which many or most of the bacterial cells are cytolized. Morton and Gonzalez,<sup>91</sup> however, obtained diphtheria toxin from young cultures of *C. diphtheriae* by sonic disintegration of the bacterial cells. The exact site of formation of toxin by the bacterial cells is not known. Only one type of toxin is known to be produced by *C. diphtheriae* or by *Cl. tetani*, although the cells of the diphtheria or tetanus bacilli occur in several agglutinative types.

Since exotoxins and toxoids as ordinarily dealt with are free from the cells which produced them, and since their relation to the architecture of these cells is unknown, their further discussion would be outside the scope of the present article.

**Immunity Against Viruses**—The immune mechanisms which are operative against bacteria and other foreign particles containing antigens are also operative against viruses.<sup>92</sup> Specific combination of viral antigen and corresponding antibody can be demonstrated in vitro by precipitation, agglutination or complement fixation, and in vivo by specific neutralization of virus infectivity. The combination of virus and specific antibody has been demonstrated in electron pictures by Anderson and Stanley<sup>93</sup> (figs 49 and 50). The blood clearing mechanism, consisting of the fixed reticuloendothelial macrophages, the wandering macrophages, the circulating monocytes and polymorphonuclear leukocytes, acting in coordination with antibodies, is operative against viruses. Virus neutralizing antibodies are extremely effective in protecting animals against experimental virus infections. Clinical protection following exposure to various virus diseases may be afforded under appropriate conditions by convalescent human serums. Active immunization or recovery affords some degree of protection against most or all virus diseases. In brief, the classic phenomena of active and passive immunity and allergy are exhibited with respect to viral and rickettsial infections, but with modifications consequent on the obligate intracellular sites of the infecting viruses and rickettsias.

Active and passive humoral immunity (i.e. immunity dependent on antibodies) is of more conspicuous value in diseases due to intracellular parasites if established prior to the onset of clinical symptoms than for the treatment of established infection. The commonly

89 By peripheral is meant present in the periphery of the cell with out implication however that the component may not be present also in the inner protoplasm of the bacterial cell. It may be emphasized also that antigens of bacterial flagella may be of cardinal importance for diagnostic purposes but have only a very minor role in antibacterial immunity.

90 Florsdorf E. W. Dozois T. F. and Kimball A. C. Studies with *H. Pertussis* V. Agglutinogenic Relationships of the Phases. *J. Bact.* 41: 457-471 (April) 1941. Florsdorf E. W. and McGuinness A. C. Studies with *Hemophilus Pertussis* VIII. The Antigenic Structure of *Hemophilus Pertussis* and Its Clinical Significance. *Am. J. Dis. Child.* 64: 43-50 (July) 1942.

91 Morton H. E. and Gonzalez L. M. On the Site of Formation of Diphtherial Toxin. *J. Immunol.* 45: 63-68 (Sept.) 1942.

92 Extensive data on this point are summarized by Topley, W. W. C. and Wilson G. S. *Principles of Bacteriology and Immunology* ed 2 London 1936 chapter 52.

93 Anderson T. F. and Stanley W. M. A Study by Means of the Electron Microscope of the Reaction Between Tobacco Mosaic Virus and Its Antiserum. *J. Biol. Chem.* 139: 339-344 (May) 1941.

accepted explanation is that once intracellular parasites (chiefly the rickettsias and viruses) have parasitized their host cells they are no longer accessible to the action of immune serum. This pessimism regarding specific therapy would doubtless be justified if all the susceptible cells which are ultimately affected were parasitized at the same time. However, in a recent article on this subject Stokes<sup>94</sup> offers evidence that measles may be modified to some extent if sufficient human antibodies are administered in its earliest febrile stage. Topping<sup>95</sup> presents similar data for experimental animal and for clinical human cases of Rocky Mountain spotted fever. Stokes emphasizes the importance of earlier diagnosis of such diseases so that the therapeutic as well as prophylactic possibilities of such newly available preparations as Cohn's human  $\gamma$ -globulin concentrate may be realized.

Another phenomenon of acquired resistance has most recently been proved to exist in a number of viral infections. This phenomenon of acquired cellular resistance is quite outside the classic phenomena of immunity as described in infections caused by extracellular parasites. Whether or not this phenomenon may ultimately prove to be coextensive with intracellular parasitism and what its practical implications may be it is as yet too early to predict. Its possible importance as well as its relative unfamiliarity suggest discussion of the interference phenomenon or the phenomenon of acquired cellular resistance in considerable detail.

*The Interference Phenomenon in Viral Diseases, Acquired Cellular Resistance.*—A growing body of evidence shows the existence in viral diseases of a phenomenon involving a specific relationship between viruses and host cells, and specific interference between related viruses in the parasitizing of their host cells. The challenging question of the extent to which this phenomenon may be related to active resistance to superinfection during infectious diseases due to intracellular parasites, in carrier states and following recovery from such diseases is worthy of much consideration.

The most clearcut instances of the interference phenomenon consist in the protection, within strict limits of time dosage and other factors, of host cells ordinarily susceptible to a virulent virus by the presence of a related<sup>96</sup> virus. The protection may be afforded by a virus of such low virulence with respect to the host cells in question that minimal or even no symptoms are observable, the protective action may be initiated by the related virus prior to or simultaneously with infection with the virulent virus. This phenomenon of interference between related viruses has been described with respect to animal, plant and bacterial (bacteriophage) viruses.

*Interference Between Animal Viruses.* Magrassi<sup>97</sup> first observed in Doerr's laboratory in 1935 a phenomenon of immunity against superinfection which was not satisfactorily explicable in terms of humoral immunity. Magrassi worked with strains of herpes virus,

certain of which were capable and certain incapable of causing encephalitis in rabbits. Following corneal infection with a nonencephalitogenic strain the rabbits did not develop any clinical signs of encephalitis, nevertheless the virus could be demonstrated to be present in the brain on the sixth day following intracorneal inoculation, from the fourth day after corneal inoculation the animal was immune to direct cerebral inoculation even of large doses of encephalitogenic virus. Magrassi similarly demonstrated that, from five to ten days after intracutaneous inoculation of herpes virus, rabbits were immune to cerebral reinoculation with the virus, the reinoculated virus indeed disappeared rapidly from the brain and this disappearance was not explicable as a neutralization by antibodies. Magrassi's essential observations were confirmed by Doerr and Seidenberg<sup>98</sup> and the significance of these and similar experiments were discussed by Doerr and Kon<sup>99</sup>.

Hoskins<sup>100</sup> in 1935 observed that *Macacus rhesus* monkeys injected subcutaneously or intraperitoneally with mixed pantropic and neurotropic strains of yellow fever virus were protected by the neurotropic strain from fatal infection by the pantropic strain. The same protective effect against pantropic virus was afforded if the neurotropic strain was injected separately up to twenty hours after the pantropic strain, if injection of the pantropic virus preceded injection of the neurotropic strain by forty-eight hours, however, there was no protection and the animals died of infection with the pantropic strain.

These observations were confirmed and extended by Findlay and MacCallum<sup>101</sup>. Protection against pantropic yellow fever virus was afforded by concurrent injection of neurotropic yellow fever virus in several host species. Rift Valley fever virus also afforded some protection to monkeys against pantropic yellow fever virus. Neurotropic yellow fever virus in turn protected mice against Rift Valley fever virus. The authors offered as a possible explanation of these instances of interference of one virus with the pathogenic action of another virus the hypothesis "that when certain cells are already occupied by actively multiplying virus particles they cannot be invaded by certain other virus particles."

Jungeblut and Sanders<sup>102</sup> similarly demonstrated interference between a mouse adapted and a monkey strain of poliomyelitis virus. The presence of murine virus in the monkey brain was shown to interfere critically with the propagation of virulent monkey strains in the same animal. This effect could be produced therapeutically up to four days after intracerebral inoculation of the virulent virus. Thus "among a total of 88 monkeys which had received murine virus between the first and fifth day of the disease, 51 monkeys, or more than half (57 per cent), failed to show paralytic symptoms, while in a group of 50 untreated controls

98 Doerr R and Seidenberg S. Die Konkurrenz von Virusinfektionen im Zentralnervensystem (Phänomen von F. Magrassi). *Ztschr f Hyg u Infektionskr* 119: 135-165 (Jan.) 1937.

99 Doerr R, and Kon M. Schieneninfektionen. Schienenimmunsierung und Konkurrenz der Infektionen im Z. N. S. beim Herpesvirus. *Ztschr f Hyg u Infektionskr* 119: 679-705 (July) 1937.

100 Hoskins M. A Protective Action of Neurotropic Against Viscerotropic Yellow Fever Virus in *Macacus Rhesus*, *Am J Trop Med* 15: 675-680 (Nov.) 1935.

101 Findlay G M, and MacCallum F O. An Interference Phenomenon in Relation to Yellow Fever and Other Viruses. *J Path & Bact* 44: 405-424 (March) 1937.

102 Jungeblut C W and Sanders M. Studies of a Murine Strain of Poliomyelitis Virus in Cotton Rats and White Mice. *J Exper Med* 72: 407-436 (Oct.) 1940. Studies in Rodent Poliomyelitis V. Interference Between Murine and Monkey Poliomyelitis Virus. *ibid* 76: 127-142 (Aug.) 1942.

94 Stokes I Jr. The Use of Immune Bodies in the Treatment of Certain Infectious Diseases (Virus and Rickettsial Diseases) Caused by Intracellular Parasites, with Emphasis on the Need for Early Diagnostic Criteria of Infection. *Yale J Biol & Med* 16: 415-424 (May) 1944.

95 Topping H H. Rocky Mountain Spotted Fever. Further Experience in the Therapeutic Use of Immune Rabbit Serum. *Pub Health Rep* 58: 757-775 (May 14) 1943.

96 The term 'related' is used without for the present attempting precise definition. In many, but definitely not in all cases in which data are available interfering strains are serologically cross reactive. Probably all that should be implied at this time is that interfering viruses parasitize the same host cells in some competitive manner.

97 Magrassi F. Studi sull'infezione e sull'immunità da virus erpetico. *Ztschr f Hyg u Infektionskr* 117: 501-528 (Nov.) 573-620 (Dec.) 1935.

only 2 monkeys (4 per cent) escaped the disease." In seeking an explanation the authors point out that both murine and monkey strains of the virus "possess the same affinity for the anterior horn cell which constitutes the selective seat of the poliomyelitic lesion."

A 'blockade' of susceptible cells by nonparalyzing murine virus might render these cells temporarily impregnable to an attack of paralyzing monkey virus because the orderly function of certain enzyme systems, necessary for successful propagation of monkey virus has conceivably been disturbed by previous contact with murine virus."

Protection of hamsters against a hamster adapted strain of poliomyelitis virus by previous inoculation with various other strains of poliomyelitis virus has recently been described by Dalldorf and Whitney<sup>103</sup>: "The protection is well developed within six days and persists for from six to eight weeks." As in other instances, heat inactivated virus does not afford this protection, "the time relationships are important in showing that the phenomenon is an interference rather than cross immunity."

Reciprocal interference between strains of influenza virus grown in tissue cultures has been demonstrated by Andrewes<sup>104</sup>:

When a strain of influenza A is given good opportunity to multiply in a tissue culture of the Maitland type, that culture is thereby rendered incapable of supporting the growth of another strain of influenza added subsequently. This cannot be because of any formation of antibody, nor is there any change in pH as compared with uninoculated cultures.

The cells of the infected culture would still support growth of the unrelated virus of lymphogranuloma venereum. "When two strains of influenza A virus were added to a tissue culture simultaneously but in widely differing amounts, the one present in larger quantity suppressed the growth of the other."

The Henles,<sup>105</sup> studying the propagation of influenza A virus in the chorioallantoic membrane of embryonated eggs, have demonstrated interference by homologous virus partially inactivated by aging or by ultraviolet irradiation.

Similar interference experiments conducted in mice by the intranasal injection of partially inactivated virus preparations, followed five hours later by the active agent, have given results indicating that the same phenomenon may be demonstrated in this species. Protection against as much as 250-50 per cent mortality doses was noted.

Interrelationships between classic immunity and the phenomenon of acquired cellular resistance are well brought out by the studies of Morgan and Olitsky,<sup>106</sup> Morgan, Schlesinger and Olitsky<sup>107</sup> and Schlesinger, Olitsky and Morgan<sup>108</sup>. A degree of active immunity

can be induced in animals by vaccination with formaldehyde inactivated eastern equine encephalomyelitis virus or western equine encephalomyelitis virus. In such vaccinated animals the degree of resistance to intracerebral inoculation of homologous virus is correlated with the titer of neutralizing antibody in the serum and with the neutralizing capacity of the cerebrospinal fluid.<sup>107</sup> Animals vaccinated with formaldehyde inactivated eastern equine encephalomyelitis virus are not immunized against western equine encephalomyelitis virus, nor are those vaccinated with western equine encephalomyelitis virus immune to eastern equine encephalomyelitis. This is the familiar picture of specific active immunity.

If now such vaccinated guinea pigs were injected intracerebrally with 1 to 1,000 minimum lethal dose of homologous virus a steep rise in temperature occurred first observed two hours after inoculation and persisting for about twenty-four hours, while in control animals fever lasted until prostration or death, in immune animals the temperature dropped after twenty-four to thirty hours and remained normal thereafter.<sup>108</sup> Guinea pigs two weeks after this abortive infection with western equine encephalomyelitis virus resisted intracerebral reinoculation with 10 or 1,000 minimum lethal doses of eastern equine encephalomyelitis virus. Similar observations were made in rabbits. Animals thus rendered resistant to reinoculation intracerebrally with either homologous or heterologous virus were not resistant to peripheral reinoculation with heterologous virus which circulated in the blood stream as in normal animals. Animals vaccinated and then recovered from an abortive infection with western equine encephalomyelitis exhibited also an increased resistance to intracerebral inoculation with Theiler's virus. This then, is the picture of the interference phenomenon—an induced, transient resistance to superinfection of cells which would normally be susceptible, this acquired cellular resistance not being necessarily limited to serologically cross reactive types of intracellular parasite.

The interference phenomenon has recently been investigated in detail by Ziegler and Horsfall<sup>109</sup>, Ziegler, Lavin and Horsfall<sup>110</sup> and the Henles,<sup>111</sup> using embryonated hen's eggs inoculated into the allantoic sac with influenza virus. Reciprocal interference has been clearly demonstrated between strains of influenza A, influenza B and swine influenza virus. These strains are related in their tropism for tissue but are not serologically cross reactive. Suppression of reproduction of active virus was obtained by the presence of active heterologous virus or of homologous or heterologous virus rendered partially or completely noninfective by carefully quantitated ultraviolet radiation or by prolonged storage at low temperature. Reproduction of active virus could be suppressed by introduction of noninfective virus as long as twelve hours after inoculation of the active virus.

103 Dalldorf G and Whitney E. A Further Interference in Experimental Poliomyelitis. *Science* **98**: 477-478 (Nov. 26) 1943.

104 Andrewes C. H. Interference by One Virus with the Growth of Another in Tissue Culture. *Brit J Exper Path* **23**: 214-220 (Aug.) 1942.

105 Henle W and Henle G. Interference of Inactive Virus with the Propagation of Virus of Influenza. *Science* **98**: 87-89 (July 23) 1943.

106 Morgan I. M. and Olitsky P. K. Immune Response of Mice to Active Virus and to Formalin Inactivated Virus of Eastern Equine Encephalomyelitis. *J Immunol* **42**: 443-454 (Dec.) 1941.

107 Morgan I. M., Schlesinger R. W. and Olitsky P. K. Induced Resistance of the Central Nervous System to Experimental Infection with Equine Encephalomyelitis Virus. I. Neutralizing Antibody in the Central Nervous System in Relation to Cerebral Resistance. *J Exper Med* **76**: 357-369 (Oct.) 1942.

108 Schlesinger R. W., Olitsky P. K. and Morgan I. M. Observations on Acquired Cellular Resistance to Equine Encephalomyelitis Virus. *Proc Soc Exper Biol & Med* **54**: 272-273 (Dec.) 1943.

109 Ziegler J. E. Jr. and Horsfall I. I. Interference Between the Influenza Viruses. I. The Effect of Active Virus on the Multiplication of Influenza Viruses in the Chick Embryo. *J Exper Med* **79**: 361-374 (April) 1944.

110 Ziegler J. E. Jr., Lavin G. I. and Horsfall I. I. Interference Between the Influenza Viruses. II. The Effect of Virus Rendered Noninfective by Ultraviolet Radiation on the Multiplication of Influenza Viruses in the Chick Embryo. *J Exper Med* **79**: 379-400 (April) 1944.

111 Henle W. and Henle G. Interference Between Inactive and Active Viruses of Influenza. I. The Incidental Occurrence and Artificial Induction of the Phenomenon. *Am J M Sc* **207**: 705-716 (June) 1944. Interference Between Inactive and Active Viruses of Influenza. II. Factors Influencing the Phenomenon. *ibid* **207**: 717-732 (June) 1944.

*Interference Between Plant Viruses*—The literature on acquired immunity of plants to viral diseases has been reviewed by Price.<sup>112</sup> Many plants recover symptomatically from virus disease but remain carriers of viable virus. Such plants are immune to reinoculation of the same or related viruses but not to unrelated viruses.

Plants recover after an acute attack by production of shoots or leaves which appear healthy or show only mild symptoms of disease, which still harbor virus and which are refractory to infection with the virus in question but not to infection with unrelated viruses.

With respect to cross immunity, it has been shown with numerous groups of viruses that plant tissues invaded by one strain of a virus are protected from infection with another strain of the virus but are susceptible to infection with unrelated viruses. The immunity appears to be closely associated with presence of virus in the immune tissues, since there is no evidence that virus free tissues of infected plants are immune. The cross immunity reaction has proved useful for differentiation and classification of plant viruses.

Kunkel<sup>113</sup> records an instance in which this interference between plant viruses was of curative value during the first days of infection. A mild strain of tobacco mosaic virus was used to immunize tomato plants against a lethal strain of tobacco mosaic virus which quickly kills unprotected tomato plants. The tomato plants were saved from death or serious injury when they were inoculated with the mild virus within three days after infection.

It is to be emphasized that nothing equivalent to antibodies and therefore no natural humoral mechanism of immunity has been demonstrated in plants. It is true that specific neutralization of the infectivity of plant viruses by immune serums prepared in animals can be demonstrated experimentally, this, however, is definitely an artificial procedure. Price presents interesting considerations suggesting that the type of specific acquired immunity under discussion may be common to animals and plants alike.

*Interference Between Bacterial Viruses (Bacteriophages)*—The lysis of bacteria by bacteriophage may be considered as a virus infection in which the susceptible bacterial cell is the host and the bacterial virus or bacteriophage particle is the parasite. The accessibility of the bacterial cell to observation, the simplicity of the host (simplicity at least as compared to animal and plant hosts) and the short time within which the parasitic cycle is complete make bacteriophage lysis peculiarly suitable for definitive analysis.

Interference between types of bacteriophage active against a single strain of *E. coli* has been demonstrated and analyzed by Delbruck and Luria,<sup>114</sup> Luria and Delbruck,<sup>115</sup> and Luria, Delbruck and Anderson.<sup>42</sup> Two different types of bacteriophage,  $\alpha$  and  $\gamma$ , each independently produce characteristic lysis of the susceptible strain of colon bacilli. In mixed infection under suitable conditions, however, lysis is exclusively of the  $\gamma$  type, and lysis by a phage is completely suppressed.

Analysis of lysis by these bacteriophage strains reveals that the first step is adsorption of bacteriophage particle or particles on the surface of the bacterial cell. Unless phage is present in great excess there is no interference between the two phage strains in regard to this primary adsorption, each strain is adsorbed at a rate dependent on its own affinity for the host cell and the experimental conditions.

"The second phase of the life cycle is the multiplication of the virus in the cell. After the bacterial cell has adsorbed a virus particle, it retains normal appearance for a while then suddenly the newly formed virus particles are liberated. In most cases the cell is lysed at the same moment. After this the newly liberated virus particles will become adsorbed to other bacteria still present in the culture." In infection by a mixture of the two phage strains the chain of events between adsorption of virus on cell through multiplication of the virus to liberation of new phage particles is dominated by the  $\gamma$  phage. In lysis by the  $\gamma$  phage the latent period between adsorption and liberation of the new phage particles is twenty-one to twenty-five minutes and on the average about 135 new phage particles are released from each cell lysed. These characteristic constants are not altered by the presence in the mixed infection of  $\alpha$  phage particles and the new phage particles produced are exclusively of the  $\gamma$  type. The  $\alpha$  phage alone produces lysis in thirteen to seventeen minutes. Yet the suppression of the growth of a phage may be brought about even when  $\gamma$  phage is added several minutes after infection by  $\alpha$  phage.

Luria and Delbruck<sup>116</sup> found that the ability of  $\gamma$  phage to suppress the growth of  $\alpha$  phage could be demonstrated even after the  $\gamma$  bacteriophage was partially inactivated by ultraviolet radiation, although heat inactivated phage had lost this ability. Analysis of the quantitative data led to the conclusion that the adsorption of one ultraviolet inactivated  $\gamma$  particle on the bacterial cell was sufficient to inhibit the growth of virus  $\alpha$ .

Luria and Delbruck<sup>116</sup> found that the ability of  $\gamma$  phage to suppress the growth of  $\alpha$  phage could be demonstrated even after the  $\gamma$  bacteriophage was partially inactivated by ultraviolet radiation, although heat inactivated phage had lost this ability. Analysis of the quantitative data led to the conclusion that the adsorption of one ultraviolet inactivated  $\gamma$  particle on the bacterial cell was sufficient to inhibit the growth of virus  $\alpha$ .

The ultraviolet inactivated virus  $\gamma$  also shows the capacity of inhibiting the growth of the sensitive bacteria. These are not lysed but deprived of the ability to divide. The number of bacterial cells thus affected corresponds to that of the cells in which the growth of the virus  $\alpha$  is inhibited; the two actions evidently are manifestations of the same phenomenon. The suppression of bacterial growth must be due to inhibition by virus  $\gamma$  of some fundamental step in the synthetic processes of the bacterial life cycle.

A bacterium-phage relationship suggestive of the resistant carrier state which is so familiar in animal and plant pathologic conditions has been described by Burnet and Lush.<sup>116</sup>

A bacteriophage (C) acting on the nonpathogenic white coccus SF is characterized by the unusual frequency with which it provokes the appearance of resistant forms. Each plaque shows a central growth of resistant culture, and suitable experiments indicate that under the usual conditions of growth 10 or 20 per cent of effective contacts between phage and susceptible bacterium result in the appearance of resistant lysogenic variants, the remainder initiating lysis in classic fashion. The resistant culture shows no gross evidence of lytic action on agar but in broth culture liberates considerable amounts of phage.

112 Price W. C. Acquired Immunity from Plant Virus Diseases. *Quart. Rev. Biol.* 15: 336-361 (Sept.) 1940.

113 Kunkel J. O. New Views in Virus Disease Research. chapter IV in *Science in Progress*. New Haven: Yale University Press, 1939. pp. 118-121.

114 Delbruck M. and Luria S. E. Interference Between Bacterial Viruses. I. Interference Between Two Bacterial Viruses Acting on the Same Host and the Mechanism of Virus Growth, *Arch. Biochem.* 1: 111-141 (Oct.) 1942.

115 Luria S. E. and Delbruck M. Interference Between Inactivated Bacterial Virus and Active Virus of the Same Strain and of a Different Strain. *Arch. Biochem.* 1: 207-218 (Dec.) 1942.

116 Burnet F. M. and Lush D. Induced Lyogenicity and Mutation of Bacteriophage Within Lyogenic Bacteria. *Australian J. Exper. Biol. M. Sc.* 14: 27-38 (March) 1936.



Concerning the change of the host bacterial cell from normal susceptible to resistant carrier the authors say

The production of the resistant lysogenic strain SF/C provides a clearcut example of the positive induction of change in bacterial character by the action of a bacteriophage. In this instance the alternative of selection by phage from pre-existent variants in the population submitted to lysis is definitely excluded. The rapidity with which the change is induced is noteworthy. Within an hour of contact with phage C the surface of the bacterium has changed so that it no longer adsorbs either phage C or C' and becomes insusceptible to their action. This changed character is then transmitted indefinitely to its descendants. It is not possible to say whether this surface change results from an altered genetic constitution of the bacterium or is directly induced by the associated phage at each generation.

White<sup>117</sup> discovered a similar case in cholera bacteriophagy. A phage strain of small lytic power "renders the originally sensitive vibrio forthwith and in perpetuity resistant to the most active" phage strain. The resistant bacteria are lysogenic, i. e. are carriers of phage. Concerning mechanism White writes "The obvious and highly probable explanation is that the less lytic phage, lacking nothing in combining vigor, establishes itself on the 'phage receptors' of the bacterium, forbidding entry to its more destructive confrere."

These data on the interference phenomenon in animals, plants and bacteria have been presented in what may seem disproportionate detail because of my belief that they may lead to the threshold of a more fundamental understanding of the relationship of the parasite to the parasitized host cell in many diseases caused by intracellular parasitic agents. They may be considered relevant to a discussion of the morphology of micro-parasites because a critical relationship between components of the parasites and components of the parasitized host cells is involved. In some instances at least the first step of this critical relationship, the adsorption of virus to host cell, may be shown to depend on a specific correspondence in chemical configuration between the virus and components of the host cell surface analogous to that between antibody and cell surface antigen.

The first step in the action of bacteriophage particle on susceptible bacterial cell is specific adsorption of the phage particle to the surface of the bacterial cell. This adsorption must depend on a lock to key correspondence between the pattern of certain molecular configurations on the surface of the bacterial cell and the pattern of configurations on the surface of the phage particle.<sup>118</sup> The adsorption of phage to a specific receptor site on the bacterial cell is analogous to the combination of antibody with antigen at the surface of the bacterial cell. Each depends on a specific surface configurational correspondence.

The specificity of the phage receptor and the antigen sites may be closely similar. Thus Schiff and Bornstein<sup>119</sup> describe a phage specific for the somatic antigen

IX of the Kauffmann-White table of *Salmonella* antigens. This antigenic configuration occurs in *Eberthella typhosa* and in group D of the *Salmonellas*, bacterial species whose surface contains configuration IX are with few exceptions susceptible to this particular phage and species lacking IX are not, again with certain exceptions. Another phage lyses bacterial species containing the flagellar antigen *d* which occurs in *E. typhosa* and in certain *Salmonella* species. A similar phage for R somatic antigen is described by the same authors.<sup>120</sup> On the other hand the V<sub>1</sub> phages described by Craigie and Brandon<sup>120</sup> and Craigie and Yen<sup>121</sup> have permitted the subdivision of the single serologic V type of *E. typhosa* into eighteen types and subtypes<sup>121</sup> as determined by phage susceptibility. Finally within the species *Streptococcus pyogenes*<sup>122</sup> the specificity of serologic types is narrower than that of the grouping determined by phage susceptibility. Strains of dysentery bacteriophage are available also which lyse strains of several types within the species *Shigella paradysenteriae*. The sites on the bacterial cell with which phages combine may thus be more or less specific or equally specific with the sites at which given antibodies combine. In each case the combination must be critically dependent on molecular configurations in the bacterial cell surface.

Direct evidence that the combination between bacteriophage and susceptible cell is also dependent on the state of the surface of the bacteriophage particle is afforded by the recent study of Kalmanson and Bronfenbrenner.<sup>123</sup> These investigators have shown that adsorption of phage particle to bacterial cell can be prevented by previous combination of phage with antiphage serum and that the phage activity can be quantitatively restored by digesting away the antibody coating with the proteolytic enzyme papain. The phage particle coated with antiphage serum cannot combine with the bacterial cell receptors, removal of the antibody from the phage particle surface enables it to combine with and cause lysis of its bacterial host cell.

The chain of events following adsorption of phage particle to susceptible cell surface leads to multiplication of the phage and usually to lysis of the bacterial host cell. d'Herelle<sup>124</sup> presents evidence suggesting that the phage may elaborate lysins which are distinct from the components which determine adsorption to the susceptible cell. However, the mechanism of phage multiplication<sup>125</sup> and of bacterial lysis have not yet been clearly analyzed and will not be considered further in this report.

In the work cited a beginning has been made in discovering the all important events that are involved in the parasitization of a host cell by an intracellular parasite. In the case of bacteriophagy at least it seems clear that the initial event is a specific adsorption of the phage particle to bacterial host cell. This combination,

120 Craigie J. and Brandon K. F. Bacteriophage Specific for the O Resistant V Form of *B. Typhosus*. *J. Path. & Bact.* 43: 233-248 (Sept.) 1936.

121 Craigie J. and Yen C. H. The Demonstration of Types of *B. Typhosus* by Means of Preparations of Type II V<sub>1</sub> Phage. *Canad. Pub. Health J.* 29: 448-463 (Sept.) 1938.

122 Evans A. Studies in Hemolytic *Streptococci*. II *Streptococcus Pyogenes*. *J. Bact.* 31: 611-624 (June) 1936.

123 Kalmanson G. M. and Bronfenbrenner J. Restoration of Activity of Neutralized Biologic Agents by Removal of the Antibody with Papain. *J. Immunol.* 47: 387-407 (Nov.) 1943.

124 d'Herelle F. *Phénomène de la guérison dans les maladies infectieuses*. Paris 1938.

125 A beginning of analysis of phage multiplication has been made by T. I. Anderson. Virus Reactions Inside of Bacterial Host Cells. *J. Bact.* 47: 113 (Jan.) 1944. abstract.

117 White P. B. Lysogenic Strains of *V. Cholerae* and the Influence of Lysogenic on Cholera Phage Activity. *J. Path. & Bact.* 44: 276-278 (Jan.) 1937.

118 This sentence is obviously an interpretation by the author, to whom however the conclusion seems almost a rational necessity. Experimentally it rests on the analogy between the specificities of the phage bacterial cell and the antibody bacterial cell relationships. That the antibody antigen combination depends on specific surface configurational correspondence is documented by a large and detailed body of knowledge.

119 Schiff F. and Bornstein S. Hemolytic Effect of Typhoid Cultures in Combination with Pure Lines of Bacteriophage. *J. Immunol.* 39: 361-367 (Oct.) 1940.



like that between antigen and antibody, being determined by specific configurational relationships. This adsorption of phage particle is followed by profound alterations in the metabolic events which occur within the parasitized cell. Some at least of the consequences have been detected. 1 The host cell may become altered in such a way as to make it refractory to superinfection with similar or competing virus particles (acquired cellular resistance—the interference phenomenon). 2 Multiplication of the bacterial host cell may be arrested. 3 Multiplication of the virus within the host cell may occur without lysis (lysogenic strains). 4 Multiplication of the virus within the host cell followed by lysis may occur.

To what extent may the relationship of bacteriophage particles to their bacterial host cells be regarded as affording a clue to the relationship of virus particles to susceptible cells of higher animals and plants? Obviously this question can now be answered in only the most tentative way. The analogies between the phenomena of acquired cellular resistance (interference phenomenon) as exhibited in viral infections of animals and plants and of bacteria seem to me very suggestive, indeed. Particularly suggestive too is the recent study by Hirst<sup>126</sup> of the adsorption of influenza virus on cells of the respiratory tract.<sup>127</sup> The analogies between the protective action of serum in prophylactic passive immunization (e.g. against measles) and the reversible inactivation of phage by immune serum<sup>128</sup> is suggestive.

Although the phenomenon of acquired cellular resistance to superinfection would appear to be a consequence of the fundamental mechanisms of reproduction within their host cells of many animal, plant and bacterial viruses, interference does not occur in all instances of viral infection. Thus numerous cases are on record of the infection of individual cells by more than one virus,<sup>129</sup> evidenced by the demonstration for instance, of specific intranuclear and cytoplasmic inclusion bodies within the same cell. The changes consequent on the parasitization of a cell, in some but not all instances, therefore render that cell refractory to a second intracellular parasite. Although this acquired cellular resistance is a phenomenon separate from humoral immunity, the two phenomena may supplement each other in the total defense against an intracellular parasitic disease.

Is the phenomenon of acquired cellular resistance limited to viral infections? Diseases due to rickettsias have not as yet been investigated with reference to the existence or nonexistence of the interference phenomenon

as far as I am aware observations which may be interpreted as suggestive of the possible occurrence of such a phenomenon in rickettsial diseases are recorded in Pinkerton's review.<sup>44</sup>

Phases in which bacterial pathogens survive and even multiply within host cells are not unknown in diseases of bacterial causation, e.g. leprosy and the early stages of tuberculosis. In tuberculosis the physiologic behavior and even the morphology of mononuclear phagocytic cells is altered by ingestion of tubercle bacilli and their products as well shown in the thorough investigations of Lurie.<sup>129</sup> Such cells may acquire an increased metabolic activity as evidenced by increased rate of division and increased rate of phagocytosis and an increased capacity to destroy tubercle bacilli. Comparison of this altered physiologic behavior with the phenomenon of acquired cellular resistance to intracellular parasitization would be purely speculative at this time, however.

#### SUMMARY

Electron micrographs of the simplest parasitic agents of disease have afforded new insight into their structure. Bacteria and rickettsias are shown to have a simple cellular organization. The continuity of bacterial groupings, the shape and structural integrity of the individual bacterial cell are dependent on a well defined bacterial cell wall. This cell wall is in the solid state and may maintain its essential form even after injury to the bacterial cell. Within the cell wall is the bacterial protoplasm with its limiting protoplasmic membrane, only the protoplasm and protoplasmic membrane are seen in ordinary microscopic preparations. The protoplasm is either a sol or a gel which may be readily solvated, it may contain more or less well defined areas of greater density. Certain animal viruses and bacterial viruses have also been demonstrated to have simple cellular organization. Plant viruses thus far studied are nucleoproteins without cellular organization.

Increase in parasitic habit among bacteria is in general correlated with loss of metabolic independence, with dependence on growth accessory substances furnished by the host. The capacity to reproduce outside the host's cells is in general retained by pathogenic bacteria, however. Rickettsias and viruses can reproduce only within their host cells, apparently through diversion of metabolic mechanisms of the host cells.

Classic mechanisms of active and passive immunity are operative with respect to bacteria, rickettsias and animal viruses. Antigens present in the periphery of the parasite (bacterial capsule or cell wall) and the antibodies corresponding to these peripheral antigens are determinative with respect to humoral anti-invasive immunity. Exotoxins are metabolites which are specifically neutralizable by antitoxins. In infections due to viruses a phenomenon of acquired resistance of parasitized host cells to superinfection (the interference phenomenon) may occur. This phenomenon is separate from but may supplement the mechanisms of humoral immunity. Whether or not the interference phenomenon occurs in rickettsial diseases remains to be investigated.<sup>130</sup>

126 Hirst, G. K. Adsorption of Influenza Virus on Cells of the Respiratory Tract. *J. Exper. Med.* **78**: 99-109 (Aug.) 1943.

127 Hirst's discussion of these important experiments which should be consulted in detail contains the following paragraph: "While the data are meager as yet it is tempting to formulate a tentative hypothesis as to the possible mechanism of the early stages of influenza virus infection of the respiratory cell. It may not be sufficient merely for an inhaled virus particle to come in contact with any point on a susceptible cell and it may be necessary for it to become attached to a specific receptor substance to gain entrance. Before the virus can infect it may also have to alter or destroy this receptor substance by means of an enzyme in order to pave the way for penetration and parasitism of that cell. Once the receptor substance is destroyed the virus becomes more firmly bound, parasitizes the cell, multiplies and again appears free in the lung making possible spread of infection by contiguity. Since the close correlation has been demonstrated between the neutralizing and agglutinating inhibiting power of various human sera it may be that neutralization (in mice) consists mainly of covering over that portion of the virus which ordinarily attaches itself to the receptor substance."

128 Sylverson, J. T. and Berry, G. P. Multiple Virus Infection of Individual Host Cells. *Am. J. Path.* **14**: 633-634 (Sept.) 1938. abstract. Sylverson, J. T. and Berry, G. P. Superinfection in Virus Induced Tumors. *Science* **86**: 411 (Nov. 3) 1937. Anderson, K. Dual Virus Infection of Single Cells. *Am. J. Path.* **18**: 577-583 (July) 1942. Wollman, O. J. Jr. Generalized Vaccinia with Dual Virus Infection. *Can. J. Path.* **20**: 173-177 (Jan.) 1944.

129 Lurie, M. B. Studies on the Mechanism of Immunity in Tuberculosis. The Fate of Tubercle Bacilli Ingested by Mononuclear Phagocytes Derived from Normal and Immunized Animals. *J. Exper. Med.* **75**: 247-263 (March) 1942.

130 Relationships of the microbiologic parasites to chemotherapy and the possibilities of developing a chemotherapy against intracellular parasites will be discussed in a section of this report to follow.

# THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

535 NORTH DEARBORN STREET CHICAGO 10, ILL

Cable Address

Medic Chicago

Subscription price

Eight dollars per annum in advance

*Please send in promptly notice of change of address giving both old and new always state whether the change is temporary or permanent. Such notice should mention all journals received from this office. Important information regarding contributions will be found on second advertising page following reading matter.*

SATURDAY NOVEMBER 4 1944

## THE NOBEL PRIZE AWARDS

Announcement from Stockholm indicates that the 1943 and 1944 Nobel prizes in physiology or medicine have been awarded to four investigators all of whom are now in the United States and three of whom are Americans. The prize for 1939 was the last previously awarded and was offered to Gerhard Domagk, a German, for his discovery of the use of sulfanilamide in medicine. He subsequently informed the Nobel Prize Committee that the ban of the German government on the acceptance of Nobel prizes prevented him from accepting the award.

The 1943 award was made to Drs. Edward A. Doisy, professor of biochemistry at the St. Louis University School of Medicine, and Henrik Dam of Copenhagen, who is now assistant professor of biochemistry at the University of Rochester School of Medicine and Dentistry, Rochester, N. Y. for their fundamental investigations on the chemical nature of vitamin K. Editorials in THE JOURNAL have repeatedly discussed this contribution and have often emphasized its significance. Vitamin K was discovered and named by Dr. Dam in 1935, when he observed in newly hatched chicks a fatal hemorrhagic diathesis which could be cured or prevented by the administration of a nonsaponifiable nonsterol fraction of hog liver or alfalfa. Later it was observed that the delayed clotting time of the blood was due to a low prothrombin content. The work of Doisy showed that there are at least two naturally occurring substances which have similar physiologic properties, and they are now called vitamins  $K_1$  and  $K_2$ . These investigations have led to the use of vitamin K in obstructive jaundice, in which it has been shown to have an extraordinary protective effect against hemorrhages. It is also used in the hemorrhagic states associated with ulcerative colitis, sprue, celiac disease and the hemorrhagic state associated with primary hepatic disease and in the treatment of the physiologic hypoprothrombinemia of the newborn which exists during the first week of life. It is now almost routine to give this vitamin by injection to a woman during labor so that the newborn infant

will have a normal amount of prothrombin in the circulating blood. The drug may also be given directly to the newborn infant.

The 1944 award was presented to Drs. Joseph Erlanger, professor of physiology at Washington University School of Medicine, St. Louis, and Herbert Spencer Gasser, director of the Rockefeller Institute, New York, for their studies on the function of individual nerves. Their contributions to a knowledge of the electrophysiology of nerves using the cathode ray oscillograph have yielded information of great importance in understanding the mechanism of action of the nerves. Fundamentally, Gasser and Erlanger showed that the speed of conduction is correlated with the size of the axon. The greater the diameter of the whole axon, the greater the speed of conduction. The largest fibers are motor and are therefore stimulated more easily and carry the impulse with greater speed. For instance, the sensory roots contain large, medium and fine fibers and in the order given carry the sensations of touch, pressure, pain and temperature. Studies made on conduction indicate, for instance, that cocaine will abolish sensation in the order of pain, temperature and touch, while pressure will affect sensation in the reverse order.<sup>1</sup>

This recognition of the contribution of the United States to medical research cannot but arouse a feeling of great pride in the physicians and in the research institutions of our country. The annual prizes are worth about \$29,000 and will be divided among the winners.

## "PRINCIPLES OF A NATION-WIDE HEALTH PROGRAM"

Last week some physicians in the United States received from the Committee on Research in Medical Economics of New York the galley proofs of a proposed pamphlet to be called "Principles of a Nation-Wide Health Program." The report comes with twenty-nine sponsors, who are said to have had several meetings and conferences. The expenses of the conferences and the publication were met by gifts contributed for this purpose. The physicians who participated in this planning conference included Ernst P. Boas, Allan M. Butler, Hugh Cabot, Nathaniel W. Faxon, Channing Frothingham, Alan Gregg, John P. Peters and Kingsley Roberts. Most of these names are familiar to the medical profession through their association with what was once known as the Committee of 400. Their points of view have been widely publicized again and again.

<sup>1</sup> Erlanger J. and Gasser H. S. Electrical Signs of Nervous Activity. Philadelphia: University of Pennsylvania Press 1937. Gasser H. S. and Erlanger J. The Role Played by the Sizes of the Constituent Fibers of a Nerve Trunk in Determining the Form of the Action Potential Wave. J. Physiol. 80: 522, 1927. The Role of Fiber Size in the Establishment of a Nerve Block by Pressure or Cocaine. Am. J. Physiol. 88: 581, 1929. Electrical Signs of Nervous Activity. London: Oxford University Press 1937. Gasser H. S. The Control of Excitation in the Nervous System. Harvey Lectures 32: 169, 1937. Gasser H. S., Erlanger J., Bronk D. W., Lorente de No R. and Forbes A. Symposium on the Synapse. J. Neurophysiol. 2: 361, 1939.

Among those who are not physicians and who apparently had leadership in the movement were I S Falk, attached to the Social Security Board, Michael M Davis, who to all intents and purposes is the Committee on Research in Medical Economics, C-E A Winslow of New Haven Conn and Edwin E Witte of Madison, Wis. Finally there were several physicians of the U S Public Health Service and several teachers of economics. Without reading the "Principles of a Nation-Wide Health Program" developed by this group, any well informed physician would know the nature of the recommendations.

The purpose of the conference was the formulation of the elements of a nationwide health program which would unite the views of physicians, economists and administrators. The physicians in this conference do not represent the opinions of any considerable number of physicians in this country. Individually some of them apparently have a following of a few hundred doctors.

This report, which bears throughout innumerable indications of the authorship of Michael Davis, is replete with plausible aphorisms regarding medical care such as have marked such "literature" since Michael Davis became associated with the Rosenwald Fund. The Committee on Research in Medical Economics was established when he separated from the Rosenwald Fund. At that time a final grant of some \$135,000 was apparently made so he could carry on his activities under his own auspices, this sum has apparently been supplemented from time to time with small grants from other foundations. The report attacks plans of medical care which are limited to hospitalization, surgery or catastrophic illness only and also plans which provide cash payments. It calls for association of the health program with a broad system of social security.

The report asserts that a nationwide health program demands that (1) comprehensive medical services and facilities shall be physically and financially available to all the people, (2) these services shall be so organized and supplied as to be scientifically efficient and as economical in cost as is consistent with quality, (3) the services shall be adequately and securely financed and (4) professional opportunities shall be improved and adequate income assured the persons and institutions furnishing service. These are the objectives to which practically every intelligent person will subscribe. It is then stated that the health program should be a national system with decentralized administration of services and that it should cover the entire population, but that those who wish to purchase medical care outside the national health system should be free to do so. Compulsory sickness insurance is advocated with the statement "The chief support of a nationwide system of medical care should be contributory insurance required by law, with the amounts of

payment from employees, employers and self-employed persons related to the earnings of the contributors combined with support from general taxation. General tax funds are to be secured in order to aid new or improved hospitals and health centers particularly in rural areas; the further extension of full time public health departments and the provision or improvement of medical services to those dependent and other persons not directly covered by the insurance system such as the chronically ill, the disabled and the aged. Free choice of physician is mentioned as a necessity, also the right of the physician to accept or reject patients and the right to participate or not to participate in the system. The voluntary hospitals, it is said, would remain as independent agencies which would make individual or group contracts for furnishing services under the national program and which would retain full responsibility for their own administration. Hospitals would retain responsibility for their administration, yet they could survive only by negotiating contracts with a governmental agency. The program proposes three methods of payment of physicians, including salary, capitation and (under certain conditions) fee for service, although it concludes that the use of the fee for service method should be discouraged.

The most important portion of this proposed program is the section devoted to the administrative organization. Here comes the statement that the national policy determining body for the national program should be representative of the chief groups of those who receive the service and of those who furnish it. The administrators of all professional and technical aspects of the program are to be qualified professional persons, the professional and the financial officials each having administrative authority in their respective fields. As might be anticipated, the proposals point again and again to the concept that the administrative control of medical services will be put in nonmedical hands.

Physicians who study this report are advised to consider particularly the next to the last paragraph. This reads:

*There are numerous, important regulations which cannot be specified in a law. Some of these regulations may be national in application. Others will be designed for certain localities or will relate only to particular forms of service. These regulations must be worked out by the administrative authorities and when adopted have the force of law.*

This paragraph represents the apotheosis of bureaucracy. Were the medical profession to agree to such a concept, it would be signing a blank check and turning it over to the nonmedical administrators for such disposition as they might care to make of the future of medicine.

Physicians who have followed the information made available through THE JOURNAL in recent months will

have noted the action taken in the International Labor Organization conference,<sup>1</sup> the action taken by the committee of the American Public Health Association<sup>2</sup> and now this report by Michael Davis's Committee on Research in Medical Economics. They should note that the same group has been active in all three places. They do not represent the medical profession of the United States. It is certainly questionable whether or not they represent any considerable number of people outside of themselves.

### BACTERIOPHAGE ELECTRON MICROGRAPHS

Under the auspices of the Council on Pharmacy and Chemistry THE JOURNAL completes this week publication of a review of recent knowledge developed by use of the electron microscope. Already much of the practical value in the diagnosis and treatment of disease has been learned in this way.

Soon after the introduction of the electron microscope several European investigators<sup>1</sup> published micrographs showing the presence of minute "spermlike" particles in 'phage lysed bacterial cultures not present in 'phage free controls. More detailed studies of these presumptive "bacteriophagic sperms" have recently been reported by Luria<sup>2</sup> of the Guggenheim Foundation and Baylor<sup>3</sup> of the University of Illinois. Luria photographed 3 coli bacteriophages. One of these had a uniformly opaque "head" 45 to 50 millimicrons in diameter to which was attached a "tail" about 150 millimicrons long and 10 to 15 millimicrons thick. The head of a second coli phage showed opaque and translucent areas, suggesting a nucleus. A third coli phage was apparently without a tail. One staphylococcus 'phage was about twice the size of the first coli phage in all dimensions, or eight times its volume. A second tailless 'phage acting against *Salmonella pullorum* is described by Baylor.

The particles thus made visible breed true in homologous bacterial cultures; they are never seen in phage free bacterial autolysates and their number is always directly proportional to 'phage titer. The most suggestive part of these studies, however, are studies of the method of reaction between 'phage units and homologous bacterial cells. Usually within three minutes after bacteriophage has been added to a homologous bacterial culture practically all of the 'phage particles become adherent to the limiting membranes of the

bacterial cells. There is no evidence of a multiplication of the particles on the bacterial surfaces or of lytic action on the underlying parts of the bacterial cytoplasm. Luria's micrographs suggest that only one of the adherent 'phage particles is able to penetrate (or is drawn into) the bacterial cell. The other adherent particles are apparently excluded by a mechanism analogous to the exclusion of superfluous sperms by monospermatic ova. This suggests a closer genetic relationship between bacteria and homologous 'phage than previously assumed.

Following entrance of the single fertilizing 'phage unit there are local reductions in the opacity of the bacterial cytoplasm accompanied by a capsular swelling suggesting an increase in internal osmotic pressure. By the end of about twenty-five minutes the swelling and loss of opacity are usually complete. Rupture of the limiting membrane now takes place in one or more places. The excluded liquefied cell contents usually contain a hundred or more new 'phage particles, many of them attached to one another to form chains. The damaged or lacerated cell wall now remains as an almost invisible ghost.

This work has a suggestive bearing on current theories of virus antagonism. The suggestion that only one virus particle may enter an infected tissue cell, and that after entry it so alters the chemotactic balance as to exclude all other virus particles, is a plausible theory of epidemiologic interest. No adequate theory of the antagonism or mutual exclusion of different viruses had been previously suggested.

### ARTERIOSCLEROSIS

The word arteriosclerosis is used for a variety of vascular diseases differing greatly in etiology and causative mechanism. The century old controversy with regard to the role of the various factors in the production of degenerative and sclerosing vascular lesions still continues.<sup>1</sup> The uncertainty and confusion interfere with the development of effective preventive and therapeutic measures. The problem has increasing medical, economic and social importance in view of the accelerated aging of the general population.

Actually arteriosclerosis is not a normal sequel of aging and therefore as inescapable as gray hairs and wrinkles. In a current review of this subject Hueper<sup>3</sup> has evaluated the available clinical, pathologic and experimental data. He divides the known exogenous

1 The International Labor Organization on Sickness Insurance editorial J A M A 126 32 (Sept 2) 1944

2 American Public Health Association Health Insurance Declaration editorial J A M A 126 434 (Oct 14) 1944 Medical Care in a National Health Program Organization Section, *ibid* 126 441 (Oct 14) 1944

1 Ruska H. *Naturwissenschaften* 28 45 1940 29 567 1941 Pfankuch E and Kausche G A *ibid* 28 46 1940

2 Luria S E, Delbruck M and Anderson T F. *Proc Nat Acad Sci* 28 127 1942 *J Bact* 46 57 1943

3 Baylor M R B, Severin J M and Clark G L. *J Bact* 47 277 1944

1 Leary Timothy. Cholesterol Lysis in Atheroma *Arch Path* 37 16 (Jan) 1944 Hirsch E F and Weinhouse Sidney. Role of Lipids in Arteriosclerosis *Physiol Rev* 23 185 (July) 1943 Moschowitz Eli. *Vascular Sclerosis*. New York: Oxford Press, 1942. Winternitz M C. Views as to Causes of Coronary Sclerosis in Blood Heart and Circulation Washington D C: American Association for the Advancement of Science 13 114 1940 Duff G L. Experimental Arteriosclerosis and Its Relationship to Human Arteriosclerosis *Arch Path* 20 81 (July) 1940 (Aug) 1940

2 Cowdry E V. The Physician's Opportunity to Help Older People *J A M A* 125 402 (June 10) 1944

3 Hueper W C. Arteriosclerosis *Arch Path* 38 162 (Sept) 1944

and endogenous causes of arteriosclerosis into four main groups according to their special causative mechanism (1) hypotonic and hypertonic vascular agents, (2) hypotensive and hypertensive intravascular hydrostatic factors, (3) colloidal plasmatic disturbances and (4) hematic anoxemic agents. The fundamental mechanism common to all these agents according to Hueper, is an impairment of the oxygenation and the nutrition of the vascular wall. However only colloid plasmatic disturbances of lipid or carbohydrate nature produce foam cell atheroma and atherosclerosis, while the other agents elicit edematous, fibrosing and hyaline intimal thickening. Medial degeneration and calcification are seen with all agents and their occurrence depends in part on the intensity of the arteriosclerogenic action of a particular agent in part on complicating factors.

Applying these concepts to prevention and therapy of arteriosclerosis Hueper notes that proper consideration must be given in the choice of such procedures to their suitability in the individual case in view of the existing differences in the character of the causal agent, the type of causative mechanism and the anatomic character of the vascular reaction. Thus atheromatosis and atherosclerosis require preventive and therapeutic measures different from those indicated in combating the causal factors and anatomic lesions connected with vaso-tonic mechanisms. Similar considerations apply also to the selection of diagnostic procedures. The concepts advanced are provocative in many respects and should stimulate physicians as well as nutritionists and chemists to adopt a more comprehensive approach to the problem of arteriosclerosis.

## Current Comment

### THERAPY OF ADVANCED SHOCK

Many investigators hold that there is strong contraction of the arterioles and arteries in hemorrhagic and traumatic shock and that the use of vasoconstricting agents is contraindicated and harmful because it results in further decrease of blood to important organs. Recent observations raise serious doubts of the correctness of this assumption and its therapeutic implication. Chambers and his co-workers<sup>1</sup> noted that a vasopressor agent is present in the blood only in the primary phase of shock, while in the late and therapeutically most important stage a vasodepressor substance predominates. In experiments on dogs with sectioned aortic depressor and carotic sinus proceptor nerves Schafer<sup>2</sup> found that the hypertension did not elicit any shock syndrome. These results as well as observations in surgical practice do not lend support to the theory of a sympathico-adrenal hyperactivity in shock. The application of heat in shock may aggravate the condition apparently by

relaxing the peripheral vessels and thereby favoring hypotension. Cold, on the other hand reduces the onset or severity of shock by peripheral constriction and reduction of the total vascular bed making more blood available to internal organs. The validity of this reasoning is supported from the results obtained by Hueper and Ichniowski<sup>3</sup> in dogs with severe and advanced histamine shock following a slow intravenous injection of a solution of hydrophilic colloid (methyl cellulose) and a cardioasopressor agent (*N*-methylisothiourea). Similar good effects on terminal hemorrhagic shock in dogs were recently recorded by Kohlstaedt and Page<sup>4</sup> by the consecutive administration of trimine (2-amino heptane sulfate), a pressor amine and blood. These results suggest that the combination of increased intravascular hydrostatic pressure and stimulation of the contractile cardiovascular tissue which is mechanically injured and therefore abnormally relaxed may represent a rational therapeutic procedure in the management of advanced traumatic or hemorrhagic shock.

### RECRUITMENT OF CIVILIAN PHYSICIANS FOR ARMY DISCONTINUED

Elsewhere in this issue appears the announcement by the War Department and by the War Manpower Commission that recruitment of civilian physicians for the Army has been discontinued. The Navy requires 3 000 additional officers at once. The Army is to fill its future requirements from the young men who complete their medical education and internships. There are now 47,500 physicians on duty in the Army, including those serving with the Veterans Administration, and some 13,000 in the Navy. Three hundred additional physicians are needed for the Coast Guard. During the war emergency physicians from the Army Medical Department and the U. S. Naval Reserve will be assigned to the Veterans Administration to meet the needs of care of the veterans. In the meantime it will become necessary for the Veterans Administration to recruit additional physicians in large numbers to meet the needs of that agency when it is no longer possible to supply physicians through the armed forces.

### RABIES IN NEW YORK CITY

Because of the spread of canine rabies from the borough of the Bronx to the rest of New York City the board of health has recently extended the antirabies quarantine on dogs to the entire city. One New York woman who was bitten by her pet has already died from this disease. The police department has been directed to issue court summonses to owners of dogs who allow their animals to run at large without a leash. A rigid system of quarantine is now necessary, it has been announced. Rabies in dogs and some wild animals is now so widespread that concerted nationwide efforts at its elimination through quarantine are needed.

1 Chambers R, Zucitach B W, Lowenstein B E and Lee R E. A Factor and Depresor Substances as Toxic Factors in Experimentally Induced Shock. *Proc. Soc. Exper. Biol. & Med.* 56: 127, 1944.

2 Schafer P W. Hyperactivity of Vasoconstrictor Nerves in Relation to Shock. *Surg. Gynec. & Obst.* 79: 163, 1944.

3 Hueper W C and Ichniowski C T. The Treatment of Standardized and Graded Histamine Shock in Dogs with Solutions of Methyl Cellulose and *N*-Methylisothiourea. *J. Pharmacol. & Exper. Therap.* 78: 282, 1943.

4 Kohlstaedt K G and Page I H. Terminal Hemorrhagic Shock. *Surgery* 16: 430, 1944.

# MEDICINE AND THE WAR

## ARMY

### NEW ARMY STATEMENT ON REQUIREMENT AND USE OF PHYSICIANS

The requirements of the Surgeon General to maintain the established strength of Medical Corps officers on active duty will be met through the appointment of medical ASTP trainees and medical students holding inactive commissions in the Medical Administrative Corps and by calling to active duty Medical Corps officers who are on inactive status for further training as interns junior residents or senior residents at nonmilitary hospitals. Accordingly appointments in the Medical Corps, Army of the United States will not be made direct from civil life except for assignment to active duty with the Veterans Administration.

All appointments resulting from applications processed in accordance with this directive will be in the Medical Corps A U S for assignment to duty with the Veterans Administration only. Every effort must be made to persuade candidates whose applications are processed under these instructions to accept this appointment.

Recalcitrant physicians including interns and residents, will not be reported to Selective Service.

Qualified candidates who of their own volition may apply for commission in the Medical Corps and who cannot be processed under these instructions will be advised that a great need exists within the Navy and Public Health Service and will be urged to contact the appropriate offices for information regarding these services.

### NEUROPSYCHIATRY FOR GENERAL MEDICAL OFFICER

According to the Technical Bulletin of Medicine No 94 issued by the War Department recently every medical officer regardless of his mission whether battalion surgeon ward officer flight surgeon or dispensary physician is confronted with psychiatric problems. There is an inadequate number of psychiatrists and furthermore not only must the average medical officer do most of the minor psychiatry in the Army but in some instances he may also be forced by circumstances to do major psychiatry. Psychiatric treatment like surgical treatment is most effective when carried out early promptly and skilfully. Consequently some of the best psychiatry will be done outside the hospital in such places as the dispensary the consultation service the battalion aid station the clearing station and the air strip. Because most medical officers have inadequate training in this field the suggestions in this bulletin are presented as a general guide.

### SHORTAGE OF NURSES IN THE ARMY

Major Gen Norman T Kirk Surgeon General of the Army announced recently that there is a critical shortage of nurses in the Army and that there has been a disappointing response to the call for 10 000 additional nurses. Only 500 applied out of the 4 000 expected during September. Army nurses now number about 40 000 the number in the United States having been reduced to about 13 000. About 4 000 of these are assigned to the Air Forces.

### TRENCH FOOT

The War Department recently issued a change in regulations governing treatment for trench foot from that given in the Technical Bulletin of Medicine No 81, issued August 4 as follows:

Treatment b Definitive treatment (1) Patients should be kept in bed with the affected parts on a horizontal level with or elevated on pillows only slightly above heart level and protected from external pressure either by complete

exposure or by means of a cradle. Elevation of the extremities should be done only if there is no evidence of inadequate circulation that is, incipient gangrene otherwise they should be maintained on a horizontal level. The period of bed rest is determined by degree and rate of subsidence of edema for this form of treatment.

### ARMY AWARDS AND COMMENDATIONS

#### Captain Hershell B Murray

Capt Hershell B Murray formerly of West Liberty, Ky, recently received a letter of commendation from Brig Gen Lmer Yeager for his exemplary work performed by his field hospital unit in the South Pacific war zone. The letter of commendation read, in part: 'Please express to the officers nurses and enlisted men of the 5th Field Hospital my regards and appreciation of the manner in which this unit functioned since entering this base. During the period July 13 to August 3, 1944 under adverse conditions, the hospital was constructed and operated. A great many more patients than normal for such a unit received the best possible care. It is the opinion of the surgeon of the headquarters that the entire operation was the finest done by any hospital seen in this theater. Such performance reflects the highest type training morale and discipline. Dr Murray graduated from the University of Louisville School of Medicine in 1932 and entered the service Sept 13 1942.'

#### Major Samuel M Klein

Major Samuel M Klein, formerly of Jackson Heights, N Y, was recently cited by Lieut Gen Mark W Clark for 'conspicuous coolness under fire in Italy. The citation states that at Anzio last January the doctor ignored 'bombing shell fire and falling flak by continuing to perform his duties of [treating] the wounded. His selfless devotion to duty aided in saving lives. His performance reflects the high tradition of the Medical Corps. Dr Klein served in Africa and with the first invasion of Sicily, Salerno and Anzio and now is stationed at a base hospital near Rome. Dr Klein graduated from New York University College of Medicine New York in 1920. Before joining the army in August 1942 Dr Klein was president of the Long Island City Medical Society.

#### Captain Bertram E Sprockin

The Soldier's Medal was recently awarded to Capt Bertram E Sprockin formerly of Nashville, Tenn for heroism in making several spectacular rescues in the Southwest Pacific. The citation stated that he entered the high and choppy seas 'to bring the first soldier in from about 150 yards. Then 'despite exhaustion from the first rescue, he swam to the aid of another struggling soldier, who was about 100 yards at sea and 150 yards east of him. 'The action of Captain Sprockin on this occasion undoubtedly saved the lives of both men and reflects great credit on himself and the military service'. Dr Sprockin graduated from Vanderbilt University School of Medicine, Nashville, in 1942 and entered the service July 30 1943.

#### Major Solomon Rosokoff

The Bronze Star was recently awarded to Major Solomon Rosokoff formerly of Tonawanda N Y and now an executive officer of an armored medical battalion in France. The citation read in part: 'He has actively coordinated much of the evacuation of the wounded in his division by liaison. In order to maintain contact with these units Major Rosokoff subjected himself to enemy artillery small arms fire and aerial bombardment without regard to personal safety. Treatment of the wounded was reduced to a minimum, thereby saving lives'. Dr Rosokoff graduated from the University of Buffalo School of Medicine in 1935 and has been in the service for four years.



## PROCUREMENT AND ASSIGNMENT SERVICE FOR PHYSICIANS, DENTISTS AND VETERINARIANS

### ARMY MEDICAL DEPARTMENT DISCONTINUES RECRUITMENT OF CIVILIAN PHYSICIANS

Paul V McNutt chairman of the War Manpower Commission, announces that he has been informed by the War Department that recruitment of civilian physicians for the Army has been discontinued. At the same time he announces that recruitment for the Navy must continue since it has urgent need for approximately 3000 additional medical officers. The U S Public Health Service and the Veterans Administration are also continuing to recruit physicians. Mr McNutt said:

Vice Admiral Ross T McIntire chief of the Bureau of Medicine and Surgery U S Navy, informed Mr McNutt that personnel expansion and intensification of operations in the Pacific have precipitated a grave shortage of medical officers.

'With less than 13,000 medical officers on active duty in the Navy the procurement of at least 3000 more as soon as possible is imperative,' said Admiral McIntire. 'Even this figure will not meet actual needs but would ease the emergency that now exists: physicians and surgeons whose availability has been or may hereafter be certified by the Procurement and Assignment Service WMC should lose no time in obtaining particulars for commissions in the Navy Medical Corps by communicating with their nearest office of Naval Officer Procurement.'

Mr McNutt said he had been informed that the Army will fill its future requirements for military physicians from sources now available to the Army and thereafter will not require certification of availability of additional physicians from the Procurement and Assignment Service of the War Manpower Commission. There are now about 47,500 physicians on duty as medical corps officers of the Army. This probably includes those serving with the Veterans Administration and other governmental agencies to which the Army Medical Corps assigns its medical corps officers.

Mr McNutt said that there are at present roughly 60,000 physicians in the armed forces and the Veterans Administra-

tion. The total number of physicians in the armed forces represents approximately 40 per cent of the active medical profession of the United States.

In addition to the 3000 medical officers needed at present by the Navy the Public Health Service has need for approximately 300 for the U S Coast Guard and other agencies.

In informing Mr McNutt of the termination of the Army recruiting of physicians except for the occasional specialist Major Gen Norman T Kirk Surgeon General of the Army said: 'The large number of physicians now in the Army volunteered for commissions without regard for their personal interests. The U S Army Medical Department is appreciative of the fine service they have given. Their removal from their usual practice also represents a sacrifice on the part of all civilians who have had to get along with less medical care than they obtained in peacetime.'

The Veterans Administration has and will continue throughout the duration of the war emergency to have assigned to it medical officers in the Army and the U S Naval Reserve to care for the needs of the casualties in its charge. The War Manpower Commission said: 'Doctors whose applications are at present in process for appointment in the Army Medical Corps will be considered for appointment and assignment to duty with the Veterans Administration.' The War Manpower Commission statement added:

Mr McNutt said that the War Manpower Commission joins with the directing board of its Procurement and Assignment Service and the War Department and the Office of the Surgeon General in expressing appreciation of the sacrifice involved in cooperation that was necessary on the part of physicians and the public before the Army reached its present level of medical personnel.

Mr McNutt also expressed the hope that additional civilian physicians will respond to the Navy's appeal for more doctors to apply for commissions. The needs of the U S Public Health Service and the Veterans Administration he said although much smaller than those of the Navy are nevertheless important.

## MISCELLANEOUS

### HOSPITALS NEEDING INTERNS AND RESIDENTS

The following hospitals have indicated to the Council on Medical Education and Hospitals that they have not completed their house staff quota allotted by the Procurement and Assignment Service:

(Continuation of list in THE JOURNAL October 21 page 504)

#### CALIFORNIA

St Joseph Hospital San Francisco Capacity 289 admissions 7218  
Sister M Raymond Superior (intern)

#### CONNECTICUT

Hospital of St Raphael New Haven Capacity 400 admissions 7986  
Sister Rose Alexi Director (interns)  
Waterbury Hospital Waterbury Capacity 372 admissions 8144  
Miss Aida E Creer RN Superintendent (5 interns 1 resident July 1 1945)

#### IOWA

Iowa Methodist Hospital Des Moines Capacity 270 admissions 8333  
Mr R A Nettleton Administrator (intern July 1 1945)

#### LOUISIANA

North Louisiana Sanitarium Shreveport Capacity 121 admissions 7856  
Mr Herman I Herold Administrator (intern)

#### NEW HAMPSHIRE

Sacred Heart Hospital Manchester Capacity 163 admissions 2561  
Sister Mary Bernardus RN Superintendent (mixed residents)

#### NEW JERSEY

St Joseph Hospital Trenton Capacity 460 admissions 7234  
Sister Anna Rita I N Superintendent (4 interns 1945)

#### NEW YORK

Our Lady of Victory Hospital Ickawanna Capacity 18 admissions 4143  
Sister M Bathlue Superintendent (2 interns Jan 1 1945)

#### OHIO

Springfield City Hospital Springfield Capacity 509 admissions 6917  
Mr I E Kassner Executive Director (2 interns)

#### TENNESSEE

Knoxville General Hospital Knoxville Capacity 25 admissions 7714  
Mr T H Haynes Superintendent (3 interns April 1 1945)

#### WASHINGTON

Providence Hospital Seattle Capacity 454 admissions 1588  
Sister M Bernardine RN Superintendent (2 interns 2 residents)

#### WEST VIRGINIA

Charleston General Hospital Charleston Capacity 380 admissions 10200  
Dr John E Cannaday Director (junior resident—surgical)

### WARTIME GRADUATE MEDICAL MEETINGS

The following subjects and speakers for Wartime Graduate Medical Meetings have just been announced:

Deshon General Hospital, Butler Pa. The Deep and Superficial Mycoses, Major H H Sawicki November 9  
Psychoneurosis Capt Peter H Knapp November 16

U S Naval Hospital Great Lakes Ill. The Management of Acute Respiratory Obstructions Dr Paul H Holinger November 8  
Rest Dr Don C Sutton November 21

Camp McCoy Wis. Malignancies in the Army Age Group Dr Gorton Ritchie, November 15  
Endocrinology Dr Elmer I Scyringhaus November 29  
Gallbladder and Liver Disease Dr Erwin R Schmidt, November 29

# ORGANIZATION SECTION

## Washington Letter

(From a Special Correspondent)

Oct 30, 1944

### Whole Blood Flown Daily to European Front

Indicative of the ferocity of fighting in Europe, 1¼ tons of whole blood is flown daily from the United States to Paris via the U S A A F Air Transport Command. Boston, New York and Washington are collection points for these air shipments of whole blood, administered only to the most serious casualties.

Brig Gen Fred W Rankin, chief consultant in surgery to the Surgeon General of the Army, declared that "continued success of the whole blood program must not be taken to mean that there should be any relaxation in blood donations for the blood plasma program. He said that blood for the preparation of plasma is still required in substantial quantities.

The whole blood program," he explained, "gives thousands of soldiers a far better chance to live than they have had with blood plasma alone. The red cells removed in the preparation of plasma are the oxygen carriers, without which a severely bleeding man cannot live no matter how much fluid is given him. In cases of severe shock and bleeding with advanced anemia, and where emergency operation is necessary, whole blood is essential in the preservation of life."

Whole blood shipments are speeded according to the War Department through careful preparation and packing at Red Cross donor centers. This permits the blood to be rushed to the front lines with very little handling. Blood taken from a donor is placed directly in the quart bottle which is used for the transfusion in Europe. After use of a preservative solution, the bottles are hermetically sealed and placed, six to a crate, in wooden packages. The packages are given a class 1 air priority but otherwise receive no special handling. Unloaded from the C-54s in Paris, the blood packages are rushed to the front by air and truck.

### Pensions for Disabilities

Disabilities incurred in or aggravated from service in the present war are the basis of pensions granted to 271,000 veterans up to October 1, according to Brig Gen Frank T Hines, administrator of veterans affairs. Death pensions are being paid to dependents of 38,000 men who lost their lives in service during the present war or died after discharge of a service incurred disability. A total of 87,000 policies of National Service Life Insurance, purchased by members of the armed forces, have matured on account of death of the insured, and beneficiaries of those deceased veterans are receiving monthly cash benefits. These cash insurance payments totaled more than \$46,000,000 up to July 31 and are additional to the death pensions referred to as being paid. These matured insurance policies have a face value of \$729,000,000. Altogether there have been 16,300,000 insurance applications, with a total face value of \$124,000,000,000. The latter sum is almost equal to the face value of all outstanding policies in private and mutual life insurance companies.

Gen Hines said that 104,000 veterans of the present war have received treatment in veterans' hospitals, 15,000 are still being treated and 89,000 have been discharged as cured or having received maximum benefit.

### Postwar Venereal Disease Conference Plans

The international character of the postwar venereal disease control conference, to be held November 9 to 11 in St. Louis, was revealed today in an announcement by Surgeon General Thomas Parran and Dr J R Heller Jr., chief of the Venereal Disease Division of the U S Public Health Service of the Federal Security Agency. They said that representatives of Canada, England, Norway, Mexico and the United States would discuss problems related to the international control of venereal

diseases. The conference will consider methods of broadening the application of recent advances in venereal disease treatment. It brings together experts in all phases of venereal disease control. Reporting will be done by Dr Melville MacKenzie, principal regional medical officer, British Ministry of Health and chief medical adviser to the Interallied Committee for Postwar Requirements. Dr Enrique Villela, venereal disease control officer of the federal health department of Mexico, Dr Thorsten Guthe, assistant to the surgeon general of public health of Norway, Lieut Col Donald H Williams, chief of the division of venereal disease control, Canadian Department of Pensions and National Health, and Dr R A Vorderlehr, medical director for Puerto Rico, of the U S Public Health Service.

## Medical Economic Abstracts

### PREPAYMENT SURGICAL AND OBSTETRIC PLAN FOR OKLAHOMA

The House of Delegates of the Oklahoma State Medical Association met in Oklahoma City, October 22, and adopted a report to set up a prepayment surgical and obstetric plan as recommended by a committee that had been investigating the desirability of establishing such a plan for the state. The vote on the report it is understood was practically unanimous. The committee submitted the following recommendations to the House of Delegates and they were agreed to: (1) That the House of Delegates take definite action to establish a prepaid medical and/or surgical plan; (2) that the plan be organized under the existing insurance laws of the state of Oklahoma; (3) that the plan be a nonprofit corporation; (4) that the plan shall recognize the age-old practice of free choice of doctors of medicine and free choice of approved hospitals; (5) that the payment of services be on an indemnity basis; (6) that this plan be incorporated and set up on a statewide basis, but financing would be worked out by the board of trustees in such a manner that any participating county shall pay a pro rata share of capital in proportion to its membership as they are admitted to service; and (7) that the council of the Oklahoma State Medical Association select a board of trustees of fifteen members, nine of whom shall be doctors of medicine and six of whom shall be laymen—these to serve as the original incorporators and who, with legal assistance, will set in force the plan. It is suggested that the term of office of these trustees should be staggered and they should be selected as nearly as possible with an idea of geographic distribution of the state.

## Society Proceedings

### COMING MEETINGS

- American Academy of Pediatrics, St. Louis, Nov. 9-11. Dr. Clifford G. Grulee, 636 Church St., Evanston, Ill., Secretary.
- American Society for the Hard of Hearing, New York, Nov. 10-12. Mr. Raymond H. Greenman, 1537 Thirty-Fifth St., N.W., Washington 7, D.C., Managing Director.
- Annual Conference of State Secretaries and Editors, Chicago, Nov. 17-18. Dr. Olin West, 535 N. Dearborn St., Chicago, Secretary.
- New York State Association of Public Health Laboratories, Albany, Nov. 17. Miss Mary B. Kirkbride, New Scotland Ave., Albany 1, Secretary.
- Puerto Rico Medical Association of Santurce, Dec. 15-17. Dr. E. L. Martinez Rivera, P.O. Box 3866, Santurce, Secretary.
- Southern Medical Association, St. Louis, Mo., Nov. 13-16. Mr. C. P. Loranz, Empire Building, Birmingham 3, Ala., Secretary.
- Western Surgical Association, Chicago, Dec. 1-2. Dr. Arthur R. Metz, 250 East Superior St., Chicago, Secretary.

## Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEM OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES NEW HOSPITALS EDUCATION AND PUBLIC HEALTH)

### COLORADO

**The Friedman Lectures**—The 1944 Friedman Lectures presented by the National Jewish Hospital Denver in cooperation with the Medical Society of the City and County of Denver and the University of Colorado School of Medicine and Hospitals will be presented November 6-8. Guest lecturers will be Drs Philip D Wilson clinical professor of orthopedic surgery, Columbia University College of Physicians and Surgeons New York, Rudolf Nissen, attending surgeon, Jewish Hospital Brooklyn, and Edgar Mayer assistant professor of clinical medicine Cornell University Medical College New York. The program is as follows:

Dr Wilson Treatment of Tuberculous Arthritis November 6  
Dr Nissen Operative Treatment of Air Cyst of the Lung and of Recurrent Spontaneous Pneumothorax November 6  
Dr Mayer Light and X-Ray Therapy of Tuberculosis November 7  
Dr Wilson Dr Mayer and Dr Altha Thomas of Denver Clinic on Tuberculous Arthritis November 7  
Dr Mayer Diagnosis of Pulmonary Emphysema November 7  
Dr Nissen Dr Mayer and Dr George B Packard of Denver Conference on Pulmonary Surgical Problems November 7  
Dr Nissen Surgical Treatment of Funnel Chest November 7  
Dr Wilson Reconstructive Surgery in the Treatment of War Wounded November 7  
Dr Nissen Experimental Studies of Pulmonary Atelectasis and Its Bearing on Clinical Observations November 8

### FLORIDA

**Dr Dame Appointed Director of Health Service**—Dr George A Dame Fernandina, for a number of years director of the Nassau County Health Department, has been appointed state director of local health service for the Florida State Board of Health in Jacksonville.

**District Meeting**—Dr John R Schenken professor and director of the department of pathology and bacteriology Louisiana State University School of Medicine, New Orleans addressed the Second District Medical Society of Florida at Quincy, October 19 on "Relationship of Hormones to Cancer" and on the "Pathology of Amebiasis".

### ILLINOIS

**Changes in Licensure**—The Illinois State Department of Registration and Education on August 9 revoked the license to practice medicine of Dr Emil Gleitsman, Chicago on the grounds of his conviction of murder. On August 1 the board restored the license of Dr Milton M Glascoe, Peoria.

#### Chicago

**Dr Judd to Speak**—Dr Walter H Judd, representative from the fifth district, Minnesota will address an open meeting at Thorne Hall, Northwestern University November 13 at 11 a m on "Medical Approach to Socialization". The lecture will be delivered under the auspices of Pi Kappa Epsilon, honorary medical fraternity.

**Miller Cancer Fund**—A gift of \$5,000 for cancer research has been received by the University of Chicago School of Medicine from Mr R T Miller Jr, educator and publisher Scottsville N Y and Chicago. The sum is in addition to an earlier gift of \$15,000 to be expended for current needs. The fund was created as a memorial in honor of Mr Miller's brother Mr O C Miller.

**The Bacon Lectures**—Dr Arthur T Hertig assistant professor of pathology and associate in obstetrics, Harvard Medical School Boston will deliver the Charles S Bacon Lectures at the University of Illinois College of Medicine December 6-7. The first lecture will be on Development of the Early Human Ovary Prior to the First Menstrual Period and the second on Pathogenesis of Hydatidiform Mole with a Clinicopathologic Correlation in 200 Cases.

### IOWA

**Forty-Two Years as Professor**—Dr John T McClintock recently retired as professor and head of the department of physiology State University of Iowa College of Medicine Iowa City, after holding the position for forty-two years.

Harry M Hines PhD professor of physiology has been appointed to succeed Dr McClintock. William Kendrick Hart PhD formerly associate professor of anatomy has been appointed associate professor of physiology and Samuel B Parker PhD instructor in physiology University of Tennessee College of Medicine Memphis has been appointed assistant professor.

**Administrative Change at Psychopathic Hospital**—Dr Wilbur R Miller has been appointed medical director of the Iowa State Psychopathic Hospital Iowa City in his capacity as professor and head of the department of psychiatry in the State University of Iowa College of Medicine, Iowa City. Naming Dr Miller in this capacity will relieve the administration of the University Hospitals of the administrative responsibilities in the psychopathic hospital it was reported. The change was made at the request of Robert E Veff administrator of the University Hospitals. Dr Miller was appointed assistant professor of psychiatry in the college of medicine and senior assistant physician in the psychopathic hospital in 1937 becoming professor and head of the department of psychiatry July 1 1943 to succeed Dr Andrew H Woods. Dr Woods retired July 1 1941 and became professor emeritus.

### MAINE

**Conference of Social Welfare**—The thirty-fifth annual Maine Conference of Social Welfare will be held in Bangor November 8-9. Among the speakers will be:

Charles L Williams assistant surgeon general U S Public Health Service Public Health Coals in Maine

Dr Frederick C Thorne Brandon At A Statewide Mental Hygiene Program

Lieut Col Wilfred Bloomberg M C The Health and Psychiatric Problems of the Returning Veteran

### MASSACHUSETTS

**Personal**—Dr Dwight O Hara dean Tufts College Medical School Boston has been named acting director of the industrial medicine division of the loss prevention department Liberty Mutual Insurance Company. Dr David A McCoy director of the division, has been given leave of absence to accept a commission as lieutenant in the U S Navy.—Dr Gordon M Morrison Boston was recently named a member of the state board of registration in medicine.

**Staff Memorial Fund**—The general executive committee of the Massachusetts General Hospital, has voted to establish a staff memorial fund to which contributions may be made in honor of the memory of any staff member. The use of the fund will be directed by the general executive committee. The idea stemmed from a wish to honor Dr William Bradley Breed who at the time of his death August 21 was a member of the general executive committee and who had been serving the hospital almost continuously for twenty-five years.

### NEBRASKA

**Ninety-Four Years of Age**—Dr Frank J Rosenberg Lexington observed his ninety-fourth birthday August 16. Dr Rosenberg graduated at the Eclectic Medical Institute Cincinnati, in 1873.

### NEVADA

**State Medical Election**—Dr Daniel J Hurley, Eureka was chosen president-elect of the Nevada State Medical Association at its meeting in Reno, September 23 and Dr John R McDaniel Jr Las Vegas, was installed as president. Other officers include Dr John A Fuller, Reno, vice president and Dr Moretton J Thorpe, Reno, secretary-treasurer.

### NEW JERSEY

**The 1945 State Meeting**—The Medical Society of New Jersey will hold its one hundred and seventy-ninth annual meeting at the Claridge Hotel, Atlantic City, May 22-24.

**Dr Liva Named Dean of Essex Medical School**—Dr Arcangelo Liva Hackensack, a member and past president of the Bergen County Medical Society has been appointed dean of the recently organized Essex College of Medicine Newark (The Journal September 9, p 115).

**Ringworm Epidemic**—An outbreak of ringworm among school children in Jersey City had reached epidemic proportions according to Dr Claudio E McNenny, chief of the communicable diseases division of the city board of health as reported in the New York Times September 29. A special clinic has been opened in Jersey City to treat children suffering from the infection, which is said to be highly contagious.

**Tuberculosis League**—The thirty-eighth annual meeting of the New Jersey Tuberculosis League was held at the Hotel Stacy-Frent Trenton, October 17. Among the speakers participating in a panel discussion on "Problems of Developing a Program for the Discovery and Prevention of Tuberculosis in Industry" were Dr Leopold Brahdy, New York Louis Horowitz area director, War Relief Committee, Congress of Industrial Organizations, Dr A Joseph Hughes, Camden and Dr John F Johnson, Trenton. In a session devoted to "Forty Years of Progress in Stripping Out Tuberculosis" the speakers included Dr Charles J Hatfield, Philadelphia, Louis I Dublin, Ph.D. New York, Dr Frederick H C Heise, Truders, N Y, and Clyde R Miller, Ph.D., New York.

### NEW YORK

**Graduate Lecture**—Dr John G Fred Hiss, professor of clinical medicine Syracuse University College of Medicine Syracuse, will address the Erie County Medical Society in Buffalo November 28 on "Common Errors in the Diagnosis of Heart Disease with Special Reference to Rheumatic Heart Disease."

**Personal**—At the recent graduation exercises of the New York Medical College, Flower and Fifth Avenue Hospitals, a gold diploma signifying fifty years of service in the practice of medicine was presented to Dr William L Love, Patchogue. —Dr Elias W Young has been appointed substitute village health officer of Goshen succeeding the late Dr Ralph J McGeoch who held the position during the absence of Dr Nathaniel T Keys.

### New York City

**Bailey B Burritt Retires**—Bailey B Burritt A.M. retired on November 1 as chairman of the executive council of the Community Service Society of New York under the group's retirement plan. He has served the society for thirty-one years. A newly created position of general director will be filled by Stanley P Davies, Ph.D., executive director of the society since its formation by merger in 1939.

**Artists Cooperate in Health Posters**—A special exhibit is on display at the Wilderstein Galleries showing the conception of famous artists on health education. The pictures and their captions were developed under the leadership of Madame Flis Schiaparelli as chairman of a special committee on health posters with the assistance of the American Museum of Health. The posters are intended primarily for use in public health programs to be carried on in Europe after the war and in the meantime are available for reproduction and use in this country. One of the features of the exhibition is a poster on syphilis by Salvatore Dali; there are also health education studies by Vertes, Helon, Donati and Farbes.

**Diabetes Clinical Society Organized**—The Clinical Society of the New York Diabetes Association has been organized with the following officers: Drs John J Weber, Brooklyn chairman, Louis Bauman, New York first vice chairman, Edmund I Shlevin, Brooklyn, second vice chairman and Harry G Jacob, New York secretary-treasurer. The society is functioning under the auspices of the parent organization and is somewhat of an outgrowth of the clinics committee which has now been dissolved. The society will consist of fellows, associate fellows and members. A carefully selected founding group of specialists in diabetes will constitute the nucleus of the fellowship; this group will formulate standards for subsequent admission to fellowship and associate fellowship and will be the sole body which votes in future fellows. The board of directors of the New York Diabetes Association wishes to establish a representative founding group from among the specialists in the five boroughs and has appointed a nominating committee to examine credentials and to make recommendations. The new society will take over the establishing of standards for diabetes clinics in New York City and the vicinity. It will aim to bring about general adoption of these standards and for this purpose will recommend to the parent organization certification of individual hospital clinics adequately meeting its prescribed standards, as well as withdrawal of certification on delinquency. It will initiate, conduct and publish statistical surveys on the basis of data derived from certified clinics. It will promote constructive relationships between physicians who are specialists in diabetes and representative physicians of allied medical specialties such as ophthalmologists and surgeons who will selectively be admitted to the fellowship. It will have contact with related technical groups such as dietitians, laboratory technicians, nurses and social workers through the "member category." It will by close mutual association promote scientific understanding and

conquest of problems in the management of diabetes, especially as these are encountered in clinical practice. The inaugural meeting of the society was held at the University Club October 26.

**Mayor's Health Plan Launched**—The Health Insurance Plan of Greater New York, proposed by Mayor Fiorello La Guardia this year, was informally organized at a meeting on October 19. Temporary officers were chosen and the honorary title of Founder conferred on the mayor. Among the temporary officers are Dr Willard C Rappleye, chairman, dean of the Columbia University College of Physicians and Surgeons, and Mr Winslow Carlton, secretary. Dr John J Wittmer and Matthew Woll, labor leader, are among the vice presidents. About \$200,000 is now available for underwriting the program of which \$150,000 is pledged by the New York Foundation and \$25,000 by the Albert and Mary Lasker Foundation. The plan aims to provide comprehensive medical and surgical services at moderate cost to all persons living or working in New York and earning up to \$5,000 a year (The JOURNAL May 13 p 161). The New York Times in reporting the meeting stated that one of the main tasks of the directors would be to obtain the cooperation of the five local county medical societies. These groups while endorsing the plan in principle are opposed to the \$5,000 income ceiling for eligibles, preferring a ceiling of \$2,500 or, at most, \$3,000. It will be up to the directors, it was said, to convince the organized medical groups that a \$5,000 ceiling is needed to obtain group enrolments that will include section heads, foremen and other employees in supervisory positions. Another important job set for the directors by the mayor is to convince the medical societies that "teamwork medicine" should be part of the program. The mayor cited the advantages of group medicine as practiced in other cities. Coverage would also extend to members of their families under 18 years of age. The plan cannot begin to function it was said until the state insurance department has approved the financial setup.

**Another Diploma Mill**—George William Manus 24 years old was taken into custody October 13 charged with operating a diploma mill in a two room suite at 103 Park Avenue which specialized in doctorates the New York Herald Tribune reported. He was arraigned before Judge Frederick L Hackenburg in special sessions for alleged violations of the state education and penal laws and was held in \$5,000 bail for a hearing that was to be held October 16. An investigation by the court disclosed that Manus had issued some 4,000 'degrees' for fees running from \$450 to \$800. From letter heads and documents found in the office, police were reported to have said that Manus represented himself as a physician with an M.D. degree from White Cross Medical College of the University of Physicians and Surgeons of Southern California. He also called himself executive vice dean and treasurer of the New York College of Psychiatry. Both institutions were allegedly mythical. "His pet institutions" for which he issued his diplomas were called "Extension Branch of Los Angeles University, College of Psychiatry," and the "Golden State University of Los Angeles." The former is said to be nonexistent and the latter is the outgrowth of the Eldridge Drugless Colleges incorporated in California in 1922. A report on the school published in the *Federation Bulletin* in May 1940, page 151 stated that all schools in the United States should be aware of the fact that degrees given by the schools are of "diploma mill" worth. The newspaper reported that the courses of study offered by Manus included hypnotic, painless and drugless childbirth, prenatal suggestion, instantaneous hypnotism, reflex therapy (described as a method for growing hair on bald heads), practical and applied psychology, suggestion and autosuggestion, psychological somnotherapy, suggestive therapeutics, color therapy, vibro therapy, chemical psychology and chemical psychotherapy, advanced esoterics and metaphysics. His specialty was the solicitation of chiropractors as postgraduate students in "psychological healing" in all its branches leading to such degrees as doctorate of philosophy in psychology for a fee of \$500, doctorate of science for a fee of \$800, formerly \$1,000, and doctorate of psychotherapy for a fee of \$450. The New York County Grand Jury handed down an information against Manus on October 10 charging him with violations of section 66 of the state education law in that his "college" functioned without having been chartered by the state board of regents conducting business under an assumed name without having filed a certificate with the county clerk, using the title "Doctor" in connection with public health matters without legal authorization in violation of the educational law and issuance of descriptive material implying that his institution was a school of medicine without sanction of the board of regents.

## NORTH CAROLINA

**New Professor of Pharmacology**—Dr Arnold J Lehman, associate professor of pharmacology, Wayne University College of Medicine, Detroit, has been appointed professor of pharmacology at the University of North Carolina School of Medicine, Chapel Hill. Dr Lehman graduated at Stanford University School of Medicine, San Francisco, in 1936.

**Changes in Health Personnel**—Dr Greene L. Rea, who has been associated with the public health department in Charlotte for twenty-three years, was not to be assistant health officer after October 1 with the abolition of this position in the department. The decision to discontinue the position was reached during a recent reorganization of the health department under the direction of Dr William R. Cameron. Dr Oscar David Garvin, health officer of Richmond and Scotland counties, has been appointed to a similar position in Chatham Orange and Person counties to succeed Dr William P. Richardson, Chapel Hill, who resigned to become a district director in the division of local administration of the state board of health, it is reported.

## OHIO

**Personal**—Dr William E. Mishler, Cleveland, has been appointed chief surgeon of the Erie Railroad to succeed Dr James Frank Dimmen, who is retiring because of ill health. Dr Dimmen has been associated with the Erie Company since 1927. He had been assistant chief surgeon of the Nickel Plate Road for nineteen years, assisting his father, who had been chief surgeon there since 1881, the *Cleveland Plain Dealer* reported.

**Torald Sollmann Honored**—On September 25 Dr Torald H. Sollmann, dean emeritus and professor emeritus of pharmacology and materia medica, Western Reserve University School of Medicine, was guest of honor at a dinner and presented with a silver plaque in recognition of his distinguished services. Winfred G. Leutner, LL.D., president of Western Reserve University, was toastmaster of the affair, which was sponsored by the faculty and alumni of the medical school. Dr Sollmann, who had been associated with the school for nearly fifty years, is chairman of the Council on Pharmacy and Chemistry of the American Medical Association.

**Broadcast in Health**—The Cleveland Health Museum in cooperation with the Academy of Medicine of Cleveland and the Cleveland Dental Society, has resumed its radio programs over station WGAR. The series, which opened October 3 with a talk by J. V. Gentilly, DDS, and Dr Gerald B. Hurd, on "A Tooth for Every Baby," includes:

- Dr Robert T. Parker: Penicillin, October 10.
- Ralph E. Craig, DDS: Your Child's Teeth, October 17.
- Dr Horace E. Mitchell: Lakewood Foreign Bodies in Food and Air, Pages, October 24.
- C. C. Buckis, DDS, and Thomas T. Healy, DDS: Those Six Year Molars, October 31.
- Dr Middleton H. Lambright: Warning Signs of Cancer, November 7.
- Dr Howard Lester Taylor: The Health Museum, November 14.
- Dr Charles E. Kinney: To Protect Your Child's Hearing, November 21.
- Leon F. Newman, DDS, and William C. Stillson, DDS: Teeth of the Teen Age, November 28.

**Medical Library Observes Fiftieth Anniversary**—The Cleveland Medical Library Association will celebrate its fiftieth anniversary November 26-27. On the first day the library will be open for public inspection and Dr. Normand L. Hoerr, professor of anatomy, Western Reserve University School of Medicine, Cleveland, will deliver an address entitled "The Forgotten Man in Medical Education." A jubilee banquet will be held the second evening at which members of the library association will be hosts to invited civic leaders, educators, librarians and honorary consultants to the Army Medical Library. As a feature of the anniversary the association is planning the publication of a catalogue of the famous Nicolson-Pol Library, of which the Cleveland Medical Library possesses the largest nucleus. The project is under the direct supervision of Dr. Max E. Fisch, curator of incunabula in the Army Medical Library.

## OREGON

**Medical Students Recommended for Membership**—At the recent annual meeting of the house of delegates of the Oregon State Medical Society it was voted to recommend to the council that a membership for medical students be created. The president of the society was also authorized to apprise Governor Earl Snell that the establishment of a university hospital at the University of Oregon Medical School, Portland, for patients on the indigent level was favorably considered. A

questionnaire seeking the profession's reaction to the proposal which was issued by the dean of the medical school states that the project was being planned to improve facilities for teaching medical students and to provide a diagnostic service for doctors of the state for patients on the indigent level.

**Physicians in the Legislature**—*Northwest Medicine* reports the following physicians as candidates in the Oregon legislature:

Dr Ferdinand H. Dammach of Multnomah County, a past president of the Multnomah County Medical Society, who was a member of the joint ways and means committee and chairman of the house committee on medicine, pharmacy and dentistry at the 1943 session, is again a candidate in the November election. Dr Dammach also served in the 1933 session.

Dr William T. Johnson of Benton County, former president of the Oregon State Medical Society, is also a candidate for the house.

Dr James A. Becht of Umatilla County, holdover senator, is one of the veteran members of the senate having served in the 1917, 1919, 1941 and 1943 sessions. He also served as representative in the 1931 session.

Dr Joel C. Booth of Linn County, a past president of Central Willamette Medical Society, is also a holdover senator. Dr Booth is a senior senator with service in the 1911, 1913, 1919, 1941 and 1943 sessions.

Dr William A. Moer of Josephine County is a new candidate for the senate.

## PENNSYLVANIA

**Special Society Election**—Dr Michael J. Pentz was installed as president of the Reading Eye, Ear, Nose and Throat Society at its recent meeting in Reading. Other officers include Drs Roland M. Brickbauer, first vice president; Isaac B. High, second vice president; and president-elect Harold L. Straube, treasurer, and Paul C. Craig, secretary.

## Philadelphia

**Annual Dinner of Resident Physicians**—The fifty-eighth annual dinner of the Association of Non-Resident and Resident Physicians of the Philadelphia General Hospital will be held on December 5 at the Bellevue Stratford Hotel with Dr. George Wilson presiding as toastmaster. Non-residents who do not receive notices of the dinner are requested to send their correct addresses to the secretary, Dr. Robert C. McClellon, 133 South 36th Street, Philadelphia 4.

## TEXAS

**Auxiliary Library Endowment Fund**—The Woman's Auxiliary library endowment fund was established September 18 when a check for \$1,000 was received in the office of the State Medical Association of Texas from the treasurer of the auxiliary. The donors of this, the first endowment fund of the auxiliary, are Mr. and Mrs. G. A. Ray, Pettus, who established this fund in memory of their daughter, Romayne Ray, who died Sept. 12, 1941. The fund is to be known as "The Romayne Ray Memorial Fund."

**Personal**—J. Allen Scott, Sc.D., associate professor of epidemiology and medical statistics at the University of Texas School of Medicine, Galveston, is participating in the organization and work of a parasitology survey in the Amazon area at Belem, Brazil, under the auspices of the Rockefeller Foundation and the Office of the Coordinator of Inter American Affairs. He will return to his duties at Galveston in November. Dr. Julius C. Davis, Rule, has been appointed a member of the state board of health to succeed Dr. Samuel T. Thompson, Kerrville, resigned.

**State Surgeons Choose Officers**—Dr. Samuel D. Weaver, Dallas, was elected president of the Texas Surgical Society during its meeting in Galveston, October 2-3. Other officers include Drs. Jared E. Clarke, Houston, and George R. Enloe, Fort Worth, vice presidents; Walter G. Stuck, San Antonio, secretary, and Elbert Dunlap, Dallas, treasurer. Among the speakers at the meeting included:

- Dr. John W. Duelett, Dallas: Surgical Treatment of Tumors of the Liver.
- Dr. Enloe: Adenoma of Pancreatitis with Hyperinsulinism.
- Dr. John on Peyton Barnes, Houston: A Simple Safe Efficient Method of End to End or End to Side Intestinal Anastomosis.
- Dr. George V. Brindley, Temple: Precancer Tumors.
- Dr. George W. N. Eggers, Galveston: Chronic Dislocation of the Metacarpal of the Thumb.
- Dr. Frank C. Beall, Fort Worth: Deicient Fixation of the Right Colon.
- Dr. Mateos Fernan Nunez, Milwaukee: Tropical Surgery.
- Capt. Stirling E. Russ, and Capt. John S. Caylor, M.C.: Spontaneous Rupture of the Spleen.

The second day's program was devoted to clinical sessions. Features of the meeting included a talk by Stewart H. Evans, Galveston, British vice consul (honorary), entitled "A Clipper Trip to England and an exhibit of drawings, sketches and etchings by Charles M. Pomeroy, Ph.D., professor of anatomy, University of Texas Medical Branch, Galveston.



**"Magnetic Ray Belt Maker" Fined**—Dr Frank B Moran, Dallas, who graduated at the University of Michigan Department of Medicine and Surgery, Ann Arbor, in 1894, was sentenced to ten days in jail and fined \$750 recently when a ruling was handed down that the physician had violated an injunction issued by the court in 1942 against transporting in interstate commerce his magnetic ray belt. The *Texas State Journal of Medicine* reported. The belt is said to be made and sold by the Magnetic Ray Company, reputedly owned by Dr Moran. The injunction was granted on petition of the government on the ground that the belt was mislabeled; it was stated.

#### VIRGINIA

**Personal**—Dr William A Browne, city health officer of Alexandria, has been appointed epidemiologist of Richmond effective October 1. Dr Browne held the Richmond position from 1935 to 1940. He once held a similar position in the New York City health department. He carried on a survey of scarlet fever in Richmond under the auspices of the Rockefeller Foundation; it is reported.

**Faculty Changes at College of Virginia**—A department of physical medicine has been created under a recent grant by the Baruch Committee on Physical Medicine to the Medical College of Virginia, Richmond. Dr Frances A Hellebrandt, associate professor of physiology, University of Wisconsin Medical School, Madison, has been named professor of physical medicine effective October 1 and Dr Ernst Fischer, associate professor of physiology at the college, has been transferred from the department of physiology to the department of physical medicine with the rank of professor of physical medicine. Robert W Ramsay, PhD, of the University of Rochester School of Medicine and Dentistry, Rochester, N. Y., has been named associate professor of physiology.

#### WASHINGTON

**Industrial Hygiene Division Named Information Center in New Program**—The industrial hygiene division of the Washington State Department of Health was selected as an information center in a new cooperative industrial program in the state. The program was launched at a recent meeting in Seattle sponsored by the Seattle Safety Council and attended by representatives from labor, industry, government agencies and the medical profession. To avoid overlapping in a concentrated industrial health program, committees were appointed and industrial health problems were broken down into eight brackets: nutrition, safety, sanitation, occupational diseases, venereal disease, tuberculosis and other communicable diseases, and plant medical facilities including medical, dental, nursing and first aid activities. The industrial hygiene division of the state health department will function as an information bureau by referring each problem that comes to it from industry, labor or others to the appropriate committee, which in turn will decide where the responsibility lies under the coordinated program. According to *Northwest Medicine*, it is believed that this service through the information bureau and the permanent committees will reduce confusion due to duplicated effort, overlapping activity and conflicting recommendations. Agencies cooperating in the program include the Committee on Congested Production Areas, King County Health Department, National Committee for the Conservation of Manpower in War Industries, Seattle City Health Department, Seattle Safety Council, Smaller War Plants Corporation, state health department, State Department of Labor and Industries, State Nutrition Committee, U. S. Army, U. S. Bureau of Mines, U. S. Department of Labor, U. S. Maritime Commission, U. S. Navy, U. S. Public Health Service, War Food Administration, War Manpower Commission, War Production Board, labor production division, War Production Board production drive, Washington State Social Hygiene Association and the Washington Tuberculosis Association.

#### GENERAL

**Urology Award**—The American Urological Association offers an annual award, not to exceed \$500, for an essay (or essays) on the result of some specific clinical or laboratory research in urology. The amount of the prize is based on the merits of the work presented and if the committee on scientific research deems none of the offerings worthy, no award will be made. Competitors shall be limited to residents in urology in recognized hospitals and to urologists who have been in such specific practice for not more than five years.

All interested should write the secretary for full particulars. The selected essay (or essays) will appear on the program of the June 1945 meeting of the American Urological Association. Additional information may be obtained from the secretary, Dr Thomas D Moore, 899 Madison Avenue, Memphis, Tenn., who must receive competitive essays on or before March 15.

**Association of American Medical Colleges**—Dr John Walker Moore, Louisville, was chosen president elect of the Association of American Medical Colleges during its annual meeting in Detroit, October 23-25, and Dr Albert C Firstenberg, Ann Arbor, Mich., was installed as president. Dr William S McElroy, Pittsburgh, was elected vice president and Drs Fred C Zapffe and Arthur C Bachmeyer, both of Chicago, were reelected secretary and treasurer respectively. Drs Walter A Bloodorn, Washington, D. C., and Wilburt C Davison, Durham, N. C., were chosen members of the executive council of the association, succeeding Drs Willard C Rappleye, New York, and Russell H Oppenheimer, Atlanta, Ga., whose terms expired. The 1945 session will be in New Orleans, October 29-31.

**Special Society Elections**—Dr Alan C Woods, Baltimore, was named president elect of the American Academy of Ophthalmology and Otolaryngology at its annual meeting in Chicago, October 12, and Dr Gordon B New, Rochester, Minn., was inducted into the presidency. New vice presidents include Drs Edmund B Spacht, Philadelphia, William H Johnston, Santa Barbara, Calif., and Major Brittain F Payne, M. C. The next annual meeting will be held at the Palmer House, Chicago, Oct. 7-11, 1945. Dr William Bates, Philadelphia, was named president elect of the United States chapter of the International College of Surgeons at its annual meeting in Philadelphia, October 4, and Dr Rudolph Jaeger, Philadelphia, was inducted into the presidency. Other officers include Major Charles H Arnold, M. C. secretary, and Dr Benjamin I Golden, Elkins, W. Va. treasurer. It was announced during the meeting that the international headquarters would be transferred from Geneva, Switzerland, to New York.

**Courses for Orthopedic Surgeons**—The American Academy of Orthopaedic Surgeons has prepared a series of instructional courses to be presented at its annual meeting in Chicago, Jan. 20-24, 1945. The courses will deal with the shoulder, the hip, the knee and the foot. The instruction periods will deal first with the orthopedic anatomy, then with the practical application from the standpoint of symptoms and pathology, the treatment of disease conditions occurring in each one of these regions and finally the treatment of traumatic conditions. Four courses on physiology will be offered covering nerves, joints, bones and muscles as they pertain to various phases of orthopedic surgery. There will also be courses on infantile paralysis, spastic paralysis, fractures and x-rays in orthopedic surgery. On Saturday evening, January 20, the instructional course dinner will be held with an "information please" type of program of interest to military and civilian orthopedic surgeons. During the session a symposium on degenerative hip pathology is also planned as well as a series of talks on fractures, reconstruction surgery, treatment of infections and trauma.

**Cancer Society Absorbs Foundation**—The recently formed National Foundation for the Care of Advanced Cancer Patients was absorbed October 10 into the American Cancer Society, according to the *New York Herald Tribune*. Under the arrangement it was stated, the cancer society, which is 31 years old, will devote part of the funds collected nationally to provide care for incurable cancer patients of moderate means in addition to its present activities in supporting research and education in the prevention and cure of cancer. The merger was announced by Clarence C Little, ScD, managing director of the American Cancer Society, and Julius I Perlmuter, organizer and president of the national foundation which was incorporated last May (*THE JOURNAL*, May 20, p. 221). It was stated that the organizations joined forces to avoid any confusion that might follow separate national campaigns for funds. The foundation will temporarily maintain its offices at 1450 Broadway, but its activities and records were to be transferred immediately to the cancer society's offices at 350 Madison Avenue. In an announcement Dr Frank E. Adair, president of the American Cancer Society and vice president of the foundation, said that the former group will stimulate establishment of hospitals and homes to care for hopeless cancer patients and contribute funds for their support. Heretofore this organization has emphasized educational campaigns in the prevention and early detection of cancer contributing to the support of cancer research and clinics throughout the country.



## Foreign Letters

### LONDON

(From Our Regular Correspondent)

Oct 4 1944

#### Compulsory Social Insurance from the Cradle to the Grave

As pointed out previously in THE JOURNAL the scheme of the government for a national health service, which has produced the greatest crisis ever faced by the medical profession is only one phase of the socialistic trend of British politics. The climax—for the present at any rate—of this trend is the social insurance plan which has just been published. This is the Beveridge scheme which has been described in THE JOURNAL, with some modifications. It extends compulsory social insurance to the entire population and so includes the millionaire as well as the humblest manual worker. Incidentally, this renders unlikely any favorable action on the demand from the profession that the upper 10 per cent of the population who do not require a national health service should not be included in it. The scheme will cost £3,250,000,000 in the first year, increasing to \$4,155,000,000 in 1975. This will be provided by contributions from workers, employers, taxpayers and ratepayers. A Ministry of Social Insurance is to be set up as soon as possible. The main benefits will be as follows:

**Sickness.** Single man or woman or man with wife earning \$5 a week, man with wife not earning \$8, married woman earning \$3, dependent's allowance \$3.

**Invalidity.** Single man or woman or man with wife earning \$4, man with wife not earning \$7, married woman earning \$3, dependent's allowance \$3.

**Unemployment.** Single man or woman or man with wife earning \$5, man with wife not earning \$8, married woman earning \$4, dependent's allowance \$3.

**Retirement Pension.** Single man or woman or man with wife earning, \$4, man with wife not earning \$7, married woman earning, \$4.

**Family Allowances.** \$1 a week for each child except the first, more school meals and milk.

Provision is also made for maternity, death, widows and orphans and industrial training.

At present twenty million employed persons are covered by insurance. The new plan which extends insurance to everybody, will bring in another twenty seven million. Each insured person will pay in the form of a stamp a single weekly contribution for all the benefits to which he is entitled. For employed men over 18 the total contribution will be \$1.50 weekly, of which nearly half will be paid by the employer. This figure includes 12 cents a week which men now pay under a separate industrial injury insurance scheme. The unemployment benefit will be payable for not more than thirty weeks continuously. For employed women the weekly contribution is \$1 a week, of which the employer pays more than half.

The government states that its first duty is to protect the country against aggression and the next is to secure the general prosperity and happiness of its citizens. Growth of the national power to produce with accompanying opportunities for increased well-being, leisure and recreation must be fostered, it is declared. Plans for the prevention of individual poverty resulting from those hazards of personal fortune over which individuals have little or no control must also be made by the government, it is held. Hence the need for social insurance. The stability of so vast a scheme depends on

strict administrative economy in every sense. This is not a matter for the government alone but requires the full cooperation of the public.

#### FAMILY ALLOWANCES

The proposals for family allowance are based on two principles: that nothing should be done to remove from parents the responsibility of maintaining their children and that it is in the national interest to help parents in discharging that responsibility. The scheme is not intended to provide full maintenance for each child but rather a general contribution to the needs of families with children. The purpose can be best fulfilled by giving a substantial part of the benefit in kind. The present school meals and milk will therefore be extended. It is estimated that this will increase the cost to \$300,000,000 a year—a figure which does not fall far short of the total cash allowances to parents. The first child is excluded from the flat rate allowance of \$1 a week because it is assumed that one child can be maintained from family earnings.

#### SICKNESS BENEFIT

Sickness benefit will be payable for the first three years of any continuous period of sickness. After that the lower rate of invalidity benefit will be paid. The government feels that sickness benefits of unlimited duration would be psychologically unwise and would tend to encourage persons subject to recurrent periods of sickness to lapse into chronic invalidity.

#### RETIREMENT PENSIONS

The prevention of want in old age is a policy on which the government sets great store. Government actuaries have estimated that in the twenty years from 1945 to 1965 the population of pensioners over working age will grow from 3,400,000 to 5,300,000, whereas the number of contributors will be practically stationary at about 21,000,000. In the ten years from 1965 to 1975 there will be a further increase of about 800,000 in the pensioners while the contributor population will fall by over 1,000,000. These figures are based on the present birth and death rates. It may become a matter of vital importance to keep up the national income by encouraging the continuance of productive work by those who have reached the pensionable age. The government therefore proposes that for any one who works beyond the pensionable age and claims his pension later the benefit rate will be increased by 80.25 weeks for each extra year of work.

#### CONCLUSION

The government has expressed gratitude to Sir William Beveridge for his great work in preparing his comprehensive and imaginative report. The main tribute is the embodiment of so much of his plan in the proposals which are believed to afford an adequate basis of social insurance for many years to come. They round off a notable chapter in the history of British social insurance which since its beginning thirty-three years ago in the National Insurance Act has grown steadily in scope. The present scheme makes provision against every one of the main attacks which economic ill fortune can launch against individual well-being and peace of mind: proponents of the plan maintain. They do not explain why the government worked out in detail this revolutionary plan of national compulsory insurance for all persons and for all purposes from the cradle to the grave during the greatest of all wars which for a time placed the very existence of this country in danger. Some explanations are suggested, however. During the war all our activities have been severely controlled so as to subordinate everything to victory. One result was the abolition of unemployment. So the argument arose: 'If the government can prevent unemployment in time of war, it can do so in time of peace. After the war of

1914-1918 the country was left to its own devices and there was a period of severe unemployment. The government has now assumed responsibility for dealing with unemployment by prevention or subsidy. In the second place, family allowances are designed to help parents in their responsibility and so encourage parenthood in the face of threatened decline of population.

### Home Leave of Soldiers for Parenthood Resented

Much discontent has been caused among men of long service in the Middle East by what they regard as a gross interference with a man's most intimate private affairs. This arises out of publication of an order that married men with more than three years of service in the Middle East could obtain compassionate leave on the grounds that they wanted to return home to start a family. Within a few days there were more than 1,000 applications. Three weeks later there was an amendment to the original order, which restricted posting to men whose wives were over 35 and who could show good reason why they had not started a family before the war. Wives and husbands were required to produce a medical certificate that they were willing and able to have children. Since this amendment, which makes it difficult for more than a handful of men to obtain posting in spite of the fact that hundreds had already joyfully written home about the new facility, chaplains and welfare officers have found the men unhappy. What their wives in Britain will think is not difficult to imagine. Most of the soldiers, even the married ones, are willing to serve abroad for three years if necessary, owing to war conditions but after that they want to go home. Nothing could be worse than the disappointment after hopes were raised by the original order.

### BUENOS AIRES

(From Our Regular Correspondent)

Sept. 22, 1944

### Social Care of Patients with Heart Disease

The Department of Social Care of Cardiac Patients in Buenos Aires, of which Dr. Rafael A. Bulluck is the head, has a central department of social assistance and nine dispensaries in the Ramos Mejia, Rawson, Alvear, Pirovano, Durand, Salaberry, Alvarez and Tornu hospitals. All the centers are well provided with the necessary means for preventing heart disease and for giving therapy to patients. The work carried on by the department during the last four and a half years is of great importance. The department is supported by the government, but donations are also given by the public. The department gives medical care to ambulatory patients, hospitalization for as long as it is necessary, medical care and guidance to pregnant and nursing mothers with heart disease and to children with heart disease and help in securing proper positions for young people with heart disease. Patients with heart disease who are unable to work and have no family to support them are admitted to institutions in which they will be given the necessary care.

### National Department of Public Health

The National Department of Public Health and Social Assistance of Argentina was created Oct. 21, 1943 to supplant the National Department of Public Hygiene. Recently the government changed the functions of the department. From now on all work concerned with public beneficence and social care will be carried on in the Department of Social Assistance, which is a branch of the Secretariat of Work and Public Aid. The functions of the National Department of Public Health are concerned with the prevention and control of diseases. Dr. Eugenio A. Galli, head of the National Department of Public Health, has resigned. Dr. Manuel Augusto Viera has been appointed to the position.

### Prevention of Typhoid

Vaccination against typhoid for all persons living in areas in which typhoid is frequent, including children over 3 years of age, became obligatory by a decree of the government which was recently published. A certificate will be given to all persons after vaccination. It should be shown by parents to teachers and by workers to employers. Managers and consulting physicians of working centers will be in charge of demanding the certificate as a requirement for admission to work. Persons who have suffered from typhoid in the recent past and those in poor health can refuse vaccination if they present a medical certificate to the vaccination department. The vaccination and proper medical after care are given free of charge. The vaccine to be used is that prepared by the National Department of Public Health or any of the vaccines authorized by the National Department of Public Health. Private clientele will pay for vaccination at home. The period of time after which revaccination, either partial or total, is to be administered will be reported later. Infractions of the law will be punished by fines, which will be used to help defray the expenses of the antityphoid campaign. The incidence of typhoid in the Argentine army is negligible because the soldiers are given the vaccines when entering the army. Several cases of typhoid were reported from San Juan shortly after occurrence there of an earthquake in January 1944. Administration of vaccines soon after the cases were reported prevented further spread. The vaccine prepared by the Bacteriologic Institute of Buenos Aires is administered in three progressive doses.

### Distribution of Penicillin in Argentina

Penicillin is not available to Argentine physicians; they have to order it from other countries. Penicillin is not produced in this country, although certain scientific institutions and pharmaceutical firms are carrying out laboratory and scientific studies on penicillin. Large amounts of it are to be sent in the near future from the United States to Argentina. No import duty will be charged. The National Department of Public Health appointed a committee in charge of the importation of the drug to Argentina, national distribution of the substance and supervision of prices. The committee sent formularies to physicians for obtaining the amounts of the drug which they may need for their patients.

## Marriages

NORMAN EDMOND DUROCHER, Ecorse, Mich., to Miss Audrey Mae Brady of Gulfport, Miss., at Charlotte, N. C., September 3.

MARION AUGUSTUS BALDWIN, Fort Gaines, Ga., to Miss Elizabeth Frances Baldwin of Montgomery, Ala., in September.

GEOFFREY HERMAN BINNFELD, Leesburg, Fla., to Miss Ellen May Whitt of Yalahua in Charlottesville, Va., September 15.

WILLIAM F. X. CAMPION, Brooklyn, to Miss Marguerita Anita Corrigan of Bay Ridge, N. Y., September 16.

CHARLES ALOXSIUS ROGERS, Upper Montclair, N. J., to Miss Mary P. Robertshaw of Montclair, September 30.

JOHN G. CHESNEY, to Miss Audrey Hasler, both of New York, in Montgomery, Ala., September 15.

BROOKE ROBERTS, Bala Cynwyd, Pa., to Miss Anna W. Ingersoll in Whitemarsh, September 16.

WILLIAM SHERARD CHAPMAN, to Miss Lois Elizabeth Smith, both of Florence, S. C., September 16.

JAMES R. FLAHERTY, to Miss Kathryn M. Gully, both of Worcester, Mass., August 26.

CHARLES A. DE WERT, to Miss Elizabeth L. Dunman, both of Cincinnati, September 14.

RICHARD V. DAUT, to Miss Jean Wilkens, both of Muscatine, Iowa, September 28.

CLIFFORD T. SMITH, to Mrs. Loine Arthur, both of Houston, August 23.

## Deaths

**James Addison Babbitt** † Haverford Pa University of Pennsylvania Department of Medicine Philadelphia 1898 emeritus professor of clinical otolaryngology at his alma mater and associate professor of otolaryngology at the Medico-Chirurgical College Graduate School of Medicine University of Pennsylvania served as professor of hygiene and physical education at Haverford College becoming emeritus in 1928 member of the United States Football Rules Committee from 1906 to 1925 a fellow and one time president and secretary of the American Laryngological Association fellow and past president of the American Academy of Ophthalmology and Otolaryngology and the American Laryngological Rhinological and Otolological Society fellow of the American Otolological Society Inc and the Philadelphia Laryngological Association fellow and past chairman executive committee section on otolaryngology College of Physicians of Philadelphia fellow and member of the board of governors of the American College of Surgeons during World War I served in France and Germany working with the hospital service of the American Red Cross with the rank of major specialist certified by the American Board of Otolaryngology member of the courtesy staffs of the Bryn Mawr Hospital Bryn Mawr Presbyterian Chestnut Hill and Methodist hospitals Philadelphia consulting otolaryngologist to the Mercy Fitzgerald Hospital Darby Pa Children's Hospital of the Mary I Drexel Home Children's Hospital and Misericordia Hospital Philadelphia consulting otolaryngologist and acting chief department of otolaryngology at the Lancaster Hospital Philadelphia where he died October 15 aged 74, of cerebral hemorrhage

**Edward Leonard Kiekham** † Boston Tufts College Medical School Boston 1923 specialist certified by the American Board of Obstetrics and Gynecology Inc member of the New England Obstetrical and Gynecological Society and the Boston Obstetric Society treasurer of St Luke's Guild of Physicians fellow of the American College of Surgeons since 1930 instructor in gynecology at his alma mater special lecturer at the Boston College School of Social Work formerly surgeon of the fire department served during World War I as senior obstetrician and gynecologist at Carney and St Elizabeth's hospitals gynecologist at the New England Medical Center died in the Cardinal O'Connell House of St Elizabeth's Hospital August 10 aged 49 of ulcerated colitis

**Denis Lane McAuliffe** † North Vernon, Ind., Vassar Medical College Cincinnati 1902 formerly instructor in anatomy and lecturer in medicine and materia medica at his alma mater for thirty years secretary treasurer and once president of the Jennings County Medical Society, for many years secretary of the Fourth District Medical Society once president and for fifteen years secretary of the Tri County Medical Society member of the Southern Medical Association and the Mississippi Valley Medical Association at one time county health officer on the staff of the Schmeck Hospital Seymour where he died September 18 aged 79, of myocarditis and bronchopneumonia

**Victor Lupu Schrager** † Chicago Universitat der Buergerlichen Fakultät der Medizin Rumina 1901 Dearborn Medical College Chicago 1904 Rush Medical College Chicago 1907 associate professor of surgery at Northwestern University Medical School professor of surgery at the Cook County Graduate School formerly assistant professor of surgery at Rush Medical College a founder member of the American Board of Surgery a member of the Chicago Surgical Society fellow of the American College of Surgeons on the staffs of Mount Sinai Garfield Park Community Walther Memorial Lorretto and Cook County hospitals died October 15 aged 66 of hypertension and heart disease

**Hiram La Mont Youtz**, Webster City Iowa Johns Hopkins University School of Medicine Baltimore 1905 member of the Iowa State Medical Society during World War I served overseas as a captain in the medical corps of the U S Army in command of Field Hospital number 40 honorably discharged in 1919 in 1935 assigned to active status as captain medical reserve Civilian Conservation Corps in Iowa served as college physician at the South Dakota State College Brookings for four years died September 27 aged 69 of carcinoma of the sigmoid with metastasis to the liver

**Bertis Charles Gwaltney** Fort Branch Ind Indiana University School of Medicine Indianapolis 1930 member of the Indiana State Medical Association health officer of Gibson

County in 1943 appointed assistant collaborating epidemiologist of Indiana for thirteen years a teacher in various schools in Gibson County including a year at Wolie Lake in Northern Indiana serving as principal at the Mackey High School a director of the Linnville National Bank on the staff of the Gibson General Hospital Princeton died August 9 aged 50 of coronary thrombosis

**Arthur E Bonesteel** Los Angeles University of Denver Medical Department 1894 member of the Colorado State Medical Society formerly on the staff of St Luke's Hospital in Denver died July 31 aged 73 of cardiovascular disease

**Samuel Pierson Brush**, Babylon N Y Albany Medical College 1908 fellow of the American College of Surgeons died July 5 aged 61 of arteriosclerosis

**Willard James Burns** Washington Pa Western Pennsylvania Medical College Pittsburgh 1897 member of the Medical Society of the State of Pennsylvania died June 28 aged 77 of coronary thrombosis and acute gastritis

**George H P Christman**, East Washington Pa Hahnemann Medical College and Hospital of Philadelphia 1881 member of the Medical Society of the State of Pennsylvania served during World War I died June 24 aged 85 of acute dilatation of the heart arteriosclerosis and coronary disease

**Leo V James Conlin**, St Paul University of Minnesota Medical School Minneapolis 1931 health officer of North St Paul and deputy coroner of Ramsey County on the staffs of St John's and St Joseph's hospitals died June 10 aged 43 of coronary occlusion

**Edward C Gager**, St Paul University of Minnesota College of Medicine and Surgery Minneapolis 1905 member of the Minnesota State Medical Association and the Minnesota Dermatological Society fellow of the American College of Physicians clinical instructor in dermatology at his alma mater chief venereal disease clinic Wilder Dispensary attending dermatologist Ancker Hospital died in the Bethesda Hospital July 29, aged 61, of acute myocardial failure following an operation for intestinal obstruction due to gallstones in the ileum

**Henry J Goodwyn**, Carrollton Ga Atlanta College of Physicians and Surgeons 1902 member of the Medical Association of Georgia president of the Carrollton Federal Savings and Loan Association died June 24 aged 70, of carcinoma of the liver

**Charles M Hanby**, Wilmington Del Southern Homeopathic Medical College Baltimore 1902, member of the Medical Society of Delaware a member and for many years president of the city board of health on the staffs of the Memorial Delaware and Wilmington General hospitals served as a member of the board of directors of the Alfred I du Pont Institute of the Nemours Foundation died July 27, aged 69 of coronary occlusion

**James I Hembree**, Atlanta Ga Georgia College of Eclectic Medicine and Surgery Atlanta 1912 died in the Crawford W Long Memorial Hospital July 5 aged 54, of coronary thrombosis

**G W Holmsley**, Comanche, Texas (licensed by years of practice) died July 8 aged 73

**William Brayton Holt** † Oak Ridge Tenn University of Minnesota Medical School Minneapolis 1924 member of the Minnesota State Medical Association formerly on the staff of St Barnabas Hospital Minneapolis died July 26 aged 46 of congestive heart disease coronary sclerosis and hypertension

**Ernest Walker Irving**, Memphis Tenn Meharry Medical College Nashville 1897 formerly inspector in city schools for the board of health died July 18 aged 74 of angina pectoris

**Addison Le Clare Judd**, Kanawha Iowa Keokuk Medical College College of Physicians and Surgeons, Keokuk Iowa 1902 member of the Iowa State Medical Society served on the staff of the Lutheran Hospital, Hampton died July 27 aged 79 of senility

**Christopher C Kesner**, Le Roy Kan Louisville Medical College Louisville, Ky 1884 served as local surgeon for the Missouri Pacific Railroad died June 15 aged 87 of cerebral hemorrhage

**Lucas Allen Miller** † Colorado Springs, Colo the Hahnemann Medical College and Hospital Chicago 1898, first lieutenant in the medical reserve corps of the U S Army not on active duty died August 21, aged 76, of coronary thrombosis

**James Franklin Owens**, Springfield Mo Northwestern Medical College St Joseph 1892 member of the Missouri State Medical Association formerly lecturer at the Empworth

Central Medical College while a resident at St Joseph served as president of the board of public health city health physician and county physician died August 1, aged 74, of cerebral and gastric hemorrhages

Edwin N Reinert @ Cleveland, Wis Milwaukee Medical College 1902 died in the Memorial Hospital Sheboygan, August 1 aged 67 of uremia and carcinoma of the prostate with metastasis

William T Rickman, Sapulpa Okla University of West Tennessee College of Medicine and Surgery, Memphis 1916, died in the Moton Memorial Hospital, Tulsa, June 17, aged 65 of cardiovascular disease

Frederick Charles Roberts, Easton, Pa University of Pennsylvania Department of Medicine Philadelphia, 1898 member of the Medical Society of the State of Pennsylvania, past president of the Northampton County Medical Society at one time mayor of Easton emeritus chief of the medical staff of Easton Hospital, died suddenly October 13, aged 74, of cardiac infarct

Joseph Horace Shull, Stroudsburg, Pa Bellevue Hospital Medical College New York 1873, also a lawyer state senator from 1886 to 1890, in 1904 elected to Congress as a representative for a term served as president of the Monroe County Medical Society and the Monroe County Bar Association on

John Sanders Taylor, Mount Pleasant, Texas (licensed in Texas under the Act of 1907) served as health officer of Mount Pleasant for many years died June 19, aged 83, of heart disease

Thomas L Underwood, Sebastopol Miss Memphis (Tenn) Hospital Medical College, 1889, died July 27, aged 84, of mitral regurgitation

Lee Wilbert Wiggins, Doraville Ga, Atlanta School of Medicine, 1908 member of the Medical Association of Georgia served during World War I, on the staff of the Crawford N Long Memorial Hospital Atlanta died in the Veterans Administration Atlanta, July 20, aged 67, of hypertension and coronary arteriosclerosis cerebral thrombosis with hemiplegia

Maurice Houston Wilkinson, Los Angeles the Hahnemann Medical College and Hospital Chicago, 1915, formerly professor of internal medicine at the Illinois Post Graduate Medical School Chicago, served during World War I captain medical corps Army of the United States, not on active duty served on the staffs of various Veterans Administration facilities died August 25, aged 55 of coronary occlusion

David York Willbern, Runge Texas Medical Department of Tulane University of Louisiana New Orleans 1900 served on the school board for many years died July 13 aged 73 of lobar pneumonia following a cerebral hemorrhage



LIEUT FRANCIS J BROCCOLO  
(VC), USNR, 1917-1943



LIEUT (JG) HENRY B LANDAAL  
(VC), USNR, 1918-1944



CAPT EUGENE FRANCIS HAVERTY  
MRC, U S A, 1912-1944

the staff of the General Hospital of Monroe County, East Stroudsburg, died August 8 aged 95, of uremia

Marvin R Smith, Cordele, Ga University of Georgia Medical Department Augusta 1905 member of the Medical Association of Georgia died July 12, aged 65 of acute dilatation of the heart

W Charles Willis Allentown Pa Eclectic Medical College of the City of New York 1907 died July 2 aged 67

Harry M Wilson, Evans City, Pa University of Maryland School of Medicine, Baltimore, 1889, member of the Medical Society of the State of Pennsylvania vice president of the Citizens National Bank died July 25 aged 78

## KILLED IN ACTION

Francis Joseph Broccolo, Cicero Ill Loyola University School of Medicine, Chicago 1941 served an internship at the Cook County Hospital Chicago, where he had been a resident in otology, laryngology and rhinology commissioned a lieutenant (jg) in the medical corps of the U S Naval Reserve on Jan 26 1942 promoted to lieutenant Oct 1 1942 had been awarded the Silver Star killed in action while at sea in the South Pacific area aged 26 presumptive date of death, Oct 13 1943, according to the Navy Department

Henry Byron Landaal, Waupun Wis Medical College of Virginia Richmond, 1943 served an internship at the State of Wisconsin General Hospital Madison commissioned a lieutenant (jg) in the medical corps U S

Naval Reserve on April 6 1943 killed in action off the coast of France June 9 aged 20

Eugene Francis Haverty, Pittsburgh, Georgetown University School of Medicine Washington D C 1938, served an internship at the Mercy Hospital formerly resident physician at the Children's Hospital Cincinnati and the Cincinnati General Hospital commissioned a first lieutenant in the medical reserve corps of the U S Army on June 18 1938 began extended active duty on July 7 1941 and assigned to the Station Hospital at Indiantown Gap Pa later promoted to captain had been stationed in England Tunisia and Salerno awarded the Legion of Merit and Silver Star for meritorious service at Anzio beach head killed in action in Italy February 29 aged 31

## Bureau of Investigation

### MISBRANDED PRODUCTS

#### Abstracts of Notices of Judgment Issued by the Food and Drug Administration of the Federal Security Agency

[EDITORIAL NOTE—These Notices of Judgment are issued under the Food, Drug and Cosmetic Act, and in cases in which they refer to drugs and devices they are designated DDNJ and foods, FNJ. The abstracts that follow are given in the briefest possible form: (1) the name of the product, (2) the name of the manufacturer, shipper or consigner, (3) the date of shipment, (4) the composition, (5) the type of nostrum, (6) the reason for the charge of misbranding and (7) the date of issuance of the Notice of Judgment.]

**Hillys 'H R 5**—Morris William Hillyer trading as Hilly Medicinal Products Pasadena Calif. Shipped Oct 7 1940. Composition essentially small amounts of an ephedrine salt caffeine sodium phosphate reducing sugars and water with caramel coloring. Misbranded because despite the 0.31 gram of ephedrine hydrochloride present in each fluid ounce the label failed to warn that frequent or continued use might cause nervousness restlessness or sleeplessness and that persons suffering from high blood pressure heart disease or thyroid trouble should not use such drug except on competent advice. Further misbranded because of false and misleading statements in labeling which represented that the product would be efficacious for use after overdulgence in alcohol and in the cure mitigation treatment or prevention of alcoholism.—[DDNJ FDC 808 December 1943]

**Howell's Antiseptic Healing Oil**—Howell Company Inc. New Orleans Shipped between Feb 21 1940 and Jan 6 1941. Composition essentially an oil containing camphor and 24 per cent of phenol. Adulterated because not possessing the phenol strength claimed and not antiptic as represented by the name. Misbranded because label failed to warn that a bandage should not be used when product was applied to fingers and toes and that it should be used according to directions and in no case on large areas of the body. Further misbranded because label statement 2% carbolic acid and claim Antiseptic were false and misleading. Also misbranded because of claims on carton that preparation would relieve pain and soreness in carbuncles erysipelas boils and itch and be efficacious for ulcers old sores and skin eruptions.—[DDNJ FDC 801 December 1943]

**Mettozone Tablets**—Standard Drug Company Inc. Spartanburg S. C. Shipped Feb 28 and March 13 1941. Composition essentially small amounts of extracts of plant drugs including nuxvomex and a phosphide of some metal such as zinc. Misbranded because label did not warn against chronic phosphorus poisoning which might follow the frequent or continued use of a product containing zinc phosphide or against anthraxes the use of which might cause nausea vomiting and abdominal pains and seriously injure the kidneys hence rendering it hazardous for use by persons afflicted with kidney disease further misbranded because of false label representations regarding its alleged efficacy in the cure mitigation treatment or prevention of sexual debility.—[DDNJ FDC 803 December 1943]

**Nomo for Piles Sanafriso and Asmolac**—Albert B. Hirschman trading as Hirschman Laboratories and Sanafriso Laboratories San Pedro Calif. Shipped between May 14 and July 1 1940. Composition Nomo for Piles essentially benzocaine boric acid eucalyptus oil fixed oils and zinc oxide. Sanafriso essentially zinc oxide camphor and menthol. Asmolac chiefly water alcohol plant extracts alkaloids reducing agents and the iodides of potassium and sodium. Nomo for Piles misbranded because labeling falsely represented product as a competent treatment for all cases of hemorrhoids and as efficacious in relieving soreness and pain in that condition further misbranded because labeling was misleading in not revealing that the preparation was not a treatment for all cases of hemorrhoids and that competent advice should be obtained in cases of excessive bleeding. Sanafriso misbranded because label falsely represented it as effective in treating chest colds and sore throat. Asmolac misbranded because directions for use mentioned no limitation as to duration of use and because though it contained iodine or iodide and the alkaloids of belladonna and hyoscyamine the labels failed to warn that the product should be used with caution in the presence of certain conditions further misbranded because directions falsely represented that when used as directed in asthmatic patients it often would completely prevent the effects of misbranded because labels did not declare the name and quantity or proportion of alkaloids of belladonna and hyoscyamine present.—[DDNJ FDC 77 September 1943]

**Re Duce Olds Capsules**—American Medicinal Products Inc. Los Angeles Shipped between April 7 and June 9 1941. Composition essentially a mixture of thyroid and potassium iodide (0.5 grain and 0.02 grain respectively per capsule) phenolphthalein and milk sugar. Misbranded because of false label representation that the mixture was an adequate and appropriate treatment for obesity.—[DDNJ FDC 815 September 1943]

**Sani-Cross Adhesive Strips and Tip Top Emergency First Aid Kits**—Cero Products Inc. South Boston Mass. Shipped Jan 27 and April 8 1942. The strips were adulterated because purity and quality fell below that which they purported to possess as being approved by the

able for use on cuts and other wounds. Misbranded because labels represented to be that unusable. The kits were adulterated because the absorbent cotton that they contained was not sterile. Labels were commingled with living bacteria and hence fell below the standard of the United States Pharmacopeia. Misbranded because claims First Aid Kit For small cuts Be Prepared for Emergencies were false and misleading when applied to kits containing items which were not sterile. Further misbranded in that labels did not accurately declare quantity of content and containers were made and filled as to be misleading.—[DDNJ FDC 79 September 1943] Another consignment of Sani-Cross Adhesive Strips shipped by World Merchandise Exchange New York Oct 6 1941 was declared adulterated and misbranded for essentially the same reasons as those named above and reported under a separate Notice of Judgment "6".

**Wise-Kollesal Tablets**—Wise-K. C. Homeopathic Pharmacy Kansas City Mo. Shipped Jan 22 1942. Composition essentially oxyquinoline sulfate potassium sulfate and lactose. Misbranded because labeling falsely represented that product would eliminate bacteria guard against toxins and ptomaines promote healing provide healthy granulation with a minimum of scar tissue control hemorrhage prevent diphtheria and other infection external and internal and provide adequate medication in dentistry for toothache pyorrhea trench mouth gingivitis and ulceration as well as diseases of the eye ear nose and throat the genitourinary tract and skin conditions including varicose ulcer carbuncles erysipelas athlete's foot and some other things.—[DDNJ FDC 839 September 1943]

## Bureau of Legal Medicine and Legislation

### MEDICOLEGAL ABSTRACTS

**Medical Practice Acts Right of Drugless Practitioner to Perform Hemoglobin Test**—The Board of Medical Examiners of California issued a Drugless Practitioner's certificate of license to King authorizing him to practice as a drugless practitioner. Subsequently an accusation was filed with the board, charging that King was guilty of unprofessional conduct in that on a stated day he penetrated the tissues of a stated patient in the treatment of a certain physical condition that he had on stated occasions prescribed or administered drugs and that he had unlawfully used the title doctor or the prefix Dr. After hearing the board found the charges sustained and revoked King's license to practice. King then brought mandamus proceedings to review the order of revocation. The trial court found that the evidence warranted a finding of guilt only with respect to the unprofessional conduct in the charge that King had unlawfully used the title doctor. This violation the trial court held however was so trivial as to be insufficient to support the order of revocation entered by the board, and the trial court accordingly ordered that King's license should be suspended for six months only. King then appealed to the district court of appeal, first district division 2 California.

The first count of the accusation filed with the board charged King with unprofessional conduct in that he did on a date specified penetrate the tissues of a stated patient in the treatment of a certain disease injury deformity and other physical and mental conditions in violation of the laws of the state relating to the practice of the healing arts. The evidence to support that charge was to the effect that King made a hemoglobin test of the blood of the person named at a lecture that he was giving, by taking a drop of blood from the earlobe of that person using what was vaguely described as 'a long instrument similar to a pencil'. He then compared the drop of blood so taken with a hemoglobin chart and told the person what the reading showed. No charge was made for the test. The question is thus presented and the appellate court as to whether or not the action of King constituted a penetration of the tissues within the intendment of that section of the Business and Professional Code which states that the penetration of the tissues of any human being by the holder of a drugless practitioner's certificate in the treatment of any physical or mental condition constitutes unprofessional conduct. In the opinion of the court King's action in this respect constituted drug use. A procedure he was lawfully permitted to perform in view of the fact that among the educational requirements imposed on an applicant for a license to practice as a drugless practitioner is a requirement that he shall have taken at least a five hundred hour course in drug use in his so-called professional school and

in view of the fact that "even in the case of drugless practitioners as said by the Supreme Court of California in *People v. Jordan* 172 Calif 391 156 P 451 "Intelligent treatment may only follow correct diagnosis" The court also alluded to the fact that among the questions propounded in the examinations given applicants for licenses to practice as drugless practitioners are questions calling for the description of the Dick test and the Schick test. The court finally pointed out that the section prohibiting drugless practitioners to penetrate the tissues merely prohibits the penetration of the tissues "in the treatment of a disease or other physical or mental condition and that there was no evidence presented that King's action came within the language of this section. The court was of the opinion that King's action in taking the hemoglobin test did not come within the letter or spirit of the law.

The second count of the accusation filed with the board charged unprofessional conduct on the part of King in that he did prescribe, use or administer drugs or what are known as medicinal preparations to wit 'Gland capsules Min-a-rex' and Vitamin capsules in the treatment of a disease deformity or other physical condition. The members of the board were unanimous in voting that with respect to this count King was guilty as charged. This was done, said the appellate court notwithstanding the fact that no evidence was offered relative to the use or prescription of any 'gland capsules' and that the undisputed evidence showed that the other compounds were not used in the treatment of a disease, deformity or other physical condition. In the proceeding before the board to show that these compounds were "drugs or what are known as medicinal preparations" a state chemist testified before the board as to his chemical analysis of the contents of the mixture and concluded with the statement that 'Min-a-rex' was 'probably sea water or something of a similar composition. The undisputed evidence was that the "Vitamin Capsules" were food substitutes containing 'wheat germ oil and were sold by King in the original sealed package under the trademark of the manufacturer without other representation than what was printed on the label. No evidence was introduced to prove that they were prescribed or used for the purposes denounced in the code, namely in the treatment of any physical or mental condition of the human being. Further as indicative that there was a complete failure of proof of the charges made in this count the court noted that the board denied King the right to present evidence of two essential elements of his defense, namely, that no drugs or medicines were used in the treatment of any disease or physical condition and that the packages sold met the requirements of the pure food laws of the United States and of the state. If King had been permitted to make this proof the court concluded no reasonable person could have found him guilty of a charge of using drug or medicinal preparations in the treatment of any physical or mental condition and the denial of that right was arbitrary, unreasonable and a breach of discretion on the part of the board.

The third count of the accusation filed with the board charged King with violating section 2409 of the Business and Professions Code which reads as follows:

Unless a person licensed and authorized under this chapter or any preceding medical practice act to use the title doctor or the letters or prefix Dr holds a physician's and surgeon's certificate the use of this title or these letters or prefix without further indicating the type of certificate he holds constitutes unprofessional conduct within the meaning of this chapter.

The accusation, said the court, does not allege that King was licensed under any act 'to use the title 'doctor or the letters or prefix 'Dr'.' The license was not offered in evidence. The accusation filed with the board alleged and the answer admitted that King was issued a 'Drugless Practitioner's certificate of license authorizing him to practice as a drugless practitioner. It does not appear either in the statute or in the record that such license authorized King to use the title "doctor in any form. The purpose of the statute is clear. If a person is licensed under any medical practice act to use the word 'doctor in relation to a profession other than that of physician or surgeon, he must indicate the type of certificate he holds. The court was unable to find any provision in the law or of any preceding medical practice act' which authorizes any agency

to license a drugless practitioner to use the word "doctor" or the prefix "Dr" and, unless such a license has been issued, the court held the section does not apply. It seems apparent said the court that the purpose of the section was to prevent misrepresentations and fraud and that there was no intent to appropriate these titles to the exclusive use of those who held the certificate of a physician or surgeon. Thus we have doctors of medicine doctors of philosophy and many other types of doctors who are not licensed under any medical practice act and therefore not included in this section.

The court accordingly held that the revocation of King's license was not warranted. The court further held that the trial court had erred when it ordered the suspension of King's license. By the terms of the Business and Professions Code, said the court all disciplinary action with respect to physicians and surgeons and drugless practitioners is lodged with the board of medical examiners, and a court reviewing the orders of the board is without power to substitute its discretion for that of the board in the matter of the form of discipline to be imposed. The appellate court in effect reversed the order of the board of medical examiners revoking King's license to practice—*King v. Board of Medical Examiners*, 151 P (2d) 282 (Calif 1944).

## Medical Examinations and Licensure

### COMING EXAMINATIONS AND MEETINGS

#### NATIONAL BOARD OF MEDICAL EXAMINERS EXAMINING BOARDS IN SPECIALTIES

Examinations of the National Board of Medical Examiners and of Examining Boards in Specialties were published in THE JOURNAL, October 28 page 589.

#### BOARDS OF MEDICAL EXAMINERS

ALASKA Juneau March Sec Dr W M Whitehead Box 561 Juneau  
ARKANSAS \* Little Rock Nov 9 10 Sec Dr D L Owens Harrison  
CALIFORNIA Oral San Francisco Nov 15 Sec Dr Frederick N  
Sexton 1020 N St Sacramento 14

CONNECTICUT \* Medical Written Hartford Nov 14 15 Endorse  
ment Hartford Nov 28 Sec to the Board Dr Creighton Barker  
238 Church St New Haven Homeopathic Derby Nov 14 15 Sec.  
Dr J H Evans Hartford 6

DISTRICT OF COLUMBIA \* Washington November Sec Commission  
on Licensure Dr G C Ruhland 6150 E Municipal Bldg Washington

FLORIDA \* Jacksonville Nov 20 21 Sec Dr Harold D Van Scharck,  
2736 S W Seventh Ave Miami 36

IDAHO Boise Jan 8 11 Dir Bureau of Occupational Licenses  
Mrs Lela D Painter 355 State Capitol Bldg Boise.

INDIANA Indianapolis Jan 35 Exec Sec Board of Medical  
Registration and Examination Miss Ruth V Kirk 301 State House  
Indianapolis 4

MAINE Portland Nov 14 15 Sec Board of Registration of Medi-  
cine Dr A P Leighton 192 State St Portland

MARYLAND Homeopathic Baltimore Dec 13 Sec Dr John A  
Evans 612 W 40th St Baltimore

MASSACHUSETTS Boston Nov 14 17 Sec Board of Registration in  
Medicine Dr H Q Gallup 413 F State House Boston

NEVADA Carson City Nov 6 Sec Dr G H Ross 215 N Carson  
St Carson City

NORTH DAKOTA Grand Forks Jan 25 Sec Dr G M Williamson  
4 1/2 S 3rd St Grand Forks

SOUTH CAROLINA Columbia June 25 27 Sec Dr A B Heward  
1329 Blandina St Columbia

SOUTH DAKOTA \* Pierre Jan 16 17 Sec Medical Licensure State  
Board of Health Dr G Cottam Pierre

TEXAS Dallas Nov 15 17 and Dec 19 21 Sec Dr T J Crowe  
918 20 Texas Bank Bldg Dallas 2

VERMONT Burlington June Sec Dr F J Lawless Richford

VIRGINIA \* Richmond June 20 23 Sec Dr J W Preston 30 1/2  
Franklin Rd Roanoke

WASHINGTON \* Seattle Jan 15 17 Dir Department of Licenses  
Mr Thomas A Swayze Olympia

\* Basic Science Certificate required

#### BOARDS OF EXAMINERS IN THE BASIC SCIENCES

COLORADO Denver Dec 6 7 Sec Dr Esther B Starks 14 9 Ogden  
St Denver

IOWA Des Moines Jan 9 Dir Division of Licensure and Registra-  
tion Mr H W Grefe Capitol Bldg Des Moines

NEW MEXICO Santa Fe Feb 12 Sec Miss Marion M Rhea  
State Capitol Santa Fe

RHODE ISLAND Providence Nov 15 Chief Division of Examiner  
Mr Thomas B Casey 366 State Office Bldg Providence

SOUTH DAKOTA Aberdeen Dec 12 Sec Dr G M Evans Yankton

TENNESSEE Memphis and Nashville Dec 18 19 Sec Dr O W  
Hyman 874 Union Ave Memphis

WISCONSIN Milwaukee Dec 2 Sec Prof R N Bauer 152 W  
Wiscon in Ave Milwaukee 3



## Current Medical Literature

### AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1934 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (\*) are abstracted below.

#### American Journal of Physiology, Baltimore

141 613 750 (July) 1944

- Factors Responsible for Intestinal Phase of Gastric Secretion W D Beamer M H T Friedman J E Thomas and M E Rehfuess —p 613
- Some Factors Affecting Resistance of Ejaculated and Epididymal Spermatozoa of Boar to Different Environmental Conditions J F Lasley and R Bogart —p 619
- Comparison of Direct and Indirect Blood Pressure Measurements in Rats R H Shuler H S Kupperman and W F Hamilton —p 625
- Lactate Response to Exercise and Its Relationship to Physical Fitness F Crescitelli and C Taylor —p 630
- Effect of Some Internal Factors on Human Work Output and Recovery E E Toltz F T Jung and Lillian E Cislis —p 641
- Effect of Manganese Intake on Concentration of Bisulfite Binding Substances in Blood J T Skinner and J S McHargue —p 647
- Response to Chilling and Recovery in Adrenalectomized Cats F A Hartman and Katharine A Brownell —p 651
- Metabolism of Acetone Bodies and Glucose in Vitro and Effect of Anterior Pituitary Extract R A Shipley —p 662
- Kidney as Locus of Fructose Metabolism R M Reinecke —p 669
- Effect of Blood Withdrawal and Replacement on Bleeding Volume of Normal Dogs Under Barbitol Anesthesia H Lawson —p 677
- Effects of Exentem of Epinephrine and of Sympathectomy on Mitotic Activity of Corneal Epithelium in Rats J S Friedenwald and W Buschke —p 689
- Determination of Blood and Plasma Volume Partitions in Growing Rat J Metcalf and C B Fayou —p 695
- Effects of Nembutal and Yohimbine on Chronic Renal Hypertension in Rat Rachael K Reed L A Sapirstein F D Southard Jr and E Ogden —p 707
- Plasma Gelatin and Saline Therapy in Experimental Wound Shock W W Swingle and W Kleinberg —p 713
- Circulatory Collapse Following Mechanical Stimulation of Arteries R F Rushmer —p 722
- Secretion of Pancreatic Juice After Cutting Extrinsic Nerves J O Crider and J E Thomas —p 730

#### Am J Roentgenol & Rad Therapy, Springfield, Ill

52 123 244 (Aug) 1944

- Effect of Roentgen Rays on Minute Vessels of Skin in Man E P Pendergras P J Hodges and J Q Griffith —p 123
- Determination of Placental Site in Bleeding During Last Trimester of Pregnancy J J McCort C A David and H J Walton —p 128
- Nonsecreting Cysts of Maxillary Sinuses with Special Reference to Roentgen Aspects and Diagnosis of Large Types J W Grossman and H D Waltz —p 136
- Postoperative Emphysematous Bullae Following Lung Abscess W R Oechsli —p 145
- Difficulties in Roentgenologic Examination of Biliary Tract A I Bengtson C A Suarez and A Negri —p 149
- \*March Fracture Analysis of 166 Cases F H Tyner and W T Hileman —p 165
- Roentgenographic Studies of Cervical Spine L A Hadley —p 177
- Effect of Increased Intraspinal Pressure on Movement of Iodized Oil Within Spinal Canal B S Epstein —p 196
- Osteoid Osteoma of Head of Radius Case Report H M Stauffer —p 200
- Military Roentgenologic Training H G Moehring —p 203
- War-time Graduate Medical Meetings E I Bortz —p 205
- Simple Method for Measuring Peak Voltage in Diagnostic Roentgen Equipment R H Morgan —p 208

**Determination of Placental Site in Bleeding During Pregnancy**—McCort and his associates review roentgenologic studies on 132 patients with the presenting symptom of bleeding during the last trimester of pregnancy. The accuracy of this method of examination was 87.8 per cent with best results in the group diagnosed as negative for placenta previa (97 per cent). The roentgen examination for placenta previa has proved to be a valuable adjunct to the sterile pelvic examination. The two examinations are somewhat complementary. The former enables the obstetrician to treat bleeding cases with greater confidence. A soft tissue roentgenographic study of the abdomen is first made. If after careful study, the main portion of

the placenta is found to lie in the fundus it is reported as negative for placenta previa and no further examination is made. If the placenta is not visualized in this position an air cystogram is done to determine if there is any tissue intervening between the fetal head and the bladder wall. The following signs are of value in positive diagnosis of placenta previa: (a) failure to visualize the placenta in the body of the uterus; this suggests central placenta previa; (b) location of mass of placenta below the equator of the uterus; (c) widening of sacral promontory-fetal head distance when the placenta is implanted on the anterior wall; (d) widening of symphysis pubis fetal head distance when the placenta is implanted on the anterior wall; (e) widening of the vesicocephalic distance seen after pneumocystography; (f) lateral displacement of the bladder seen after pneumocystography; (g) displacement of the fetal head from the midsagittal and sagittal planes.

**March Fracture**—Tyner and Hileman observed between April 1941 and June 1943 166 cases of march fracture of the metatarsal bones. All current theories concerning the production of march fractures give due importance to the small repeated traumas incurred in long marches but all authors agree that some other factor must be involved. 'Physiologically inadequate' feet, abnormal length of metatarsals, overload, neurogenic influences, inflammatory processes and the handicap of a previously sedentary occupation of the patient have been mentioned as possible causative factors. The authors evaluated these possible causes in their cases. The most frequent site of fracture was at the distal third of the third metatarsal. The age distribution appears closely correlated to the age distribution in the Army and is therefore not considered of significance in the etiology. No neurologic disturbances or infections could be discovered. Prior occupation and length of service were studied in 20 cases. The duration of training time spent taking long hikes and forced marches averaged twenty-seven weeks. The patients' former occupations ranged from coffin making to dress designing and did not appear of significance. The 20 men who were interviewed personally reported that they had completed several miles of marching and that muscle fatigue had set in before the onset of symptoms. Studies on the blood chemistry of 12 patients revealed that the serum phosphatase levels averaged 6.48 units. This slight increase may be due to the stimulus of healing fractures. It is apparent from these studies that age, previous occupation, neurologic disturbances, bony anatomy of the feet and bone metabolism cannot be important etiologic factors. The authors think that due consideration has not been given to the fact that bones cannot stand great stresses unless they are adequately supported by muscles. When muscles of the foot and leg are fatigued the weight of the body is thrown directly on the metatarsal bones while the arches are flattened by the loss of muscular tone. All of the 20 men concerning whom information was available experienced fatigue before the pain of fracture occurred. This makes the authors believe that muscle fatigue as it occurs during long marches is the principal cause of march fractures.

#### American Journal of Surgery, New York

65 153 302 (Aug) 1944

- \*Functional Parathyroid Tumors and Hyperparathyroidism: Clinical and Pathologic Considerations H B Alexander J de J Pemberton F J Kepler and A C Broders —p 157
- Management of Postoperative Urinary Tract Complications E E Ewert and H A Hoffman —p 189
- Motion Study in Surgery F B McCarty —p 197
- \*New Technique for Instilling Amniotic Fluid Concentrate Intra Abdominally at Close of Operations 27 Case Reports H J Merkle —p 210
- Fractures of Femur: Results of Treatment of 179 Patients H A Swart and G Miyakawa —p 221
- Effects of Sulfanilamide and Azobenzamide on Hemolytic Streptococci and Staphylococci in Wounds of Rabbits E R Vetter R S Hubbard and T G Lambert —p 226
- Benign Tumors of Stomach E B Dewey —p 233
- Psychology of Patient Undergoing Plastic Surgery A J Barsky —p 233
- Fractures of Jaw: Analysis of 212 Cases W A Coakley and J M Baker —p 244
- Treatment of Fractures with Hawes Splint M H King —p 248
- Use of Curve in Anesthesiology L Watter —p 253

**Parathyroid Tumors and Hyperparathyroidism**—Alexander and his associates present the histories of 14 instances of hyperparathyroidism due to functioning parathyroid tumors which were treated at the Mayo Clinic up to November 1942.

In 2 cases there was fatal termination while in 12 the results of operative treatment were excellent. The authors stress the widely divergent clinical pictures which may be presented by patients with hyperparathyroidism. No single symptom or sign should be regarded as decisive. Single findings of concentrations of calcium less than 125 mg per hundred cubic centimeters of serum were encountered in 4 of the 14 cases of proved hyperparathyroidism. The authors stress the importance of the relation between the serum protein level and the serum calcium level. Depression of the value for serum phosphorus measured as inorganic phosphate is the rule in cases without gross impairment of renal function. The serum alkaline phosphatase level is elevated in proportion to the degree of involvement of bone. The Sulzowitch test provides a rough estimate of the presence or absence of excess urinary excretion of calcium. Considered alone it is not diagnostic of hyperparathyroidism. Bone changes in hyperparathyroidism appear to be an index more of the duration of the disease than of its severity. The incidence of renal lithiasis in hyperparathyroidism is about 60 per cent. In 13 of the 14 cases the tumor showed cytologic evidence of cancer. No correlation was found to exist between the weight of the tumor and the degree of hyperparathyroidism as measured by the concentration of calcium in the serum before operation. The average weight of the tumors was 182 Gm. They were encapsulated and usually were brown. Four were in the mediastinum, 3 being posterior and 1 anterior. Cytologic evidence of cancer was seen in chief cells, oxyphil cells and foam cells. Such evidence included irregularity of size and staining power of the nuclei, a densely staining chromatin network, giant nuclei mitotic figures, pathologic mitoses, prominent nucleoli, irregular cellular arrangement and invasion of the capsule and blood vessels by tumor cells. The type of cell predominating in the tumor did not appear to affect the clinical picture. The authors stress the necessity of complete operative removal of parathyroid tumors.

**Instilling Amniotic Fluid at Close of Operations**—Merkle points out that one of the chief functions of amniotic fluid in its natural location is to prevent adhesions between the amniotic sac and the fetus. He describes 27 abdominal operations in which amniotic fluid concentrate was instilled intra-abdominally immediately before the peritoneum was closed. Instillation in the first 8 cases was attempted by the funnel and catheter method, the fluid reaching the peritoneum by gravity. In the remaining cases the fluid was instilled through a specially designed trocar, positive pressure being substituted for gravity. The latter method proved preferable.

### Annals of Allergy, Minneapolis

2 281-364 (July-Aug.) 1944

- Qualitative Differences Among Canine Danders S. B. Hooker—p. 281
- Histopathology of Eczematoid Dermatoses W. Sachs, C. S. Miller and Margaret Gray—p. 289
- Precipitation of Pulmonary Edema by Overdose of Antigen in Patient with Rheumatic Mitral Disease K. J. Deissler—p. 299
- Psychiatric Studies in Clinical Allergy E. A. Brown and P. L. Gortem—p. 303
- Pollination of Anemophilous Trees in New Orleans W. T. Penfound—p. 315
- Severe Urticarial Reactions Due to Pooled Human Plasma Report of Case B. Dickson—p. 327
- Contact Dermatitis from Rubber Gas Mask J. C. Gilbert—p. 339
- Subcutaneous Emphysema During Asthma M. Francis—p. 342
- Localized Atrophy of Subcutaneous Fat After Repeated Injections of Grass Pollen M. Francis—p. 344

**Psychiatric Studies in Clinical Allergy**—Brown and Gortem discuss the psychiatric components of allergic personality. The authors demonstrated the existence of a special type of personality prone to asthmatic attacks. A sample population of asthmatic subjects and an equal number of nonasthmatic allergic subjects were classified for normal personality variables. The asthmatic patient had a somewhat greater tendency than the normal to be left handed and to marry and was subject to emotional instability when compared either with other allergic patients or with the normal population of the same age and social group. All the patients seem to be of average intelligence but in 43 per cent the personality deviated from the normal and showed trends constituting abnormal or psychiatric

personalities. The abnormal aspects of personality were now tested for by an independent technic. The neurotic elements of deviation were determined separately by a psychiatric assessment of the patient and his background. This gave a score which indicated the degree of severity of the attendant neuroses. Psychiatric inquiries differentiated an abnormal personality of a special stamp (obsessive and paranoid). Neurotic and emotional maladjustment was discernible in 43 per cent of the asthmatic subjects as compared with 10 per cent in the control patients and 47 per cent in the allergic nonasthmatic subjects. Current neuroses were diagnosed in 20 per cent of the patients. The neuroses in allergic nonasthmatic patients totaled 16 per cent. These neuroses took the form of hypochondriasis, obsessionalism, conversion and anxiety-hysteria and (among the allergic nonasthmatic patients) vague anxiety symptoms, depression, obsessionalism and hysteria. In both groups the emotionally stable section admitted to a feeling of improvement as a result of physical treatment and seemed less inclined to mental resistance and obstinacy. They lacked the sense of dissatisfaction which was noted in the unstable section. The hysteroid type was more evident in the allergic neurotic patients and the obsessive type among the asthmatic neurotic patients.

### Archives of Dermatology and Syphilology, Chicago

50 79-150 (Aug.) 1944

- Contact Testing of Buccal Mucous Membrane for Stomatitis Venenata I. Goldman and B. Goldman—p. 79
- Ichthyiform Atrophy of Skin in Hodgkin's Disease Report of Case with Reference to Vitamin A Metabolism A. J. Glazebrook and W. Tomaszewski—p. 83
- Rat Bite Dermatitis Acaricosis Caused by Tropical Rat Mite Liponyssus Bacoti Hirst 1914 C. R. Anderson—p. 90
- Tuberous Sclerosis Report of Case Z. B. Noon and O. O. Williams—p. 96
- Apoposis Varielliform Eruption Review of Literature and Report of 2 Cases of Its Occurrence in Adult R. L. Barton and L. A. Brumsting—p. 99
- Juxta Articular Nodules H. D. Chambers—p. 105
- Impetigo Herpetiformis in Male Report of 1 Case with Response to Sulfapyridine A. T. Hall—p. 107
- Prurigo of Hebra (Severe Type) P. Kamee—p. 113
- Superficial Epitheliomatosis Report of Case S. I. Weisman and L. S. Medalia—p. 117
- Jichen Sclerosis et Atrophicus Report of Its Occurrence in Negro S. Irving—p. 120
- Contact Dermatitis Produced by Tincture of Merthiolate L. Hollander—p. 123

### Archives of Internal Medicine, Chicago

74 1-80 (July) 1944

- Treatment of Scarlet Fever M. J. Fox and N. F. Gordon—p. 1
- Recovery from Multiple Rheumatoid Arthritis Complicated by Amyloidosis in Child Report of Case and Review of Literature A. Traasoff, N. Schneeborg and M. Scarf—p. 4
- Actinomycosis of Heart Stimulating Rheumatic Fever Report of 3 Cases of Cardiac Actinomycosis with Review of Literature A. Cornell and H. B. Shookhoff—p. 11
- Sickle Cell Disease I. Observations on Behavior of Erythrocytes in Sickle Cell Disease R. C. Murphy Jr. and S. Shapiro—p. 28
- Blood Review of Recent Literature F. H. Bethell, C. C. Sturgis, O. T. Mallery Jr. and R. W. Rundles—p. 36

**Treatment of Scarlet Fever**—Three types of therapy for scarlet fever are available: (1) chemotherapy with sulfonamide compounds, (2) administration of commercial antitoxin and (3) administration of convalescent serum. Fox and Gordon evaluate these methods in an analysis of results obtained in 7,500 scarlet fever patients hospitalized at the South View Hospital in Milwaukee during the years between 1937 and 1943. Sulfonamide compounds find their chief value in the treatment of certain complications. These drugs are of no value in the management of the toxic phase or type of scarlet fever. The use of commercial antitoxin, prepared with horse serum, combats the toxic phase of the disease but introduces the danger of foreign protein reactions. Pooled human convalescent serum produces rapid clinical response and offers the best means of therapy. Of the 7,500 patients, 1,000 had received pooled human convalescent serum. To evaluate the effect of serum therapy, 1,000 consecutive cases were chosen from the hospital records for comparison. These control cases were deliberately selected from the year 1923, when only symptomatic treatment could be used, since antitoxin convalescent serum and sulfonamide com-

pounds were not then available. The series of 1000 patients of 1937 to 1943 contained a far higher percentage of seriously ill persons than did the 1,000 patients of 1923. Eighty-eight and six tenths per cent of the patients treated with serum were severely ill, in contrast to only 20.3 per cent of the control series. Notable beneficial effects of pooled convalescent serum included prompt subsidence of fever, alleviation of signs and symptoms, avoidance or improvement of complications, shortened period of hospitalization and lower mortality rate. The last mentioned consideration is especially significant in view of the fact that the lower mortality rate was obtained in a group of patients who were more severely ill. Smaller doses of convalescent serum than have been previously used have been found to be effective.

### Archives of Neurology and Psychiatry, Chicago

52 87-162 (Aug) 1944

- Clinical and Pathologic Features of Gliomas of Spinal Cord H. A. Shenkin and B. J. Alpers—p. 87  
Effects of Stimulation and Lesion of Median Longitudinal Fasciculus in Monkeys M. B. Bender and E. A. Weinstein—p. 106  
Effect of Insulin Hypoglycemia on Glycogen Content of Parts of Central Nervous System of Dog Annette Chesler and H. E. Hummel—p. 114  
Photic Driving A. E. Walker, J. I. Woolf, W. C. Halstead and T. J. Case—p. 117  
Post-Traumatic and Histamine Headache A. P. Friedman and C. Brenner—p. 126  
Multiple Transfusions for Schizophrenia A. Z. Pfeffer and M. J. Peacor—p. 131  
Spinal Cord Level Syndrome Following Intrathecal Administration of Magnesium Sulfate for Tabetic Crisis: Report of Case with Necropsy S. A. Guttman and A. Wolf—p. 135  
Rapid Head Movement Test of Equilibratory Function G. H. Hildebrand—p. 140

### Archives of Otolaryngology, Chicago

40 75-156 (Aug) 1944

- Labyrinthitis Due to Pneumococcus Type III Histopathologic Studies F. Altman and J. G. Walker—p. 75  
Histopathology of Nasal Mucosa of Older Persons A. R. Hollender—p. 92  
Meniere's Syndrome: Results of Treatment with Nicotinic Acid in Vasoconstrictor Group M. Atkinson—p. 101  
Hereditary Hemorrhagic Telangiectasia (Osler's Disease): Review of Literature and Report of Case M. F. Stock—p. 108  
Vitamin C-Sulfonamide Compounds in Healing of Wounds: Use of Sulfanilamide Ascorbate in Treatment of Chronic Suppurative of Wound After Radical Mastoidectomy S. L. Ruskin—p. 115  
Epistle on Organs of Hearing by Bartholomaeus Eustachius Dedicated to Francis Alciatus Bishop of Milan During Reign of Pope Pius IV G. O. Graves and M. E. Galante—p. 123  
Carcinoma of Larynx: Review of Treatment and End Results at Brooklyn Cancer Institute W. E. Howes and M. Platau—p. 135  
Tumors of Nose and Throat G. B. New and E. L. Foss—p. 142

**Meniere's Syndrome**—Atkinson maintains that in cases of idiopathic Meniere's syndrome one of two vascular mechanisms is at work: a primary vasodilator and a primary vasoconstrictor mechanism. These two groups can be differentiated by means of an intradermal test with histamine. The treatment appropriate to one group is inappropriate and deleterious to the other. Therefore accurate grouping is a prime requisite for effective therapy. The satisfactory results obtained by desensitization to histamine in the primary vasodilator group have already been published. This paper is concerned with the treatment in the primary vasoconstrictor group. The series reviewed comprises 110 patients observed between January 1940 and June 1943. All have been under personal observation. They have the idiopathic syndrome; they were proved to be insensitive to histamine and thus belong to the primary vasoconstrictor group. The author found nicotinic acid to be the most effective vasodilator drug. Its action is at the periphery of the vascular system. This distal effect is wanted, since it is the circulation in the capillaries of the stria vascularis which is believed to be at fault in this condition at least as far as concerns the aural manifestations. It is essential to use nicotinic acid, not nicotinamide. Whereas the two substances are interchangeable as regards their vitamin effect, they are not interchangeable as regards vasodilator effect. The most efficacious method is to start with injection and gradually wean the patient to oral medication. The author discusses the indications for the intra-

venous, the intramuscular and the oral medication. The 110 patients were treated medicinally exclusively with nicotinic acid. The attacks of vertigo were relieved or greatly modified in 84 per cent of the cases.

**Hereditary Hemorrhagic Telangiectasia (Osler's Disease)**—Stock defines hereditary hemorrhagic telangiectasia as a rare disease, probably due to mesenchymal dysplasia which is characterized by the presence of multiple acquired angiomas or telangiectasias of varying distribution and number with a tendency to bleed spontaneously or from slight trauma. It is transmitted as a dominant characteristic. The initial symptom usually consists of abnormally profuse epistaxis beginning at about puberty. This is followed by the development of multiple telangiectasias of the skin and mucous membranes from the age of 25 to 35. All symptoms tend to reach their greatest severity during the fourth decade. The author presents a review of the literature from 1933 to 1944 and adds 7 cases which were gathered during the past two and a half years in his own otolaryngologic practice. In about 20 per cent of the recorded cases the disease probably developed in the absence of a family history. Whether these patients can transmit the disease to their progeny is not known. The author adds to the literature the third recorded instance in the last eleven years in which the disease can be traced through six generations in one family. The extreme rarity of this together with the fact that the disease has become progressively milder during the last two generations in this family, suggests self-limitation of the hereditary transmission. The disease is generally regarded as simple ectasia of preexisting vascular channels but it is not improbable that the lesions are actually multiple acquired neoplastic angiomas arising from endothelial rests of embryonic origin. This is suggested by the following observations: Epistaxis usually predates the development of visible mucosal or cutaneous lesions; satellite lesions develop in the region adjoining the site formerly occupied by angiomas destroyed by treatment; the lesions have a universal distribution and some are of great size; they have a tendency to disappear spontaneously while new angiomas appear. The microscopic and biomicroscopic pictures suggest neoplastic development; there is a slow and incomplete but definite response to roentgen therapy. The newer methods of treatment include electrolysis, roentgen or radium irradiation, microinjection of sclerosing solutions and parenteral administration of moccasin venom. The author observed good results in the single patient who was treated with roentgen rays by the "intermediate" method. The literature includes many references to a possible relationship between Osler's disease and other diseases due not only to possible mesenchymal but also to possibly associated ectodermal dysplasia. These postulates have not been proved. The author thinks that more widely disseminated knowledge of the disease will result in its more frequent recognition and diagnosis.

**Vitamin C-Sulfonamide Compounds in Healing of Wounds**—Ruskin reviews the literature on the role of vitamin C in the healing of wounds. He believes that the local effect of the ascorbic acid is independent of the systemic level of vitamin C. Vitamin C locally applied to wound tissue presents an additional factor in healing. The relationship of ascorbic acid to the bacteria in the wound area has been investigated, and the conclusion has been reached that ascorbic acid serves as a detoxicating agent. The possibility of using vitamin C in chemical combination with the sulfonamide drugs opened up a most interesting avenue of investigation. The chemical properties of ascorbic acid are such as to reduce the alkalinity of the sulfonamides. The vitamin also lends a hygroscopic factor which tends to prevent caking of sulfanilamide, thus prolonging uniform absorption. In order to have visual control of the advantages of the sulfonamide ascorbate the drug was used in chronic, nonhealing wounds of long standing, in which bone would particularly be involved. Such easily visualized wounds involving bone are found in unhealed cavities following radical mastoidectomies and in ears with chronic suppurative otitis media and defects of the drum membrane. The routine procedure was to irrigate the ear cavity dry the area and then fill the mastoid cavity, the middle ear and the external canal with the sulfanilamide ascorbate. The author presents a number of cases which indicate that sulfanilamide ascorbate and sulfathiazole ascorbate both stimulate healing with epithelialization.

## California and Western Medicine, San Francisco

61 49-128 (Aug) 1944

- New Problems in Field of Industrial Toxicologist Alice Hamilton —p 55  
 Hormones and Skin I R Bancroft —p 60  
 Scrub Typhus A C Reed —p 62  
 War Anesthesia in South Pacific E H Kelley —p 63  
 Outbreak of Shigella Newcastle Dysentery V G Rubenstein and R L Phillips —p 64  
 \*Dermatitis of the Feet and Hands Due to Rubber C R Anderson —p 65  
 Diabetic Coma H Stephens and H I Burtess —p 66  
 California Industrial Accident Fee Schedule H F Peart —p 67  
 National Medical Legislation D H Murray —p 68  
 Contagiousness of Scarlet Fever H O Swartout and W P Frank —p 72  
 Emergency Maternity and Infant Care (E M I C) Program W B Thompson —p 72  
 Kenny Treatment in Poliomyelitis Evaluation J W McFarland —p 76

**Dermatitis of Feet and Hands Due to Rubber**—Rubber dermatitis of the feet most often affects women as rubber is used extensively in the manufacture of women's shoes. Rubber cement is used for basting the shoes during the sewing process and for fastening down the sock liner to the inner sole. An elastic rubber fabric is used frequently as an inner lining. The dermatitis may be manifested by erythema, edema, vesiculation, weeping and crusting. It may involve any part of the foot. However, it most frequently appears first on the toes. The sides of the heels are also early sites. Rubber dermatitis of the feet should be suspected when the patient has had a previous dermatitis from rubber girdles, dress shields and garters. There may be confusion with acute dermatophytosis of the feet. Physicians suffering from an eczematous dermatitis of the hands and feet are occasionally subjected to futile treatment for dermatophytosis when actually suffering from surgical glove dermatitis and rubber dermatitis of the feet. Sensitivity to rubber gloves should not be ruled out until patch tests have been performed on the back of the hands. The treatment requires elimination of exposure to rubber, which may prove difficult and, especially in women, may necessitate the purchase of custom built shoes in which all rubber has been eliminated.

## Canadian Journal of Public Health, Toronto

35 297-336 (Aug) 1944

- Experiences in Diphtheria Control in Northern British Columbia R C Knipe —p 297  
 \*Streptococcal Epidemic in Children's Surgical Ward M Elizabeth Doyle and Elizabeth Chant Robertson —p 302  
 \*Trial of Dysentery Toxoid (Shiga) in Human Volunteers L Farrell D T Fraser and Helen Ferguson —p 311  
 Health Officer and Cyanide Fumigation D V Currey —p 317  
 Population Estimates in Wartime A B Valois —p 321

**Streptococcal Epidemic in Children's Surgical Ward**—An epidemic of streptococcal infections in a surgical ward of a children's hospital provided material for study by Doyle and Chant Robertson. The ward admitted surgical patients from 2 to 5 years of age. The ward was overcrowded at the time of the epidemic. Most of the beds were separated only by a small table 20 inches wide, and the children could exchange toys with ease. Close contact of patients due to overcrowding of the ward, the presence of infected attendants, inadequate washing facilities and the presence of hemolytic streptococci in the air were the important factors. The epidemic was checked by removing all those with positive throat cultures, closing the ward to admissions and visitors using flannelette masks and separate gowns in attending each patient, spacing the beds 9 feet apart, providing adequate washing facilities for the personnel, using a reliable hand antiseptic and wet mopping the floor instead of sweeping. A negative Dick test did not indicate immunity to scarlet fever caused by this strain of hemolytic streptococci. The advantage of a more rapid method of typing hemolytic streptococci became evident during the course of this investigation.

**Trial of Dysentery Toxoid (Shiga) in Human Volunteers**—In a previous report Farrell and his associates presented laboratory and clinical data which suggested that the experimental product dysentery toxoid (Shiga) was antigenic and

safe for human use and would afford a reasonable hope of protection against dysentery caused by *Bacterium shiga*. The present report describes the reactions of 142 persons who received 1 to 4 doses of 0.25 or 0.5 cc of the toxoid at various intervals, or a total of 377 injections, and sets forth the results of titration of antitoxin in 215 samples of blood taken from 100 persons at different stages in the process of immunization. Three groups of persons received 3 injections at intervals of ten, twenty-one and forty days respectively and the ten day group received a recall dose three months after the third dose. The reactions to the injections both local and systemic were of the same order as those to the combined antigen T A B T. Provided due caution is observed in the proper testing of the toxoid in laboratory animals, it would appear that a field trial of this material could be undertaken without undue concern. The antitoxic response was strikingly better after 3 doses than after 2. Long intervals between doses were advantageous but the differences were not great.

## Delaware State Medical Journal, Wilmington

16 105-118 (July) 1944

- Surgery of Gallbladder and Common Bile Duct G S Serino —p 105

16 119-144 (Aug) 1944

- Morbidity and Population Trends E Cameron —p 119  
 High School Vary Survey L D Phillips A M Dietrich and G T Evans —p 120  
 Postwar Planning in Public Health Field R C Beckett —p 122  
 Survey of Birth Registration C A Marshall —p 125  
 War Wives and GI Babies C P Knight —p 126  
 Mortality and Prevalence of Heart Disease in School Children of Delaware J W Williams M Dressler and R S Snow —p 129  
 Operational Shortcomings of Division of Communicable Disease Control J W Williams and A R Cameron —p 131  
 Important Factors in Control of Syphilis A R Cameron and J W Williams —p 133  
 Laboratory Comments Re Syphilis R D Herdman —p 135  
 What County Health Unit Means to Doctor and His Community Katharine B Franklin —p 137  
 Newer Knowledge of Nutrition in Pregnancy Eleanor M Wilkinson —p 139  
 Public Health Nursing in Prevention and Control of Tuberculosis Alberta B Wilson —p 141  
 Role of Medical Social Worker in Delaware State Board of Health Eunice Usher —p 142

**Heart Disease in School Children**—According to Williams and his collaborators, heart disease ranks high as a cause of death among children over the age of 5 years. In the national figures for the year 1939 heart disease was second to accidents as a cause of death in the age group 10 to 14 years. The figures for the state of Delaware indicate the same tendency. For the entire age span from 5 to 19 years heart disorders caused more deaths than any other condition except accidents. Examination of the hearts of 2,990 children of Kent and Sussex counties in Delaware disclosed 22 children with clinical evidence of organic heart disease, a prevalence rate of 0.7 per cent. Of this group of 22 there were 9 with murmurs characteristic of congenital heart disease and 13 with evidence of rheumatic heart disease. The latter condition was fairly evenly distributed between the children of the elementary and high schools but was somewhat more frequent in the Negro than in the white children. Arrhythmias consisting of 6 cases of extrasystoles and 1 of bradycardia were discovered. A group of 59 additional children had slightly abnormal cardiac sounds which were designated as accidental murmurs. The survey suggested the need for a program for the supervision and care of these children with heart disease. Such a program would include the following activities: 1. Case finding with reports from physicians of cases of heart disease or rheumatic fever. 2. A central file of the records of these children. Such a file has already been started for records of children found in school surveys. 3. A consultation service with a thorough examination of children suspected of having heart disease. 4. Adequate care of acutely ill children to include beds for those requiring prolonged convalescent care. 5. Broad educational programs for instruction of nurses, physicians and the public in the problems of heart disease, the dangers of rheumatic fever and the methods of care.

## Journal of Immunology, Baltimore

49 71-128 (Aug) 1944

- New Salmonella Type Salmonella Claibornei K S Wilcox and Elizabeth K Lennox—p 71
- Hemagglutination by Products of Influenzal Virus Using Infected Mouse Lung and Chick Embryo as Source of Virus E Tumble and H C Mason—p 73
- Simplified Procedure for Titrating Hemagglutinating Capacity of Influenza Virus and Corresponding Antibody J E Salk—p 87
- Immunochemistry of Allergens VI Anaphylactogenic Properties of Protein Component of Kapok Seed and Relationship of Kapok Seed Antigens to Cottonseed Antigens E J Coulton J R Spies and H Stevens—p 99
- Attempts to Obtain Specific Agglutination of Mixtures of Colloidal Particles or Bacterial Cells with Virus and Antiviral Serum H E Pearson—p 117
- \*Inactivation of Influenza Virus by Mild Antiseptics W B Dunham and W J MacNeal—p 123

**Inactivation of Influenza Virus by Mild Antiseptics**—Dunham and MacNeal reported studies on the action of bactericidal agents on the vaccinal virus. The tests were performed by injecting mixtures of the viral suspension and antiseptics into embryonated eggs. A similar technique, with modifications, was employed in the present study on the influenza virus. A number of antiseptics were tested for their inactivating effect on the virus of influenza during a brief period of exposure. This was accomplished by preparing mixtures of the antiseptics and virus, allowing them to remain in contact for three minutes, diluting the mixtures to the point where they would not be toxic for chick embryos and then injecting the material into embryonated eggs. Survival of the embryos indicated inactivation of the virus. The following preparations were found to inactivate the virus in three minutes or less: phenol, 3 per cent, tincture of iodine U S P XII, 0.1 per cent, Lugol's solution, U S P XII, 1 per cent, mercury bichloride, 1,000, potassium permanganate, 1,000, copper sulfate, 1 per cent, propylene glycol, 90 per cent, liquor antisepticus, N F VII, 80 per cent.

## Journal of Infectious Diseases, Chicago

75 1-102 (July-Aug) 1944 Partial Index

- Effect of Immunity on Asexual Reproduction of *Plasmodium Brasiliense* W H Taliaferro and Lucy Graves Taliaferro—p 1
- Study of Defense Mechanism Involved in Hereditary Resistance to Pullorum Disease of Domestic Fowl J M Severens E Roberts and L F Card—p 33
- Carbohydrate-Lipid Fraction of *Gonococcus* and *Meningococcus* A K Boor and C P Miller—p 47
- Studies on Transmission of Hemolytic *Streptococcus* Infections M Hamburger Jr—p 58
- Cultivation of Human Tubercle Bacilli on Egg Mediums Dorothy M Powelson and Janet R McCarter—p 95

## Journal of Nervous and Mental Diseases, New York

100 115-228 (Aug) 1944

- Bruns Syndrome B J Alpers and H E Yaskin—p 115
- Cerebellar Type of Ataxia Associated with Cerebral Signs A J Arieff and I A Kaplan—p 135
- Current Views on Neuropsychiatric Effects of Barbiturates and Bromides F J Curran—p 142
- Psychiatric Aspects of Epilepsy E Davidoff G M Doolittle and V I Bonifede—p 170
- Subarachnoid Administration of Pyridoxine Hydrochloride in Diseases of Nervous System (Preliminary Report) S Stone—p 185

**Pyridoxine Hydrochloride in Diseases of Nervous System**—Stone administered pyridoxine hydrochloride intraspinally to 26 patients with various disturbances of the nervous system. The average dose was 30 mg. for children and 50 mg. for adults, with one to four injections per patient. It was well tolerated by all of these patients and no untoward reactions were observed following its use. In a case of Sydenham's chorea of long standing complete disappearance of choreic movements followed three injections of 50 mg. of pyridoxine at weekly intervals. In 2 other cases great improvement was observed following administration of a single dose of 50 mg. In 2 cases of infectious meningomyelodisculitis and 1 case of anterior poliomyelitis relaxation of muscular rigidity, some improvement in muscle strength and increase in range of passive and active movements became apparent within twenty-four hours after intraspinal administration of 50 mg. of pyridoxine. It hastened

recovery in a case of Korsakoff's disease which failed to respond to prolonged intramuscular and oral vitamin therapy. It also produced disappearance of pain and limitation of leg extension in a case of sciatic neuritis of unknown etiology after two intraspinal injections of 50 mg. at a weekly interval. Reduction of spasticity, improvement in gait and decrease of hyperreflexia were observed in a case of multiple sclerosis and a case of spastic paraplegia of unknown etiology following a single injection of 50 mg. In cases of dementia paralytica and the tubercle form of dementia paralytica the improvement was manifested in increased alertness, improvement in the sense of well-being, better coordination and improved ward behavior. Pyridoxine appeared to be of value when combined with intraspinal thiamine hydrochloride and artificial fever therapy. The favorable results observed in this small group of cases would seem to indicate that pyridoxine hydrochloride when administered intraspinally is an important adjunct in the treatment of postinfectious states and degenerative diseases of the nervous system either when used alone or in combination with other vitamins or other methods of treatment.

## Journal of Nutrition, Philadelphia

28 71-140 (Aug) 1944

- Effects of Glucose, Fructose and Galactose on Respiratory Exchange in Goat E G Ritzman and T M Carpenter—p 71
- Role of Dietary Fat and Linoleic Acid in Lactation of Rat I K Loohi J F Lingenfelter J W Thomas and L A Maynard—p 81
- Vitamin C Level of Blood Plasma in Guinea Pigs L Karel and C W Chapman—p 89
- Further Studies on Vitamin C Metabolism of Preschool Children Frieda L Meyer and Wilcent L Hallway—p 93
- Nutritive Value of Canned Foods I Introduction and Sampling Procedure L E Clifton—p 101
- Id II Ascorbic Acid and Carotene or Vitamin A Content Anne Pressley Clara Ridder M C Smith and Emily Caldwell—p 107
- Id III Thiamine and Nicotin Margaret Ives J R Wagner C A Elvehjem and F M Strong—p 117
- Id Riboflavin and Pantothenic Acid Mary Louise Thompson Elizabeth Cunningham and Edmund E Snell—p 123
- Id Distribution of Water Soluble Vitamins Between Solid and Liquid Portions of Canned Vegetables and Fruits Miriam K Brush Wm Fred F Hinman and Evelyn G Halliday—p 131

## Journal of Pediatrics, St. Louis

25 105-190 (Aug) 1944

- Stomatitis and Diarrhea of Infants Caused by Hitherto Unrecognized Virus G J Buddingh and Katharine Dodd—p 105
- \*Treatment of Influenzal Meningitis with Sulfadiazine Further Report W Sako C A Stewart and J Fleet—p 114
- Experiences with Convenient Method for Culturing Stool J Fleet and C A Stewart—p 127
- \*Treatment of Hyperthyroidism in Children C B McIntosh—p 131
- Eruption of Deciduous Teeth H C Snyder—p 140
- Treatment of Vascular Nevi C R Anderson—p 148
- Cor Bilecular Report of Case F R Shechter and D R Mernze—p 150
- Lymphoblastoma in Children Under 13 Years of Age I I Kaplan—p 155
- Osteogenesis Imperfecta and Osteopetrosis Contribution to Study of Their Identity and Their Pathogenesis S Rosenbaum—p 161
- Examination of Development of Certain Adaptive Behavior Patterns in Infants Sarah S Morgan and J J B Morgan—p 168

**Sulfadiazine in Influenzal Meningitis**—Sako and his associates report that 16 of 23 children with influenzal meningitis given sulfadiazine have been discharged as cured and have remained well. One patient developed and still has a residual generalized spasticity. Six fatalities occurred all in infants below 8 months of age. There was only 1 recovery in the group of infants under 8 months of age. No fatalities occurred above the age of 8 months. Since sulfadiazine alone does not seem sufficient for young infants, it is imperative that type-specific rabbit antiserum be given together with large doses of sulfadiazine. In older infants and children the recovery rate is high with sulfadiazine alone. Few spinal punctures and drainages were performed. Leukopenia in 1 patient, hematuria in 1 and drug fever in 1 were the only toxic conditions encountered that can be attributed to the drug.

**Treatment of Hyperthyroidism in Children**—Recent controversy regarding the treatment of toxic diffuse goiter in children induced McIntosh to review the records of the children with the disease who were treated at the University Hospital.

of Iowa City between 1925 and 1943. All of the 23 children were girls ranging in age between 7 and 16 years. Nineteen of the patients were subjected to subtotal thyroidectomy and 4 were treated without surgery. In the group of children operated on were 9 complete arrests, 3 nearly complete arrests, 5 recurrences and 2 deaths. The patients not operated on were all successfully treated by conservative management. The medical management of the 4 patients was not the same in all cases. All of them received bed rest during the period of hospitalization. Each also received phenobarbital sedation, the dose being regulated symptomatically. A high caloric and high carbohydrate diet was insisted on in each case. Lugol's solution was given to 3 children. The other child received no iodine therapy. Roentgen therapy was used in 2 instances after medical treatment alone appeared to be inadequate. The average period of time for the treatment of the patients operated on was six weeks while that of those not operated on was seven months. Children deserve an adequate trial of medical management before surgery is advised, and for a considerable number of them surgery is neither necessary nor desirable.

### Journal Pharmacology & Exper Therap, Baltimore

81 209-306 (July) 1944

- Local Nervous Tissue Changes Following Spinal Anesthesia in Experimental Animals. Co Tui A L Preiss I Barclam and M I Nevin —p 209
- Distribution Method for Differentiation of Urinary Excretion Products of Sulfonamide Drugs and Role of These Products in Urolithiasis. J V Scudi and Viola C Jelinek —p 218
- Toxicity and Trypanocidal Activity of Some Organic Antinomials. L G Goodwin —p 224
- Contribution to Pharmacology of Aliphatic Amines. R P Ahlquist —p 235
- Studies on Shock Induced by Hemorrhage. VIII. Inactivation of Apoenzyme of Amino Acid Oxidase and Lactic Dehydrogenase in Anoxia. Margaret E Greig —p 240
- Bone Marrow Procedure for Assay of Liver Extracts for Anti Pernicious Anemia Activity. C M Young and H D Bett —p 248
- Toxicologic and Pharmacologic Investigation of Sodium Sec Butyl Ethyl Barbituric Acid (Buti of Sodium). C M Gruber F W Ellis and G Freedman —p 254
- Clinical Actions of Ethionorsuprarenin. M L Tainter W M Cameron L J Whitsell and M M Hartman —p 269
- Toxicity and Trypanocidal Activity of p Sulfonamidophenylarsonic Acid and Certain of Its Derivatives. E L Way and L K Chan —p 278
- Acute Toxicity for Mice of 'Maphasen' and Sodium Sulfathiazole Administered Separately and in Combination. Elizabeth M Cranston W G Clark and E A Strakoski —p 284
- Relation of Intensity of Morphine Abstinence Syndrome to Dosage. H L Andrews and C K Himmelsbach —p 288
- Inhibition of Nervous Transmission in Synapses and End Plates by Thiamine. K Unna and E P Pick —p 294
- Sulfamerazine (2 Sulfanilamido 4 Methylpyrimidine). III. Comparative Activity of Sulfamerazine Sulfadiazine and Sulfapyridine in Production of Hemolytic Anemia in Mouse. A R Latven and A D Welch —p 301

### Medical Annals of District of Columbia, Washington

13 285-318 (Aug) 1944

- \*Relationship of German Measles During Pregnancy to Congenital Ocular Defects. B Rones —p 285
- Modern Approach to Divorce Evil. J R Ernst —p 288
- Prevention of Pulmonary Embolism. L B Rose —p 291
- Prognosis of Spontaneous Subarachnoid Hemorrhage. H J Forrest —p 294

**German Measles During Pregnancy and Congenital Ocular Defects.**—Rones presents histories of 4 infants whose ocular defects lend support to the claims of Australian observers that exanthematous disease in the mother during the early months of pregnancy can result in congenital ocular abnormalities in the child. Three of the mothers had had rubella and 1 had had morbilli. In the 2 cases in which the exanthem occurred during the second month of pregnancy the infants had cataracts, while in the 2 with the disturbance in the third month congenital glaucoma was present. Not all cases of congenital ocular abnormalities are due to an exanthematous disease in the mother during pregnancy. Many other factors can operate to produce such disturbances. More cases will have to be compiled before the occurrence of exanthems in the mother and ocular defects in the infants are accepted as causally related rather than coincidental. Rubella has been regarded as one of the most innocuous of the exanthematous diseases. We are now

faced with the fact that the virus attacking a pregnant woman before the placental barrier has been developed can cause a disturbance to the developing fetus, and particularly to the optic buds.

### Military Surgeon, Washington, D C

95 89-178 (Aug) 1944 Partial Index

- \*Pemmican. V Stefansson —p 89
- Physiologic Effects of High Temperatures. W Machle —p 98
- Caring for the Eyes of Britain's Army. S Duke Elder —p 105
- Red Cross Services in Evacuation Hospital. J H Berman —p 105
- Veterinary Service at Army Post. D M Campbell —p 110
- Some Aspects of Venereal Disease Control in Army. C S Hendricks and J D Winebrenner —p 121
- Report of Case of Peripheral Neuritis with Hypertension Following Serum Therapy. H F Robertson and F Varnus —p 129
- Meningococcal Meningitis. H F Wechsler and A H Rosenblum —p 132
- Complete Rupture of Tendo Achillis. M G Henry —p 135
- Secondary Repair of Rupture of Posterior Urethra with Case Report. S Gersten —p 139
- Oral Aspect of Cleidocranial Dysostosis. W S Britt —p 143
- Management of Dermatophytosis. J S Snow —p 147
- Practical Walking Cast for Use Under Wartime Conditions. D Goldberg —p 151
- Short PR Interval with Prolonged QRS Complex Associated with Paroxysmal Tachycardia. L F Bishop Jr and R W Kimbro —p 153

**Pemmican.**—Stefansson reviews the history of dried meats and of pemmican in particular. To make pemmican the Indian removed every trace of fat, split the lean into thin sheets and hung it up for wind drying. When thoroughly dry the lean was converted into pounded meat. Bags were made of the hide of the animal in question (buffalo hide for buffalo meat, caribou for caribou meat and so on). These pillow size rawhide bags were filled loosely with pounded meat. Suet was then poured into the bag so as to percolate everywhere. The mouth was sewed up before the fat had time to harden completely and the bag tramped on or otherwise pressed so as to become flat, with a usual thickness of 6 or 7 inches. Pemmican seems to have kept as well in Oklahoma as in Manitoba. There are records of ten, twenty and more years in perfect condition. The author thinks that if our army used pemmican we could reduce by a third or half the weight and bulk of the meat element in a combination ration, with its nearly or quite exclusive use for certain purposes, we could reduce by a third or half the total weight and bulk of present special emergency or survival rations—such for instance, as Army ration K, and we would have, from the start, a food which, in heat or cold in moist or dry is not experimental. An ancient Indian food that has been proved out by thousands of white users.

### New England Journal of Medicine, Boston

231 71-110 (July 20) 1944

- Toxic Factor in Experimental Traumatic Shock. J C Aug —p 71
- Renal Failure Simulating Adrenocortical Insufficiency. G W Thorn G F Koepf and M Clinton Jr —p 76
- Problem of Tuberculosis Control. J A Foley and J B Andosca —p 96
- Pigmentation of Skin. H Jeghers —p 88

231 111-168 (July 27) 1944

- Infectious Mononucleosis Simulating Brucellosis. A D Rubenstein and Carolyn I Shaw —p 111
- \*Primary Suture of Simple Mastoid Wounds. L F Johnson and P S Spence Jr —p 116
- Cavernous Sinus Thrombophlebitis. Report of Case with Multiple Cerebral Infarcts and Necrosis of Pituitary Body. A D Weisman —p 118
- Pigmentation of Skin (continued). H Jeghers —p 122

**Primary Suture of Simple Mastoid Wounds.**—Johnson and Spence report their experience in 44 cases of acute mastoiditis in which treatment was primary closure of the wound after the cavity had been filled with sulfonamide powder. The technical demands for primary suture are exacting. The mastoid exenteration must be complete. Great care should be taken to remove all infected cells. The perilymphathic cells are removed until the horizontal semicircular canal is sharply defined. The zygomatic area is thoroughly cleaned out and in a number of cases the incus is brought into view. The mastoid cavity is then irrigated with isotonic solution of sodium chloride followed by thorough drying of the cavity. If any bleeding persists epinephrine packs may be used to establish complete hemostasis.



The cavity is then filled with sulfonamide powder. It appears to make little difference in the end result which sulfonamide drug is employed. In more than half of the cases thus treated the mastoiditis complicated scarlet fever. In these it was possible to reduce the period of hospitalization from an average of fifty-two days to twenty-seven days. Patients without scarlet fever went home with dry ears and the postaural wound healed in an average of fifteen days. At first patients were kept in the hospital longer than absolutely necessary in order to observe the effects of primary suture. Those admitted later were allowed to go home in fewer days. No serious complications were seen in primary closure even in cases in which the sinus or dura was exposed. The temperatures promptly returned to normal after every operation, and no intracranial complications were noted.

**231 169 218 (Aug 3) 1944**

- \*Tularemia in New England. Review of 18 Cases with Report of 2 Additional Cases. I. D. Moore, C. S. Sawyer and S. C. Blount Jr.—p. 169  
Vitamin B Deficiency in Private Practice. D. Merrill—p. 174  
Purpose and Accomplishments of Lawrence Clinic. H. F. McCarthy and F. C. Atkinson—p. 179  
Pigmentation of Skin (concluded). H. Jeghers—p. 181

**231 219 248 (Aug 10) 1944**

- Prelude to Ether Anesthesia. W. W. Ford—p. 219  
Aid to Visual Education in Medicine. F. R. Harding—p. 224  
Multiple Extragenital Giant Chancres. Report of Case. W. T. Lever—p. 227  
Neurology. H. H. Merrill—p. 250

**231 249 278 (Aug 17) 1944**

- Delirium Tremens. C. B. Chapman—p. 249  
War and Public Health. F. F. Russell—p. 2  
Echinococcal Disease. Report of 2 Cases. T. W. Worthen and J. F. Jenovese—p. 260  
Recent Advances in Surgery. A. Blalock—p. 261

**Tularemia in New England**—Moore and his associates point out that New England appears to have been the last region in the United States to remain free of infection with *Pasteurella tularensis* but now a total of 20 cases can be brought together. A chronological review of the New England cases is presented and 2 new cases are reported in detail. The first of these occurred in Massachusetts. A man aged 52 who had been bitten by an unidentified insect after three days began to notice occasional chilly sensations, fever and muscular weakness. Following a week of such symptoms he noticed soreness in the left axilla and a small papule at the site of the bite which broke down and formed an ulcer. He poulticed the lesion and called in his physician who gave him sulfadiazine for ten days. Since the fever and malaise persisted, as well as the ulcer and the sore node in the left axilla he was referred to a hospital. Tularemia was suggested as a tentative diagnosis. A blood culture yielded no growth and serum agglutination tests against *Pasteurella tularensis* were negative in all dilutions. The clinical course was one of continued swinging fever. A node developed in the right axilla and then generalized lymphadenopathy appeared. To obtain material to clarify the diagnosis the ulcer was excised. The operative site healed cleanly and the palpable nodes disappeared. Repeated agglutination tests for *Past. tularensis* were positive and the disease was now diagnosed as the ulceroglandular form of tularemia. The second patient, a man aged 36 from Rhode Island, four days prior to the onset of his illness had been hunting rabbits and had skinned and dressed them himself. He had a hangnail on the left thumb and one day after the onset of the systemic illness the thumbnail became infected and the inflammation persisted despite treatment. For the eleven days until entry to the hospital this fever continued rising to 102 or 103 F daily. Febrile illness with malaise, headache, cough and the infected thumb and axillary nodes continued. A diagnosis of ulceroglandular tularemia was made and the possibility of pneumonic involvement was raised. Agglutination tests were positive against *Past. tularensis* in dilutions up to 1:50. Both of these patients recovered, but 9 of the 20 cases reported in New England have been fatal. The response of the Massachusetts patient to primary excision of the ulcer was striking and if the results of this method are corroborated by other observers it may constitute a useful way of shortening the period of disability from the disease.

**New Orleans Medical and Surgical Journal****97 1-42 (July) 1944**

- Evolution of Tuberculosis in Human Lung. C. A. Stewart—p. 1  
Thirty-Five Millimeter Fluorographs in Mammography. R. A. Brown—p. 4  
Permanent Presence of Specific Immunizing Antibodies in Blood of Yellow Fever Subjects Experimentally Demonstrated by M. Protection Test Seventy-Seven Years After a Clinically Acute Attack of Disease. R. Matas—p. 9  
Milk's Nodule. M. T. Green—p. 13  
Production and Treatment of Scar and Keloid. W. Marshall—p. 14  
Food Fact and Fads. P. R. Cannon—p. 17  
Arthropod Borne Encephalides of North America. I. L. Mendenhall—p. 22

**97 43 92 (Aug) 1944**

- Some Postwar Problems in Medical Education. L. H. Weed—p. 4  
Diagnosis of Disease Without Instrument of Precision. K. H. May Jr.—p. 49  
Clinical Evaluation of Intradermal Test for Polymyositis. C. Parvitz—p. 58  
Pneumoperitoneum in Treatment of Pulmonary Tuberculosis. Report on Patient Successfully Treated. B. M. Stuart, K. I. Tullen and I. I. Wilson—p. 61  
Physiologic and Clinical Phenomena of Aging. E. P. Boas—p. 64  
Blood Supply of Sternum. I. A. R. Studies of Injected Sternum Showing Venous Return. P. Pizzolato—p. 71

**New York State Journal of Medicine, New York****44 1615-1726 (Aug 1) 1944**

- Clinical Experience with Penicillin. D. C. Anderson—p. 1651  
Otolaryngologic Problems of Aviation. P. Northington—p. 165  
Dermatologic Diseases Frequently Encountered by Otolaryngologists. A. B. Cannon—p. 1661  
Reinforcement of Sulfonamide Activity. Experimental and Clinical Observations. E. R. Neter—p. 1669  
Results of Cancer Treatment. C. E. Farr—p. 1673  
Ophthalmoscopic Signs of Terminal Hypertension. A. T. Bedell—p. 1675  
Pentothal Sodium Anesthesia in Shock and Hemorrhage. C. K. Eiler—p. 1679

**44 1727-1838 (Aug 15) 1944**

- Management of War Amputations in General Hospital. K. H. Alldredge—p. 1763  
\*Report of 85 Fenestration Operations for Otosclerosis. J. M. Smith—p. 1771  
Fluorescence with Wood Filter as Aid in Dermatologic Diagnosis. Observation on Patients at Bellevue Hospital. M. J. Costello and L. A. Littenberger—p. 1778  
Evaluation of Various Methods of Treatment of Chronic Cervicitis. M. N. Hyams—p. 1785  
Goals and Objectives in Psychotherapy. I. R. Wolberg—p. 1792  
Common Cold. H. Adler—p. 1797  
Correlation of Peritoneoscopic Findings with Clinical and Pathologic Factors Especially of Liver. L. P. Wershub—p. 1805  
Basic Concepts of Alcoholism Anonymous. W. C. Wilson—p. 180

**Fenestration Operations for Otosclerosis**—In a previous report Smith reported 32 cases of fenestration operation. About one third of these were successful. The results have greatly improved in the 53 additional operations reviewed in this article. The improvement in the results dates back to the new location of the fistula. In the first 18 operations of the total of 85 the fistula was made over the length of the external semicircular canal posterior to the ampullated end with the head of the malleus removed and the incus in its normal position. In the rest of the series 67 in number the fistula was moved forward over the dome of the vestibule anterior to the ampullated end of the horizontal semicircular canal with the head of the malleus and the incus removed. The results immediately were better. The fact requiring special emphasis is that in a vast majority of the cases of otosclerosis there is a gradual loss of hearing extending over a considerable time before there is a serious impairment of nerve function. It is during this stage that the operation offers the best chance for a successful and lasting result. If allowed to continue uninterrupted the loss of nerve function will reach a point where the patient cannot be helped by the operation. The author performed the fenestration operation on 6 patients with severe loss in air and bone conduction. These patients submitted to the operation after being told the poor prospects. There were no successful results in these patients. The fact that there were no complications or deaths in the 85 reported cases prove that it may be performed without undue risk to the patient. It is dangerous in the hands of the untrained technician. The operation must first be taught on the cadaver, and the necessary time and effort

must be devoted to the correlation of the intricate steps comprising its technic before it is attempted on the living. The successful fenestration operation not only restores practical hearing but also checks the progress of otosclerosis.

### Ohio State Medical Journal, Columbus

40 709-804 (Aug) 1944

- \*Outbreak of Typhoid Fever Attributed to Baked Beans Contaminated by Chronic Typhoid Carrier E E Kleinschmidt—p 725  
Benign Pulmonary Changes in Arc Welders Arc Welders Siderosis J A Groh—p 732  
Meniere's Syndrome J A Rudolph—p 736  
Radiation Therapy as Method of Treatment in Nonmalignant Conditions L M Platt—p 738  
Operability versus Curability of Cancer of Breast U V Portmann—p 742  
Chordotomy E W Shannon—p 746  
Ruptured Sacular Aneurysm of Circle of Willis in Patient Cured of Gastric Carcinoma T C Lipply—p 750

**Typhoid Outbreak Attributed to Contaminated Baked Beans**—Kleinschmidt describes an outbreak of typhoid resulting in 60 known cases in Toledo, Ohio, and 21 others in three counties in southern Michigan occurring in the months of June and July 1943. Epidemiologic investigation revealed the outbreak to be due to the eating of baked beans contaminated by a single chronic typhoid carrier living in Toledo. This outbreak established a new route of spread for typhoid and directed attention to the need for more careful health supervision of wholesale food establishments especially those engaged in dispensing prepared foods. It emphasizes the necessity for continued effort to control typhoid carriers and illustrates the explosive potentialities of outbreaks of this disease despite a downward trend in its incidence and a condition of apparent safety, as might be inferred from current statistical observations.

### Physiological Reviews, Baltimore

24 297-408 (July) 1944

- Anticoagulants Effective in Vivo with Special Reference to Heparin and Dicumarol A J Quiek—p 297  
Hyperpnea of Muscular Exercise J H Comroe Jr—p 319  
Lactation W E Petersen—p 340  
Maintenance of Nitrogen Balance by Intravenous Administration of Plasma Proteins and Protein Hydrolysates R Elman—p 372  
Functional Organization of Cerebral Cortex W S McCulloch—p 390

### Public Health Reports, Washington, D C

59 1041-1076 (Aug 11) 1944

- Simplified Procedure for Detecting Cross Reactions in Diagnostic Antipneumococcal Serum Bernice E Eddy—p 1041  
X Ray Exposure in Manufacture and Operation of Certain Electronic Tubes A F Bush H T Castberg and D G Macpherson—p 1045

59 1077-1102 (Aug 18) 1944

- Studies on Duration of Disabling Sickness V Frequency of Short Term Absences and Its Relation to Total Frequency W M Gafar and Rosedith Sitgreaves—p 1077  
Pathologic Changes in Animals Exposed to Commercial Chlorinated Diphenyl J W Miller—p 1085

59 1103-1130 (Aug 25) 1944

- \*Methods of Sanitizing Eating and Drinking Utensils J Andrews—p 1103

**Methods of Sanitizing Eating and Drinking Utensils**—Andrews reports the results of a comprehensive survey of eating and drinking establishments made in an Eastern city. Bacterial counts were made of plates, tumblers, spoons, forks and beer glasses. The lowest count reported, 2,800, was on spoons at eight soda fountains. The highest count 7,000,000, was on beer glasses at nineteen barrooms. The next to the highest count, 390,000, was on tumblers at the eight soda fountains. Each figure is the average 'swab count' of ten utensils. Rabbit blood agar was used for plating. These counts, all of which are greatly in excess of the standard of 100 organisms per utensil surface show the need for improvement in dishwashing practice. On the average, lower bacterial counts are obtained with machine washing than with hand methods. However, the data do not justify the conclusion that manual methods should universally be discarded in favor of dishwashing machines. Satisfactory results can be obtained by either method. During the rush hour dishes will frequently be put

through the machine too rapidly to give proper washing and rinsing. Observations at one large cafeteria during the noon rush showed that for a group of ten consecutive racks of dishes washed one rack was in the machine for only twenty seconds, four for thirty seconds, three for forty-five seconds and two for sixty seconds. The shorter exposures are inadequate. One solution of this problem is to encourage the restaurant to have in use a large enough supply of utensils to tide over the rush period without having to make the dishwashing operation only a pretense. Frequently the person doing the dishwashing has not been instructed in the proper dishwashing technic and has not been impressed with the importance of his job. Since the outbreak of war, the problem of maintaining good sanitation in restaurants has been intensified by shortages of manpower and materials and increased customer loads. There are indications that the amount of disease spread in restaurants is increasing.

### Radiology, Syracuse, N Y

43 107-212 (Aug) 1944

- Correlation of X Ray Diagnosis with Operative Findings in Small Intestinal Obstruction C J Hunt—p 107  
Roentgenologic Features of Mediastinal Tumors L L Robbins—p 115  
\*Statistical Analysis of 100,000 Examinations of Chest by Photoroentgen Method P Zanca and F K Herpel—p 122  
Further Experiences with Venography E C Baker and F A Miller—p 129  
Anteroposterior Lordotic Projection in Roentgenographic Examination of Lungs G Lavner and B Copleman—p 135  
Neurosurgery and Radiation for Relief of Pain in Advanced Cancer G Cooper Jr and Y W Archer—p 142  
Ureter and Its Involvement in Pelvic Irradiation E E Mansur—p 147  
Development of Centralized Radon Services in Australia C E Eddy—p 155  
Evolution of Improved Transvaginal Speculum A W Erskine—p 170  
Barium Gelatin Mixture for X Ray Examination of Digestive Tract M S Abel—p 175

**Analysis of 100,000 Examinations of Chest**—Zanca and Herpel present the results of routine examinations of the chest by the photoroentgen method in 100,000 consecutive selectees. Stereoscopic roentgenograms on 4 by 10 inch films have been found highly satisfactory, economical, easy to handle and process, susceptible of being rapidly interpreted with minimum eye strain and fatigue, and superior in definition to 14 by 17 inch films. The rejection rate for pulmonary tuberculosis in this series was 4.91 per thousand examined. This rejection rate applies to all types of pulmonary tuberculosis, from far advanced active cases with cavitation to the chronic minimal fibrous or apparently arrested cases in which stability of the lesions was not yet demonstrated. The low rejection rate for tuberculosis at this station reflects creditably on the splendid antituberculosis program in North Carolina over the last quarter of a century, also on the screening out of known tuberculous selectees at the local boards of origin.

### Rocky Mountain Medical Journal, Denver

41 449-528 (July) 1944

- Rocky Mountain Spotted Fever Diagnosis of Disease G E Baker—p 466  
Screw Worm Fly in Utah H L Marshall and D T Jones—p 478  
Carcinoid Tumors of Appendix W W King—p 480

41 529-608 (Aug) 1944

- Perforating Wounds of Abdomen F H Good and J G Hedrick—p 546  
\*Polomyelitis 1943 Children's Hospital Denver Colo. Lula O Lubchenko R Scandalis H D Palmer and G Valdemar—p 549  
Viscerotropic Syndrome R B Weiler—p 555

**Polomyelitis**—Lubchenko and her associates review observations in 120 cases of polomyelitis treated during the last six months of 1943 at the Children's Hospital of Denver. All patients with acute and convalescent polomyelitis were treated by the Kenny method. The technic as described by Kenny could not be followed in regard to frequency of treatments. Ten to twelve packs plus physical therapy every day was impossible except for the most severe cases because of the shortage of help. Hot fomentations were applied four to five times a day to most of the patients. In the very seriously ill with respiratory difficulties packs were given as often as three to four times every hour. When persistent and severe spasm was

present, ten to twelve packs a day were applied. During the acute stage some patients would wake up during the night and ask for packs, which gave them relief. Physical therapy was started as soon as it could be given without causing pain in the spastic muscles. This consisted of passive exercises to the alienated and paralyzed muscles and muscle reeducation of those muscles in which some power was present. Tightness which frequently followed spasm was treated successfully by stretching exercises. Physical therapy was administered three or four times a week. Accurate localization and early evaluation of muscle spasm and weakness is necessary if one is to use the Kenny method effectively. Thirty-two per cent of the patients were discharged as recovered. Of these 12 per cent had no muscle weakness on admission. An additional 58 per cent showed improvement of varying degree. Ten per cent showed no change. Thirteen patients have had braces applied and 4 more are soon to receive them. Spasm in one or more muscles was present in all the cases. The average duration of spasm ranged from 9.2 weeks (neck) to 16.3 weeks (hip adductors). Patients received hot fomentations for an average of fourteen weeks. In 14 of 88 cases deformities developed despite hot pack therapy. The mortality rate was 58 per cent. All of the seven deaths occurred in cases of poliomyeloencephalitis. The incidence of bulbar poliomyelitis was highest in those patients who had had operations in the mouth or pharynx. Three severe cases occurred within four weeks after tonsillectomy. One fatal case occurred two weeks after tooth extraction.

### South Carolina Medical Assn Journal, Florence

40 137-158 (July) 1944

- Likelihood of Establishment of Alien Diseases in United States H S Mustard—p 137  
Trends of Immunization in Present Day Pediatrics M W Beach and B O Ravenel—p 140

40 159-178 (Aug) 1944

- Prevention of Venous Thrombosis and Pulmonary Embolism E A Hines Jr—p 159  
Chemotherapy in Bacterial Infections W H Kelley—p 164  
Use of Sulfonamides in Surgery J McLeod—p 167

### Surgery, St Louis

16 169-318 (Aug) 1944

- \*Endocrine Treatment of Cancers of Prostate Gland A L Dean Helen Q Woodard and C H Twombly—p 169  
Relationship of Hormones to Testicular Tumors G H Twombly—p 181  
Adrenal Cortical Tumors—Physiologic Considerations A T Kenyon—p 194  
Hormonal Tumors of Adrenal G F Cahill—p 233  
Endocrine Activity of Thyroid Tumors and Influence of Thyroid Hormone on Tumors in General J Ierman—p 266  
Endocrine Aspect of Enlargements of Parathyroid Glands O Cope—p 273  
Hyperinsulinism in Relation to Pancreatic Tumors A O Whipple—p 289  
Endocrinologic Aspects of Tumors of Pituitary Gland L M Davidson—p 306

**Endocrine Treatment of Cancers of Prostate**—Dean and his associates review observations on 100 patients with cancer of the prostate. These patients were treated either by castration or by the administration of diethylstilbestrol given in doses of 1 to 5 mg daily by mouth. Both forms of treatment have given striking clinical improvement at least temporarily. Pain is abolished, appetite is increased and a gain in weight results. After seven to eight months the patients are apt to have a return of pain and obvious progression of disease to death. Institution of other treatment diethylstilbestrol for the castrated patients or castration of the patients treated originally with diethylstilbestrol fails to affect the unfavorable course. Some patients continue to remain clinically free from symptoms of prostatic cancer for two years or longer. The number of such prolonged arrests of cancer seems more frequent in the group treated with diethylstilbestrol than by castration, so that this has become the routine initial form of treatment in the last eighteen months. Diethylstilbestrol seems to cause regression in the size of the prostate and reduction in the amount of residual urine more frequently than castration. Changes in bony metastases are toward an increase in calcification. Elevation of serum acid phosphatase above 1 Bodansky unit is pathognomonic

of prostatic cancer although a low acid phosphatase does not rule out its presence. Serum acid phosphatase falls promptly in those patients who respond favorably to castration and rises again with a return of cancerous activity. The same changes occur more slowly in patients treated with diethylstilbestrol. Castration decreases estrogenic excretion in the urine and usually causes a rise in androgens as measured colorimetrically as 17-ketosteroids by the Callow-Zimmerman test. It causes a rise in excretion of pituitary gonadotropic hormones in the urine. The administration of diethylstilbestrol decreases the output of the 17 ketosteroids and the gonadotropic hormone from the pituitary. After its administration the excretion of diethylstilbestrol in the urine gives a great rise in the estrogenic assays. These findings suggest that the mechanism whereby castration and diethylstilbestrol cause regression of prostatic cancer is fundamentally different.

### War Medicine, Chicago

6 1-66 (July) 1944

- Malnutrition During Convalescence Prepared Under Direction of Committee on Convalescence and Rehabilitation of National Research Council—p 1  
Summary of Activities of Procurement and Assignment Service I H Lahey and J L Hankonen—p 10  
Visual Aids in Preventive Psychiatry R R Cohen—p 18  
Dyspepsia Regimen Method of Rehabilitation A A Goldbloom and H Schildkrom—p 24  
Dimethyl Phthalate as Repellent in Control of Phlebotomus (Pappas or Sindfly) Fever C B Philip I R Paul and A B Sabin—p 27  
Subdural Hygroma Report of 3 Cases W G Hawkes—p 34  
Psychiatric Voice Recordings in Military Service Recorded Program A A Rosner—p 38

### Wisconsin Medical Journal, Madison

43 765-900 (Aug) 1944

- Congenital Heart Lesion Pulmonary Stenosis and Interventricular Septal Defect Report of Case M Hurdgrove and A J Gramling—p 793  
Recent Advances in Treatment of Meningitis A J Cordes—p 795  
Sequelae of Fractures of Neck of Femur and Their Treatment C C Schneider—p 799  
Hereditary Hemorrhagic Telangiectasia Report of Case with Review of Literature J J Barrock—p 805

43 901-1000 (Sept) 1944

- Virus Diseases of Man E R Krumholz—p 927  
Caudal Anesthesia H A Cunningham—p 931  
Dilantin Hyperplastic Gingivitis R P Gingress—p 934  
Refrigeration Amputation J I Neller and E R Schmidt—p 936  
Intra Abdominal Diverticulitis Report of 11 Cases J J Gramling Jr—p 942  
Tuberculosis Picture in Wisconsin A Filek—p 947

**Refrigeration Amputation**—Neller and Schmidt say that refrigeration was first applied at the Wisconsin General Hospital to a patient for whom, because of his extremely poor condition no other therapy seemed to present a reasonable chance of success. This man aged 65 entered moribund, with diabetic gangrene of the foot, gross infection, generalized sepsis and uncontrolled diabetic ketosis. The case was judged hopeless. Refrigeration amputation was performed and the result was so favorable that subsequently the authors used the method for 40 additional patients. All of them were poor risks, all had established gangrene, many had gross infection and general sepsis were diabetic, and the average age was 68 years. The authors stress the importance of the proper selection of patients. Routine use of refrigeration is contraindicated. Patients requiring amputations who are not aged, who show no significant infection or general sepsis and whose general reserve is good are better managed under general anesthesia. Amputation for Buerger's disease should not be done under refrigeration because of (1) the vasospastic tendencies, (2) the lack of general toxemia and (3) the younger age level. Refrigeration amputation should be reserved for those patients who because of senility, uncontrolled diabetes, infection, general sepsis or other complications would be poor risks for general anesthesia. Several different techniques are used, depending on the clinical picture. The authors differentiate between surgical refrigeration and preliminary control refrigeration and further divide surgical refrigeration into primary and secondary types. These may be used singly or in combination. Proper use of these different techniques will give best results.

## FOREIGN

An asterisk (\*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

## British Journal of Tuberculosis, London

38 37-102 (April-July) 1944

Pulmonary Hydatid Disease. A. R. Barrett and D. Thomas—p. 39

## British Medical Journal, London

2 137-168 (July 29) 1944

Localization in Cerebrum and Cerebellum. Bertram Louis Abrahams.

Lecture. E. D. Adrian—p. 137

Some Problems in Riboflavin and Allied Deficiencies. H. S. Stannus—p. 140

Postoperative Strain in Navy. D. Curran and G. Carman—p. 144

Schick Reactions in Recently Confined Women and Their Infants. G. P. Wright and W. M. Clark—p. 146

Radiotherapy of Ectopic Calcification. E. Millington—p. 148

**Schick Reactions in Recently Confined Women and Their Infants**—Wright and Clark made Schick tests during the first five days after delivery on 250 women. Schick tests were also carried out at some time during the first five days of life on the infants of 145 of this group of women. The authors found that considerably less than half of the infants born to women living in a typical outer London suburb have an adequate congenitally acquired immunity to diphtheria. So infrequently do the mothers come into contact with toxigenic *Corynebacterium diphtheriae* that their circulating antitoxin concentrations fall to levels considerably below the critical titer for the Schick test. While a large proportion of the positive reactors among these recently confined women are themselves immune in consequence of the promptitude with which their antitoxin forming tissues respond to the secondary stimulus of the specific toxin, their low antitoxin titer during pregnancy confers little or no immunity on their infants. In the event of an epidemic rise in diphtheria two possible measures might be instituted. First infants might be immunized considerably younger than is now the custom; this procedure has the disadvantage that very young infants seem to respond less well to prophylactic immunization than older infants or young children. Secondly, it might be desirable to immunize all Schick positive pregnant women during the latter part of the gestation period. Such a procedure would at the same time immunize any woman who was susceptible and raise the maternal antitoxin titer to a high level about the time of the birth of the infant.

## Journal of Pathology and Bacteriology, Edinburgh

56 145-288 (April) 1944

Pinealoma. Its Relationship to Teratoma. Dorothy S. Russell—p. 145

Sources of Blood Platelets and Their Adhesiveness in Experimental Thrombocytosis. Helen Payling Wright—p. 151

Spontaneous Folliculitis of Conjunctiva in Grivet and Vervet Monkeys (*Leontopithecus griseoviridis* and *Cercopithecus aethiops*) and *L. Pterygopithecus* (*L. Pterygopithecus*). J. O. W. Bland—p. 161Filtration of *Mycobacterium tuberculosis* and *Mycobacterium stevensii* Through Gradocol Membranes. M. A. Soltys and A. W. Taylor—p. 175

Developing Factor in Experimental Blastogenesis. J. C. Mottram—p. 181

\*Anemia Associated with Infection. M. F. Saifi and Janet M. Vaughan—p. 189

Architectural Structure of Upper End of Femur in Various Pathologic Conditions. W. Townsley—p. 199

Chronic Human Carrier of *B. aertrycke* (Bact. Typhi Murium) Treated by Cholecystectomy. H. Burt—p. 209

Toxic Effects of Propamide with Special Reference to Treatment of Burns. J. W. Allen, F. Burgess and G. R. Cameron—p. 217

Diabetogenic and Pancreatotropic Actions of Ox Anterior Pituitary Extract in Rabbits. R. F. Ogilvie—p. 225

Incidence and Causes of Discrepancies in Results of Serologic Tests for Syphilis. T. M. Berger and P. L. Sutherland—p. 237

**Anemia Associated with Infection**—Saifi and Vaughan investigated hemopoiesis in acute and chronic infections. The peripheral blood picture was studied over varying periods in three different types of cases: (1) mild infections such as furunculosis, acne and sties; (2) acute infections of not more than three months' duration; and (3) subacute and chronic infections of more than three months' duration. Patients receiving sulfonamide drugs in a bigger total dose than 1 Gm. have been excluded since these drugs have an effect on hemopoiesis in

certain individuals. In the acute cases blood examinations were made every four or five days. In some instances reticulocyte counts were made daily. In the chronic cases the blood was examined at first every week and then every fortnight. A complete histologic study was made of the hemopoietic tissues in patients who died during the investigation. It was found that anemia was normocytic or microcytic in type, the color index never being above unity. A raised reticulocyte count occurred commonly in the chronic cases with severe anemia. In acute cases the reticulocyte count often rose when fever abated. Increased activity of the marrow was found in 12 of 15 cases examined, leukopoiesis predominating. There was no aplasia of erythropoietic tissue, primary erythroblasts and normoblasts being present with few mature red cells. The degree and character of the response appeared to be unrelated to the type of infection, the severity of the anemia or the age of the patient. It is suggested on analysis of the available evidence that anemia associated with infections is due to interference with the synthesis of hemoglobin.

## Lancet, London

2 131-164 (July 29) 1944

Rehabilitation of Injured in This War and Last. H. A. T. Fairbank—p. 131

Naval Experience in Relation to National Health Service. S. Dudley—p. 134

Burns in Warfare. N. J. Logie—p. 138

Treatment of Varicose Veins by Diathermy. R. A. Smith—p. 141

\*Synergic Action of Penicillin and Sulfonamides. J. W. Bigger—p. 142

Traumatic Retroperitoneal Rupture of Duodenum. P. A. Trafford—p. 145

Relapse of Quartan Fever After Twelve and Twenty One Years. P. G. Shute—p. 146

**Synergic Action of Penicillin and Sulfonamides**—The success which has attended the treatment of streptococci, pneumococci and gonococci infections in man with the sulfonamides has not been repeated when the infecting organism is the staphylococcus. Penicillin is much more potent against staphylococci than is the best of the sulfonamides, but, despite the susceptibility of these organisms to penicillin in vitro treatment of human infections, even when continued for a relatively long time often fails to eliminate the bacteria completely from the body. It seems to be almost a universal practice, when penicillin treatment is initiated to abandon the administration of sulfonamides if they have previously been employed. Bigger records experiments in which the method used has been titration of penicillin, with or without sulfonamide in broth or serum saline in 5 cc. amounts, the test organism being usually *Staphylococcus pyogenes*. The tubes were observed after twenty four hours or in some cases longer periods of incubation for evidence of growth of the bacteria inoculated. The presence of sulfathiazole in broth greatly increased the dilution at which the inhibitory action of penicillin on staphylococci could be demonstrated. Sulfathiazole was more effective in this respect than either sulfanilamide or sulfapyridine. The same synergic action of sulfathiazole and penicillin can be demonstrated in serum. The action of penicillin against *Streptococcus pyogenes* is similarly reinforced by the presence of sulfathiazole. It is suggested that this synergic action of sulfonamides and penicillin should be employed in the treatment of suitable infections in man.

2 165-196 (Aug. 5) 1944

\*Primary Tuberculous Infection in Nurses. Manifestations and Prognosis. M. Daniels—p. 165

\*Resuscitation of Battle Casualties. D. S. Dick—p. 170

Intraoral Splint for Facial Palsy. A. G. Allen and D. W. C. Northfield—p. 172

\*Note on Commonly Unrecognized Type of Injury to Cervical Spine and Spinal Cord in Association with Head Injuries. F. M. R. Walsh—p. 173

Antibacterial Values of Ethylene Glycol Monophenyl Ether (Phenoxetol). H. Berry—p. 175

Phenoxetol in Treatment of Protozoan Infections. J. Gough, H. Berry and B. M. Still—p. 176

Spontaneous Rupture of Esophagus. J. L. Colles, D. R. Humphreys and W. H. Bond—p. 179

Note on Thomas Splint. C. A. Pannett—p. 180

**Primary Tuberculous Infection in Nurses**—Daniels reviews data obtained through the Prophit survey, which was inaugurated in 1934 by the Royal College of Physicians of London under the terms of the Prophit bequest. Nurses form only one of the five groups studied in the survey; the others

being medical students, contacts, volunteer controls and boys in the Royal Navy training establishments. Since the outbreak of war it has been impossible to continue the work in the last two groups. Each person entering the survey is required to fill in a record card giving information on age, environment, race, previous illnesses, history of contact and previous occupation. This information is supplemented by the results of an initial Mantoux test and an initial x-ray film of the chest. Each person is reexamined annually by Mantoux test and x-rays and note is taken of any clinical illness during the period since the preceding test. It becomes possible then to analyze the progress of groups with different backgrounds and different states of tuberculin sensitivity under differing conditions of exposure. This report analyzes data collected on nurses. The total number of nursing entrants to the survey up to March 1943 was 3764. Nurses were Mantoux tested and x-rayed shortly after entry to the preliminary training school. Of the 3764 entrants 50.3 per cent were positive to old tuberculin 1:10,000 or 1:100,000, 30.5 per cent were positive only to 1:100 or 1:1000 and 19.2 per cent were negative. The rate of Mantoux conversion in the first year was 58.4 per cent and 78.3 per cent in two hospital groups. The group with a higher conversion rate had a high proportion of strongly positive reactions revealing conversion. Most had no notable symptoms between the last negative test and the first positive. A study has been made of the tuberculous morbidity in nurses who entered the survey before 1942 and whose chest x-ray film on entry was clear. 33 cases occurred in 452 nurses initially Mantoux negative, 43 cases in 2,120 nurses initially Mantoux positive. The 33 cases arising in nurses Mantoux negative on entry are briefly described. Analysis reveals the diversity of aspects of tuberculosis following primary infection in adults. In many cases it is difficult to determine whether the primary focus or a secondary infection is responsible for the lesion observed. The annual case rate per thousand was 7.4 in nurses Mantoux positive on entry and 18.8 in those Mantoux negative. The rate was particularly high in the first year after Mantoux conversion. The evidence of this survey and the combined evidence of twenty other surveys show that the risk of tuberculosis developing after primary infection in young adults is a serious one. It is suggested that a controlled method of antituberculosis vaccination is needed. In the absence of vaccination, recommendations are made with the object of reducing the primary infection rate, detecting primary infection when it occurs and reducing the tuberculosis morbidity.

**Resuscitation of Battle Casualties**—Dick's transfusion unit dealt in eighteen months with over 800 shocked patients. Transfusion of blood and plasma was undoubtedly the major factor in the resuscitation of these cases. The total amount of fluid used was 1776 pints (average per patient 354 pints), which included 1327 pints of blood, 315 pints of plasma and 134 pints of saline solution. Usually the transfusion of 2 pints at a fast rate was sufficient to restore the blood pressure. If after this the response was only sluggish, it was found better to take the lesser risk of earlier operation. The average time spent in the resuscitation ward was about two to four hours. In practically all cases the transfusion was continued in the operating theater and often in the postoperative ward as well. Severe blood loss at operation was met by rapid transfusion, and on occasion a second separate transfusion apparatus was set up on another limb. With such a procedure it was not uncommon to give before, during and after operation a total of 10 pints of blood without any question of overloading the circulation. This method of continued transfusion is perhaps not widely enough appreciated and there is a false belief that resuscitation is usually only a preoperative measure. There has been a good deal of controversy over the relative merits of blood and plasma in the field. The author mentions the deceptive appearance of recovery gained by plasma transfusion after severe blood loss. This fact together with the undoubted efficacy of stored blood was borne out in two invasions. In the first no stored blood was available. The fresh blood was reserved for cases of extreme blood loss. For the moderately severe cases reliance was placed wholly on plasma and it was found that the blood pressure was restored without difficulty but again the pulse rate remained relatively high, also it was apparent that post-operatively the cases did badly. In the second

landing stored blood was available in quantity but otherwise the conditions were similar. The results of transfusion in resuscitation were strikingly better and the condition of the patients after operation was much more encouraging. Reactions were fewer with stored blood than with plasma. With the blood 5 per cent of the patients developed reactions in the form of slight or moderately severe rigors. With wet plasma the reaction rate was 7 to 8 per cent but with the dry plasma this rate was around 20 per cent. Stored blood kept in good condition for at least twenty-one days in the refrigerator lorry even during movement over rough roads.

**Commonly Unrecognized Injury of Cervical Spine**—Walshe in 1936 with Ross reported cases of relatively mild head injury with associated damage to the cervical spine and spinal cord in which the latter components had escaped notice during the period of treatment and had later been diagnosed under various titles as nontraumatic. Since then the author has observed further cases of this combined head and neck injury. The head injury is of the closed variety and is commonly mild. The injury involves a blow on the vertex or side of the head with an associated anterior or lateral flexion of the neck. The patient dives into shallow water, is thrown from horse or cycle, is flung out of a car or has fallen forward, striking the top of his head. In one case a sack of grain fell through an open hatch on the head of a man standing below. The mechanism of this cervical vertebral injury and its site of election between the fifth and sixth cervical vertebrae were described by Jefferson in 1928. The partial extrusion of the intervertebral disk has not been mentioned as a component of this injury but in 1 recently observed case the narrowing of the relevant intervertebral space suggested that this had occurred. When he first comes under observation, still concussed or just recovering from concussion the patient who has sustained this vertebral cord lesion is thought of as having head injury. The cord damage is not profound. No one would listen to me when I complained about my arms" is the not rare later complaint of these patients. It is only when the patient is mobilized that the range of his disability becomes fully apparent to him and he may then find himself stiff and clumsy on his legs. Commonly he returns home and may even attempt to resume work. Thus he finds difficult. In a few weeks he notices that some muscles in the arms or hands are wasting, and he returns to his medical adviser. The condition is then labeled amyotrophic lateral sclerosis or disseminated sclerosis or, if a positive Wassermann reaction exists, the case is diagnosed as spinal syphilis. The clinical picture bears a superficial resemblance to motor neuron disease (amyotrophic lateral sclerosis, progressive muscular atrophy) yet the state of the tendon jerks in the arms, the persistence of paresthesias and the history suffice to make differentiation simple. The common failure to recognize this damage, with the subsequent tendency to erroneous diagnosis, may react unjustly on the sufferer's right to compensation. Some of these patients recover. Others remain with a fixed degree of disability while yet others continue to deteriorate for some time as joint and muscle changes ensue.

## Medical Journal of Australia, Sydney

2 1-24 (July 1) 1944

- Influenza and Other Respiratory Infections F. M. Burnet—p. 1  
Culture of Tubercle Bacilli from Sputum: Review of Personal Experience of 310 Specimens D. B. Rosenthal—p. 6  
Medical Aspect of Naval Recruiting W. E. Roberts—p. 8  
Clinical Impressions of Skin Disease in Tropical Operational Area W. K. Myers—p. 10

2 25-48 (July 8) 1944

- Dr. E. S. P. Bedford and His Hospital and Medical School of Saint Marys Van Diemens Land and W. E. L. H. Crowther—p. 25  
Treatment of Ingrowing Toenails T. E. Wilson—p. 33  
Gas Gangrene at Australian General Hospital in Owen Stanley and Buna Gona Campaign K. C. Ross and W. P. Ryan—p. 35

**Gas Gangrene in the Owen Stanley and Buna-Gona Campaign**—According to Ross and Ryan the Owen Stanley and Buna Gona campaign was noteworthy for the relatively high incidence of anaerobic infection of wounds. During the four month period from Nov. 1, 1942 to Feb. 28, 1943 1815 Australian battle casualties were treated and 82 cases of clinical gas gangrene occurred (4.5 per cent). Of these 82 patients,



12 died. Amputation was performed as often for the nature of the wound as for the extent of the infection. Exhaustion and emaciation contributed to the mortality. The clinical types ranged from the classic fulminating infection to cases associated with merely a local abscess around a retained missile. The latter cases with frank pus formation were diagnosed only by the presence of gas in the pus and by the growth of *Clostridium welchii* in culture. In 3 patients there was little evidence of infection in the wound itself, but an acute, overwhelming cellulitic edema spreading from the wound commenced four to five days after the receipt of the wound. In 2 of these cases the wounds were trivial. Death occurred in each case within forty-eight hours of the commencement of the edema. *Clostridia* were isolated from all. All patients with gas gangrene were given a full course of sulfanilamide. Polyvalent antitoxin was given to 51 patients in doses of 20,000 to 200,000 units, the usual dose being 50,000 units. It is difficult to assess the value of antitoxin, but the impression was gained that it had some beneficial effect. Forty-nine patients received transfusions of blood and plasma. The initial amount was usually 1 liter of blood and 1 liter of plasma. A full course of antimalarial therapy has to be given to patients receiving blood collected in a malarious area. One of the authors had success with radical excision in the Libyan Desert. Therefore it was decided to employ this wherever possible and to be conservative with amputations. At first whether anaerobic infection was present or not, operations took the form of debridement and partial excision rather than radical excision, but the authors soon learned to rely more and more on radical excision no matter how old was the wound. Excision caused little or no local or general reaction, and several partly excised wounds needed reexcision a few days later. The authors became convinced that the time factor did not matter, and with adequate resuscitation they excised the wounds as completely as the anatomic situation would allow.

### Journal de Radiologie et d'Electrologie, Paris

25 189-216 (1942-1943)

- Failures in Radiation Therapy of Fibroma J. Ducuing—p. 189  
Late Results of Roentgenotherapy of Glossoepiglottic Epitheliomas F. Baclesse—p. 190  
Treatment of Tuberosus Angiomas of Young Children S. Laborde—p. 193  
Radium Therapy of Angiomas L. Mallet and C. Proux—p. 196  
Urethrographic Exploration of Cancers of Prostate Mathey Cornat and H. Duvergey—p. 199  
Submicroscopic Study of Human Bones by Diffraction of X Rays P. Lanmarque and J. Mering—p. 201

**Late Results of Roentgenotherapy of Glossoepiglottic Epitheliomas**—Baclesse differentiates epitheliomas of the oropharynx into two groups: (1) those of the lingual base and (2) those of the valleculae and of the epiglottis which develop in the space between the steepest part of the pharyngeal slope, the glossoepiglottic folds and the free edge of the epiglottis. This differentiation is of importance in statistical evaluation because in the first group the results have been much less favorable than in the second. The author reviews the results obtained in 256 patients with epitheliomas of the oropharynx which were treated at the Curie Foundation between 1920 and 1938 inclusive. The minimum period of observation was four years. The author takes into account the local extension, the lymph node invasion and the anatomic and clinical aspects. Among the 256 patients there were 89 in whom the cancer was still localized. Of these 18 (20 per cent) were cured, whereas of the 167 patients with cancers which had already invaded adjoining regions only 5 (3 per cent) were cured. Classification of cancers according to presence or absence of lymph node invasion revealed that the percentages of cure were 16 in those without and 6 in those with invasion. From the anatomoclinical and radiographic points of view the author differentiates four types of glossoepiglottic epitheliomas: (1) the proliferating types, which extend on the surface do not invade and extend toward the lumen of the oropharynx; (2) the ulceroproliferating type, which is likewise superficial; (3) the interstitial or infiltrating types; and (4) the invasive types which destroy the organ by ulceration. Of the total of 23 cured patients 16 had the proliferating type of cancer and 7 the ulceroproliferating type. None of the patients who had interstitial (infiltrating) or invasive cancers were cured.

### Ophthalmologica, Basel

105 1-64 (Jan.) 1943

- Injury of Trigeminal Nerve by Retro Orbital Grenade Splinter New Case Lieux and R. de Saint Martin—p. 1  
Simple Method for Stereoscopic Visualization of Ocular Fundus Using Ordinary Monocular Ophthalmoscope J. W. Wagenaar—p. 13  
New Family with Doynes Discoid Cataract (Cataracta Centralis Pulverulenta) M. Girardet—p. 24  
\*Cholinesterase Content of Eye R. Bruckner—p. 37

**Eye and Cholinesterase**—Bruckner presents investigations on the presence and importance of cholinesterase in the eye, particularly in the aqueous humor and in the vitreous body. Studies on horses and cows revealed that cholinesterase is a regular constituent of the aqueous humor and it is assumed that this is the case also in man. The esterase found in the aqueous probably is derived not from the blood but from other sources. The esterase values of the vitreous body of cows, calves and hogs were several times as high as those of the aqueous humor in cows it was four times higher than in the serum, in horses the esterase values of the vitreous body were occasionally lower than in the aqueous. In cows the concentration of esterase varied in the different parts of the vitreous; the concentration was greatest in the peripheral zones. The esterase of the vitreous body is probably derived chiefly from the retina.

### Bol del Inst de Clinica Quirurgica, Buenos Aires

20 521-592 (April) 1944 Partial Index

- \*Prothrombin in Preserved Blood R. T. Banfi, R. Bay and C. A. Tanti—p. 521  
Persistence of Ductus Arteriosus R. Dambrosi and E. Gobich—p. 540  
Abscess of Lung A. S. Centino—p. 545  
Use of Vitamin K C. Morel—p. 581

**Prothrombin in Preserved Blood**—Banfi and his collaborators found that the time of coagulation and the amount of prothrombin in preserved blood and preserved plasma do not change during the first three days of conservation. The coagulability diminishes slowly but continuously up to a point of final coagulability of plasma conserved for five months and to which thromboplastin and calcium are added. The amount of prothrombin in the blood and plasma increases during the first three days up to double values in relation to the initial figures. This early increase of prothrombin in the blood and plasma seems to be due to rapid formation of the substance through its sensitization during the process of disintegration of platelets. After the third day prothrombin diminishes down to figures as low as 30 per cent in five months in relation to the initial figures. Transfusion of blood or plasma when it is preserved for a certain time, is of no therapeutic value in controlling hemorrhage due to hypoprothrombinemia.

### Obstet y Ginec Lat -Americanas, Buenos Aires

2 417-512 (June 30) 1944 Partial Index

- \*Pregnancy and Cancer of Cervix C. Monckeborg B—p. 417  
Quadruple Pregnancy J. Di Bitonto and S. Wilber—p. 465  
**Pregnancy and Cancer of Cervix**—Monckeborg B encountered 20 women with cervical cancer among 36,500 pregnant women who were observed in a maternity ward in the course of ten years. All the patients but 2 were under the age of 40. All but 1 were multiparas. They complained of hemorrhage small or moderate, continuous or intermittent. Cancer was recognized during the last half of pregnancy in the majority of the cases. It was of the type of cellular epithelioma in 11 cases. The author advises local examination and biopsy as a routine in pregnant women complaining of hemorrhage during pregnancy. Pregnancy aggravates cancer of the neck, which in its turn predisposes the patient to abortion. Roentgen therapy and radium therapy are interdicted as dangerous for the infant. The author advises the following scheme: (1) Immediate hysterectomy followed by transpelvic roentgen therapy for women with operable cancer before the sixth month of pregnancy; (2) postponement of operation up to full term, abdominal cesarean section at full term and total hysterectomy followed by roentgen therapy and radium therapy in women with operable cancer beyond the sixth month of pregnancy; and (3) abdominal cesarean section at full term and subtotal hysterectomy followed by roentgen therapy and radium therapy in women with inoperable cancer before or after the sixth month of pregnancy.



## Book Notices

**Global Epidemiology A Geography of Disease and Sanitation** By James Stevens Simmons BS MD PhD Brigadier General US Army Tom F Whayne AB MD Lieutenant Colonel MC US Army West Anderson AB MD Dr PH Lieutenant Colonel MC USA Harold MacLachlan Horack BS MD Major MC USA and Collaborators Volume One Part One India and the Far East Part Two The Pacific Area Cloth Price \$7 Pp 504 with Illustrations Philadelphia London Montreal J B Lippincott Company 1944

This is the first volume of what is no doubt a unique work in medical publication. As a part of the work of the Division of Medical Intelligence in the Bureau of Preventive Medicine in the Office of the Surgeon General information regarding medical conditions in every area throughout the world has been assembled. The information is here coordinated and presented in such form as to be exceedingly useful to every one concerned with health in far parts of the world. Thus for Burma there is a discussion of its geography and climate of the organization of its public health services, its medical facilities, the diseases that are prevalent and the nature of their spread, with a good summary and a bibliography. The major problem of public health in Burma was malaria. Other important diseases are listed. Each of the nations investigated is given similar treatment. The book is handsomely printed in two columns, with large type and many exceedingly useful maps. This is a work of reference which should be available in every medical library and which will be found immediately useful by every physician concerned with disease in any of the nations covered. This is truly an "excursion" into the unexplored field of geomedicine. Now that airplanes have made every section of the world easily accessible, this book serves an immediate need.

**Cataract and Anomalies of the Lens Growth Structure Composition Metabolism Disorders and Treatment of the Crystalline Lens** By John C Bellows MD PhD Assistant Professor of Ophthalmology Northwestern University Medical School Chicago Cloth Price \$12 Pp 624 with 212 Illustrations St Louis CV Mosby Company 1944

This book is a combination of laboratory and clinical investigations necessary to establish a basis for a more complete clinical understanding of the normal and pathologic crystalline lens. The literature has been thoroughly reviewed, and many theories are presented and discussed without an attempt being made to evaluate all of them. The author has attempted to give the essential scientific facts concerning the embryology, anatomy, histopathology and biochemistry of the lens before going on to the more interesting practical or theoretical conclusions which must be based on this material.

The early chapters are devoted to the comparative anatomy and histology of the crystalline lens. This is followed by a rather thorough discussion of the composition of the lens, which includes all the literature on the chemistry brought up to date. Many analytic tables are included. Thirty-two pages are devoted to the metabolism of the lens and capsular permeability.

The first five chapters with their numerous tables and condensations of many scientific laboratory reports will no doubt be boring reading for the average clinician, but the effort will well repay any ophthalmologist with an interest in getting below the surface of clinical case reports, as well as any anatomist, chemist or biologist who may have special interest in this important structure.

The last four chapters are of considerable interest to the clinical ophthalmologist. They include a comprehensive discussion on developmental defects of the crystalline lens and contain many case reports. Much space is devoted to cataracts due to radiant energy, electricity, deficiency of some vital constituents and toxins. The discussion on toxic cataracts is important as such cataracts are being seen more frequently. The chapter on cataracta complicata contains reports of many unusual causes. Stress is placed on endocrine dysfunction as a cause of cataract. The discussion of senile cataract is complete and includes the operative treatment and complications of cataract surgery. This chapter should be of vital interest to the average clinical ophthalmologist.

Physiologic-chemical factors have been dealt with at length although an attempt has been made to be both systematic and practical in proceeding from the development and growth of the lens to a consideration of its structure. After becoming

acquainted with the lenticular composition and metabolism the reader should be well equipped to appreciate more fully the clinical problems presented in the last five chapters. The arrangement is such that a reader not interested in comparative anatomy for instance may pass on to parts of the subject which do interest him. The numerous illustrations are well chosen and contribute materially to the value of the book.

The author has produced an exceedingly interesting and important work one which will take its place as the authority on the crystalline lens.

**Industrial Medicine** Edited by Sir Humphry Jolliffe Bt CVO MD KCB and Alan A Moncrieff MD FRCS With an Introduction by Air Vice Marshall Sir David Munro KCB MB ChB Cloth Price 16s Pp 202 with 5 Illustrations London The Practitioner by Eyre and Spottiswoode Ltd 1944

This is a handbook as the title indicates with various authors contributing chapters on industrial medicine and the general practitioner industrial poisons industrial dermatoses chest disease in industry, miners nystagmus toxic anemia the treatment of the injured workman, backstrain neuroses in industry, malnourishing nutritional problems related to industrial workers, adolescents in industry, fatigue and boredom lighting problems ventilation and heating welfare services the works ambulance room and factory law in relation to health and welfare.

It is stated in the preface that this book resulted from the interest shown in a small symposium on industrial medicine published in the periodical *The Practitioner*. The subject of each of the chapters apparently was selected on the basis of interest and need for information on these industrial medical problems in the British Isles miners nystagmus being prevalent there and nonexistent in the United States. The inclusion of eighteen major subjects in 183 pages makes this a compendium and a convenient reference for those becoming interested in industrial medicine. Because of its brevity superfluous details are omitted to make it a highly practical book as each author has handled his assignment ably. The introductory chapter on industrial medicine and the general practitioner by Air Vice Marshall Sir David Munro outlines the relationship that should exist between the practitioner and industry and workers particularly as related to the general improvement of health in industrial areas.

The book should have wide usage by general practitioners because of its practicality.

**A Six Year Journey** Published by Cleveland Child Health Association Leighton E Carter Director of the Cleveland Foundation Paper Pp 14 with Illustrations Cleveland Ohio 1943

This is a report issued by the Cleveland Child Health Association of a project begun in 1937 dealing with preschool children. The study began when it was realized that children entering Cleveland's public school kindergarten showed an alarming number of physical defects which could have been avoided with proper preventive work during the preschool years. There were approximately fifty organized school centers where the children received from almost no care to excellent care. The latter was given only at those centers where the parent paid a fee. There was no uniformity among these various centers. The association then defined through its standards committee the meaning of a "good nursing school." Through the efforts of this association the standards in all centers began to rise. There is now a great need for such centers, and this booklet will be of help to those groups that are planning to form and maintain such centers or schools.

**The Experiments of Nature and Other Essays** By Irvine McQuarrie PhD MD Department of Pediatrics The Medical School University of Minnesota Minneapolis Delivered at the University of Kansas School of Medicine Lawrence Kansas Porter Lectures Series VII Cloth Price \$1 Pp 115 with 16 Illustrations Lawrence Kansas University Extension Division University of Kansas 1944

Three scholarly lectures delivered at the University of Kansas School of Medicine in 1942 are included in this book. The first lecture is entitled "The Experiments of Nature and the Advance of Medical Knowledge." The second is on "Diseases of the Adrenal Glands in Children and the third on "Impressions of Medical Conditions in Besieged China." They are all thoughtful and well illustrated. The first in particular is a well ordered plea for the more careful pursuit of scientific observation in clinical investigations.

## Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

### MAGNESIUM AND CALCIUM PHOSPHATE CALCULI

To the Editor—What specific foods in the diet tend to the formation of renal magnesium and calcium phosphate calculi? What part does vitamin A have in the prevention of these formations? If important what dosage is recommended? Major M C A U S

ANSWER—The oxidation of foods within the body results in the formation of an ash. Foods in which calcium, potassium, sodium and magnesium predominate over phosphate, sulfate, chloride and the uncombusted organic acid radicals are called alkaline ash foods. Since phosphatic stones form in urine, which usually has an alkaline reaction, foods which cause this reaction should be restricted. As a general rule, vegetables and fruits are alkaline in their final reaction within the body. As a prophylactic against formation or development of recurrent magnesium and calcium phosphate calculi Higgins has recommended the high vitamin A acid-ash diet. Restriction of foods with high calcium and magnesium concentration has also been suggested. For more specific information see Renal Lithiasis by C. C. Higgins (Springfield, Ill. Charles C. Thomas, 1943) and Dietetics for the Clinician by M. A. Bridges (Philadelphia, Lea & Febiger, 1941). Clinical and experimental evidence has demonstrated the relation between vitamin A deficiency and formation of renal calculi. A vitamin A deficient diet in the white rat for ten weeks usually produces keratinization of urinary tract epithelium; for example, of the kidney pelvis. Desquamation of the epithelium and keratinization may cause sufficient irritation to produce the initial lesion, while elaboration of fibrin forms a framework for deposition of crystalline sediment and subsequent development of a calculus. The daily requirement of vitamin A is estimated to be between 6,000 and 8,000 international units for the growing child and 6,000 international units for the adult. Biophotometer tests may be utilized in management of patients with renal lithiasis to determine the response to dosage administered.

### MENSTRUATION AND CLIMATE

To the Editor—I have a 17 year old patient who menstruates every twenty-eight days when the weather is cold and every fourteen to seventeen days as soon as the weather becomes warm. This is the third summer that it has occurred. The menses started at age 13 and have been regular otherwise. The flow is moderate for five days. What if any is the effect of climate on the menses? Morris Weinstein M.D. Irvington N. J.

ANSWER—There are many circumstances which can alter the periodicity of the menstrual flow. Among them are marriage, pregnancy and labor, change of climate, change of occupation, illness and mental or physical shock. The exact effect of climate on the menses has not been agreed on. Thus, while it is generally believed that in countries where the temperature is high most of the time the onset of menstruation occurs earlier than in countries of moderate or low temperature this belief has not been definitely proved by statistics. Usually change of climate and change of temperature produce an amenorrhea rather than an alteration in the frequency of the menses. The case cited is unusual but the occurrence does not mean that there is anything wrong with the patient. Treatment is not necessary.

### SUTURES FOR HERNIOTOMY

To the Editor—A few patients who have had recent herniotomies have told me that their periods of stay in the hospital were only one week. Apparently there have been no recurrences of the hernia. In order to discharge hernia cases as soon as there is any special suture or unusual type of stitch required? Ranson B. Baker M.D. Rawlins Wyo.

ANSWER—Generally speaking, there are three types of sutures utilized in the repair of hernia: (1) the absorbable type represented by catgut, (2) the unabsorbable type represented by fine silk or cotton and (3) the fascial type. Most surgeons still adhere to the absorbable type, some preferring chromatinized catgut because of its slow absorption. The silk suture is probably more reliable but requires the mastery on the part of the surgeon of an especially fine technique as advocated by Halsted. Of late there has been a renewed interest on the part of some surgeons in the use of autoplasmic fascial repair. McArthur, Gallie and

LeMesurier advocated long ago the use of both living and dead fascial strips for the repair of inguinal hernia. They have demonstrated in experiments and from microscopic studies that autoplasmic suture heals and lives in situ, it is not absorbed and does not slough. McArthur's technique consisted in splitting a strip from the aponeurosis of the external oblique without detaching it, threading it onto a needle and accomplishing the Andrews imbrication operation with it. If one was to rely for his results on the suture rather than on the method, the autoplasmic fascial suture of McArthur is undoubtedly the most reliable. However the technique is rather clumsy and difficult and time consuming.

Regardless of the type of suture used, the tendency is not to permit patients early rising after an inguinal herniotomy. The success of the operation depends on the proper healing of the coapted layers.

### RESTAURANT SANITATION AND CHIPPED CHINA

To the Editor—The Columbia County Department of Health is interested in promoting publicity for good restaurant sanitation. The elimination of the many and increasing number of cracked and chipped cups in our restaurants was one of our objectives. We hesitate to do anything further about this after seeing the August issue of Hygiene. On page 629 is a full page advertisement by the War Advertising Council with the title "The Chipped Teacup of the Patriotic Mrs. Jones." Is it your opinion that the danger of transmission of disease through cracked and chipped cups is of greater or lesser significance than the conservation of materials during wartime? We are trying in our community to maintain good sanitary conditions in spite of lack of materials and regret the appearance of this particular advertisement in the more popular magazines. While this particular advertisement relates to home use of cracked teacups we believe it could easily be misinterpreted.

Sue Hurst Thompson M.D. Hudson N. Y.

ANSWER—From the esthetic point of view the use of chipped or cracked table ware is to be discouraged. In the presanitary days when but limited attention was given to cleansing and disinfection the crevices of chipped dishes were packed with particles of food and living bacteria. While it is possible to sterilize chipped or cracked dishes few eating places carry out adequate disinfection so as to eliminate the menace of the chipped utensil. Even though replacements are now difficult most health authorities for the protection of the people, prohibit the use of chipped table ware.

### DISCOLORATION OF TEETH FROM ERYTHROBLASTOSIS FETALIS

To the Editor—About two years ago I had occasion to see 3 newborn infants not related with erythroblastosis fetalis. These infants were given repeated transfusions of Rh negative blood until the hemoglobin and red cell count ceased to drop. They were dismissed from the hospital with an iron compound added to the daily formula. In all 3 infants the iron was discontinued several months before the eruption of the first teeth. When the deciduous teeth erupted they were all deeply discolored with a grayish green pigment which seemed incorporated in the tooth structure instead of being on the tooth surface. The teeth were otherwise well normal and the babies have since developed normally physically. Can you give me any explanation for this discoloration? Is it related to the iron in the formula or to the erythroblastosis? M.D. California

ANSWER—The discoloration of the deciduous teeth in these cases probably resulted from erythroblastosis fetalis and was caused by excessive amounts of blood pigments that were deposited during the prenatal formation of the enamel and dentin of the deciduous teeth. The deposition of endogenous pigments in the enamel and dentin during their formation and calcification has been reported in uroporphyrria and in icterus neonatorum. It is possible but doubtful that the exogenous iron given during the postnatal period contributed to the pigmentation. In iron therapy the deposits of stain are present on the surface of the tooth rather than within the enamel and dentin.

### ANESTHESIA FOR CESAREAN SECTION

To the Editor—In Queries and Minor Notes in the July 29 issue of The Journal there is a question entitled "Anesthesia for Cesarean Section in Women with Myocarditis and Renal Disorders." Long experience has taught me that a great deal more anesthesia is given during the ordinary cesarean section than is at all necessary. In my service at the Graduate Hospital of the University of Pennsylvania the rule is to prepare the woman's abdomen and catheterize before any anesthesia is given. The anesthetic is started when everything is ready to make the incision. As soon as the patient is unconscious the incision can be made and the baby extracted under a wonderfully small amount of anesthesia. If this practice is followed instead of anesthetizing the woman thoroughly before the abdominal preoperative preparation is made it will be found that the child does not have to be resuscitated—in fact it cries just as readily as though the operation had been done under local or spinal anesthesia.

William R. Nicholson M.D. Philadelphia

# The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL 126, No 11

CHICAGO, ILLINOIS  
COPYRIGHT 1944 BY AMERICAN MEDICAL ASSOCIATION

NOVEMBER 11 1944

## THE MAKING OF AN OPHTHALMOLOGIST

CHAIRMAN'S ADDRESS

CONRAD BERENS, M.D.

NEW YORK

In guiding the medical student who desires to practice ophthalmology or in advising the young ophthalmologist, stress should be laid on education, ethics, research and the importance of attending medical meetings.

Older ophthalmologists can be of great assistance to young men by merely setting a good example in clinical practice by offering their assistance in training and by imparting the results of their experience. The question of the adequate training of the ophthalmologist seems to be especially important at this time because of the disorganization of educational opportunities and depletion of teaching staffs due to the war. Therefore this subject has been chosen for presentation. Certainly there has been excellent precedent in the Transactions of the Section<sup>1</sup> for this type of discussion.

### EDUCATION

The medical curriculum of the ophthalmologist should include comprehensive courses in higher mathematics, biology, chemistry, physics, modern languages and, if possible, elementary courses in embryology, comparative anatomy, physiology, bacteriology and physiologic chemistry. In medical school the student should be permitted to elect certain subjects which will aid him in ophthalmology. For example, he should be encouraged to devote more attention to clinical ophthalmology than to clinical obstetrics. He should have a keen interest in the fields closely related to ophthalmology and have the privilege of continuation studies in fundamental work, particularly anatomy, embryology, pathology and immunology in relation to ophthalmology. This statement should not be construed as suggesting that the ophthalmologist's training should not be as broad as possible in general medicine but merely that some time should be available for elective studies.

After graduating from medical school there is a question of a general hospital internship. Some ophthalmologists consider this period of training a waste of time. However, the stimulation and broadening influence derived from close association with and observation of the work of the great leaders in medicine and surgery makes a general internship the most impor-

tant part of a man's medical training. A hospital where the young physician can obtain stimulation from outstanding clinicians and teachers should be his first choice. Although the American Board of Ophthalmology and most of the states require only one year of training in a general hospital, I believe that from eighteen months to two years is not too much time for the ophthalmologist to devote to this part of his training and that the major part should be devoted to internal medicine. It is regrettable that our medical students today are to have only nine months of general hospital experience and that the Army has been unable to arrange for some degree of selection of the medical school by the applicant.

The next step is usually a residency of two or three years in an eye hospital or eye department of a well equipped general hospital. During this period of training the ophthalmologist acquires by apprenticeship proficiency in the techniques of operations and methods of treatment and learns to use his hands under the guidance of experienced surgeons. The clinical judgment acquired by experience aided by apprenticeship under a good clinician may be even more important than surgical technique. One of the best and most valuable parts of an eye resident's hospital training is that received from his senior resident, the young ophthalmologist should make rounds with him and observe and write his notes. In doing this he will profit greatly as will hospital records. Unfortunately in peacetime there are not enough residencies in the country for all young ophthalmologists to receive this type of training. Therefore other means of training must be provided, for example, working in a clinic or in an office with an ophthalmologist who is a good clinician and who keeps adequate records.

If possible the student should have a course in the basic sciences related to ophthalmology before he enters active hospital work. He should work toward an advanced degree and should be stimulated to undertake a specific research problem and prepare a thesis, preferably while he is having basic science training. My observation leads me to believe that men so trained make better residents and benefit more from their special hospital training. If it is not feasible to obtain a course in the basic sciences, one should attend lectures and demonstrations by members of the hospital staff, attend meetings of ophthalmologic sections and enroll in the Home Study Course sponsored by the American Academy of Ophthalmology and Otolaryngology under the direction of Dr. Harry S. Gradle.

The education of war veterans presents a special problem. Many of our young men have been called into the military services in the middle of their hospital or basic science training. Even before the President's message to Congress concerning the postwar education of veterans for from one to three years ophthalmolo-

<sup>1</sup> Read before the Section on Ophthalmology at the Ninety-Fourth Annual Session of the American Medical Association, Chicago, June 14, 1944.  
<sup>2</sup> Knapp, V. Importance to the Practicing Ophthalmologist of Contributing to Literature. *Tr. Sect. Ophth.* A. M. A. 1926, p. 17.  
<sup>3</sup> Todd, J. C. Research in Ophthalmology and the Training of Ophthalmologists. *ibid.* 1914, p. 1.  
<sup>4</sup> Holloway, J. B. The Correlation of University Research. *ibid.* 1930, p. 17.  
Greenwood, Snell, Hecker.

gists guided by suggestions made by Dr Gradle, have been planning for the teaching of ophthalmology to physicians released from our armed services. The instruction will be given with little, if any, cost to our confreres who have sacrificed so much for those of us who remained at home. The undertaking of the entire expense by the government may or may not be desirable and should be carefully studied.

#### ETHICS

While ethics may be taught by lectures, the conduct of older ophthalmologists provides the greater stimulus. Several of our chairmen have ably presented this problem in their chairman's addresses.<sup>2</sup> The county medical societies are influential in maintaining and raising ethical standards, especially when the higher type of physicians take an active part in the work of the society. The boards of censors of these societies act on complaints from other medical practitioners and the public concerning unethical actions of member physicians.

Young ophthalmologists as well as any physician should appreciate the importance of never detracting from the standing or the work of his confreres. A man's own position is never helped when he attempts to make himself important by belittling his colleagues. Another grave mistake is to speak disparagingly of large fees obtained by other men. If the fees are large but commensurate with ability to pay and the service rendered is of high quality and honest, colleagues should be delighted. To my knowledge no honest physician ever became rich through the practice of medicine, and physicians in private practice give more of their time to charity in one way or another than they can physically or financially afford.

#### ETHICS AND OPTOMETRY

One of the most important problems in ethics from the standpoint of public service and public health is that of optometry. Those who believe that optometrists should be taught certain subjects and that there should be closer cooperation between ophthalmology and optometry are apparently in conflict not only with the Oath of Hippocrates, "I will impart a knowledge of the art to my own sons and those of my teachers, and to disciples bound by a stipulation and oath according to the law of medicine, but to none other," but also with certain resolutions passed by this section in 1936, which were reaffirmed in 1942. I believe this part of the Hippocratic Oath should be reconsidered by ophthalmologists in the light of conditions existing in 1944 and that the entire matter should be returned to the individual state and county societies.

Some members of the section have said that insufficient consideration has been given to optometry and that the only place where these problems have been discussed has been in the brief executive meetings of the section. These statements have been made without knowledge of the facts, for the Section on Ophthalmology appointed a committee on optometry as far back as 1913, designating Dr William C Posey as chairman. This question was thoroughly and ably discussed by Hiram Woods in 1913 and by Walter B Lancaster in 1928 in their chairman's addresses. Having served as secretary of the American Committee on Optics and Visual Physiology and as a director of the National Society for the Prevention of Blindness, I have gradu-

ally accepted the conclusion that lack of cooperation between ophthalmologists and all others concerned with vision and eye health is the most serious unsolved problem in the prevention of blindness today.

Those who have been closely associated in the study of this problem believe, almost to a man, that optometrists should be taught by those best qualified to teach subjects which would aid in preventing blindness. A recent vote taken by the American Ophthalmological Society and by this section indicates a similar opinion among a large and growing group of ophthalmologists. I believe that a careful unbiased study of the reasons why so many men are now in favor of cooperation, by those who hold opposite views, would lead to a change of opinion in many cases.

The armed forces have used optometrists under the close supervision of ophthalmologists, and in the great majority of instances of which I have personal knowledge the arrangements have been mutually satisfactory to the ophthalmologists and to the optometrists. Because of this, ophthalmologists have asked whether a similar arrangement would not be satisfactory in private practice, as this association has also proved useful in some of the nation's municipal and private hospitals. This is one problem a special committee of the American Medical Association might well study to the mutual benefit of all concerned.

In spite of the existence of the 1942 optometry resolution, we should cooperate in preventing the introduction of bills in our state legislative bodies and the publication of articles in scientific or lay journals which fan the flame of a feud. The feud between the two groups concerned with eye care not only lessens the faith of the public in all types of eye service but also shakes public confidence in medical care in general, because few lay men can define the terms optometrist, ophthalmologist and optician.

I urge each young ophthalmologist and every member of this section to study this problem from the aspect of public health, service to the public and the prevention of blindness, without prejudice engendered by personalities or by financial considerations.

#### FREE SPLITTING AND PARTICIPATION IN THE SALE OF GLASSES

Several of my predecessors who have discussed similar subjects<sup>3</sup> have had nothing to say on fee splitting for operations, drugs, x-ray examinations and hospitalization. However, I believe that this practice is so little indulged in by ophthalmologists in spite of one or two recent isolated examples that it may be dismissed. All ophthalmologists should strive to eliminate these practices by their example and by aiding American medicine in the fight against this degrading and dangerous evil practice.

Profits from the sale of glasses is another matter which cannot be too heartily condemned if money is received for no service rendered or no financial risk assumed. Undoubtedly in many communities ophthalmologists must dispense their own glasses, and if the lenses were sold without profit these ophthalmologists might be in unfair competition with the opticians and other persons associated with eye care, who could not afford to dispense glasses at cost. The ophthalmologist who dispenses his own glasses usually would prefer to find a reliable optician or encourage one to settle in his

<sup>2</sup> Lancaster W B. The Optometry Problem. Tr Sect Ophth A M A 1928 p 97. Snell A. Some Principles of Medical Ethics Applied to the Practice of Ophthalmology. *ibid* 1941 p 17. Heckel E B. The Ethics of Ophthalmology. *ibid* 1929 p 17.

<sup>3</sup> Greenwood A. The Organization and Activities of the Ophthalmic Service in the American Expeditionary Forces. Tr Sect Ophth A M A 1919 p 87. Snell<sup>2</sup> Heckel<sup>2</sup>.

community. Thus he could free himself from conducting a business which, if it continues for any length of time frequently becomes a financial necessity.

It is my conviction that all those associated with eye care who participate to any great extent in the sale of glasses even though they perform a service in dispensing lenses and thus are able to charge low fees for their consultations, are in unfair competition with those who do not participate. Even when ophthalmologists or optometrists dispense glasses without profit, they are still in unfair competition with those who do not dispense their own lenses.

If when beginning practice the young nonparticipating ophthalmologist makes his fees low in order to permit him to compete with ophthalmologists and optometrists who do participate in the sale of glasses, it will later be hard for him to raise his charges. However, to start his practice with adequate fees may be so difficult as not to be practical. There is no question that it is preferable from the standpoint of the public and medicine to give honest real medical service and charge for it than only to seem to give low cost service. Some of the plans for prepayment of medical service stress low fees for eye examination but neglect to mention profit from glasses. This tendency to cheapen the apparent cost of medical service by hidden profits should be carefully watched, studied, discouraged and prevented.

There is no doubt that the great majority of medical men, especially those who are willing to submit to regulation by organized American medicine are ethical and wish to have nothing to do with merchandising. There are many sides to this complicated problem and many points of view which must be respected until we know every angle of the situation which has caused ophthalmologists to take a certain stand.

If all ophthalmologists and optometrists could and would free themselves from the personal dispensing of glasses ethical standards would be raised.

This is too complex and important a subject to be discussed fully in the time at my disposal and requires study by a special committee with adequate funds to make a comprehensive investigation.

#### RESEARCH AND STUDY

Fortunately for the advancement of science, there are many young ophthalmologists who are interested in the broader concept of medicine. They should be associated with a clinic where they may be broadened by contact with other physicians. They should be interested in teaching and research and should stimulate others in investigative work. Some of the best and most important research may be done in the clinic.<sup>4</sup>

Office records should be complete so that they may be valuable for research. The young ophthalmologist should be constantly thinking of how he can improve his technique of examination and his instruments. He should attempt to make treatment less empirical. This is a form of research any one can do. Qualified men or those who can work under the supervision of competent ophthalmologists should endeavor to contribute to the knowledge of the many unsolved problems in ophthalmology, for example the etiology of chronic uveitis, cataract and glaucoma. Several foundations may be approached if the problem to be studied is well presented and seems to offer the possibility of advancing science. The John and Mary R Markle Foundation,

Snyder Ophthalmic Foundation, the Ophthalmological Foundation, the Josiah Macy Jr Foundation and several others have contributed funds for research in ophthalmology.

Ophthalmologists should contribute to the literature and keep well informed concerning the writings and the techniques of other surgeons and read current medical journals not only the ophthalmic publications but also those in fields related to ophthalmology e.g. embryology, physiology, bacteriology, immunology, pathology and, of course, psychiatry, medicine, general surgery and neurology.

#### ATTENDANCE AT MEDICAL MEETINGS AND PARTICIPATION IN LOCAL OPHTHALMIC ACTIVITIES

The young ophthalmologist should attend local eye meetings and contribute to them. In addition to attending local meetings of ophthalmologists he should become a member of the Association for Research in Ophthalmology. This association has been developed with the younger men in the profession in mind. The dues have been kept low, well within the financial range of the younger man who may not be able to afford the membership fee of the more expensive special medical societies. The association affords an opportunity not only to attend medical meetings but also to present the results of individual research. Certainly the younger men should have the opportunity of this form of stimulation and contact, and the holding of these meetings the day before the meeting of the Section on Ophthalmology of the American Medical Association stimulates interest in the section papers and exhibits. Derby and Feingold<sup>5</sup> are former chairmen who in their presidential addresses stressed the value of attending medical meetings.

Every young ophthalmologist should join his county medical society and participate actively in the work especially in these trying days for the world and medicine and the days to come, which can hardly be less difficult.

Every ophthalmologist should be interested in the prevention of blindness and should take an active part in the work of local societies as well as in the activities of the National Society for the Prevention of Blindness. They should interest themselves in the ophthalmologic public relations committees of the state and county medical societies, if they have been organized or help to organize them, so that they can improve the standards of ophthalmology.

The mere existence of ethical standards cannot raise the standards of the practice of ophthalmology. The problem is more fundamental, and it is my belief that more attention should be given to selecting men for medical and ophthalmologic training because of their excellent character in addition to scientific or scholastic proficiency.

#### CONCLUSIONS

Because of changed conditions resulting from the war and awakened social consciousness, ophthalmologists have an important part to play in furnishing better medical service to low income groups. The needs and hopes of the free people in the world must and will be met. We may look to medicine to continue to provide unselfish leadership, scientific study and intelligent planning.

<sup>4</sup> Berens, C. Medical Research in Connection with Ophthalmologic A. M. A. 1924 p. 17  
<sup>5</sup> Feingold, M. The Habit of Attending Medical Meetings Tr. Sect. Ophth. A. M. A. 1925 p. 17

<sup>4</sup> Berens, C. Medical Research in Connection with Ophthalmologic Illnesses and Clinics. Am. J. Ophth. 7: 55, 1924.



The future of ophthalmology lies in the hands of the younger men. It is the privilege and great responsibility of the senior ophthalmologists to train and guide their younger confreres, who should be stimulated and encouraged to assume leadership in formulating plans for medical service, research and the teaching of ophthalmology in the future. I am confident that leaders will be developed who will carry the fine tradition of American medicine and ophthalmology to even greater heights.

35 East Seventieth Street, New York 21

## CLINICAL USE OF PRODUCTS OF HUMAN PLASMA FRACTIONATION

### I ALBUMIN IN SHOCK AND HYPOPROTEINEMIA II $\gamma$ -GLOBULIN IN MEASLES

CHARLES A. JANEWAY, M.D.  
BOSTON

#### PART I ALBUMIN IN SHOCK AND HYPOPROTEINEMIA<sup>1</sup>

##### A PLASMA FRACTIONATION

As our understanding of the mechanisms of disease has advanced, the compound empirical remedies of an earlier era in medicine have been steadily replaced by specific drugs. Human blood is undergoing similar evolution as a therapeutic agent. Blood is a complex mixture of cellular elements and protein components in a menstruum which closely corresponds in composition to the interstitial fluid of the body. It is a specific remedy for one condition—hemorrhage—but has been used in the past as a "shotgun" remedy for general debility, anemia, hypoproteinemia, infection and hemorrhagic tendency. In many of these conditions only one particular component of blood is needed.

The aim of the program of plasma fractionation is to supply the various protein components of plasma in concentrated and safe form for clinical use. This program had its origins in the needs of the armed forces for a compact, stable blood substitute for emergency use in situations where the saving of space and time was of prime importance. This led to the development of concentrated human serum albumin by Cohn, Oncley, Strong, Hughes and Armstrong<sup>2</sup> from blood collected by the American Red Cross. In the preparation of human albumin, other protein fractions were obtained and studies have been directed constantly toward improvements in the products derived from them and to their wider clinical application.

From the Department of Pediatrics, Harvard Medical School and School of Public Health and from the Children's and Infants' Hospitals, Boston.

Owing to lack of space this article has been abbreviated for publication in THE JOURNAL. The complete article appears in the author's reprints.

Read before the Section on Pathology and Physiology at the Ninety-Fourth Annual Session of the American Medical Association, Chicago, June 14, 1944.

This work has been carried out under contract recommended by the Committee on Medical Research between the Office of Scientific Research and Development and Harvard University.

This paper is No. 30 in the series, *Studies on the Plasma Proteins from the Harvard Medical School Boston on products developed in the Department of Physical Chemistry from blood collected by the American Red Cross*.

1. This paper is a condensed summary of work which has been done by a very large group of investigators both in the laboratory and in the clinic. For detailed reports of the various studies on the products of plasma fractionation the reader is referred to a series of papers on "Chemical, Clinical and Immunological Studies of the Products of Human Plasma Fractionation" (J. Clin. Investigation 23, July 1944).

2. Cohn E. J., Oncley J. L., Strong L. E., Hughes W. L. Jr. and Armstrong S. H., Jr. Chemical, Clinical and Immunological Studies on the Products of Human Plasma Fractionation. I. The Characterization of the Protein Fractions of Human Plasma. J. Clin. Investigation 23: 417-433 (July) 1944.

Table 1 presents schematically the various derivatives of whole blood and their clinical indications. The use of resuspended red cells, which should be an integral part of any program for the efficient utilization of human blood has been studied both here and abroad by a number of investigators.<sup>3</sup> It should be emphasized that the clinical uses for plasma fractionation products listed in table 1 are only those which have been proved. Much remains to be done, but it is clear that the process of separating human blood into its functional components has already provided the clinician with useful tools for the treatment and study of disease.

##### B CONCENTRATED HUMAN SERUM ALBUMIN<sup>4</sup>

The albumin molecule differs from the molecules of the globulins in size, charge and shape. Its smaller size (molecular weight 70,000) and greater net charge account for its high colloid osmotic pressure, while its more symmetrical shape accounts for its relatively low viscosity in solution.<sup>5</sup> The stability of albumin, particularly under optimal conditions,<sup>6</sup> has been an important factor in its usefulness for military purposes, since it can be shipped and stored without refrigeration. Because of its high solubility, it is possible to prepare concentrated solutions in water, glucose, saline solution or any other desired aqueous medium.

Although the use of albumin dissolved in water, glucose or other diluents has many interesting possibilities, most of our knowledge has been gained with the albumin solution dispensed in the standard Army and Navy package—25 per cent solution (25 Gm in 100 cc) in 1.7 per cent sodium chloride with merthiolate 1:10,000 as preservative.<sup>7</sup>

The immediate effects of an injection of concentrated albumin are (1) increase in serum albumin concentration and consequent (2) increase in colloid osmotic pressure of the plasma. The latter leads to (3) rapid transfer of fluid from the extravascular to the vascular compartment with (4) increase in plasma volume, (5) fall in hemoglobin and hematocrit and subsequent return of (6) serum albumin concentration and (7) colloid osmotic pressure toward normal. If the blood volume is depleted before albumin injection, as in shock, the fall in hemoglobin and hematocrit and increase in plasma volume will be sustained. If the blood volume is normal before albumin, then the plasma volume increase will be in excess of normal and the hemodilution will

3. Taylor E. S., Thalhimer W. and Cooksey W. B. The Organization of a Red Blood Cell Transfusion Service. J. A. M. A. 124: 958-960 (April 1) 1944. Cooksey W. B. and Horwitz W. H. Use of Salvaged Red Cells. Ibid. 124: 961-964 (April 1) 1944.

4. In this section the author has attempted to summarize existing knowledge concerning the uses of concentrated human serum albumin. Most of this has been gained from work carried on by my colleagues. Lieut. Comdr. L. M. Woodruff and S. T. Gibson (MC) U. S. N. R., Capt. L. R. Newhouse (MC) U. S. N. Lieut. J. T. Heyl (MC) U. S. N. R., Dr. O. T. Bailey and Dr. J. G. Gibson. 2d. An initial evaluation of albumin in the treatment of shock (reported by Woodruff and Gibson<sup>12</sup>) led to the production of albumin for the Army and Navy under Navy contract. Since then the observations on the use of albumin in hypoproteinemia have been a by-product of a program to test commercial lots of albumin for acceptance by the Navy. Consequently these studies have been somewhat fragmentary, since the pressing need of the armed forces for blood substitutes prevented the planning and execution of long range experiments. Detailed studies of the action of albumin in shock have been carried out under contracts with the Office of Scientific Research and Development by Courmand, Noble, Breed, Lauson, Baldwin, Pincot and Richards<sup>13</sup> and by Warren, Stead, Merrill and Brannon<sup>14</sup> whose work will be frequently referred to in the text.

5. Cohn E. J. The Plasma Proteins. Their Properties and Function. Tr. & Stud. Coll. Physicians, Philadelphia 10: 149-162 (Dec.) 1942.

6. Scatchard G., Gibson S. T., Woodruff L. M., Batchelder A. C. and Brown A. Chemical, Clinical and Immunological Studies on the Products of Human Plasma Fractionation. IV. A Study of the Thermal Stability of Human Serum Albumin. J. Clin. Investigation 23: 445-454 (July) 1944. Ballou G. A., Boyer P. D., Luck J. M. and Lum F. G. Chemical, Clinical and Immunological Studies on the Products of Human Plasma Fractionation. V. The Influence of Nonpolar Anions on the Thermal Stability of Serum Albumin. Ibid.

7. Newhouse L. R. and Lozner E. L. The Use of Human Albumin in Military Medicine. III. The Standard Army Navy Package of Serum Albumin Human (Concentrated). U. S. Nav. M. Bull. 40: 796-799 (Oct) 1942.



not be sustained but will diminish over a period of several hours as excess plasma protein leaves the blood stream. This is shown by changes in hemoglobin concentration in chart 1.

The advantages of albumin for use in shock and certain forms of hypoproteinemia are chiefly those of safety and convenience. Because of its stability it can be transported and kept for long periods without refrigeration, while it occupies but little space. It is ready for instant injection without reconstitution, cross matching or other preliminary testing. Its safety has been borne out by experience—and with the type of control used in its production and testing, reactions are almost unknown in clinical use. Its compactness is of great assistance in administering protein to children or to patients with poor veins. Thus, when it becomes available, albumin should be a very valuable addition to the emergency kit carried by the practitioner or kept in the accident room of a busy hospital.

Albumin is indicated in the treatment of conditions in which its high colloid osmotic pressure will be advan-

ments indicate that each gram of albumin should hold the equivalent of 18 cc of fluid in the circulation and a 5.6 per cent albumin solution should be isotonic with a 7 per cent plasma.<sup>12</sup> Thus 25 Gm of albumin is osmotically equivalent to 450 cc of circulating plasma.

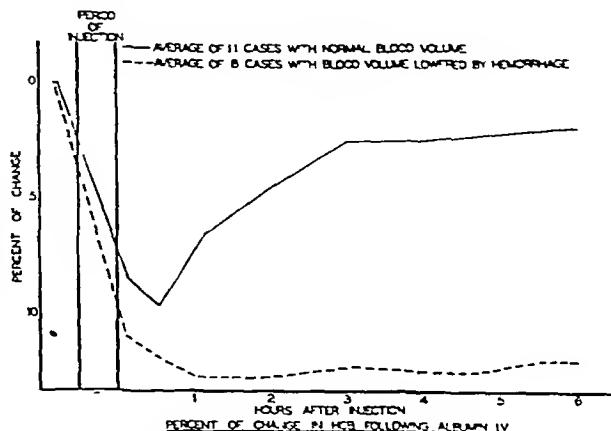


Chart 1—Contrast in the plasma volume change (as indicated by the percentage change in hemoglobin concentration) after the injection of concentrated human serum albumin in a group of patients whose blood volumes had been depleted by acute hemorrhage and in a group with normal blood volume. Note that immediate rapid hemodilution occurs in both groups (most normal received a smaller dose of albumin) but is sustained only in the group who had lost blood.

or 500 cc of citrated plasma. That these theoretical considerations are well substantiated by actual clinical experience is shown in table 2. For this reason the standard Army and Navy package contains 25 Gm, which is equivalent to the standard Army and Navy package of dried human plasma (500 cc) but is only

TABLE 1—Blood and Blood Derivatives

| Derivative                        | Fraction | Protein                    | Clinical Use                                 |
|-----------------------------------|----------|----------------------------|--|
| Whole Blood<br>(centrifuged)      |          |                            | Hemorrhage                                   |
| 1 Resuspended RBC<br>(pooled)     |          |                            | Anemia                                       |
| 2 Pooled Plasma<br>(fractionated) |          |                            | Burns, hemophilia,<br>prothrombin deficiency |
| 1 Fibrin Film                     | I        | Fibrinogen                 | Dural substitute                             |
| 2 Fibrin Foam and<br>Thrombin     | III 2    | $\beta$ -Globulin          | Hemostasis                                   |
| 3 Globulin Antibodies             | II       | $\gamma$ Globulin          | Venous prosthesis                            |
| 4 Isohemagglutinins               | III 1    | $\beta + \gamma$ Globulins | Blood grouping                               |
| 5 Albumin                         | V        | Albumins                   | Shock, hypoproteinemia, edema                |
| 6 Other Fractions                 | IV       | $\alpha + \beta$ Globulins | To be determined                             |

tageous. At present we have data on its usefulness in two such groups of conditions—shock and hypoproteinemia.<sup>8</sup>

In shock, whether due to hemorrhage, trauma or burns, it restores the diminished blood volume toward normal by drawing on the extravascular fluids and this is accompanied by clinical improvement. This has been demonstrated in dogs,<sup>10</sup> in human volunteers who submitted to large venesections,<sup>11</sup> and in clinical cases of shock.<sup>12</sup> The blood volume changes after treatment with concentrated human albumin in a group of 14 patients with shock due to trauma, hemorrhage and burns are shown in chart 2. Osmotic pressure measure-

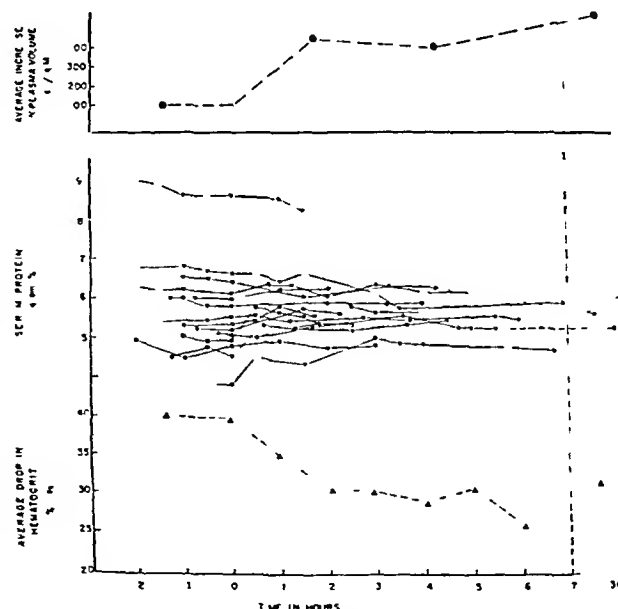


Chart 2—Changes in plasma volume, serum protein concentration and hematocrit after injection of concentrated human serum albumin in 14 cases of shock due to hemorrhage, trauma and burns. (Reprinted from the Journal of Clinical Investigation July 1944, p. 494, with permission of the authors [Courmand and others] and editors.)

about one sixth as heavy or as bulky. In treating cases of shock, 25 Gm doses may be repeated at fifteen to

12. Scatchard G, Batchelder A C and Brown A. Chemical and Immunological Studies on the Products of Human Plasma Fractionation. VI. The Osmotic Pressure of Plasma and of Serum Albumin. J Clin Investigation 23: 48-65 (July) 1944.

8. Janeway C A, Gibson S T, Woodruff L M, Heyl T T, Bailey O T and Newhouse L R. Chemical and Immunological Studies on the Products of Human Plasma Fractionation. VII. Concentrated Human Serum Albumin. J Clin Investigation 23: 463-491 (July) 1944.

10. Dunphy J E and Gibson J G. The Effect of Infusions of Bovine Serum Albumin in Experimental Shock. Surgery 14: 509-518 (Oct) 1943.

11. Stead F A Jr and Ebert R V. Studies on Human Albumin in Mudd S and Thalhimer W. Blood Substitutes and Blood Transfusion. Springfield, Ill: Charles C Thomas Publisher 1942, p. 185. Heyl T T, Gibson J G, and Janeway C A. Studies on the Plasma Proteins. I. The Effect of Concentrated Solutions of Human and Bovine Serum Albumin on Blood Volume After Acute Blood Loss in Man. J Clin Investigation 22: 763-773 (Nov) 1943.

12. Woodruff L M and Gibson S T. The Use of Human Albumin in Military Medicine. II. The Clinical Evaluation of Human Albumin. U S Navy Bull 40: 791-796 (Oct) 1942. Warren J A, Stead F A Jr, Merrill A J and Brannon E S. Chemical and Immunological Studies on the Products of Human Plasma Fractionation. IX. The Treatment of Shock with Concentrated Human Serum Albumin. A Preliminary Report. J Clin Investigation 23: 306-310 (July) 1944. Courmand A, Noble R P, Breed E S, Lau H D, Baldwin E de L, Pinchot G B and Richards D W Jr. Chemical and Immunological Studies on the Products of Human Plasma Fractionation. VIII. Clinical Use of Concentrated Human Serum Albumin in Shock and Comparison with Whole Blood and with Rapid Saline Infusion. J Clin Investigation 23: 491-506 (July) 1944.

thirty minute intervals, but, as with plasma in traumatic cases whole blood or red cells must be given after large doses to correct the anemia which inevitably develops

In patients in shock who are severely dehydrated, albumin will restore the amount of total circulating

TABLE 2—Osmotic Effect of Concentrated Human Serum Albumin

| Authors  | No Cases                         | Hours After Albumin | Average Ce Blood Volume Increase per Gm of Albumin |
|--|----------------------------------|---------------------|--|
| Scatchard Batchelder and Brown <sup>13</sup>   | Calculated from Osmotic Pressure |                     | 15   |
| Hevl Gibson and Janeway <sup>11</sup><br>(Experimental hemorrhage)   | 11                               | 1                   | 17*  |
| Courmand Noble, Breed Lau on Baldwin Pinchot and Richards<br>J. Clin Investigation 23:491<br>(July) 1944<br>(Clinical shock) | 4†<br>1‡                         | 1°<br>136           | 19°<br>23‡   |
| Warren Stead Merrill and Brannon <sup>1</sup><br>(Clinical shock)  | 3                                | 14.1                | 16*  |

\* Per gram of albumin injected (no bleeding after injection)  
† These cases selected from group for comparison since determinations were made within two hours of albumin injection  
‡ Per gram of albumin retained (11° ce per gram of albumin injected)

protein to normal without harm to the patient, but unless the salt and water necessary to make up the deficit of fluid in both plasma and extracellular fluid are administered the therapeutic effect will obviously be inadequate This has been our experience in only a few cases of shock in civilian hospitals, all of which were caused by serious intra-abdominal disease in which vomiting had depleted the body fluids Work on dogs<sup>14</sup> has borne this out<sup>15</sup> The additional fluid does not necessarily have to be given by vein but may be given orally, if tolerated, or by any other available route

TABLE 3—Effectiveness of  $\gamma$  Globulin Compared to Other Preparations Used in the Prophylaxis of Measles (Unselected cases)

|                    | No Cases | No Measles per Cent | Mild Measles per Cent | Average Measles per Cent |
|--------------------|----------|---------------------|-----------------------|--------------------------|
| Convalescent serum | 167      | 76                  | 17                    | 5                        |
| Normal adult serum | 384      | 56                  | 24                    | 20                       |
| Placental extract  | 2740     | 64.3                | 30.4                  | 33                       |
| $\gamma$ Globulin  | 221      | 71.5                | 20.1                  | 3.4                      |

TABLE 4—Effectiveness of  $\gamma$  Globulin in Measles Tests (Selected cases Intimate exposure 12 years of age and under Injection before tenth day after initial exposure satisfactory data)

| No Preparations Tested | No Cases | No Measles per Cent | Mild Measles per Cent | Average Measles per Cent |
|------------------------|----------|---------------------|-----------------------|--------------------------|
| 40                     | 1165     | 60.8                | 31.3                  | 9                        |

The absence of the globulin components of plasma has not affected the usefulness of albumin in our experience with 100 shock cases, with 1 exception, a patient with a 50 per cent burn, in whom continued replacement with 300 Gm of albumin in eighteen hours led

to hypoglobulinemia, which was readily corrected with plasma<sup>8</sup> The place of albumin in the treatment of shock is particularly in its early phases, when the emergency demands prompt restoration of blood volume, and in those cases in which peripheral circulatory failure is related to hypoproteinemia with edema In the treatment of burns, plasma should be used to replace the losses of whole plasma, although albumin will carry patients through the first twelve hours if necessary

The usefulness of albumin in the treatment of hypoproteinemia and edema remains to be explored to a large extent<sup>8</sup> Although we have given albumin in 25 Gm doses daily for long periods of time to a number of hypoproteinemic patients, we have had an opportunity in only a few patients to use large doses in a short time which seem essential for most efficient correction of hypoalbuminemia In a number of cases of burns which had developed a syndrome of hypoproteinemia, edema and failure of the peripheral circulation as a result of treatment with large amounts of saline solu

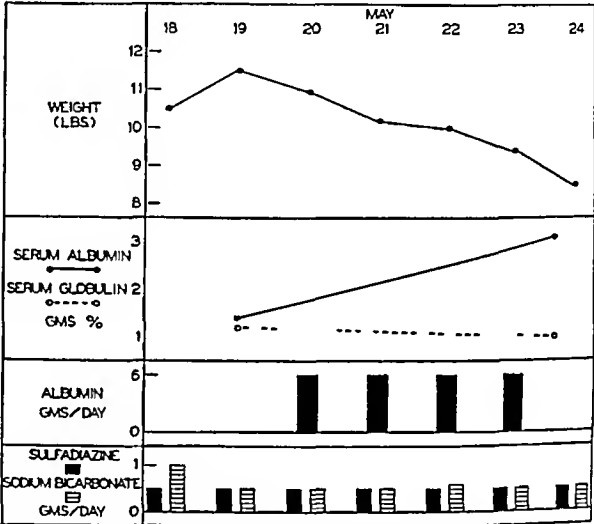


Chart 3—Clinical course of  $\gamma$  baby with severe hypoproteinemia who was given concentrated human serum albumin 6.25 Gm (25 cc) per day for four days On May 19 the baby had severe anasarca and ascites while on May 24 only slight edema remained about the area of infection on the forehead and scalp

tion the infusion of 50 Gm of albumin led to dramatic improvement Chart 3 shows the results of administration of 25 Gm of albumin in four days to a baby with hypoproteinemia associated with weeping eczema of two weeks' duration The rapid decline in weight was accompanied by diuresis and disappearance of the edema and ascites, which were presumably due to hypoalbuminemia and aggravated by the administration of sodium bicarbonate Thorn<sup>16</sup> has emphasized the possible usefulness of albumin in cases of renal insufficiency with hypoproteinemia to raise the colloid osmotic pressure, thus increasing blood volume and glomerular filtration, and to supply protein without increasing the load of nonprotein nitrogen for the kidney to clear

In certain chronic types of hypoproteinemia, albumin administration will increase the concentration of serum albumin if sufficiently large amounts are given When doses of only 25 Gm daily are used, a great deal must be given and only a small portion can be accounted

14 Fine J Frank H A and Seligman A M Traumatic Shock VIII Studies in the Therapy and Hemodynamics of Shock J Clin Investigation 23:731-741 (Sept) 1944  
15 Maboney F B and Howland J W Personal communication to the author

16 Thorn G W Physiologic Considerations in the Treatment of Nephritis New England J Med 229:33-48 (July 8) 1943

for in the peripheral circulation. The remainder is presumably stored or utilized while sparing other proteins, since no increase in nonprotein nitrogen excretion was observed in 3 hypoproteinemic patients whose nitrogen balance was studied during albumin therapy. In several cases of cirrhosis of the liver it has been possible to raise the level of serum albumin and to reduce the serum globulin by doses of 25 Gm daily. In these patients some general improvement was noted but no conclusions could be drawn concerning the control of ascites. When albumin injections were discontinued the serum albumin level fell again within a month or two.

In patients with the nephrotic syndrome the administration of albumin was promptly followed by an increased excretion of protein in the urine.<sup>17</sup> In certain patients no improvement was noted, in 2 children, however, the administration of very large amounts (500 Gm to a 16 month old child in twenty days, 560 Gm to a boy of 8 in a month) coincided with diuresis and decided clinical improvement although in other patients this did not occur. Since the results

TABLE 5—Use of  $\gamma$ -Globulin in Measles Prophylaxis in Adolescents and Adults (Over 12)  
(Combined figures for 1943-44 seasons)

|                             | Total | No Measles | Mild Measles | Average Measles |
|-----------------------------|-------|------------|--------------|-----------------|
| Intimate exposure           | 100   | 71 (67%)   | 29 (28%)     | 5 (5%)          |
| Moderate or casual exposure | 100   | 97 (97%)   | 8 (7%)       | 1 (1%)          |

#### Comment

1. Dose used in most cases.
2. Day of injection varied from 1 to 9 days after exposure chiefly 4 to 6 days.
3. Attack rate in age group 10 to 14 as reported by previous workers varies from 20 per cent to 104 per cent. Most of our patients were over 16.
4. The low attack rate makes evaluation difficult but the fact that mild measles was more common than average measles in each group whereas measles is usually severe in adolescents and adults indicates that the globulin has had an effect.

have been irregular this problem requires much more careful study.

In the treatment of hypoproteinemia with large doses of albumin, the powerful osmotic effect of albumin must be borne in mind. The patient should be watched for signs of venous and pulmonary congestion and observation of the hemoglobin or hematocrit should enable the physician to follow the trend of the plasma volume over short periods. We have been impressed with how well large doses of albumin are tolerated perhaps because of the low viscosity, but we observed 1 seriously ill elderly patient in whom doses of from 75 to 125 Gm per day (650 Gm in six days) appeared to exceed the limits of compensation.

#### SUMMARY TO PART I

1. By the application of large scale methods of fractionation developed in the Department of Physical Chemistry of the Harvard Medical School to pooled human plasma from blood collected by the American Red Cross concentrated human serum albumin  $\gamma$ -globulin antibodies isohemagglutinins fibrin films and fibrin foam with thrombin have been made available for clinical use.

17 Luescher, J. A. Jr. The Effect of a Single Injection of Concentrated Human Serum Albumin on Circulating Protein and Proteinuria in Nephrosis. *J. Clin. Investigation* 23: 36-371 (May) 1944. Janeway, Gabor, Woodruff, Heryl, Bailey and Newthorpe.

2. Concentrated human serum albumin as dispensed in the standard Army and Navy package provides a compact stable solution ready for immediate use in the emergency treatment of shock.

3. The use of albumin in cases of shock due to hemorrhage, trauma and burns results in an increase in blood volume, hemodilution and clinical improvement. The blood volume is increased in these conditions by approximately the amount to be expected from measurements of its osmotic pressure (18 cc per gram of albumin).

TABLE 6—Complications of Measles in Children Under 12 Receiving  $\gamma$ -Globulin  
(100 injections, 22 cases of mild measles, 74 cases of average measles)

| Age     | Dose Cc/Lb | Days from Exposure to Injection | Result          | Complications   |
|---------|------------|---------------------------------|-----------------|---|
| 2 yrs   | 6          | 9                               | Severe measles  | Staphylococcus aureus pneumonia and empyema with recovery |
| 11 mos  | 60         | 6                               | Average measles | Mild encephalitis with recovery                           |
| 2 yrs * | 125        |                                 | Average measles | Otitis media (n.p.e.)                                     |

\* Child had reaction with chills, fever and edema of eyelids 1 day after injection of globulin.

TABLE 7—Reactions from Injection of  $\gamma$ -Globulin in Measles Prophylaxis

| Type of Reaction             | No Cases | No Reactions | Per Cent of Total Reactions |
|------------------------------|----------|--------------|-----------------------------|
| Local soreness or swelling   | 16       | 1            | 5                           |
| Fever                        | 11       | 12           | 35                          |
| Headache                     | 1        | 1            | 3                           |
| Dizziness                    | 1        | 1            | 3                           |
| Hyperactivity                | 1        | 1            | 3                           |
| Chills, fever, orbital edema | 1        | 1            | 3                           |
| Total                        | 41       | 22           | 100                         |

#### Summary

100 injections, 22 reactions in 31 patients.  
17 per cent reaction, one half local and one half general chiefly fever with one anaphylactoid type of reaction.\*

TABLE 8—Results in Young Adults with 5 Cc Dose of  $\gamma$ -Globulin  
(Stokes and Maris)

| Group     | No Cases | No Measles | Mild Measles | Average Measles |
|-----------|----------|------------|--------------|-----------------|
| Immunized | 65       | 34 (52%)   | 10*          | 1 (1.5%)        |
| Controls  | 4†       | 29 (47%)   | 4†           | 15 (42%)        |

\* Very mild measles in 8, questionable measles in 2 (catarrhal symptoms and fever but no rash).

† These cases more severe than in immunized group.

4. In the presence of severe dehydration albumin must be supplemented with fluids in order to obtain the maximum therapeutic effect.

5. Albumin is an extremely safe blood derivative and can be administered very rapidly without reaction even after periods of heating at temperatures of 50 C for as long as one hundred days.

6. Albumin can be used to correct hypoproteinemia if sufficiently large amounts are used.

7 In the nephrotic syndrome the injection of albumin is followed by a definite increase in proteinuria but does not regularly result in a diuresis

PART II  $\gamma$  GLOBULIN IN MEASLES<sup>18</sup>

Normal serum  $\gamma$ -globulin antibodies (human) concentrated (immune serum globulin) have been prepared as a plasma fractionation product from blood collected by the American Red Cross by the methods of Cohn Oncley, Strong, Hughes and Armstrong<sup>2</sup> About 60 per cent of the antibodies are recovered in fraction II and appear to be  $\gamma$ -globulins, which comprise 96 per cent or more of the protein of recent preparations Robinson<sup>19</sup> early suggested that this globulin fraction from pooled normal plasma might be effective in the prevention and modification of measles

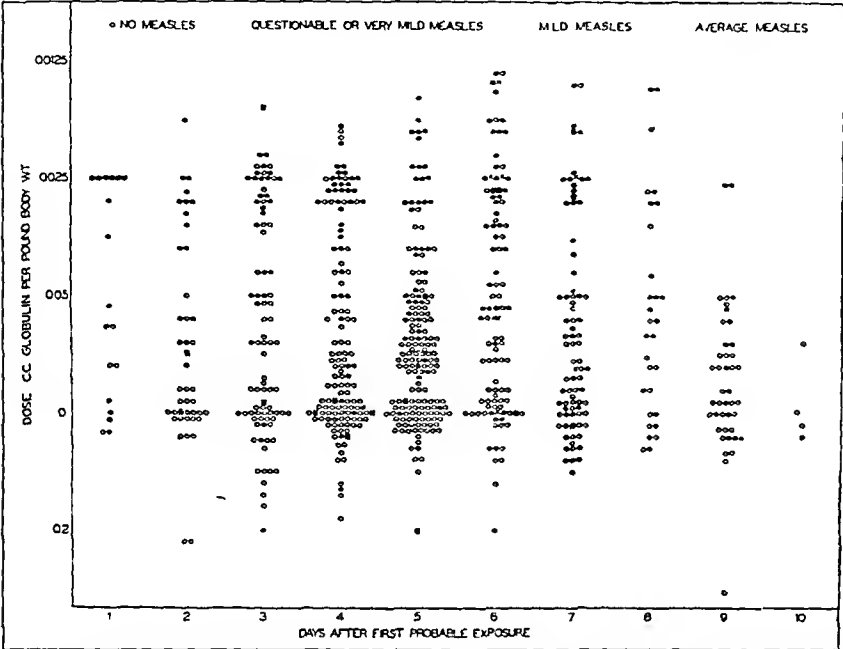


Chart 4—Results in 837 satisfactory prophylactic injections of  $\gamma$  globulin as influenced by the size of the dose in terms of body weight and by the interval between injection and first probable exposure

Enders<sup>20</sup> has reported on the concentrations of the great variety of antibodies which have been detected in  $\gamma$ -globulin preparations (fraction II) In these prepa-

18 The studies reported in this section would not have been possible without the cooperation of a number of agencies and individuals. Much of the work in Boston in 1943 was carried on by Dr Charles W. Ordman. Field tests of globulin preparations against measles in 1944 have been carried out with the assistance of the Commission on Measles and Mumps Board for the Investigation and Control of Influenza and Other Epidemic Diseases in the Army in Philadelphia and Baltimore under the direction of Dr Joseph Stokes Jr, Dr Elizabeth P. Maris and Lieut. S. S. Gelis, M. C. A. U. S., in New York City through the Department of Health by Dr Maurice Greenberg, Dr Samuel Frant and Dr David D. Rustein in Washington, D. C. under Capt. L. R. Newhouse (MC) U. S. A. and Dr Lewis H. Sweet in Durham, N. C. under Dr W. C. Davison and in Boston and vicinity with the cooperation of the Massachusetts Department of Health, the Massachusetts Antitoxin and Vaccine Laboratory and the Health Officers of Arlington, Medford, Malden and Chelsea. We are indebted to the large number of physicians in Boston, New York, Philadelphia, Baltimore, Washington and Durham who have provided most of the reports on which this study is based to Dr William B. Berenberg and the house and resident staff of the Children's Hospital for their assistance in the control and distribution of globulin and to Miss Virginia S. Poole, B.S., who has kept the records tabulated the data and prepared the charts for this report.

19 Cohn E. J., Luetscher J. A. Jr, Oncley J. L., Armstrong S. H. Jr and Davis B. D. Preparation and Properties of Serum and Plasma Proteins. III. Size and Charge of Proteins Separating on Equilibrium Across Membranes with Ethanol-Water Mixtures of Controlled pH, Ionic Strength and Temperature. *J. Am. Chem. Soc.* 62: 3396-3400 (1940). See footnote p. 3398.

20 Enders J. F. Chemical, Clinical and Immunological Studies on the Products of Human Plasma Fractionation. V. The Concentrations of Certain Antibodies in Globulin Fractions Derived from Human Blood Plasma. *J. Clin. Investigation* 23: 510-531 (July) 1944.

rations most antibodies are concentrated approximately 25-fold over the pooled plasma from which they are derived. Variations in antibody titers from one preparation to another are slight since the initial pool consists of the plasma from 2,000 to 4,000 donors and the variations which do occur presumably reflect variations in the antibody levels of the population from whom the blood was drawn.

Proof that fraction II is a safe and effective agent for the prevention and modification of measles was obtained in 1943 by Stokes, Maris and Gelis<sup>21</sup> and confirmed by Ordman, Jennings and Janeway<sup>2</sup>. It is now being produced under Navy contract for the Army and Navy, and it has been our concern this year to test each preparation produced for its effectiveness against measles. Final tests of the material as a prophylactic agent against measles were carried out in children under 12 who were intimately exposed to the disease in the home since it is known that the attack rate under such conditions is very high<sup>22</sup>. All injections were given intramuscularly. Reports were sent to a central office at least three weeks after injection where the results were tabulated and analyzed.

RESULTS

1 *Effectiveness of  $\gamma$ -Globulin*—Table 3 presents the comparison of  $\gamma$ -globulin with other agents used in measles prophylaxis in unselected cases.<sup>23</sup> Table 4 gives the results of the measles testing program for the satisfactory cases (children under 12, intimate home exposure, adequate follow-up data, injection before the tenth day after exposure).

We have been particularly anxious to ascertain the effectiveness of globulin in adults, a difficult problem since the attack rate is low in this age group. Table 5 gives the results in 212 exposed and supposedly susceptible adolescents and adults.

2 *Complications*—The rationale for attempting to modify measles is based on two premises: first, that modified measles confers a lasting immunity and, second, that the modified disease is much less serious. Proof of the first premise cannot be obtained as yet, but evidence for the second is available. Since the fatalities and serious sequelae from measles are usually associated with the development of complications, it is important to learn whether complications are less frequent in modified measles. In table 6 are listed the complications observed in a group of 1,168 children fulfilling our criteria for a satisfactory test of the globulin. The outstanding finding is that the only 3 complica-

21 Stokes J. Jr, Maris E. P. and Gelis S. S. Id. VI. The Use of Concentrated Normal Human Serum  $\gamma$  Globulin in the Prophylaxis and Treatment of Measles. *J. Clin. Investigation* 23: 531-541 (July) 1944.  
22 Ordman C. W., Jennings C. G. Jr and Janeway C. A. Id. VII. The Use of Concentrated Normal Human Serum  $\gamma$  Globulin for the Prevention and Attenuation of Measles. *J. Clin. Investigation* 23: 541-550 (July) 1944.  
23 Stillerman M. and Thalheimer W. Attack Rate and Incubation Period of Measles. *Am. J. Dis. Child* 67: 15-21 (Jan) 1944.  
23a The figures for convalescent serum, normal adult serum and plasma extract in table 3 are from McLaughlin C. F. The Prevention and Modification of Measles. *J. A. M. A.* 109: 2034 (Dec 18) 1937.

tions observed were in cases in which the attempt to modify the disease apparently failed as typical measles developed.

3 *Reactions*—Most physicians who have previously used placental extract for measles prophylaxis have remarked on the low incidence of reactions following

results since the susceptibility of the individual as emphasized by Stokes, Maris and Gellis,<sup>21</sup> is an important variable. This is brought out by the exceptional cases in chart 4.

The proper dosage for adults is difficult to determine. Stokes and Maris<sup>22</sup> have had the opportunity to make a controlled study in a group of 107 presumably susceptible college students who were exposed to active cases of measles in several meetings. A dose of 5 cc was given to 65 of the group and 42 were not immunized. The results are shown in table 8. This suggests that the dosage schedule worked out on a weight basis for children may be applicable to adults, since the average dose used in this group was 0.04 cc per pound, one which would be expected to give results similar to those obtained.

5 *Mild Measles*—The modified form of measles which results after a proper dose of  $\gamma$ -globulin does not differ from that previously described. Most cases are milder in all respects and briefer in duration than typical cases. Each of the cardinal symptoms—catarrh, fever, malaise and rash (including exanthem)—may occur alone or in conjunction with the others, and with varying degrees of severity. Since rash is usually accepted as an essential feature of the disease, it is hard to classify cases with fever, cough and coryza occurring twelve to fourteen days after exposure but at least 14 such cases occurred in the group reported. Close observation of the patient is usually necessary between the ninth and twentieth days after exposure if mild measles is to be recognized, as the rash may be sparse and transitory, and the fever short lived and unaccompanied by prostration. Chart 5 illustrates satisfactory modification of measles after home exposure.

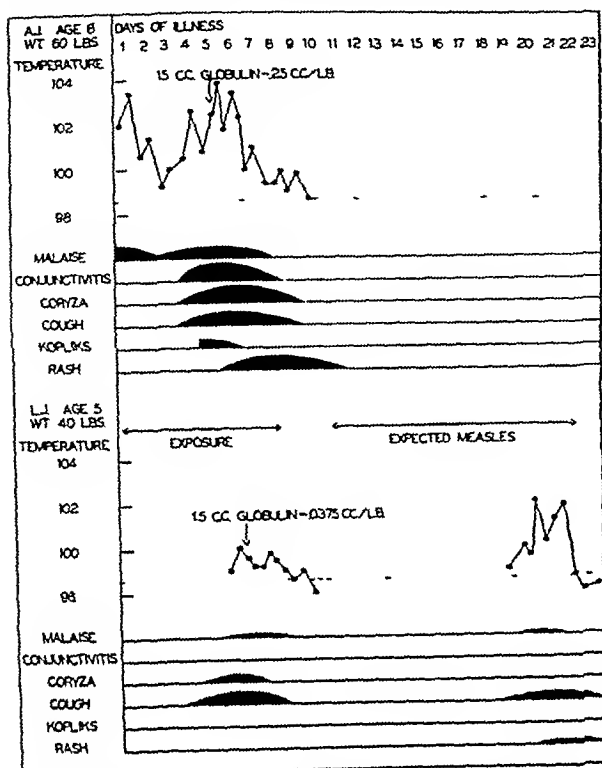


Chart 5—Satisfactory modification of measles in a sibling intimately exposed to an older sister. The initial bout of fever in each patient may have been due to an intercurrent infection with short incubation period. The large dose of globulin given just before appearance of the rash in the older child appears to have had no effect. This has been our general experience but Stokes, Maris and Gellis<sup>21</sup> feel that  $\gamma$ -globulin may be useful in the early treatment of measles. The rash in the modified case consisted of about 50 minute pink, maculopapular lesions and might have been readily overlooked.

the use of  $\gamma$ -globulin. The reactions reported in 1,843 intramuscular injections are presented in table 7.

4 *Dosage and Time of Injection*—In the reports based on clinical trials in 1943, both groups of authors<sup>24</sup> came to essentially similar conclusions concerning dosage. With the large number of satisfactory reports accumulated in two seasons, it has been possible to confirm the validity of these recommendations concerning the proper dosage of  $\gamma$ -globulin. Study of charts 4 and 6 will show very clearly that, whereas the results in the first eight days after exposure are directly dependent on the dose of globulin (calculated on a weight basis), the interval between exposure and injection makes much less difference, although the number of cases of mild and average measles increases after the fifth day. In other words, if complete protection is desired, give 0.1 to 0.075 cc per pound as early as possible, if modification is desired, use one fourth of this dose (0.025 to 0.02 cc per pound) on the fourth or fifth day. The fifth day after exposure is the usual time of administration in the home, since it is the day on which the rash usually appears in the source case. These dosage recommendations will give at best only about 80 per cent satisfactory

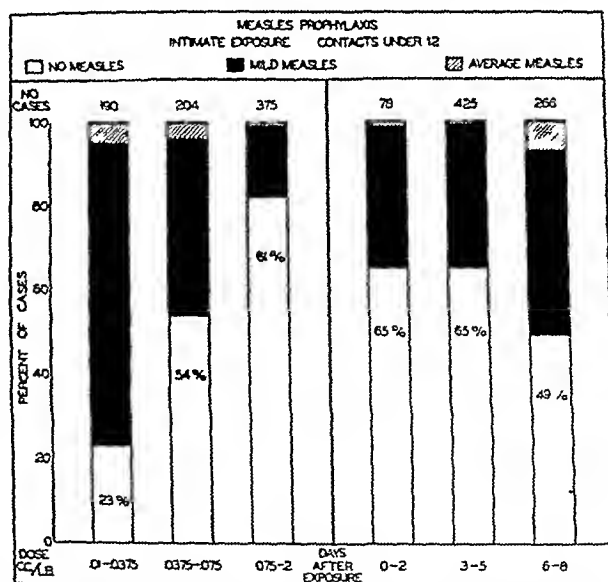


Chart 6—Graphic summary of the data in chart 4. On the left is shown the relationship between the results and the size of the dose in patients injected within eight days of exposure. On the right is shown the relationship between the results and the time of injection regardless of the size of the dose.

6 *Duration of Immunity*—It is probable that the duration of passive immunity depends to a considerable extent on the dose given. Evidence from last year's work indicates that a large dose (0.1 cc per pound)

<sup>24</sup> Stokes, Maris and Gellis<sup>21</sup>; Ordman, Jennings and Janeway<sup>22</sup>

<sup>25</sup> Stokes, J. Jr. and Maris, E. P. Personal communication to the author.

confers immunity for at least three weeks<sup>22</sup> and that a 5 cc dose in adolescents does not protect after six to eight weeks

7 *Use of  $\gamma$ -Globulin in Institutions*—Communicable diseases are a particular problem in institutions caring for children. The two diseases which cause the greatest difficulty in pediatric wards because of their contagiousness are measles and chickenpox.  $\gamma$ -globulin has proved extremely useful in controlling outbreaks of measles in pediatric wards. It has been given in thirty-five separate outbreaks to 350 susceptible children with the following results: not followed 95, no measles 241 (94.6 per cent), mild measles 13 (5 per cent), average measles 1 (0.4 per cent).

Unfortunately, a few limited trials in outbreaks of chickenpox suggest that it does not protect satisfactorily against this disease, at least in doses of 5 to 20 cc.

#### SUMMARY OF PART II

1  $\gamma$ -globulin antibodies (fraction II of Cohn, Strong, Oncley, Hughes and Armstrong) contains most of the antibodies of pooled normal human plasma in 25-fold concentration over the original plasma.

2  $\gamma$ -globulin antibodies is the safest and most effective agent available for the prevention and modification of measles by passive immunization.

3 For this purpose the injection should be given preferably on the fifth day after exposure. At this time a dose of 0.1 to 0.075 cc per pound will completely protect most susceptible individuals, while one of 0.025 to 0.02 cc per pound will result in mild measles in most cases.

4 The mild measles in patients receiving globulin is similar to that previously observed in patients immunized with convalescent serum or placental extract. Complications were noted in 3 out of 400 cases of measles in immunized children but occurred in patients in whom globulin failed to modify the disease.

5 Reactions were noted in only 1.7 per cent of 1,843 intramuscular injections. Half of these consisted of local soreness and most of the remainder of fever. Only one anaphylactoid reaction occurred, which was probably due to an idiosyncrasy.

6  $\gamma$ -globulin is very effective in controlling the spread and severity of measles in pediatric wards but does not appear to be effective in the control of chickenpox.

#### CONCLUSIONS

1 Fractionation of pooled human plasma from blood collected by the American Red Cross has yielded a number of products which have important clinical applications while others are in process of development. Two of these products are concentrated human serum albumin and  $\gamma$ -globulin antibodies, which are discussed in this paper.

2 Concentrated human serum albumin exerts its expected osmotic effect when injected into the blood stream and this may be utilized in the treatment of shock and hypoproteinemic edema. It is an extremely safe, convenient and effective blood derivative.

3  $\gamma$ -globulin antibodies constitutes the safest and most effective agent available for the prophylaxis of measles.

## CLINICAL USE OF PRODUCTS OF HUMAN PLASMA FRACTIONATION

### III THE USE OF PRODUCTS OF FIBRINOGEN AND THROMBIN IN SURGERY

FRANC D. INGRAHAM, M.D.  
AND  
ORVILLE T. BAILEY, M.D.  
BOSTON

In the course of large scale fractionation of human blood plasma in the Department of Physical Chemistry at the Harvard Medical School<sup>1</sup> purified fractions of human fibrinogen and thrombin have become available in large amounts. From these proteins, several materials have been prepared for use in surgery; these materials have a wide variety of physical properties and differ greatly in the surgical uses for which they are adapted. Two products have thus far proved satisfactory in clinical and experimental trials and are now ready for distribution. One is fibrin foam, which is used with a solution of thrombin as an absorbable hemostatic agent. Another is fibrin film, which has been employed as a dural substitute and in the prevention of meningocerebral adhesions. To a less extent the solutions of fibrinogen and thrombin have been used directly in certain special locations, where they provide a physiologic adhesive material by virtue of the clot produced when they are mixed *in situ*.

#### FIBRIN FOAM WITH THROMBIN, AN ABSORBABLE HEMOSTATIC AGENT

The importance of hemostasis in surgery has been recognized as long as surgery itself has existed. Use of the ligature was known to Celsus, and his description of it was doubtless copied from still earlier sources. New techniques for hemostasis in recent times, such as the silver clip and electrocoagulation, have come chiefly from neurosurgical investigators and have gradually found their way into those operations of the general surgeon, where they save time or secure more accurate control of bleeding than do traditional methods. This course has again been followed in the studies of human fibrin foam with thrombin, which was first used to control bleeding in neurosurgical operations and now promises to have use in certain general surgical procedures.

The characteristics of fibrin foam and the range of properties which may be secured by changes in the conditions of manufacture have been described elsewhere.<sup>2</sup> The fibrin foam is prepared from human

Read before the Section on Pathology and Physiology at the Ninety-Fourth Annual Session of the American Medical Association, Chicago, June 14, 1944.

From the Surgical Services of the Childrens and the Peter Bent Brigham hospitals and from the Departments of Surgery and Pathology, Harvard Medical School.

This work has been carried out under contract recommended by the Committee on Medical Research between the Office of Scientific Research and Development and Harvard University.

This paper is number 31 in the series "Studies on Plasma Proteins from the Harvard Medical School, Boston, on products developed by the Department of Physical Chemistry from blood collected by the American Red Cross."

1 Cohn, E. J., Oncley, J. L., Strong, L. E., Hughes, W. L., and Armstrong, S. H., Jr. "Chemical, Clinical and Immunological Studies on the Products of Human Plasma Fractionation. I. The Characterization of the Protein Fractions of Human Plasma." *J. Clin. Investigation* 23: 417-432, 1944. Edsall, J. T., Ferry, R. M., and Armstrong, S. H., Jr. "Chemical, Clinical and Immunological Studies on the Products of Human Plasma Fractionation. XV. The Proteins Concerned in the Blood Coagulation Mechanism." *ibid.* 23: 557-565, 1944.

2 Bering, E. A., Jr. "Chemical, Clinical and Immunological Studies on the Products of Human Plasma Fractionation. XXII. The Development of Fibrin Foam as a Hemostatic Agent for Use in Conjunction with Human Thrombin." *J. Clin. Investigation* 23: 586-590, 1944.



fibrinogen and thrombin and therefore is wholly composed of proteins native to human blood plasma. Its outstanding characteristics are that it rapidly controls bleeding from oozing surfaces and large veins and that it is absorbed with minimal tissue reaction when left in place at the end of an operation.

The fibrin foam has a honeycomb structure composed of fibrin with air spaces of various sizes (fig 1). When it is to be used as a hemostatic agent, three bottles are supplied (fig 2). One of these contains sterile fibrin foam, another dried human thrombin, and the third 30 cc of sterile isotonic solution of sodium chloride. At the time of use the saline solution is added to the dry thrombin, solution takes place rapidly. Pieces of fibrin foam are soaked in the thrombin solution and are then ready for use in hemostasis. The fibrin foam, which is firm and somewhat brittle in the dry state, becomes rubbery and shrinks as fluid enters the air spaces.

The value of fibrin foam with thrombin as a hemostatic agent is greatly enhanced by the fact that it can be left in place. Absorption is rapid and the tissue reaction excited by the presence of the material is minimal from the point of view of the histologist and negligible from the point of view of the clinician. Since the fibrin foam remains on the bleeding surface after hemostasis is complete, it entirely obviates the recurrence of hemorrhage, so troublesome when cotton materials are removed from bleeding points.

#### FIBRIN FOAM WITH THROMBIN IN NEUROSURGERY

The use of fibrin foam with thrombin has greatly facilitated a variety of neurosurgical procedures. The bleeding from oozing surfaces may be controlled in other ways, but the rapidity and completeness of hemostasis secured with fibrin foam materially shortens the duration of operations in which this agent is used. Moreover, fibrin foam with thrombin stops bleeding under certain circumstances in which other methods have been unsatisfactory.

For use in any neurosurgical operation the dry fibrin foam is cut up into pieces of various sizes for use in the different types of bleeding which may be expected in that particular procedure. As the operation gets under way, these are placed in the thrombin solution so as to be ready for instant use. If minute fragments are wanted for control of small bleeding points, the moist fibrin foam can be picked up with forceps and cut or pulled apart. At the time when bleeding is encountered, a piece of the fibrin foam is selected and held firmly in place with a cotton pledget which takes up excess moisture. Suction is often useful when applied over the pledget. It will then be possible to remove the pledget without dislodging the fibrin foam. The fragment can be molded somewhat to conform to the shape of the surface and will retain the configuration after excess moisture has been removed. Should additional hemostatic material be required because of unforeseen circumstances in the course of the operation

dry fibrin foam will be suitable for use after soaking in the thrombin solution for one minute."

When dealing with blood vessel malformations or surfaces with bleeding from numerous small vessels it is of advantage to slice the fibrin foam so that it forms a wafer thin plaque. The fibrin foam will not smear but retains the form into which it is pressed. Bleeding from spurting arteries is controlled with silver clips or ligatures. While fibrin foam is not recommended for brisk arterial bleeding it will occasionally be satisfactory if applied with sufficient pressure. Fibrin foam with thrombin is also not recommended for the scalp, the cut edge of the dura or the cut edge of the bone. It is, however, of great value in dealing with bleeding from the dural sinuses and the large veins entering them. When pieces of fibrin foam are placed against torn dural sinuses or large tributary veins, control of bleeding is more effective than that secured by the use of muscle.

One of the situations in which fibrin foam has been found most useful is the outer surface of the dura beneath the margins of the bone flap. Here bleeding is often troublesome and its control may occupy considerable time. The fibrin foam can be tucked beyond the limits of the wound with safety and left in place.

Again, fibrin foam is extremely valuable in dealing with bleeding from the beds of cerebral neoplasms. By its use, certain large tumors can be removed when otherwise it might not be safe to resect them completely or to take them out en bloc when they would have to be dealt with piecemeal without this hemostatic agent. When a tumor of this sort is to be excised or removed in toto, preparation is made by securing a large mass of fibrin foam, usually large enough to fill the entire cavity. If the cavity is larger than the largest piece of fibrin foam available several smaller



Fig 1—The appearance of fibrin foam before it has been soaked in thrombin solution. Note the porous structure.



Fig 2—The package now in use for distribution of fibrin foam and thrombin. The center bottle contains dry fibrin foam. The right bottle contains dry thrombin and the left bottle isotonic solution of sodium chloride.

fragments may be pressed together. While the pieces of fibrin foam do not fuse, they adhere to one another well enough to make a compact ball. The application

3. Bailey, O. T. and Ingraham, F. D. Chemical, Clinical and Immunological Studies on the Products of Human Plasma Fractionation. XI. The Use of Fibrin Foam as a Hemostatic Agent in Neurosurgery. *Clinical and Pathological Studies*. J. Clin. Investigation 23: 591-596, 1944. Ingraham, F. D. and Bailey, O. T. The Use of Products Prepared from Human Fibrinogen and Human Thrombin in Neurosurgery. Fibrin Foams as Hemostatic Agents. Fibrin Films in Repair of Dural Defects and in Prevention of Meningocelebral Adhesions. *J. Neurosurg.* 1: 23-9, 1944.

of several small bits of fibrin foam to a bleeding tumor bed would allow too much blood to accumulate among them. When the mass of fibrin foam has been pressed against the tumor bed its volume is reduced by excavating the center. A relatively thin but continuous coating of fibrin foam is thus left along the tumor bed.

We have now used fibrin foam with thrombin as a hemostatic agent in 169 neurosurgical operations. From this experience it appears to be a most valuable hemostatic agent. Use of human fibrin foam with thrombin at successive operations on one patient is not attended by any untoward results. The fibrin foam does not replace the cotton pattie as sponging material but finds its use in the control of bleeding. A new absorbable hemostatic agent has thus been added to a very restricted group of these materials now in common use.

By far the most widely used of the absorbable hemostatic materials is muscle introduced by Cushing in 1911.<sup>4</sup> Fibrin foam with thrombin is superior in several important respects to muscle for this purpose. The tissue reaction to fibrin foam with thrombin is much less than that elicited by muscle as discussed in another part of this paper. Furthermore, the surgeon who uses muscle must content himself with the limited supply which he may obtain from the temporal muscle or perform another procedure to obtain additional material from the gastrocnemius or other muscle or depend on the chance that muscle may be secured from a concomitant operation, which is not always possible. On the other hand fibrin foam with thrombin is ready in any amount and can be placed on the instrument table with as little concern as is given to the provision of an adequate supply of instruments. Should an emergency arise as the operation progresses an additional supply is available in a few moments.

Fibrin foam with thrombin can also be more readily adapted to the particular bleeding area than can muscle. The foam is broken or cut to size with ease and may be molded further to fit contours once it has been placed. The structure of muscle prevents this degree of adaptability. Both muscle and fibrin foam are entirely of human origin and share the advantages of homologous materials when used for human patients.

In general, muscle has been reserved for emergencies by neurosurgeons. When serious hemorrhage occurs, such as that from a dural sinus or blood vessel malformation, hemostasis is better controlled by means of fibrin foam with thrombin than with muscle and the large amount which must be used makes the minimal tissue reaction to fibrin foam an important consideration. Fibrin foam with thrombin finds perhaps its largest field of use in situations where muscle would seldom be employed. A great deal of time may be saved by the use of fibrin foam with thrombin to control oozing on the dura beneath the edge of the bone flap and elsewhere. This saving of time amounts to at least half an hour and often to an hour or more in a single operation. Fibrin foam with thrombin has saved the life of some patients in whom large tumors had been removed when muscle would have been unsatisfactory as a hemostatic agent.

Soluble cellulose has been prepared for use as a hemostatic agent when soaked in thrombin solution.<sup>6</sup> After the demonstration by Frantz<sup>7</sup> that soluble cellulose is rapidly absorbed with minimal tissue reaction it was used with thrombin for hemostasis in neurosurgery by Putnam.<sup>8</sup> Soluble cellulose and fibrin foam are both satisfactory from the standpoint of tissue reactions. While fibrin foam is made wholly from proteins of human origin, soluble cellulose is oxidized cotton. Our clinical experience with the two materials suggests that fibrin foam is superior to soluble cellulose as a hemostatic agent in neurosurgery. The control of bleeding by means of fibrin foam depends not only on the presence of thrombin but also on the way in which the thrombin is held in the honeycomb structure of the fibrin foam. Confirmation of this is seen in the fact that hemostasis is effected even when weak solutions of thrombin are used.<sup>2</sup> The loose structure of the soluble cellulose is less well adapted for the purpose and is not effective unless a considerably greater concentration of thrombin is available. Fibrin foam also has the advantage of being more easily cut and shaped to fit the individual characteristics of the bleeding point and especially of retaining the contour of the surface to which it is molded. From the standpoint of neurosurgery, the speed and tenacity with which fibrin foam adheres to tissues is very valuable. In our experience soluble cellulose has seemed less firmly adherent and the edges of the pledget have tended to curl away from the surface to which it has been applied.

Fibrin foam with thrombin has thus proved to be an effective absorbable hemostatic agent in many different types of neurosurgical operations.

#### TISSUE REACTION TO FIBRIN FOAM

It is of crucial importance that the tissue reaction caused by any absorbable material be minimal if its use is to be without danger in surgical procedures. Investigations of the tissue reactions to fibrin foam have been of two types—experimental studies, chiefly in monkeys, and studies of specimens removed at second operations or necropsies.<sup>9</sup>

Fibrin foam, as it comes in the bottle, appears microscopically to be composed of loose meshed fibers, these are actually cross sections of the honeycomb structure (fig. 3). When used as a hemostatic agent in conjunction with thrombin the spaces fill with blood clot. This is followed by a shrinking and coalescence of the fibrin. The result is a minute mass of fibrin which persists for from one to four weeks (fig. 4). The absorption of the fibrin is accomplished by the intermediation of small numbers of mononuclear phagocytes and a few polymorphonuclear leukocytes. Giant cells occasionally form about the bits of fibrin. Fibrous tissue reaction is so slight that the location of the foam could usually not be identified in specimens obtained as late as one month after operation and often could not be located at much shorter intervals. These results are in conformity with the clinical observation that no untoward sequelae have been observed following the use of fibrin foam with

<sup>4</sup> Cushing, H. The Control of Bleeding in Operations for Brain Tumors with a Description of Silver Clips for the Occlusion of Vessels Inaccessible to the Ligature. *Ann. Surg.* 54: 119, 1911.

<sup>5</sup> Ingraham, F. D., Bailey, O. T., and Nulsen, F. E. Studies on Fibrin Foam as a Hemostatic Agent in Neurosurgery, with Special Reference to Its Comparison with Muscle. *J. Neurosurg.* 1: 171-181, 1944.

<sup>6</sup> Yackel, E. C., and Kenyon, W. O. The Oxidation of Cellulose by Nitrogen Dioxide. *J. Am. Chem. Soc.* 64: 121-127, 1942. Linnith, C. C., and Kenyon, W. O. Investigation of the Properties of Cellulose Oxidized by Nitrogen Dioxide. *ibid.* 64: 127-131, 1942.

<sup>7</sup> Frantz, V. K. Absorbable Cotton Paper and Gauze (Oxidized Cellulose). *Ann. Surg.* 118: 116-126, 1943.

<sup>8</sup> Putnam, T. J. The Use of Thrombin on Soluble Cellulose in Neurosurgery. *Ann. Surg.* 118: 127-129, 1943.

thrombin in 169 operations. The tissue reactions were not altered by the use of sulfadiazine or penicillin at the same time as the fibrin foam.

Because muscle has been successfully used for over thirty years as an absorbable hemostatic agent, it seemed worth while to compare the tissue reactions due to

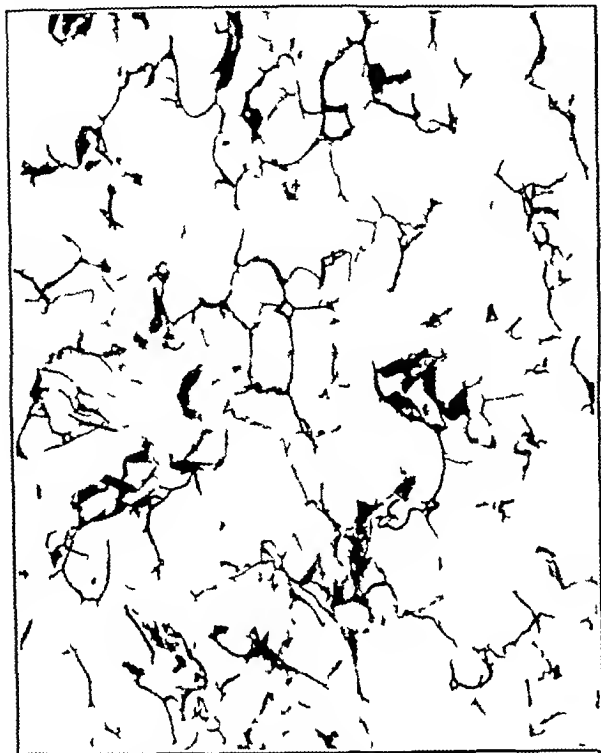


Fig 3—The microscopic appearance of fibrin foam

muscle and those due to fibrin foam with thrombin. The experimental study of these two materials in the same monkey show conclusively that the tissue reaction to fibrin foam is very much less than that to muscle.<sup>5</sup> A large mass of fibrin foam does not excite as much tissue response as one black silk suture or a bit of bone wax.

These studies indicate that the use of fibrin foam with thrombin as an absorbable hemostatic agent is safe from the standpoint of tissue reaction, even when large amounts are required.

#### FIBRIN FOAM WITH THROMBIN IN GENERAL SURGERY

After fibrin foam with thrombin had been given a thorough clinical trial in neurosurgery and shown to be safe by experimental and follow-up studies, possible applications in general surgery were considered. Preliminary experimentation in various sites was therefore carried out. This indicated that the tissue reactions in the liver, peritoneum, lung, kidney and abdominal wall were similar qualitatively and quantitatively to those already described in the tissues of the central nervous system. Again it appeared that large amounts of fibrin foam with thrombin were rapidly absorbed and produced so little fibrous tissue reaction that its site could be determined with difficulty or not at all when microscopic sections were studied a month or less after operation. The use of fibrin foam with thrombin as a hemostatic agent in many sites outside the nervous system was therefore considered a safe procedure.

In neurosurgery a small amount of ooze may make the difference between success of the operation and fatality. The same amount of hemorrhage in the operative fields of the general surgeon may lead to complications in wound healing but is seldom crucial in the survival of the patient. Fibrin foam with thrombin is not therefore necessary as a routine in these procedures.

There are however several circumstances in which large amounts of oozing occur in general surgery and in which ligature, endothermy and other conventional methods of hemostasis are inadequate. Experience with the use of fibrin foam with thrombin in these operations has as yet been limited but the results to date indicate that it may be possible to control the hemorrhage satisfactorily with the new absorbable hemostatic agent.

One situation in which fibrin foam with thrombin has proved valuable is the cut surface of the liver. It was possible to stop the ooze from this site when it was exposed during the resection of a large carcinoma of the stomach with extension to the right lobe of the liver. Injuries to the liver might be treated in the same way. It appears that the best way to handle hemorrhage from the cut surface of the liver is to put silver clips on spurting arteries and to coat the surface with fibrin foam soaked in thrombin. The same hemostatic agent has proved of great value in controlling ooze of the gallbladder bed in cholecystectomy. While this bleeding is satisfactorily controlled by conventional methods, the completeness and rapidity of hemostasis secured by fibrin foam with thrombin facilitates the procedure considerably.

The material also controls very well the oozing in abdominal wounds when operations are performed on jaundiced patients. It is possible to cover the entire surface of the wound with this hemostatic agent, if necessary, without fear of untoward tissue reactions.



Fig 4—The only residuums of the large mass of fibrin foam left on the surface of the dura seventeen days previously.

Persistent ooze not controlled by the usual methods of hemostasis occurs in occasional operations undertaken for a variety of conditions. Such bleeding has responded favorably to the application of fibrin foam and thrombin in seven gynecologic procedures, as well as in radical mastectomy and nephrotomy. While on -

prior grounds it would appear that fibrin foam with thrombin would be useful in many of the operations of thoracic surgery, experience thus far has been limited. One instance is of especial interest. In this case a mediastinal tumor was resected, leaving a slowly oozing bed. Application of fibrin foam with thrombin brought the bleeding promptly and completely under control.

Further clinical experience in the use of fibrin foam with thrombin as a hemostatic agent in general surgery is accumulating rapidly. Its effectiveness in a large variety of sites has been clearly demonstrated, and no contraindications to its use have thus far appeared.

#### FIBRIN FOAM WITH THROMBIN IN HEMOPHILIA

The prevention of hemorrhage in hemophilia has not yet been accomplished, despite numerous investigations in that direction. Surgeons faced with operations on patients suffering from that disease are confronted with a difficult problem in deciding whether it is more dangerous to forego operation or to chance the excessive bleeding which will inevitably result. This perhaps comes up more often with tooth extractions than in any other single type of procedure. When teeth are removed from patients with hemophilia, bleeding may continue for days or weeks despite packing and transfusions. It has been shown<sup>9</sup> that rabbit thrombin controls such bleeding satisfactorily. Fibrin foam with thrombin has also proved to control the bleeding from the tooth sockets of patients with hemophilia quickly and completely, even when careful packing and repeated transfusions have proved ineffective.

There is considerable oozing from the tooth sockets of patients who do not have hemophilia. The packing of these tooth sockets with fibrin foam soaked in thrombin has proved of considerable value even though the serious results encountered in hemophilia were not anticipated.

Other operations in which fibrin foam and thrombin has been used to control the bleeding in hemophilic patients has been limited to the repair of a laceration of the tongue and another of the lower extremity. In each of these instances, hemostasis was prompt and complete.

#### SOLUTIONS OF FIBRINOGEN AND THROMBIN IN SURGERY

There are certain conditions in which it has been found advantageous to use fibrinogen and thrombin solutions rather than products manufactured from them. Cronkite, Lozner and Deaver<sup>10</sup> have published an account of the use of these solutions in skin grafting. Experience in this clinic also indicates that these solutions are of considerable value in affixing skin grafts to the recipient sites. The grafts are placed in a solution of thrombin and the recipient site is painted with a solution of fibrinogen. When the thrombin soaked graft is laid on the prepared recipient site a clot is rapidly formed. This acts as a glue which holds the graft in place and allows satisfactory taking.

Solutions of thrombin have also been used in otolaryngologic procedures. They are effective in controlling nasal hemorrhages in patients with leukemia as well as in those without blood diseases. The solutions may be painted or sprayed on the surface or applied by packing the nose with cotton soaked in thrombin. Solutions of thrombin are also of considerable value in securing hemostasis during tonsillectomy. While it

would be advantageous from certain points of view to use fibrin foam soaked in thrombin under these circumstances, the possibility of aspiration of bits of foam makes one hesitate to employ it except for patients who are fully conscious and have an active gag reflex or for patients under general anesthesia who are very carefully watched.

With the exception of such special situations as those discussed, hemostasis is better secured by the use of a matrix to hold the thrombin solution than it is by the solution of thrombin alone.

#### FIBRIN FILM IN SURGERY

It has been possible to prepare a film from solutions of fibrinogen and thrombin which are allowed to clot under conditions entirely different from those used in preparing fibrin foams.<sup>11</sup> The film is translucent, somewhat elastic and pliable. It presents physical properties which meet the requirements for a dural substitute. Experimental investigation of the use of fibrin film as a dural substitute was carried out on a series of monkeys.<sup>12</sup> These experiments indicated that the film was slowly replaced by fibrous tissue without the formation of meningocerebral adhesions. It thus proved a satisfactory substitute for dura under experimental conditions. The tissue reactions were not altered by the simultaneous use of sulfadiazine or penicillin.

We have used fibrin film in the repair of dura and in the prevention of meningocerebral adhesions in 59 cases. The use of the fibrin film under these circumstances has proved to be highly successful and no evidence of untoward sequelae have appeared, even though some of the patients have been followed as long as one year.

In the evaluation of a new substance for use as a dural substitute, great caution must be exercised because of the possibility of the late appearance of unfavorable reactions to its presence. In our experience so far, fibrin film has proved more satisfactory than any other material tested as a dural substitute. In addition to its safety, fibrin film is well adapted for use in the repair of dural defects because of its translucence, flexibility, ease of handling and adaptability to any contour.

It is possible that there may be applications of fibrin film to problems in general surgery. To this end, experiments have been begun to test the tissue reactions of fibrin films in joints, in the eye, in the peritoneum about nerves and elsewhere. These applications of fibrin film are at present in the experimental stage, and the use of the material except as a dural substitute is not recommended at this time. The possibility of unfavorable reaction to fibrin film in general surgery must be borne in mind and each site thoroughly investigated experimentally before it is used in the clinic.

#### SUMMARY

The preparation of purified human fibrinogen and thrombin has made possible new materials for use in surgery. The solutions of the proteins may be employed and a variety of products prepared by combining them under different conditions.

Of these, fibrin foam with thrombin is a new absorbable hemostatic agent prepared from fibrinogen and thrombin of human blood plasma.

9 Lozner E. L., MacDonald H., Finland H. and Taylor F. H. L. The Use of Rabbit Thrombin as a Local Hemostatic. *Am. J. M. Sc.* 202: 593-598, 1941.  
10 Cronkite E. P., Lozner E. L. and Deaver J. M. Use of Thrombin and Fibrinogen in Skin Grafting. *J. A. M. A.* 124: 9-6, 978 (April 1) 1944.  
11 Ferry J. D. and Morrison P. R. Chemical, Clinical and Immunological Studies on the Products of Human Plasma Fractionation. XVII. Fibrin Clots, Fibrin Films and Fibrinogen Plastics. *J. Clin. Investigation* 23: 566-572, 1944.  
12 Bailey O. T. and Ingraham F. D. Chemical, Clinical and Immunological Studies on the Products of Human Plasma Fractionation. XVIII. Fibrin Films in Neurosurgery with Special Reference to Their Use in the Repair of Dural Defects and in the Prevention of Meningocerebral Adhesion. *J. Clin. Investigation* 23: 597-600, 1944. Bailey and Ingraham.

Extensive clinical use of fibrin foam with thrombin in neurosurgical operations has shown it to control oozing from the dura, from beneath bone flaps and from the cerebral tissues as well as from the dural sinuses and large veins. It is not recommended for brisk arterial hemorrhage.

The tissue reaction to fibrin foam with thrombin is minimal and negligible from the clinical standpoint. In this respect, as well as in availability, ease of manipulation and adaptability, it is much superior to muscle. Fibrin foam with thrombin is prepared wholly from materials of human origin.

This hemostatic agent can be used with advantage in certain procedures by the general surgeon. It is also effective in controlling hemorrhage in patients with hemophilia.

A limited use has been made of solutions of fibrinogen and thrombin in certain special situations in which it is desirable to form a clot *in situ*.

Fibrin film is a homogeneous sheet prepared from human fibrinogen and thrombin. It has proved effective in the repair of dural defects and in the prevention of meningocerebral adhesions.

300 Longwood Avenue

## ABSTRACT OF DISCUSSION

ON PAPERS OF DR. JANEWAY AND DR.  
INGRAHAM AND BAILEY

DR. ORVILLE T. BAILEY, Boston. There has been an inclination, because of the nature of most investigations on purified proteins, to regard them as unstable substances, but the preparations of albumin may be frozen, thawed and injected clinically without causing reactions. They may be kept at tropical temperatures for periods of many months, and severe shaking does not change them in such a way that they cause reactions in patients when injected subsequently. A number of hospitals have sent the tissues of patients receiving large amounts of albumin to learn whether there are any pathologic effects which may be due to the presence of the administration of such an unusual amount of one fraction of human plasma. Pathologic changes which could be correlated with the injection of the albumin could not be found. Since fibrin foam, to be effective, must be left in place, it should elicit a minimal tissue reaction and this is found to be the case. Fibrin foam, when it is fixed directly, consists of cross sections of the honeycombs of which it is composed. When it has been left on the surface of the dura for fourteen hours the meshes of the honeycomb have become filled with blood clot. There is practically no cellular infiltration in response to its presence. At the end of twenty-four days a large mass of fibrin foam has become reduced to a small structure, filling only a high power field, and is surrounded by a minimal amount of connective tissue. It is difficult to make sure that even this small amount of connective tissue is due wholly to the presence of the fibrin foam because the blood clot which the fibrin foam is left in place to produce will usually result in the production of more fibrous tissue than that. Experiments were set up in monkeys to compare the tissue reaction of muscle and fibrin foam as hemostatic agents. The material was introduced into the cerebral cortex. At the end of four weeks there is practically no reaction to the presence of the fibrin foam. It has become somewhat coalesced and is nearly absorbed. When a piece of muscle of similar size is left in a comparable place on the opposite side of the same animal there is considerable gliosis about the fragment and the muscle is being converted into a mass of richly collagenous connective tissue. Some of the blood vessels which were present in the original fragment of the muscle are still present. This indicates that the reaction to fibrin foam is many times less than it is to muscle and this permits us to use fibrin foam in a great many situations where we might fear tissue reaction from muscle.

## A STUDY OF "PENICILLIN FAILURES"

ARTHUR L. BLOOMFIELD, M.D.  
WILLIAM M. M. KIRBY, M.D.  
AND  
CHARLES D. ARMSTRONG, M.D.  
SAN FRANCISCO

In studying a new therapeutic agent it is necessary not only to discover the conditions in which it is effective but also to define the circumstances under which it fails or at least yields unsatisfactory results. Penicillin has now been used long enough to make possible the compilation of lists of those infections in which it seems to be of value.<sup>1</sup> But such bare enumerations do not begin to tell the story, as there are all sorts of special circumstances which arise in the individual case to modify any general statement. From an intensive study of over 100 patients treated with penicillin a good deal has been learned about what might be called "penicillin failures", it is with this phase of the subject that the present paper is concerned.

"Penicillin failures" may be discussed under the following headings:

1. Causes of death in penicillin treated patients.
2. Failures due to inadequate amounts of penicillin.
3. Failures due to inadequate surgical drainage in penicillin treated cases.
4. Failures due to overwhelming infection even when penicillin dosage was presumably adequate.
5. Failure to prevent or cure renal lesions in penicillin treated cases of streptococcal infection.
6. Conditions in which penicillin either fails or is likely to be inadequate.

### 1. CAUSES OF DEATH IN PENICILLIN TREATED CASES

Aside from patients who were not seriously ill, such as those with primary syphilis, mild sulfonamide fast gonorrhea or furunculosis, we have treated 87 instances of severe infection including endocarditis, meningitis and acute osteomyelitis. An idea of the general character of the material is obtained from the fact that 27 or 31 per cent, of these patients had bacteremia. Of this series of 87 patients 7, or 8 per cent died. An analysis of these fatal cases is given in the accompanying table. It appears that only 2 deaths (cases 6 and 7) or 2.3 per cent of the whole series, could be ascribed to actual failure of penicillin treatment. Ten years ago one would have had a mortality of at least 50 per cent.

### 2. FAILURES DUE TO INSUFFICIENT PENICILLIN THERAPY

It is not our present purpose to discuss the unsettled question of adequate penicillin dosage. Excellent results have been reported with relatively small quantities of the material,<sup>2</sup> but this does not rule out the need of larger doses in some cases. At any rate the unsatisfactory results in the following patients seemed to be ascribable to too small amounts of penicillin or to treatment of too brief duration.

From the Department of Medicine, Stanford University School of Medicine.

The Penicillin was provided by the Office of Scientific Research and Development from supplies assigned by the Committee on Medical Research for chemical investigations recommended by the Committee on Chemotherapeutics and Other Agents of the National Research Council.

<sup>1</sup> Memorandum of Office of Civilian Penicillin Distribution Council, May 1944.

<sup>2</sup> Herrell, W. E. The Clinical Use of Penicillin, an Antibacterial Agent of Biologic Origin. *J. A. M. A.* 124: 622 (March 4) 1944.

The following case concerns relapse of an infection which probably could have been prevented by more prolonged treatment of the original attack, although the daily dose seemed adequate

CASE 8—A woman aged 61 entered the hospital on the fifth day of a typical facial erysipelas. The eruption extended over the nose to the malar prominences and ordinarily would have continued to spread for several days. She was given an intravenous dose of 35 000 units of penicillin and thereafter

seems clear that with any serious infection it may be well to continue treatment for several days after the process has been controlled as possible insurance against recurrence. This applies especially to staphylococcal and streptococcal infections. In *Streptococcus viridans* subacute bacterial endocarditis the good results which we have obtained in a consecutive series of 9 cases seems due to the continuation of uninterrupted treatment over a period of six to eight weeks. Recurrences of acute

#### *Patients Who Died Under Penicillin Treatment*

| Case | Clinical Diagnosis  | Treatment  | Anatomic Diagnosis   | Comment  |
|------|---|--|--|--|
| 1    | Lung abscess following aspiration of potato chip 4 weeks' duration high fever abscess at least 15 cm in diameter huge amount of foul sputum containing various streptococci and putrefactive anaerobes a desperately ill patient with progressive gangrene of lung with diabetes of moderate severity | Penicillin by continuous intravenous drip 300 000 units per day after 3 days with condition generally better she died suddenly in acute collapse   | A huge lung abscess occupying practically the entire right upper lobe was found there was no evidence of air embolus no pulmonary embolus no edema of lungs in short, no anatomic cause of death was found | Contents of abscess obtained at autopsy showed no growth on culture so that the penicillin had been effective to some extent treatment had not gone on long enough before she died to draw any further conclusions as to efficacy no cause for sudden death was found the lots of penicillin used in this case gave no reactions in other patients and penicillin clearly had nothing to do with her death |
| 2    | A patient in the last stages of lymphoid leukemia developed acute lobar pneumonia of left lung with 150 colonies per cubic centimeter of type 1 pneumococcus  | Treatment started on fifth day of disease 200 000 to 300 000 units by continuous intravenous drip rapid improvement and 12 days later when apparently comatose went into collapse with high fever and died in 24 hours   | The pneumonia on the left was practically resolved there was a fresh consolidation of the right middle lobe which showed no pneumococci but an undifferentiated bacillus extensive lesions of leukemia     | A dying leukemic woman with terminal type 1 pneumococcal sepsis with heavy bacteremia and lung consolidation was cleared of her pneumococcal infection but died of leukemia and another different (bacillary) infection  |
| 3    | A young man with a fistula from esophagus to lung and huge paravertebral abscess from which non-hemolytic streptococci (sensitive to penicillin) were grown no tubercle bacilli found on extensive search of pus and sputum   | Intensive intravenous intramuscular and local penicillin therapy for about a month   | Huge tuberculous paravertebral abscesses tubercle bacilli easily demonstrated in scrapings from granulation tissue   | A misdiagnosis. This patient would not have been treated had the correct diagnosis of tuberculosis been made   |
| 4    | A man aged 46 had pneumococcal sepsis with 25 to 50 colonies of type 2a pneumococcus per cubic centimeter of blood there were evidences of endocarditis arthritis and meningitis  | Intensive treatment of up to 400 000 units daily by intravenous drip, also intrathecal penicillin treatment over a period of 3 weeks eliminated all evidence of pneumococcal infection (sterile blood and spinal fluid cultures) but he developed a huge bed sore with general failure and died            | No autopsy   | There was every evidence here that the pneumococcal sepsis was cured death was clearly due to infection from a huge bed sore and perhaps could have been avoided   |
| 5    | A woman aged 22 was desperately ill with a gas bacillus infection following attempted abortion ( <i>Clostridium welchii</i> grown from cervical discharge)  | After 5 days of intensive penicillin therapy by intravenous drip the gas bacillus infection was entirely cleared she was oliguric on entry and went on to uremia and anuria of obscure origin—possibly associated with transfusion or sulfonamides received before entry                                   | All evidences of uterine infection cleared up kidneys showed a peculiar diffuse lesion—still under study   | <i>C. welchii</i> infection cleared under penicillin but she died of renal disease which was already under way when treatment was started  |
| 6    | A woman aged 39 with old rheumatic mitral disease infected her finger by pin prick and developed <i>Staph aureus</i> bacteremia 800 colonies per cubic centimeter she seemed moribund with jaundice, high fever and anemia the staphylococcus was highly sensitive to penicillin in test tube         | Given penicillin by intravenous drip at rate of 300 000 units in first 20 hours at this time blood culture (with penicillinase) still positive—170 colonies per cubic centimeter—no growth without penicillinase indicating a high blood level progressive cyanosis and dyspnea death 24 hours after entry | Old mitral lesion with fresh acute ulcerative endocarditis no special cause of death found   | This case must be considered a penicillin failure in spite of intensive treatment and high blood level bacteremia was not controlled soon enough and she died in toxemia   |
| 7    | A man aged 59 was in hospital for nearly 5 months with recurring <i>S. aureus</i> sepsis  | Received a total of 7 500 000 units of penicillin  | Subacute pericarditis subacute meningitis small abscesses in kidney  | This case also must be set down as penicillin failure although it is now believed that his treatment was inadequate in amount  |

15,000 units intramuscularly every three hours. There was no further spread of the process, and within twenty-four hours it seemed to have completely subsided. The temperature dropped promptly (fig. 1) and penicillin was continued for only two days—a total of 255 000 units. Three days later she left the hospital apparently well but after an interval of seven days returned again with typical facial erysipelas. This was clearly a second attack and not a residue of the first. Penicillin was given once more with prompt arrest of the erysipelas but this time treatment was continued for nine days—a total of 1,180 000 units (fig. 1).

There is every reason to believe that the second attack would not have occurred had treatment been continued for a longer time after the first bout. It

hemolytic streptococcus throat infections, common with brief treatment,<sup>3</sup> can be prevented by giving penicillin over a period of five to ten days.

In the next case also the poor result may be due to the fact that treatment was stopped too soon.

CASE 9—A school boy aged 8 years was admitted on the third day of an acute osteomyelitis of the left femur. The left thigh was hot, red, greatly swollen and acutely painful. There was high fever with leukocytosis, and a blood culture was positive for *S. aureus*. Penicillin was started on the following (fourth) day in doses of 150,000 units per day by continuous intravenous drip. Treatment was continued for only twelve days and was then stopped, although the temperature



had not yet reached normal (fig 2). A roentgenogram on entry showed no visible lesion in the bone, but on the thirteenth day of the disease an early destructive process was detected by x-ray just proximal to the epiphyseal line of the lower femur. No periosteal reaction was seen at this time. The patient left the hospital on the twenty-fourth day of the disease.

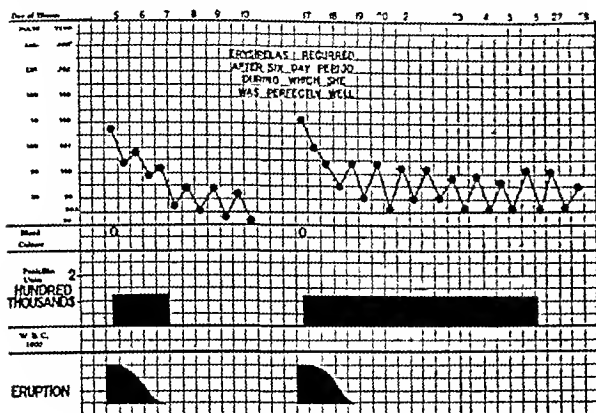


Fig 1—Graphic record of case 8

with normal temperature, no pain and only very slight swelling of the leg just above the left knee. Frequent roentgenograms from this time on showed progressive destruction and absorption of the lower two thirds of the femur and a pronounced periosteal reaction throughout its length. After three months there was obvious sequestration and finally a pathologic fracture. X-ray films made on the thirteenth day and at the height of the lesion several months later are shown in figures 3 and 4.

Our experience in 8 cases of acute osteomyelitis of the long bones in which no operation was done indicates that very intensive and prolonged therapy is necessary if serious changes are to be prevented. Even then, as reported by others also, the x-rays from the second week on usually show some absorption of cortex with periosteal reaction possibly due to injury which began before penicillin therapy was started. Some staphylococci must be sealed in and difficult to reach in areas made relatively avascular by thrombosis and necrosis. It is possible, if not probable, that more prolonged therapy of patient 9 might have arrested the process at an earlier stage as it appears to have done.



Fig 2—Graphic record of case 9

in our other cases. At any rate prolonged uninterrupted treatment is clearly indicated in acute osteomyelitis. This whole subject will be dealt with in detail in another paper.

In case 7 in the table it is our belief that death might have been prevented by more intensive and continuous therapy.

This man with severe diabetes developed *S aureus* sepsis with positive blood culture following a skin injury. On entry there were skin lesions and osteomyelitis of the left humerus. Pericarditis was detected (friction rub) a few days later. He was one of our early cases and after ten days of penicillin (2,000,000 units) treatment was arbitrarily stopped. Over a period of five months there were repeated episodes of *S aureus* infection of various structures with recurring positive blood culture, although the organism was always sensitive to penicillin in vitro. Treatment with penicillin given during each exacerbation in the end totaled 7,500,000 units but was never continued over a period of more than ten days at a time. The patient finally left the hospital feeling fairly well, with normal temperature and with no obvious foci, but on reaching home he again developed fever with left upper abdominal pain, failed rapidly and died in twelve days. At autopsy pertinent points were "subacute and chronic pericarditis, subacute and chronic myocarditis, subacute meningitis, small abscesses of kidney." There were also large infarcts of the spleen.



Fig 3—Left femur in case 9 on December 20, the thirteenth day of disease showing early absorption and periostitis.



Fig 4—Left femur in case 9 on April 4, showing advanced changes with sequestration and pathologic fracture.

This patient furnishes a typical example of penicillin therapy which during a long relapsing infection always fell short of the mark. It seems probable from experience in subsequent cases that intensive uninterrupted treatment over a period of four to six weeks would have cured this man. The hazard of too little and too brief therapy which in our experience is especially great with staphylococcal infections, is illustrated.

### 3. FAILURES ASSOCIATED WITH PENICILLIN THERAPY WHEN ADEQUATE SURGICAL DRAINAGE OF INFECTIONS WAS NOT CARRIED OUT

In spite of the great efficacy of penicillin in controlling certain types of infection, the principle that evacuation of closed collections of pus is necessary for rapid cure still holds good in most cases.<sup>4</sup> Simple

<sup>4</sup> Keefer, C. S. and others. Penicillin in the Treatment of Infections. J. A. M. A. 122: 121, (Aug. 28) 1945.

aspiration of pneumococcic empyema and of gonococcic joints, with injection of penicillin, has, to be sure, been adequate in many cases, but with other infections, especially those due to staphylococci and nonhemolytic streptococci progress may be arrested until surgical drainage has been instituted. The problem is illustrated by the following cases.

CASE 10—A man aged 38 developed subphrenic abscesses probably following perforation of a viscus. The abscesses were incised and drained and an anaerobic nonhemolytic streptococ-

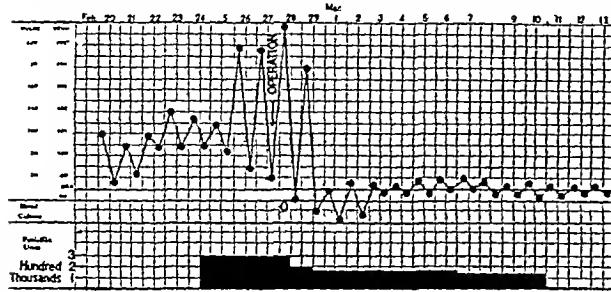


Fig 5—Graphic record of case 10

cus, highly sensitive to penicillin was isolated. He received intensive penicillin therapy (2,290,000 units) by continuous intravenous drip, as well as locally, for eleven days. His temperature gradually fell almost to normal and he seemed much better, but fever recurred with leukocytosis and abdominal pain. It was evident that there was more pus, and drainage of an encapsulated pocket was done through the previous incision. Penicillin (1,515,000 units) was given intramuscularly over a period of eleven days and the temperature again fell to normal with clinical improvement. He was not entirely well however, and fever soon returned. This time x rays showed a lung abscess which appeared to have developed under penicillin therapy. The same organism obtained from the subphrenic abscess was grown from the lung lesion, which was drained surgically. Another intramuscular course of 1,000,000 units was given with injection of 26,000 units into the abscess cavity. There was now rapid healing of all lesions, and the patient was discharged well after a hospital stay of three months and a total of 7,400,000 units of penicillin. Figure 5 shows the portions of the course before and after drainage of the lung abscess. One sees that in spite of intensive penicillin the temperature did not drop until drainage was instituted.

The streptococcus in this case was highly sensitive to penicillin *in vitro*, but the whole situation is difficult to evaluate. Those who saw him felt that he did better than patients of this sort usually do with surgery alone. On the other hand there were two relapses in spite of intensive penicillin treatment, each associated with an undrained collection of pus.

The following case is even more clearcut.

CASE 11—A man aged 66 was brought to the hospital with the story of sudden onset of sharp pain in the right side of the chest two weeks previously. This had continued with fever, prostration and general failure. There had not been cough, sputum or any suggestion of bronchitis or pneumonia. On entry he looked ill and had sweats and fever. There were signs of fluid in the right chest and on tapping thin yellow purulent fluid was obtained. It had an extremely foul odor. Smears showed innumerable bacteria and on culture nonhemolytic streptococci and an unidentified gram positive bacillus were grown. Between April 13 and April 29 the chest was aspirated seven times, and on five occasions penicillin was injected into the pleural cavity in amounts of 50,000 to 100,000 units, a total of 495,000 units. There was considerable improve-

ment under this program, and by the 29th the fluid was no longer foul and no organisms were seen or grown. However 50 cc of yellow thickish pus was obtained and the patient continued to feel ill and to have a variable fever with leukocytosis. On April 27 (fig 6) penicillin was started intramuscularly at the rate of 120,000 units daily in eight doses, but after five days there was no improvement so that operation was finally done, a tube inserted into the pleura and tidal drainage instituted. The temperature promptly fell to normal. The patient recovered rapidly and left the hospital well on May 20.

In this case thoracentesis with local injection of penicillin led to partial control of the infection and did away with the foul nature of the pus. However, no complete clearing could be obtained until a tube was inserted for continuous tidal drainage. This has been our general experience in other instances of streptococcic and staphylococcic empyema.

#### 4 FAILURES DUE TO OVERWHELMING INFECTION

Patient 6 in the table is the only example we have had of failure of penicillin due simply to an overwhelming infection with an organism sensitive *in vitro*. She received large doses of penicillin by continuous intravenous drip, sufficient to raise the blood content to well over the standard bacteriostatic level of 0.15 unit per cubic centimeter.<sup>6</sup> In spite of this the blood stream was not cleared and after twenty hours culture still yielded 130 colonies of *S. aureus* per cubic centimeter. The importance of using penicillinase<sup>7</sup> is also brought out, as there was enough penicillin in the blood to inhibit growth in a blood culture made without penicillinase.

#### 5 FAILURE TO PREVENT OR CURE THE DEVELOPMENT OF GLOMERULAR NEPHRITIS IN CERTAIN PATIENTS WITH STREPTOCOCCIC INFECTIONS TREATED WITH PENICILLIN

The association of glomerulonephritis with certain types of streptococcic infection is clearly established. When penicillin became available it seemed of particular importance to find out if this agent, which extirpates so many streptococcic infections with great speed, would prevent the occurrence of nephritis. Of no less interest was the question of whether nephritis

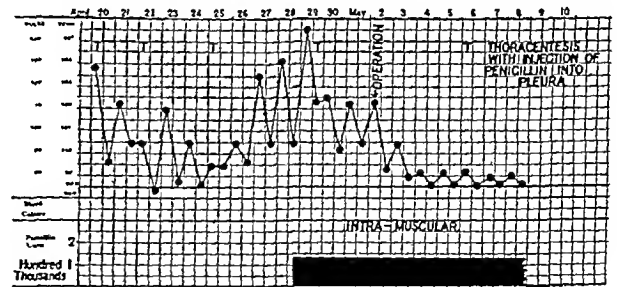


Fig 6—Graphic record of case 11

already established would clear up after elimination of concomitant streptococcic infection by penicillin, as for example in bacterial endocarditis.

CASE 12—A man aged 66, some time after a burn of the left shoulder, was brought to another hospital because of high fever, shortness of breath and swelling of the left leg. Blood culture was found positive for hemolytic streptococci but in spite of intensive sulfadiazine therapy and two transfusions

5 Tillett W. S., Camber M. J. and McCormack J. E. The Treatment of Lobar Pneumonia and Pneumococcal Empyema with Penicillin. *Bull. New York Acad. Med.* 20: 142, 1944.

6 Rammellkamp C. H. and Keefer C. S. Penicillin. Its Anti-bacterial Effect in Whole Blood and Serum for the Hemolytic Streptococcus and Staphylococcus Aureus. *J. Clin. Investigation* 22: 649, 1943.  
7 Kirby W. M. M. Extraction of a Highly Potent Penicillin Inactivator from Penicillin Resistant Staphylococci. *Science* 80: 452, 1944.

he had gone steadily downhill. On entry to Stanford Hospital (fig 7) he seemed desperately ill. The temperature was 40.5 C (104.9 F). The remains of a small burn on the right shoulder were visible but the lesion was almost healed. There were many petechiae, a faint systolic murmur at the apex and soft edema of both ankles, but the left leg was much more swollen than the right. Blood culture yielded 400 colonies per cubic centimeter of hemolytic streptococci. He was moderately anemic and the blood urea was 90 mg per hundred cubic centimeters. The urine contained considerable protein, immense numbers of red cells, white cells and casts of all sorts. The

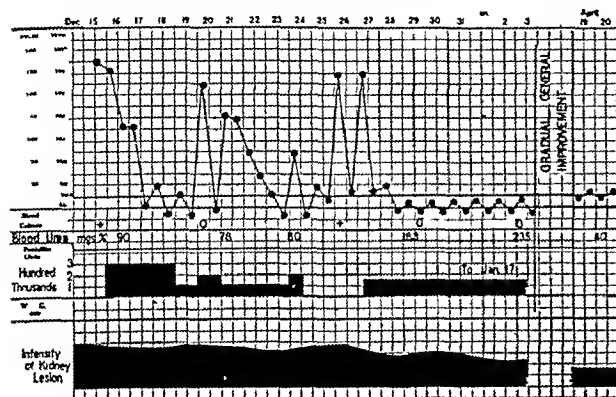


Fig 7—Graphic record of case 12

diagnosis was sepsis, hemolytic streptococcus, with bacteremia, phlebitis of the left femoral vein, and acute glomerular nephritis associated with the streptococcal infection. Penicillin was given by continuous intravenous drip at the rate of 300,000 units per day, and within twenty-four hours the blood culture showed no growth and the temperature fell abruptly to normal. On the fifth day there was an unexplained rise of temperature, which may have been due to a small pulmonary embolus. Penicillin was stopped on the ninth day with the temperature normal and the patient much improved, but the urine was essentially unchanged and the blood urea was still 78 mg per hundred cubic centimeters. Two days after penicillin was stopped he had a chill with rise of temperature to 40 C (104 F) and blood culture was again positive, showing 5 colonies of hemolytic streptococci per cubic centimeter. Penicillin was given again, intramuscularly, for three weeks. The temperature fell promptly to normal and never rose again above 37.5 C (99.5 F) nor was the blood culture again positive.

In spite of the elimination of the streptococcal infection the nephritis seemed unaffected. The urine continued to show protein, large numbers of red cells and casts. The blood urea rose as high as 235 mg per hundred cubic centimeters. Soft edema continued. His general condition gradually improved, so that by May 1944 four months after leaving the hospital, he felt very well and the blood urea was only 40 mg per hundred cubic centimeters. The blood pressure was 150/85. Except for slight pitting edema had disappeared. The urine, however, showed the typical findings of a glomerular nephritis in the subacute stage. An Addis count gave protein 0.35 Gm in twenty-four hours, red blood cells 250 million in twenty-four hours, white and epithelial cells 55 million in twenty-four hours and casts 500,000 (granular, hyaline and a few blood casts). This case also illustrates relapse of an acute infection with recurrence of positive blood culture when penicillin was stopped too soon.

There is every reason to believe that this patient's streptococcal infection was completely eliminated. There is no evidence, however, that the course of the nephritis was influenced and every reason to believe that an irreversible lesion has been set up which will progress in the usual relentless fashion of chronic glomerulonephritis.

Similar observations by one of us (C D A) in cases of *S. viridans* bacterial endocarditis have shown that the renal lesion may persist after the infection has been eliminated. All this is in harmony with the evidence accumulated by Addis<sup>8</sup> to the effect that glomerular nephritis, once under way, tends to propagate itself.

#### 6 CONDITIONS IN WHICH PENICILLIN EITHER FAILS OR IS LIKELY TO BE INADEQUATE

**Pneumococcal Meningitis**—Although pneumococci are often highly sensitive to penicillin, the results of treatment of pneumococcal meningitis have in our hands been unsatisfactory in many ways. These poor results are doubtless attributable in some degree to the nature of this infection<sup>9</sup> with its well known tendency to adhesive arachnoiditis, encephalitis and thick gelatinous exudate, which impedes the local application of any therapeutic agent. Three patients with pneumococcal meningitis, probably of otitic origin, all survived their infection after intensive penicillin treatment given intrathecally, by injection into the ventricles and by intramuscular or intravenous injection, but in each instance serious neuropsychiatric residues reduced them to an essentially vegetative state. The following case is typical.

**CASE 13**—A man aged 48, a gardener, was found comatose in his home two days before entry. He had previously been well. He was found to have signs of meningitis, and type 12 pneumococcus was grown from the blood and spinal fluid. He failed to improve on intravenous sulfadiazine and antipneumococcus serum and was sent into Stanford Hospital for penicillin. He was flushed, restless and delirious. The neck was stiff. There was some pus in the left auditory meatus but there were no signs of mastoiditis. He was started on large doses of penicillin by continuous intravenous drip, later changing to the intramuscular route (200,000 units per day). He also received 10,000 units in 10 cc of saline solution intrathecally almost daily for the first eight days. On the ninth day, as he had not improved, the ventricles were tapped but there was no evidence of block. His temperature gradually subsided over twenty-six days, but the spinal fluid still showed cells and protein. After eleven days there was a relapse with slight fever and considerable disorientation, but pneumococci were not recovered from the spinal fluid. However, he was given more penicillin intramuscularly and four intrathecal injections of 5,000 units each. He remained mildly confused and had a peculiar visual difficulty characterized by ability to see objects but difficulty in naming them. He could read words aloud but could not read consecutively or understand what he read. At the time he left the hospital, two months after entry, the spinal fluid still showed increased cells and protein suggestive of arachnoiditis, but he was much improved. The temperature was normal. He was oriented and talked rationally for the most part. There was still a pronounced personality change with general mild mental deterioration. Six weeks after leaving the hospital there was not much change.

Poor results in this small series of cases should not be taken as a final evaluation of penicillin in pneumococcal infections and better results have been reported by others.<sup>10</sup> However, our cases were treated intensively, both intrathecally, by ventricular puncture and by the intravenous and intramuscular routes and it seems unlikely that the outcome was due to too little treatment. Since sulfonamides are quite effective in pneumococcal meningitis, it may turn out that sulfonamides together with penicillin may be the best treatment for this condi-

8 Addis T. Unpublished observations.  
9 Rueggesser J M. Pneumococcal Meningitis. Ann Int Med 17: 693, 1942.  
10 Dawson M H and Hobby G L. The Clinical Use of Penicillin. Observations in 100 Cases. J A M A 124: 611 (March 4) 1944.

aspiration of pneumococcal empyema and of gonococcal joints, with injection of penicillin, has, to be sure, been adequate in many cases, but with other infections, especially those due to staphylococci and nonhemolytic streptococci, progress may be arrested until surgical drainage has been instituted. The problem is illustrated by the following cases.

**CASE 10**—A man aged 38 developed subphrenic abscesses probably following perforation of a viscus. The abscesses were incised and drained and an anaerobic nonhemolytic streptococcus

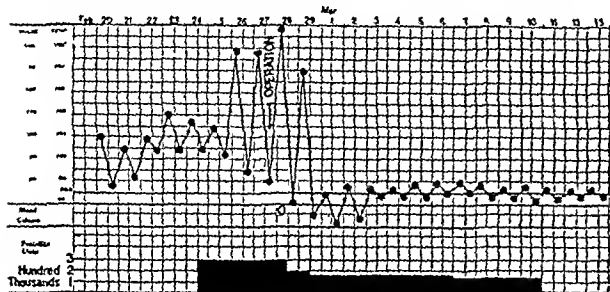


Fig 5—Graphic record of case 10

was highly sensitive to penicillin, was isolated. He received intensive penicillin therapy (2,290,000 units) by continuous intravenous drip as well as locally, for eleven days. His temperature gradually fell almost to normal and he seemed much better, but fever recurred with leukocytosis and abdominal pain. It was evident that there was more pus, and drainage of an encapsulated pocket was done through the previous incision. Penicillin (1,515,000 units) was given intramuscularly over a period of eleven days and the temperature again fell to normal with clinical improvement. He was not entirely well, however, and fever soon returned. This time x-rays showed a lung abscess which appeared to have developed under penicillin therapy. The same organism obtained from the subphrenic abscess was grown from the lung lesion which was drained surgically. Another intramuscular course of 1,000,000 units was given with injection of 26,000 units into the abscess cavity. There was now rapid healing of all lesions, and the patient was discharged well after a hospital stay of three months and a total of 7,400,00 units of penicillin. Figure 5 shows the portions of the course before and after drainage of the lung abscess. One sees that in spite of intensive penicillin the temperature did not drop until drainage was instituted.

The streptococcus in this case was highly sensitive to penicillin *in vitro*, but the whole situation is difficult to evaluate. Those who saw him felt that he did better than patients of this sort usually do with surgery alone. On the other hand there were two relapses in spite of intensive penicillin treatment, each associated with an undrained collection of pus.

The following case is even more clearcut.

**CASE 11**—A man aged 66 was brought to the hospital with the story of sudden onset of sharp pain in the right side of the chest two weeks previously. This had continued with fever, prostration and general failure. There had not been cough, sputum or any suggestion of bronchitis or pneumonia. On entry he looked ill and had sweats and fever. There were signs of fluid in the right chest and, on tapping, thin yellow purulent fluid was obtained. It had an extremely foul odor. Smears showed innumerable bacteria and on culture nonhemolytic streptococci and an unidentified gram positive bacillus were grown. Between April 13 and April 29 the chest was aspirated seven times, and on five occasions penicillin was injected into the pleural cavity in amounts of 50,000 to 100,000 units, a total of 495,000 units. There was considerable improve-

ment under this program, and by the 29th the fluid was no longer foul and no organisms were seen or grown. However, 50 cc of yellow thickish pus was obtained and the patient continued to feel ill and to have a variable fever with leukocytosis. On April 27 (fig 6) penicillin was started intramuscularly at the rate of 120,000 units daily in eight doses, but after five days there was no improvement so that operation was finally done, a tube inserted into the pleura and tidal drainage instituted. The temperature promptly fell to normal. The patient recovered rapidly and left the hospital well on May 20.

In this case thoracentesis with local injection of penicillin led to partial control of the infection and did away with the foul nature of the pus. However, no complete clearing could be obtained until a tube was inserted for continuous tidal drainage. This has been our general experience in other instances of streptococcal and staphylococcal empyema.

#### 4 FAILURES DUE TO OVERWHELMING INFECTION

Patient 6 in the table is the only example we have had of failure of penicillin due simply to an overwhelming infection with an organism sensitive *in vitro*. She received large doses of penicillin by continuous intravenous drip, sufficient to raise the blood content to well over the standard bacteriostatic level of 0.15 unit per cubic centimeter.<sup>6</sup> In spite of this the blood stream was not cleared and after twenty hours culture still yielded 130 colonies of *S. aureus* per cubic centimeter. The importance of using penicillinase<sup>7</sup> is also brought out, as there was enough penicillin in the blood to inhibit growth in a blood culture made without penicillinase.

#### 5 FAILURE TO PREVENT OR CURE THE DEVELOPMENT OF GLOMERULAR NEPHRITIS IN CERTAIN PATIENTS WITH STREPTOCOCCIC INFECTIONS TREATED WITH PENICILLIN

The association of glomerulonephritis with certain types of streptococcal infection is clearly established. When penicillin became available it seemed of particular importance to find out if this agent, which extirpates so many streptococcal infections with great speed, would prevent the occurrence of nephritis. Of no less interest was the question of whether nephritis

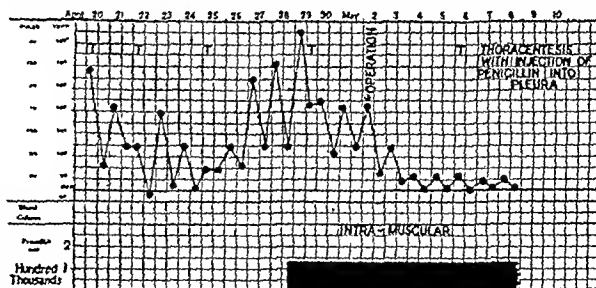


Fig 6—Graphic record of case 11

already established would clear up after elimination of concomitant streptococcal infection by penicillin, as for example in bacterial endocarditis.

**CASE 12**—A man aged 66 some time after a burn of the left shoulder was brought to another hospital because of high fever, shortness of breath and swelling of the left leg. Blood culture was found positive for hemolytic streptococci but in spite of intensive sulfadiazine therapy and two transfusions

6 Rammelkamp C H, and Keefer C S. Penicillin Its Anti-bacterial Effect in Whole Blood and Serum for the Hemolytic Streptococcus and Staphylococcus Aureus. J Clin Investigation 22: 649 1943.  
7 Kirby W M. Extraction of a Highly Potent Penicillin Inactivator from Penicillin Resistant Staphylococci. Science 99: 452 1944.

5 Tillett W S, Camber M J, and McCormack J E. The Treatment of Lobar Pneumonia and Pneumococcal Empyema with Penicillin. Bull New York Acad Med 20: 142 1944.

he had gone steadily downhill. On entry to Stanford Hospital (fig 7) he seemed desperately ill. The temperature was 40.5 C (104.9 F). The remains of a small burn on the right shoulder were visible but the lesion was almost healed. There were many petechiae, a faint systolic murmur at the apex and soft edema of both ankles, but the left leg was much more swollen than the right. Blood culture yielded 400 colonies per cubic centimeter of hemolytic streptococci. He was moderately anemic and the blood urea was 90 mg per hundred cubic centimeters. The urine contained considerable protein, immense numbers of red cells, white cells and casts of all sorts. The

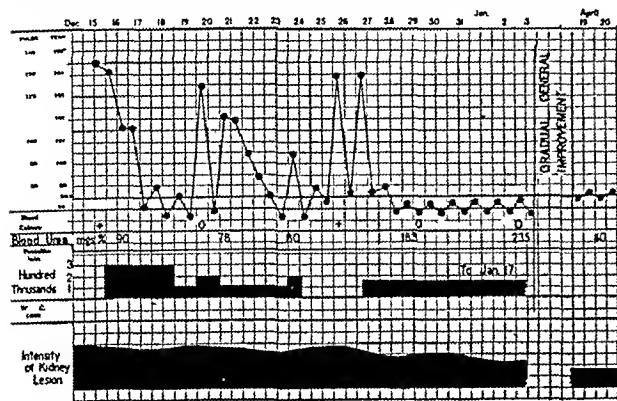


Fig 7—Graphic record of case 12

diagnosis was sepsis, hemolytic streptococcus, with bacteremia, phlebitis of the left femoral vein, and acute glomerular nephritis associated with the streptococcal infection. Penicillin was given by continuous intravenous drip at the rate of 300,000 units per day, and within twenty-four hours the blood culture showed no growth and the temperature fell abruptly to normal. On the fifth day there was an unexplained rise of temperature which may have been due to a small pulmonary embolus. Penicillin was stopped on the ninth day with the temperature normal and the patient much improved, but the urine was essentially unchanged and the blood urea was still 78 mg per hundred cubic centimeters. Two days after penicillin was stopped he had a chill with rise of temperature to 40 C (104 F) and blood culture was again positive, showing 5 colonies of hemolytic streptococci per cubic centimeter. Penicillin was given again intramuscularly, for three weeks. The temperature fell promptly to normal and never rose again above 37.5 C (99.5 F) nor was the blood culture again positive.

In spite of the elimination of the streptococcal infection the nephritis seemed unaffected. The urine continued to show protein, large numbers of red cells and casts. The blood urea rose as high as 235 mg per hundred cubic centimeters. Soft edema continued. His general condition gradually improved so that by May 1944 four months after leaving the hospital he felt very well and the blood urea was only 40 mg per hundred cubic centimeters. The blood pressure was 150/85. Except for slight pitting edema had disappeared. The urine, however, showed the typical findings of a glomerular nephritis in the subacute stage. An Addis count gave protein 0.35 Gm in twenty-four hours, red blood cells 250 million in twenty-four hours, white and epithelial cells 55 million in twenty-four hours and casts 500,000 (granular, hyaline and a few blood casts). This case also illustrates relapse of an acute infection with recurrence of positive blood culture when penicillin was stopped too soon.

There is every reason to believe that this patient's streptococcal infection was completely eliminated. There is no evidence, however, that the course of the nephritis was influenced and every reason to believe that an irreversible lesion has been set up which will progress in the usual relentless fashion of chronic glomerulonephritis.

Similar observations by one of us (C D A) in cases of *S. viridans* bacterial endocarditis have shown that the renal lesion may persist after the infection has been eliminated. All this is in harmony with the evidence accumulated by Addis<sup>8</sup> to the effect that glomerular nephritis, once under way, tends to propagate itself.

#### 6 CONDITIONS IN WHICH PENICILLIN EITHER FAILS OR IS LIKELY TO BE INADEQUATE

**Pneumococcal Meningitis**—Although pneumococci are often highly sensitive to penicillin, the results of treatment of pneumococcal meningitis have in our hands been unsatisfactory in many ways. These poor results are doubtless attributable in some degree to the nature of this infection<sup>9</sup> with its well known tendency to adhesive arachnoiditis, encephalitis and thick gelatinous exudate, which impedes the local application of any therapeutic agent. Three patients with pneumococcal meningitis, probably of otitic origin, all survived their infection after intensive penicillin treatment given intrathecally, by injection into the ventricles and by intramuscular or intravenous injection, but in each instance serious neuropsychiatric residues reduced them to an essentially vegetative state. The following case is typical.

**Case 13**—A man aged 48, a gardener, was found comatose in his home two days before entry. He had previously been well. He was found to have signs of meningitis, and type 12 pneumococcus was grown from the blood and spinal fluid. He failed to improve on intravenous sulfadiazine and antipneumococcus serum and was sent into Stanford Hospital for penicillin. He was flushed, restless and delirious. The neck was stiff. There was some pus in the left auditory meatus but there were no signs of mastoiditis. He was started on large doses of penicillin by continuous intravenous drip later changing to the intramuscular route (200,000 units per day). He also received 10,000 units in 10 cc of saline solution intrathecally almost daily for the first eight days. On the ninth day, as he had not improved the ventricles were tapped but there was no evidence of block. His temperature gradually subsided over twenty-six days but the spinal fluid still showed cells and protein. After eleven days there was a relapse with slight fever and considerable disorientation, but pneumococci were not recovered from the spinal fluid. However, he was given more penicillin intramuscularly and four intrathecal injections of 5,000 units each. He remained mildly confused and had a peculiar visual difficulty characterized by ability to see objects but difficulty in naming them. He could read words aloud but could not read consecutively or understand what he read. At the time he left the hospital, two months after entry, the spinal fluid still showed increased cells and protein suggestive of arachnoiditis, but he was much improved. The temperature was normal. He was oriented and talked rationally for the most part. There was still a pronounced personality change with general mild mental deterioration. Six weeks after leaving the hospital there was not much change.

Poor results in this small series of cases should not be taken as a final evaluation of penicillin in pneumococcal infections and better results have been reported by others<sup>10</sup>. However, our cases were treated intensively, both intrathecally, by ventricular puncture and by the intravenous and intramuscular routes and it seems unlikely that the outcome was due to too little treatment. Since sulfonamides are quite effective in pneumococcal meningitis, it may turn out that sulfonamides together with penicillin may be the best treatment for this condi-

8 Addis T. Unpublished observations.  
9 Rueggsegger J M. Pneumococcal Meningitis. *Ann Int Med* 17: 693 1942.  
10 Dawson M H and Hobby G L. The Clinical Use of Penicillin. Observations in 100 Cases. *J A M A* 124: 611 (March 4) 1944.



tion It seems especially important that some of our cases did not come under treatment until late in the disease In the long run better results will undoubtedly be obtained if penicillin therapy is started on the first or second day of the meningitis

**Chronic (Staphylococcal) Osteomyelitis**—In contrast to acute staphylococcal osteomyelitis our results in most of the chronic cases have been unsatisfactory If the lesion is in a long bone and can be laid wide open by surgical means, local penicillin irrigations seem to aid in rapid healing In cases with sinuses leading into the pelvic bones or into the spine and inaccessible to surgery, neither local irrigations nor heavy intramuscular injections have had any definite effect in our hands

#### CONDITIONS IN WHICH PENICILLIN WAS ENTIRELY INEFFECTIVE

During the course of our work penicillin was used in infections occurring along with other diseases, thus giving an opportunity to evaluate the material in conditions in which it ordinarily would not be used The results agree with those obtained by others<sup>1</sup> but may be enumerated

- Tuberculous paravertebral abscess, no effect
- Lymphoid leukemia, no effect
- Aleukemic myeloid leukemia, no effect
- Infectious mononucleosis, no effect (This condition developed in a patient with acute osteomyelitis while under active penicillin treatment)
- Mycosis fungoides, no effect
- Chronic (rheumatoid) arthritis, no effect
- Filaria, no effect (Blood count of microfilariae remained unchanged during penicillin administration)

#### RELATION OF PENICILLIN FAILURE TO SENSITIVITY OF STRAINS IN VITRO

Even within categories of bacteria such as streptococci, staphylococci and others which are in general sensitive to penicillin there may be strains which are resistant in vitro It is important to know whether such strain resistance in the test tube runs parallel with resistance to therapy in disease It has been noteworthy that practically all of our strains of pneumococci, streptococci and staphylococci recovered from clinical cases of active infection were inhibited in the general range of 0.1 unit per cubic centimeter of culture medium The relations with staphylococci are quite complicated and are discussed in detail in other papers from this clinic,<sup>11</sup> most of our penicillin resistant strains of this organism were recovered from sources other than active infections There are strong suggestions, however, that some correlation exists between strain sensitivity in vitro and clinical response This is well brought out in our series of 10 cases of subacute bacterial endocarditis caused by nonhemolytic streptococci Eight strains were highly sensitive to penicillin in vitro, and all of the patients infected with these were promptly rendered bacteria free In 1 of them culture made only two hours after penicillin was started was negative, as were all subsequent cultures In the ninth case a strain was obtained which required two or three times the usual concentration of penicillin to produce inhibition in the test tube and with this patient intensive (200,000 to 300,000 units per day) treatment was carried on for nineteen days before the temperature began to fall, although blood cultures were

negative after penicillin was given The strain from the tenth case was not inhibited in vitro even with very high concentrations of penicillin, and this patient failed to respond clinically to doses as high as 450,000 units per day, while blood cultures remained consistently positive

It is evident, therefore, that failure of therapy in an individual case may be due to strain resistance, and the need of in vitro tests in routine work is emphasized

We have not so far encountered the phenomenon of a strain becoming penicillin fast during the course of treatment, although this possibility has been raised both on experimental and on clinical grounds<sup>12</sup> In a case of relapsing staphylococcal sepsis, for example many positive blood cultures over a period of five months yielded organisms which were all equally sensitive even though treatment had been inadequate It does not seem probable that induced penicillin fastness will turn out to be a major factor in clinical penicillin failures

#### COMMENT

Penicillin failures fall under two main headings First there are those diseases or infections which are entirely unaffected by penicillin Those are now pretty well known and are enumerated in the memorandum<sup>1</sup> of the Office of Civilian Penicillin Distribution Secondly there are the infections which in a general way are amenable to penicillin but in which special circumstances may lead to failure in the individual case The present analysis deals with this problem

Patients with infections by bacteria which are sensitive to the actions of penicillin may die or may relapse because of inadequate dosage The daily amount may be too small, but the time factor is likely to be more important This is clearly established in *S. viridans* bacterial endocarditis, and in hemolytic streptococcus and staphylococcus infections A daily dose which may be adequate if given over periods of weeks or months may fail to cure if given for a few days only, even though the infection seems at first to be eliminated We believe that the question of optimum dosage both as to frequency and as to size of daily injections and as to total duration of treatment is the most important practical problem in penicillin therapy at the present time

The question of whether collections of pus can be disposed of by aspiration and injection of penicillin without surgical drainage is also one of great importance In general the position seems secure that such surgical drainage will be necessary in addition to penicillin This applies, in our experience, to empyema, lung abscess, subphrenic abscess and brain abscess, even though certain local collections caused by specially sensitive organisms (gonococci, pneumococci<sup>5</sup>) and located in favorable situations may be cured by aspiration and injection alone Ordinarily if such a lesion is not cured or definitely improving after a week of injection therapy surgical drainage should be done In some cases surgery is obviously necessary when the patient is first seen

Penicillin may fail in infections with a highly sensitive organism even when given in huge doses Under these circumstances either the patient is seen in a late stage of the disease or there is an overwhelming infection

<sup>11</sup> Rantz, L. A. and Kirby, W. M. M. The Action of Penicillin on the Staphylococcus in Vitro to be published Kirby, W. M. M. Bacteriostatic and Lytic Actions of Penicillin on Sensitive and Resistant Staphylococci to be published

<sup>12</sup> McKee, C. H. and Houck, C. L. Induced Resistance to Penicillin of Cultures of Staphylococci, Pneumococci and Streptococci. *Proc. Soc. Exper. Biol. & Med.* 53: 33, 1943. Rammelkamp, C. H. and Maxon, T. Resistance of Staphylococcus Aureus to the Action of Penicillin. *Ibid.* 51: 386, 1942.



In general elimination of streptococcal infections by penicillin will not be followed by healing of an associated nephritis. In certain conditions, such as pneumococcal meningitis, the nature of the lesions makes adequate application of penicillin difficult, and serious neuropsychiatric sequelae are likely to result even if the infection is overcome and the patient lives. Chronic staphylococcal osteomyelitis of the spine or pelvic bones not amenable to wide surgical exposure has in our experience not been influenced by penicillin even though the strains are sensitive in vitro.

## SUMMARY

Penicillin failures for the most part fall into the following groups:

- 1 Cases in which the treatment is too brief or the daily dose too small
- 2 Cases in which penicillin fails unless surgical drainage is also done
- 3 Overwhelming infection, even with a sensitive strain

Penicillin may fail to prevent the development or progress of nephritis even if the predisposing (streptococcal) infection is eliminated.

Penicillin treatment of pneumococcal meningitis may be followed by chronic neuropsychiatric disturbances.

There is probably a correlation between strain sensitivity in vitro and clinical amenability to penicillin therapy.

Development of penicillin fastness probably plays little part in therapeutic failures.

THE TOXIC REACTIONS OF THE  
NEWER SULFONAMIDES

CARL F VILTER, M.D.

AND

M. A. BLANKENHORN, M.D.  
CINCINNATI

In the past four years 1,936 patients in the medical wards at the Cincinnati General Hospital have been treated with sulfathiazole, sulfadiazine, sulfapyrazine, sulfaguanidine and succinylsulfathiazole. Sulfapyridine is now considered obsolete and is no longer used in this service; sulfanilamide is rarely employed and only a preliminary report can be given on sulfamerazine, since its use has been recent.

This particular study was undertaken to determine the relative incidence of untoward reactions to the various drugs and the relation of the mild and readily recognizable symptoms to severely toxic or lethal reactions. Difficulties were encountered in this evaluation because many patients admitted to this service are critically ill as the result of acute infection or are in a moribund state of chronic disease, and thus the division of symptoms due to drug and those due to disease is difficult. Also the drug is usually discontinued at the first sign suggestive of sulfonamide toxicity. Consequently the course from early and mild to late and severe symptoms can rarely be followed.

Table 1 shows the relative incidence of toxic reactions and of deaths due to and contributed to by sulfonamides. Persons treated at home and sent to the

hospital because of toxic symptoms are excluded, since this would yield an erroneous incidence of toxicity. Untoward symptoms caused by sulfadiazine are significantly less than those due to sulfathiazole and sulfapyrazine.

The symptomatology deserves some description and comment. Although the incidence may vary between one sulfonamide and another, the clinical picture is

TABLE 1—Incidence of Toxic Reactions to Sulfonamides in the Medical Wards of the Cincinnati General Hospital, January 1940 to April 1944

|                       | Patients<br>Treated | Patients<br>Who<br>Developed<br>Toxic<br>Reactions * | Per<br>Cent | Deaths<br>Due to<br>Drug<br>Intoxi-<br>cation * | Deaths in<br>Which<br>Drugs<br>Con-<br>tributed |
|-----------------------|---------------------|--|-------------|---|---|
| Sulfathiazole         | 1,261               | 87   | 6.9         | 2   | 4   |
| Sulfadiazine          | 503                 | 16   | 3.2         | 2   | 0   |
| Sulfapyrazine         | 132                 | 11   | 8.3         | 0   | 1   |
| Succinylsulfathiazole | 18                  | 1  |             | 0   | 0   |
| Sulfaguanidine        | 22                  | 1  |             | 0   | 0   |
| Total                 | 1,936               | 116  | 6           |   |   |

\* Not counting reactions or deaths that came after home treatment with sulfonamides.

much the same. Table 2 demonstrates the incidence of the various symptoms and syndromes. It includes patients referred because of sulfonamide intoxication.

Fever occurs most frequently between the fifth and tenth days of therapy. It is usually above 102° F. and when chills occur, rises as high as 106° F. The fever may be of a plateau type or may mimic a septic source with daily elevations. In a small number of cases there is a relative bradycardia. The white blood cell count may be as high as 20,000 or may be within normal limits. Unfortunately there is no absolute method, short of discontinuing the sulfonamide, of differentiating such fever from that produced by the infection for which the drug is given. Frequently, however, there are clinical signs of resolution of the infection, or one is aided by the appearance of skin manifestations.

Skin lesions usually appear between the second and tenth days. Sulfathiazole usually produces a tender erythema nodosum, most frequently found on the extensor surfaces of the extremities and on the face. Sulfathiazole may also produce a morbilliform erythematous rash, either localized or widespread. This is similar to the lesions produced by sulfadiazine in 3 cases. The skin lesions may become pustular with continued administration of the drug.

Conjunctivitis, frequently associated with erythema nodosum, occurred only in patients treated with sulfathiazole in our series. It occurred between the fifth and fourteenth days and was bilateral in all but 1 case. The erythema and moderate edema of the bulbar conjunctiva may be accompanied by burning of the eyes and photophobia.

Nausea and vomiting, distressing symptoms that contributed to the discarding of sulfapyridine, occur infrequently with sulfathiazole and rarely with sulfadiazine. It usually appears after the first dose of the drug in contrast to similar symptoms which may appear later as a result of uremia due to sulfonamide nephrosis or tubular obstruction. It is usually possible to change immediately to another sulfonamide with prompt relief of the emeses.

Polyneuritis, which is usually asymmetrical, has a remarkably high incidence. This may be due to the nutritional state of the patients of the Cincinnati General

From the Department of Internal Medicine, University of Cincinnati College of Medicine and the Cincinnati General Hospital.  
Read before the Section on Miscellaneous Topics, Sessions for the General Practitioner at the Ninety-Fourth Annual Session of the American Medical Association, Chicago, June 14, 1944.

Hospital<sup>1</sup> Its onset with pains, burning, numbness or tingling has occurred as early as the seventh day of treatment and perhaps as late as six months after a course of sulfonamide

Delirium is difficult to attribute to sulfonamides, since it occurs so frequently in febrile disorders. As a rule it occurs in association with other toxic manifestations of the drugs, particularly renal complications

Polyarthritides and arthralgia appeared in a small number of our cases between the second and twelfth days

Alterations in the blood and bone marrow were noted eleven times in the case of sulfathiazole, once with sulfapyrazine and not at all with sulfadiazine. Others have reported similar reactions with sulfadiazine, however, and we have seen it several times in patients not included in this series. These reactions may occur at any time in the course of therapy. Leukopenia gives no clinical sign. Thrombocytopenia is, of course, usually associated with hemorrhagic phenomena, hemolytic anemia with jaundice, and agranulocytosis with dirty ulcerations of the mouth and pharynx.

injury of the secreting portion of the kidney. In this paper we refer to the former as "calculi" or crystalline obstruction and to the latter as sulfonamide nephrosis. The former has been the most common in this series but has not caused death. All the fatal cases here described were due mainly to nephrosis.

Crystalline obstruction or "calculi" may be asymptomatic, but generally hematuria and sometimes renal colic appear from the second to the eighth day. These signs may be followed by drug retention, oliguria, albuminuria, anuria and uremia. In our group of 30 patients that developed this picture, the smallest dose was just under 3 Gm of sulfathiazole. We believe a urine pH of 7 or above and a high urine urea content aid tremendously in elimination of the crystals.

Sulfonamide nephrosis, characterized by drug retention, and a rising blood urea nitrogen may or may not be accompanied by oliguria and anuria and by albuminuria. It has occurred in patients receiving sodium bicarbonate. It may occur in conjunction with a systemic picture of encephalopathy, myocarditis, hepatitis, anemia, leuko-

TABLE 2—Symptoms in Relation to Drug and Dosage in the Medical Wards of the Cincinnati General Hospital, January 1940 to April 1944

|                     | Sulfathiazole   |                    |         |    | Sulfadiazine    |                    |         |    | Sulfapyrazine   |                    |         |    | Succinyl sulfathiazole |                    |                 | Sulfaguanidine  |                    |                 |
|---------------------|-----------------|--------------------|---------|----|-----------------|--------------------|---------|----|-----------------|--------------------|---------|----|------------------------|--------------------|-----------------|-----------------|--------------------|-----------------|
|                     | Number of Cases | Days of Appearance | Dose Gm |    | Number of Cases | Days of Appearance | Dose Gm |    | Number of Cases | Days of Appearance | Dose Gm |    | Number of Cases        | Days of Appearance | Dose Gm (Range) | Number of Cases | Days of Appearance | Dose Gm (Range) |
| Fever               | 43              | 2-10               | 16-99   | 47 | 2               | 3-34               | 42-190  |    | 2               | 1-6                | 13-44   |    | 1                      | 7                  | 91              |                 |                    |                 |
| Skin lesions        | 59              | 2-10               | 2-264   | 45 | 3               | 8-34               | 50-190  |    |                 |                    |         |    |                        |                    |                 | 1               | 8                  | 23              |
| Calculi             | 18              | 2-7                | 3-48    | 27 | 3               | 2-8                | 8-51    | 29 | 6               | 2-8                | 14-69   | 41 |                        |                    |                 |                 |                    |                 |
| Nephrosis           | 5               | 1-5                | 6-19    | 10 | 3               | 2-4                | 12-58   |    | 1               | 5                  | 48      |    |                        |                    |                 | 1               | 5                  | 23              |
| Delirium            | 3               | 2-4                | 26-70   | 39 | 1               | 1                  | 22      |    |                 |                    |         |    |                        |                    |                 |                 |                    |                 |
| Nausea and vomiting | 13              | 1                  | 8-58    | 26 |                 |                    |         |    | 1               | 6                  | 44      |    |                        |                    |                 |                 |                    |                 |
| Conjunctivitis      | 10              | 5-18               | 21-103  | 63 |                 |                    |         |    |                 |                    |         |    |                        |                    |                 |                 |                    |                 |
| Hemolytic anemia    | 4               | 5-14               | 40-50   | 51 |                 |                    |         |    |                 |                    |         |    |                        |                    |                 |                 |                    |                 |
| Leukopenia          | 5               | 4-10               | 19-56   | 32 |                 |                    |         |    | 1               | 2                  | 17      |    |                        |                    |                 |                 |                    |                 |
| Agranulocytosis     | 2               | 21                 | 50*     |    |                 |                    |         |    |                 |                    |         |    |                        |                    |                 |                 |                    |                 |
| Arthritis           | 1               | 4                  | 10      |    | 1               | 5                  | 24      |    |                 |                    |         |    |                        |                    |                 |                 |                    |                 |
| Arthralgia          | 3               | 2-12               | 8-99    | 46 |                 |                    |         |    |                 |                    |         |    |                        |                    |                 |                 |                    |                 |
| Neuritis            | 6†              | 7 days to 6 mo     | 50-197  | 76 | 3†              | 9-30               | 27-100  | 65 |                 |                    |         |    |                        |                    |                 |                 |                    |                 |
| Hepatitis           | 1               |                    |         |    |                 |                    |         |    |                 |                    |         |    |                        |                    |                 |                 |                    |                 |
| Rash with edema     | 1               | 13                 | 48      |    |                 |                    |         |    |                 |                    |         |    |                        |                    |                 |                 |                    |                 |

\* Total dose of sulfadiazine, succinylsulfathiazole and sulfathiazole

† Two patients received sulfadiazine and sulfathiazole; 1 received sulfanilamide, sulfapyrazine and sulfathiazole

‡ One patient received sulfapyrazine and sulfathiazole

None of the toxic symptoms are of particularly deadly portent. Most of them disappear within one to two days after discontinuance of the sulfonamide, except that neuritis may not. Leukopenia may disappear even while treatment with the sulfonamide continues. When the onset of peripheral neuritis occurs during treatment, the necessity of treatment must be weighed against the possibility of a persistent neuritis after recovery. Thiamine has not cured or prevented this form of neuritis. Some of our patients developed neuritis while receiving brewers' yeast, thiamine and liver extract. In others, vigorous treatment with vitamins and diet may have prevented neuritis from becoming worse.

Hepatitis, myocarditis and disorders of other systems undoubtedly occur, but as yet our clinical methods of evaluation are too limited to make it possible to be certain in their recognition.

The most troublesome toxic symptoms center about the kidney and the urinary tract. These have been the most dangerous to the patient and most difficult to diagnose in early stages. They appear in two separate forms but may overlap. The one is mechanical obstruction of the renal pelvis or ureter by crystals, the other is

cytosis and fever and is readily confused with Weil's disease when the history of sulfonamide ingestion is lacking. It appeared in 10 of the cases collected, and the smallest dose of drug (sulfathiazole) was 6 Gm. It was noted regularly between the first and fifth days that the first manifestation was a rising blood urea nitrogen level.

The treatment of renal complications must suit the individual case. Because of the frequency with which renal complications occur, daily fluid intake and urinary output, and frequent examination of the urine for erythrocytes and blood for drug level and nonprotein nitrogen should be a routine. For hematuria the urine should be alkalinized promptly by administration of sodium bicarbonate, and fluids should be administered to bring the urinary output to at least 1,200 cc per day. If oliguria or retention of drug or nonprotein nitrogen develops, fluid intake should be increased, but if improvement does not result the drug should be discontinued. Ureteral catheterization is indicated if anuria is preceded by hematuria and renal colic. Only 1 of our patients has benefited by this procedure.

\*The value of routine alkali treatment concomitant with the sulfonamides is still open to question. Although it is true that sulfonamides are more soluble in alkaline

1 Blankenhorn, M. A. Multiple Peripheral Neuritis Occurring with Sulfonamide Therapy. *Ann. Int. Med.* 20: 423 (March) 1944.

solutions and consequently might have less opportunity of depositing in the genitourinary tract the increased rate of excretion tends to reduce the blood level of the sulfonamide to below effective range. Of the 30 patients with urinary complications due to sulfonamides, 11 had received alkali by mouth during sulfonamide administration. Four of these so treated were among the 11 who died. Five of the patients who died were given alkali by mouth or parenterally after the appearance of renal failure. Nine of the 11 were given parenteral fluids in an attempt to increase the flow of urine. Dehydration at this stage did not play a significant part.

were not considered to be of clinical significance and occurred infrequently. They included soreness of the neck and shoulder muscles, headache, dysphagia, weakness, malaise and pruritus.

Similar symptoms of toxicity apparently occur with sulfamerazine. Of 86 patients thus far given this sulfonamide, 9 have developed such untoward reactions. Three showed leukopenia, 2 fever, 1 delirium, 1 hematuria alone and 2 nephrosis. The majority of these patients suffered from pneumococcal disease.

Of the 1,936 patients included in the general report, the death of 4 (0.2 per cent) could be attributed mainly,

TABLE 3—Deaths Due to Renal Complications of Sulfonamide Therapy in the Medical Hands of the Cincinnati General Hospital, January 1940 to April 1944\*

| Name | Age | Sulfonamide | Dose Gm. | Diagnosis   | Primary or Secondary Cause of Death | Early Signs and Symptoms  | Late Signs and Symptoms   | Autopsy   |
|------|-----|-------------|----------|---|-------------------------------------|---|---|---|
| R C  | 70  | Thiazole    | 22       | Bronchopneumonia arteriosclerosis and hypertensive heart disease bronchial asthma     | Primary                             | Oliguria, hematuria, general arteriosclerosis   | Oliguria, hematuria, azotemia (blood urea nitrogen 16)                                  | Sulfathiazole crystals in tubules and pelvis of kidneys and in ureters  |
| V C  | 84  | Thiazole    | 33       | Bronchopneumonia, general arteriosclerosis, diverticulitis                            | Primary                             | General arteriosclerosis, poor hydration, microscopic hematuria, incontinence, oliguria   | Increasing azotemia, drug retention, acidosis   | Acute pyelonephritis due to crystals  |
| M T* | 49  | Thiazole    | 6        | Pelvic disease  | Primary                             | Maculopapular rash, stupor, fever, anemia, blood urea nitrogen 10   | Oliguria, anuria, drug retention, blood urea nitrogen 10, fever, coma                   | Kidneys: multiple millary areas of necrosis. Heart: interstitial myocarditis with few millary areas of necrosis                     |
| A B* | 49  | Thiazole    | 9        | Bronchopneumonia  | Primary                             | Nausea and vomiting   | Jaundice, oliguria, hematemesis and melena, stupor, anemia, blood urea nitrogen 18, 278 | None  |
| G D  | 43  | Thiazole    | 16       | Lobar pneumonia type I, bacteremia, millary pulmonary abscesses                       | Secondary                           | Azotemia, drug retention  |   | Active chronic interstitial nephritis, much swelling of tubular epithelium  |
| H M  | 44  | Thiazole    | 34       | Chronic pyelonephritis, hypertensive cardiovascular disease with encephalopathy       | Secondary                           | Chronic pyelonephritis with urine albumin + + + red blood cells, white blood cells and casts, blood urea nitrogen 10  | Blood urea nitrogen 171, drug retention, coma   | None  |
| B H  | 76  | Thiazole    | 10       | Bronchopneumonia, chronic bronchitis, general arteriosclerosis                        | Secondary                           | Dehydration, blood urea nitrogen 48, fixed urine, specific gravity, anuria, incontinence  | Hyperventilation, carbon dioxide 23   | None  |
| G J  | 46  | Thiazole    | 10       | Bronchopneumonia, hemolytic streptococcal sepsis, hypertensive cardiovascular disease | Secondary                           | Severe hypertensive cardiovascular disease, Lzme, white blood cells, casts, red blood cells prior to drug, blood urea nitrogen 4, drug blood level 27.5 mg. % | Blood urea nitrogen 140, drug retention, melena (urine +) anemia                        | None  |
| E R  | 86  | Diazine     | 35       | Bronchopneumonia, pneumonia type III, arteriosclerotic heart disease                  | Primary                             | High level 17 mg. % general arteriosclerosis  | Progressive azotemia, confusion, stupor, coma   | Acute bronchitis, bronchopneumonia, cardiac dilatation and hypertrophy, toxic myocarditis, arteriosclerosis, severe toxic nephrosis |
| H S  | 69  | Diazine     | 31       | Lobar pneumonia type I, bronchial asthma, chronic bronchitis                          | Primary                             | Arteriosclerosis, microscopic hematuria   | Cross hematuria, oliguria, blood urea nitrogen 70                                       | None  |
| R F  | 41  | Pyrazine    | 99       | Staphylococcal septicaemia  | Secondary                           | Drug level 30 mg. %, oliguria, blood urea nitrogen 39 %   | Rising azotemia, anuria, coma   | Sulfapyrazine crystals in renal calyces, pelvis, cortex and medulla and ureters   |

\* Including patients treated at home.

A patient who has toxic symptoms from a specific sulfonamide need not necessarily display signs of toxicity with another. In this series we have been able to find 6 instances in which initial treatment with sulfathiazole resulted in rash, fever, nausea and vomiting or hematuria. All 6 were changed directly to sulfadiazine. In 4 the untoward reactions including hematuria, subsided immediately. In 2 (fever, rash) the toxic symptoms recurred.

In 2 instances in which sulfadiazine produced azotemia, sulfathiazole was substituted after omission for a few days. The azotemia did not recur. In 1 case, however, after 90 Gm. of sulfathiazole, fever, cutaneous lesions and conjunctivitis appeared.

Numerous minor subjective complaints appeared which could be attributed to the sulfonamides. These

perhaps solely, to the action of the sulfonamides. In 5 more instances death was probably hastened by the administration of sulfonamides. To this group are added 2 cases of sulfathiazole intoxication with resultant death in which the drug was given in the home by a private physician. All these patients died with renal complications due to sulfonamides. Six necropsies were performed in this group of 11 deaths.

Table 3 shows the pertinent clinical data including autopsy. In the 6 cases thus examined, obstruction of the pelvis or ureter did not occur. Crystals were recorded as the evidence of sulfonamide intoxication, but crystals or calculi did not obstruct. None of the patients examined post mortem were anuric.

Five of the cases might be classed as nephrosis. In only 2 of these was there an early manifestation of

sensitivity, i. e. in 1 a typical rash developed and in another nausea and vomiting were noted from the first dose.

There were certain signs and conditions in these individuals which warned against indiscriminate use of sulfonamides. Five showed advanced arteriosclerosis and 2 impaired renal function. The earliest manifestations of unfavorable action of the drug were varied and seldom subjective—usually microscopic hematuria, oliguria, incontinence and drug retention. None had renal colic. The signs of uremia later developed.

Although the blood urea nitrogen is one of the most useful of indexes in this problem, its magnitude has apparently little relation to the survival or recovery of the azotemic patient when the drug is discontinued. In one individual who recovered, the blood urea nitrogen rose to 135 mg per hundred cubic centimeters. In another it was 70 mg per hundred cubic centimeters on the day of death. Seventeen of those with genito-urinary complications who recovered had blood urea nitrogen levels over 50 mg per hundred cubic centimeters. It has been routine in this medical service to measure the urea nitrogen on all patients before and during treatment with sulfonamides. An initial level as high as 70 or 80 mg per hundred cubic centimeters does not deter cautious treatment of acute infectious disease. Should the level of nitrogenous products rise constantly however during sulfonamide therapy, it is wise to discontinue the drug regardless of the drug blood level.

It is apparent, then, that with advanced age and renal disease sulfonamides should be prescribed cautiously and the treatment followed carefully. With the onset of persistent hematuria, decreased urine output, signs of azotemia and unusually high levels of sulfonamide in the blood or of any one of these manifestations, treatment should certainly be discontinued.

It is obvious that the early signs of severe reactions are so occult as to be revealed usually only by laboratory studies. There is nothing unfortunately, that bedside appraisal of the patient will yield in the early diagnosis of the fatal sulfonamide reaction.

#### SUMMARY

Among 1,936 patients toxic reactions were recorded among 116, an incidence of 6 per cent. These reactions were usually of such severity as to compel the arrest of treatment. Occasionally treatment could be resumed by changing to another drug. This could be done oftenest by changing from sulfathiazole to sulfadiazine.

Death was ascribed to toxic effects mainly in 4 instances (0.2 per cent) and death in 5 was certainly hastened by drug intoxication. All fatal toxic reactions were mainly renal and resulted in uremia.

In no instance was blockage of the pelvis or ureter thought to be the cause. There was no correlation of the milder forms of intoxication to the more severe or lethal.

Therefore there are no premonitory signs of renal intoxication. Mild signs of disease of the kidney pelvis are microscopic hematuria, oliguria, incontinence, pain and elevated blood urea.

If these signs are observed, sulfonamide treatment should be stopped or continued with great care lest nephrosis occur. The use of alkali and water usually corrects mild symptoms. By the time classic symptoms of uremia appeared no form of treatment was effective.

In this series blockage of the renal tubule was considered the cause of death, hence ureteral catheterization was not helpful. In disease of the tubule, symptoms may be absent until the disease is well established and irreversible.

#### ABSTRACT OF DISCUSSION

DR LAWRENCE D. THOMPSON, St. Louis. Few reports have covered such a large series of cases and have been so well analyzed as this report by Drs. Vilter and Blankenhorn. The comparative incidence of reactions with the various drugs agrees closely with the majority of reports. The report of Hageman, Harford, Sobin and Ahrens from our clinic revealed little difference in the incidence of reactions following the use of sulfadiazine and sulfamerazine. My own observations, although covering a series only about one third as large, are in close agreement with those reported, with a possible exception in the cases of renal complications, the incidence of these complications has been somewhat smaller. It is accepted that age and preexisting renal damage predispose to renal complications following the use of sulfonamide drugs. Since most of the cases were observed in the St. Louis City Hospital, this series should be comparable to that of Vilter in respect to this factor. The forcing of fluids is also a generally accepted part of sulfonamide therapy. The deliberate limiting of fluid intake in order to secure a high blood level of the drug early in the course of treatment is to be condemned most emphatically, unfortunately, this tendency has appeared repeatedly during the past year. The use of sodium bicarbonate may have contributed to this difference in results. The wisdom of the routine use of sodium bicarbonate is still under debate. The increased solubility of the drugs in alkaline urine is undisputed. The early observations of Hartmann and his co-workers which indicated the harmful effect on the kidneys of an alkalosis combined with the use of sulfanilamide and sulfapyridine made such an impression on me that only rarely have I given sodium bicarbonate. Later studies have made it clear that sulfanilamide and the more recent sulfonamides cannot be compared in many respects. Perhaps it was an error to apply this rule with the use of sulfathiazole and sulfadiazine, however, like sulfanilamide these drugs are reabsorbed to a significant extent by the renal tubules. This reabsorption has been shown to be an active process by the tubular cells. The harmful effect of either acidosis or alkalosis on already impaired tubular cells has been pointed out by many students of renal physiology and pathology. Until more exact information is available it is logical to assume that two agents, each of which in itself may impair renal tubular function should not be used together except for some very special purpose and then under most careful observation. The repetition of observations on the toxicity of these drugs, particularly as to the effect on the renal tubules, such as the work of Shannon under the experimental condition of deliberate alkalosis, might throw some light on this debated point.

DR S. L. BERNSTEIN, Cleveland. What is Dr. Blankenhorn's opinion of the administration of the sulfonamide drugs on ambulatory patients? I recall giving a man aged 60 a small dose of sulfanilamide for a septic throat without a culture. He had a total of 20 grains (13 Gm.), with alkali for three days. He had to be urged to go to the hospital because of agranulocytosis. Fortunately he recovered. Since then I have been chary about prescribing sulfonamides to ambulatory patients. One sees many prescriptions at the drug stores with doctors prescribing them for ambulatory patients. The druggists are beginning to prescribe them over the counter, and this is becoming a serious question.

DR DAVID LEHR, New York. In experiment on the prevention of renal obstruction the animals received repeated intraperitoneal injections of sodium sulfadiazine in amounts known to produce massive precipitation of sulfadiazine in the renal tubules provided no therapy was employed. Stomach tube feedings of water alone did not provide adequate protection. Animals of this group succumbing to the sulfadiazine intoxication revealed without exception massive intratubular precipitation.

of sulfadiazine accompanied by severe tubular dilatation and degeneration of the kidneys. The striking success of alkalization (sodium bicarbonate) in combination with the "forcing of fluids" was clearly borne out by the high rate of survival (no death) and the almost complete absence of significant pathologic lesions in the alkali treated animals. These measures were of little value once the renal obstruction was fully developed. In such instances the forcing of fluids actually produced water poisoning. In the treatment of renal obstruction, standardized experimental conditions were established in the following manner. The renal block was produced by intraperitoneal injection of a single fatal dose of sodium sulfadiazine. If left untreated, the animals invariably developed pronounced renal obstruction from intratubular precipitate of sulfadiazine, and 80 to 90 per cent succumbed to this complication after two to three days. Treatment consisted in stomach tube feedings of fixed amounts of water or salt solutions (containing either sodium bicarbonate, ammonium chloride or a mixture of these two or sodium chloride). The most striking result was achieved with solutions of sodium chloride and of the mixture of sodium bicarbonate and ammonium chloride. They made possible the complete recovery of all rats from an otherwise fatal sulfadiazine intoxication, whereas no benefits were derived from the "forcing of water alone. The water-sodium bicarbonate combination even shortened the time of survival (alkalosis), and ammonium chloride, in addition to a further reduction of the life span also increased the mortality to 100 per cent (acidosis). Apparently water alone is reabsorbed rapidly under the conditions of a block in the collecting tubules, whereas in the presence of salts of high osmotic value some of the water might be forced to remain in the tubules, dilate them and push the tubular plugs down and out of the kidney. The life saving effect of salt diuresis in renal obstruction from sulfadiazine has been learned in experiments with more than 200 animals.

DR M. A. BLANKENHORN, Cincinnati. Dr. Thompson and I come to the same consideration of the problem of the general practitioner who gives sulfonamides, namely, damage to the kidney. The matter of making alkalis mandatory with sulfonamide medication is a weighty one, and being responsible for rather a large service with a great variety of patients and a great variety of house officers, I am unwilling to make it mandatory in the service for the reasons of which Dr. Thompson mentioned a few. Perhaps we might have improved our service had we been able to give alkalis intelligently. Merely to exhibit alkalis to the patient is far from meeting the indications of alkalinizing urine. Alkalis may be given in too great an amount, and they may be given in an insufficient amount. The object is to alkalinize the urine. We used nitrazine paper to test the urine, when freshly voided as our criterion of alkalization. That is a simple device which any general practitioner can put into the hands of his nurse. Litmus paper is not reliable. I may have been misleading in my discussion of the treatment and the prophylaxis of renal complications in mentioning water. Dr. Lehr, when I said "water" I meant water as a vehicle for glucose, saline alkali in the form of bicarbonate and lactate. To answer Dr. Bernstein on the use of sulfonamides for ambulatory patients, if I should draw on my own experience I would be absolutely against it. I have seen individuals carried into the hospital in a desperate condition, and I have not counted the deaths that I have seen in other hospitals where ambulatory patients had been treated or received. There are several in my experience, and my advice would be not to give it to ambulatory patients. I am not unfamiliar with Dr. Lehr's work and with the work of others who have concentrated on the function of the tubule and its reaction to this drug, because that is where the work must be done, and it is from such experimentation that the answer may come. The use of alkalis in moderate dose in advance of treatment or with treatment, will not always prevent fatal damage to the kidney. I speak particularly of that lesion of the kidney which involves the parietal structure of the kidney, as well as the tubule. That is a cellular infiltrate resembling granuloma. Just why that lesion occurs I do not know. Two of the patients not counted in this series that I have seen had that disorder of the kidney from relatively small doses. That was the unfortunate individual who is sensitive to the dose and has perhaps an allergic reaction.

## THE SIGNIFICANCE OF MUSCLE SPASM

IN THE ACUTE STAGE OF INFANTILE PARALYSIS  
BASED ON ACTION CURRENT RECORDS

R. PLATO SCHWARTZ, MD

HARRY D. BOUVIAN, MD

AND

WILBUR K. SMITH, MD

ROCHESTER, N. Y.

The total time interval required for essential agreement on some phases of infantile paralysis includes the names of Heine,<sup>1</sup> Medin,<sup>2</sup> Wickman,<sup>3</sup> Lovett<sup>4</sup> and many others. During this period and since that time a steady flow of literature has provided evidence of the great efforts which have been made in the study of all aspects of a disease which annually disables great numbers of children and adults.

Out of all this there came the confirmation of a correlation between the pathologic changes and the clinical characteristics of infantile paralysis. Thus it became established that the disabilities provoked by this disease were directly proportional to the degree and extent of permanent damage to the lower motor neurons on which normal muscle function was dependent.

Spasm in the muscles of the neck and back, the spine sign, was a noted characteristic of early onset. Hyperesthesia was less frequent but carefully distinguished from muscle soreness, tenderness and pain. The latter usually prevailed but was most variable as related to degree and duration.

In 1916 Lovett<sup>5</sup> and more recently, Ober<sup>6</sup> and others have recorded the observation that moist heat relieves muscle pain and soreness. The prescription of rest for the affected extremity was then logically based on principles which are today recognized as sound practice in all phases of clinical medicine and surgery.

When considered as a unit, each of three parts, (1) the pathologic characteristics, (2) the clinical manifestations and (3) the treatment were related so naturally in the form of a premise that they have held together with ease for more than three decades.

But none of us would hesitate to divorce ourselves from this or any other premise when presented with the evidence that it was wrong. However, any logical premise which has slowly developed from the work of many men in various countries should not be readily discarded on the basis of a different opinion which depends solely on clinical observations relevant to some particular manifestation of a disease.

This brings us to Sister Kenny's concept of infantile paralysis. It is based on her personal observation of

Read before the Harvard Seminar Group on Thursday, Sept. 30, 1943.  
Aided by a grant from the National Foundation for Infantile Paralysis, Inc.

From the University of Rochester School of Medicine and Dentistry, Department of Surgery, Division of Orthopedics and Department of Anatomy.

<sup>1</sup> Heine, J. Beobachtungen über Lähmungszustände der unteren Extremitäten und deren Behandlung. Stuttgart, F. H. Kohler, 1840.

<sup>2</sup> Medin, O. Ueber eine Epidemie von spinaler Kinderlähmung. Verhandl. d. internat. med. Cong. (1890) 2: 37. 1891. Infantile Paralysis with Especial Reference to Its Acute Stage. Nord. med. Ark. 6: No. 1, 1896. translated Arch. de med. d. enf. 1: 257 and 321, 1898.

<sup>3</sup> Wickman, I. Studien über Poliomyelitis acuta. Zugleich ein Beitrag zur Kenntniss der Myelitis acuta. Berlin, S. Karger, 1905. reviewed Arch. de med. d. enf. 9: 636, 1906.

<sup>4</sup> Lovett, R. W. and Richardson, M. W. Infantile Paralysis with Especial Reference to Its Occurrence in Massachusetts, 1907-1910. Am. J. Dis. Child. 2: 369 (Dec.) 1911.

<sup>5</sup> Lovett, R. W. The Treatment of Infantile Paralysis. ed. 1. Philadelphia, P. Blakiston's Son & Co., 1916. ed. 2, 1917.

<sup>6</sup> Ober, I. R. Pain and Tenderness During Acute State of Poliomyelitis. I. A. M. A. 120: 514 (Oct. 17) 1942.

patients during and after the acute stage of the disease. In Pohl's<sup>7</sup> most recent book on the subject it is stated that

Infantile paralysis is neither a simple disease nor one completely understood. The destruction of anterior horn cells of the spinal cord is certainly not the principal nor the most important characteristic and does not explain the presenting symptoms of the disorder. From the discussion presented, infantile paralysis affects both muscles and nerve tissue and is a disease capable of widespread disorganization of the neuromuscular system. The condition of muscle spasm is the symptom common to all cases. Untreated spasm destroys muscle tissue and is the cause of contractures, stiffness and deformities. In addition the pathophysiological symptoms of mental alienation of muscle and incoordination of muscle action implicate the more highly organized portions of the nervous system. Paralysis is unfortunately a feature of the disease, but paralysis proves after all to be a minor consideration in most cases of infantile paralysis. Muscle spasm, mental alienation and incoordination are far more damaging to bodily mechanics. Acceptance of these true symptoms forms the true basis on which the treatment of the disease can be designed. Only meticulous attention to all of the disturbed structures can reduce the evil after effects of the disease.

Spasm if untreated will result in permanent muscle damage, stiffness and skeletal deformities.

Muscle spasm in the acute stage appears almost to have the properties of an acute inflammatory process capable of causing serious and permanent changes in the muscle substance.

The examination of the patient should not include stretching, squeezing or manipulation of the affected muscles nor should the patient be requested to make any voluntary efforts at contraction of the muscle.

It is recognized that certain muscles, noticeably the opponents of the muscle in spasm, have become nonfunctioning. This is of no immediate concern, since these nonfunctioning muscles usually are simply alienated. Such muscles however, cannot be restored except by first treating the condition of spasm in the opponent. Attempts to determine the presence or absence of contractile power in muscle are therefore not only impossible and of no value but they have the serious effect of increasing the spasm in the affected muscles. Under no circumstances should the acutely ill patient be encouraged to contract any of his muscles for the purpose of recording the so called muscle test.

Inspection or observation alone usually suffices for the purpose of analysis of the muscle condition.

Critical examination of infantile paralysis in the acute stage will present abundant evidence to show that orthodoxy has erred both in the recognition as well as in the interpretation of the physical findings of the disease.

Miss Kenny's real contribution is not a new treatment for the disease of infantile paralysis as it has been conceived in the past but a conception of the disease itself so radically opposed to the old as to almost warrant considering the entity as a new disease. The basic principles [are] built upon observations of the behavior of the musculature.

In short Miss Kenny's discovery is that infantile paralysis is a disease in which disturbance of physiological function of the nervous system is of more importance than actual architectural change. Many of the observable clinical phenomena are the result of functional disorganization of the motor centers and of the nerve pathways to the muscles. The disease affects muscle as well as nerve tissue. Muscle spasm is the primary lesion in the disease rather than paralysis. Miss Kenny has designed a treatment for these conditions. Needless to say the treatment could have nothing in common with the previous methods designed for a disease of opposite conception.

Any concept such as this one should not be accepted or rejected on the basis of clinical observation alone. An objective analysis of the new versus the old concept revealed a common agreement on one point, i. e., neuromuscular dysfunction was the cause of disabilities and therefore continued to be the reason for the great efforts made to bring infantile paralysis under control. This point in common should therefore lead to agreement that a lowering of incidents of disabilities, subsequent to the acute onset of the disease, is dependent on the discovery of more effective methods of preventing the impairment of muscle function. From this point it naturally follows that a continuation of past efforts toward this objective might be favored by additional information regarding the behavior of the neuromuscular mechanism in the acute stage of infantile paralysis.

It therefore became our purpose to investigate the characteristics in the behavior of the neuromuscular mechanism, primarily as related to the acute stage of infantile paralysis, for comparison with the recorded characteristics of normal individuals and the records of patients with other established neuromuscular disabilities. In so doing it was indicated that we should pay particular attention to any and all evidence through which the significance of muscle spasm might be evaluated.

Here we venture to state that a similar point of view may have prompted the electromyographic studies made by Watkins, Brazier and Schwab.<sup>8</sup> It was gratifying to note the agreement between their recorded evidence and that which we reported in 1942.<sup>9</sup> This fact is far more important than that we offer a slightly different explanation for the recorded abnormal functions of the lower reflex arc.

With the introduction of muscle spasm as the dominant influence contributing to disability the authors previously quoted also accepted the possibility of paralysis on the basis of established evidence of partial damage to or complete destruction of the lower motor neuron innervation, in part or in toto, to one or more muscles. The absence of conclusive evidence in support of the statements which have been quoted regarding muscle spasm cannot be regarded as evidence that spasm might not play a significant role in producing disabilities. However, the clinical and myographic records of muscle spasm in the acute stage of infantile paralysis should not be interpreted as evidence which confirms the "new concept" as quoted.

But this "new concept" has already been found to be at variance with the distribution of spasm as recorded by action currents through the oscillograph. Our original report and that of Watkins, Brazier and Schwab emphasized that muscle spasm in the acute stage of infantile paralysis was not limited to the "antagonists of nonfunctioning muscles." On the contrary, both of these investigations gave evidence which emphasized the presence of spasm in the "nonfunctioning" or weakened muscle and in muscles which showed no clinical or other evidence of weakness, as indicated by successive records from respective patients.

In attempting to clarify this situation we have found that available methods for evaluating the role of muscle spasm are very limited. But it is evident that both mus-

<sup>7</sup> Pohl, J. T. and Kenny, E. The Kenny Concept of Infantile Paralysis and Its Treatment. Minneapolis: Bruce Publishing Company, 1943. pp. 37-38, 960 and 61-62.

<sup>8</sup> Watkins, A. L., Brazier, M. A. B. and Schwab, R. S. Concept of Muscle Dysfunction in Poliomyelitis Based on Electromyographic Studies. J. A. M. A. 123: 189 (Sept. 23) 1943.

<sup>9</sup> Schwartz, R. P. and Bouman, H. D. Muscle Spasm in the Acute Stage of Infantile Paralysis as Indicated by Recorded Action Current Potentials. J. A. M. A. 119: 923 (July 18) 1942.



cle weakness and muscle spasm are respective states of abnormal function which are expressed through the lower motor neuron. To differentiate between these two states of abnormal muscle function it was found that action current records provided the most useful evidence.

Four action current amplifiers were constructed for use with a multiple recording oscillograph, for making records of the reaction on one or a maximum of four muscles simultaneously to stretch reflex or voluntary contraction.

A total of 50 individuals have been studied: normal subjects 9, spastic paralysis patients 6, infantile paralysis patients 23, miscellaneous patients 12. The total number of records has been from Nov 22 1941 to July 1, 1943 3,622 and from July 1, 1942 to July 1, 1943 2,879.

The past year's work has added confirmation to the summary of recorded evidence reported in 1942 and provides a more lucid interpretation of this evidence than has heretofore been possible. Naturally this approach directs primary attention to prevailing abnormalities in the function of the neuromuscular mechanism of the lower reflex arc during the acute stage of infantile paralysis.

However, a satisfactory understanding of the recorded reactions which are to be enumerated cannot be provided by the simple concept of upper and lower motor neurons without designation of the mechanisms which may be altered by the direct or indirect effect of the virus of infantile paralysis to produce the respective abnormal functions.

Interpretation in this instance should be based on the present available information concerning the intrinsic structures and function of the normal lower reflex arc. This should include information concerning the normal structural and functional relationships which the lower motor neuron bears to other nerve cells at its own and at other levels, i. e., its relation to all neuronal pathways which make essential contributions to every physical effort that requires muscular coordination.

As this information is still in a formative state our interpretation must be based on the knowledge which is available at the present time.

As part of the spinal reflex arc and as the effector cell of "the final common path" the lower motor neuron plays an obviously essential role in all reflex and voluntary contractions of skeletal muscle. The fact that the lower motor neuron can be excited to discharge by impulses passing over the dorsal spinal nerve roots is axiomatic. That these dorsal root impulses can excite the cell directly or through the medium of interneurons seems established by the investigations of Renshaw<sup>10</sup> and of Lloyd.<sup>11</sup> In addition the lower motor neuron is bombarded by volleys of impulses passing over pyramidal and extrapyramidal pathways, these impulses reaching the motor neuron probably through the medium of interneurons.

It is important for the lower motor neurons to respond to impulses which reach them but it is just as important that these same neurons at times should be rendered inactive. An example of this phenomenon is the well known fact that under certain circumstances sensory impulses passing into the spinal cord are pre-

vented from exciting the lower motor neurons to discharge and these sensory impulses may even block or nullify the effect of other impulses impinging on the motor neuron from other levels of the nervous system. This phenomenon of inhibition leads to the relaxation of antagonists during the performance of muscular movements and thus facilitates their proper execution. At present we have no generally accepted explanation of the mechanism of the inhibitory process. It appears that the functional reaction of the lower motor neuron as related to transmission of impulses by way of the axon to striated muscle fibers is determined by some mechanism at or related to internuncial cells or to the many synapses associated with the dendrites and cell body of the lower motor neuron.

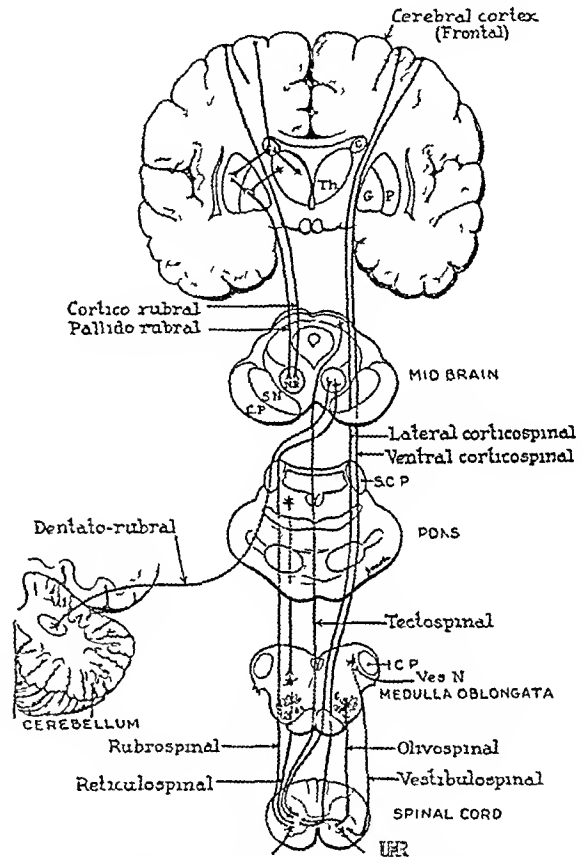


Fig 1—Diagram showing some of the descending pathways which influence the spinal motor neuron. C caudate nucleus, C P, cerebral peduncle, G globus pallidus, I C P, inferior cerebellar peduncle, N R, red nucleus, P putamen, S C P, superior cerebellar peduncle, S V, substantia nigra, Th thalamus, Ves N, vestibular nerve.

In figure 1 some of the pathways through which the lower motor neuron receives a multiplicity of inhibitory and excitatory impulses are diagrammatically indicated.<sup>12</sup> The large number of synaptic connections which the lower motor neuron makes with internuncial cells and the axons of dorsal root ganglion cells is in sharp contrast to the single axon over branches of which the former sends impulses to more than one hundred muscle fibers at the rate of five to ten per second for the maintenance of normal tone and at a greater frequency for increased muscular contraction.

When considered as a unit the cell body of the motor neuron, while making numerous synaptic connections is regarded as essentially free from structural connec-

12 Although we use the term inhibitory impulses there is no evidence to indicate that impulses causing inhibition differ in any way from those causing excitation.

10 Renshaw B. Activity in Simplest Spinal Reflex Pathways. *J Neurophysiol* 3: 373, 1940.

11 Lloyd D. P. C. Reflex Action in Relation to Pattern and Peripheral Source of Efferent Stimulation. *J Neurophysiol* 6: 111, 1943.

Neuron Patterns Controlling Transmission of Ipsilateral Hind Limb Reflexes in Cat. *ibid* 6: 293, 1943.

Conduction and Synaptic Transmission in Reflex Response to Stretch in Spinal Cats. *ibid* 6: 317, 1943.

tions with other neurons which combine to form the neural mechanism for normal muscular control. It is at this level proximal to the dendrites and the motor cell body, that internuncial cells are present and to them has been largely assigned the function of transmission or rejection of impulses through to activate the motor

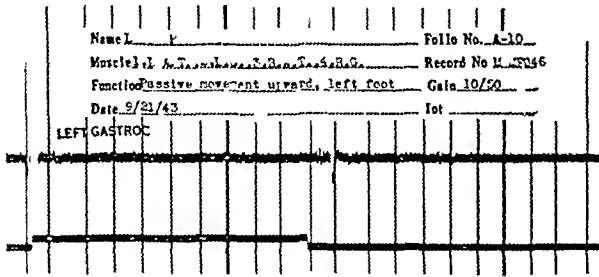


Fig 2—Reaction to stretch (stretch reflex) of the left gastrocnemius muscle of a normal person. Upper line action currents of gastrocnemius muscle. Lower line signal indicating duration of stretch line in all records 0.1 second and 1 second (heavy line).

cell from which impulses are sent via its axon to the muscle. In addition, the physiologic state of the motor neuron itself is also a determinant factor as to whether or not it is excited to discharge by impulses impinging on it.

In a much less literal sense we may regard the multiple branching axon terminals of the lower motor neuron as somewhat separated from each of the more than one hundred muscle fibers thus innervated. Reference is here made to the non-neural character of the "sole plate," i. e. the group of cells which forms the structural connection between the axon terminals of the lower motor neuron and the striated muscle fibers.

The addition of the sensory relationship to the lower motor neuron-muscle complex is required to complete the elements essential for a simple spinal reflex arc. The knee jerk is frequently cited as a typical spinal reflex. Likewise it is an example of the stretch reflex and has proved to be both an important and a fundamental means of eliciting information. By stretching the muscle with a blow on the patellar tendon from a percussion hammer, afferent impulses normally pass from the muscle to sensory ganglion cells of the second to the fourth lumbar and thence to the lower motor neurons, the axons of which transmit the impulses to the quadri-

from cutaneous receptors appear to involve a multi-neuron reflex arc including internuncial cells interposed between the axon of the sensory cell and the lower motor neuron. It is of course not possible at the present time to be certain that all of the fibers carrying impulses from the muscle receptors synapse directly with the lower motor neurons or that all of the fibers carrying impulses from cutaneous receptors form connection with the lower motor neuron by means of interneurons but evidence indicates that such is probably the case in animals under experimental conditions.

By this brief summary of influences under which the lower motor neuron exercises its normal function, our appreciation for the systemic manifestations of infantile paralysis is in no way lessened. Moreover we are fully aware that repeated observations of the past thirty years have continuously emphasized the effects of the virus of infantile paralysis at nearly all levels of the central nervous system. But without the associated impairment of muscle function this disease would become relatively unimportant.

However, as related to the latter point our attention must continuously be focused on the functional disturbances of the lower reflex arc as they have been found to prevail in relation to muscle spasm with or without muscle weakness during the acute stage of

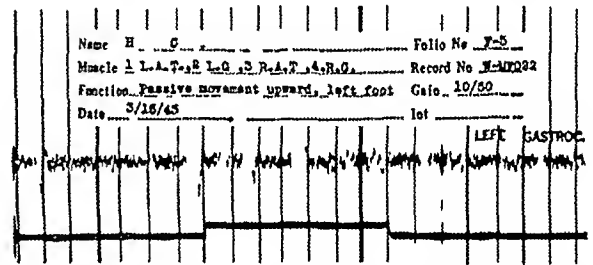


Fig 4—Reaction to stretch (stretch reflex) of left gastrocnemius muscle of a patient with spastic paralysis. Upper line action currents of left gastrocnemius muscle. Lower line signal indicating duration of stretch.

infantile paralysis. The stretch reflex of a normal lower reflex arc always produces a characteristic action current record as in figure 2. For this reason departure from this characteristic action current reaction indicates that abnormal conditions prevail somewhere within or related to the lower reflex arc.

In muscles examined during the acute stage of infantile paralysis the stretch reflex usually produces a record indicating the prolonged contraction of muscle fibers as related to both time and degree (fig 3). This abnormal reaction to the stretch reflex is the phenomenon which we have interpreted as muscle spasm in the acute stage of infantile paralysis.

Here it should be emphasized that the magnitude of spasm thus recorded is in no way comparable to that which we clinically observe as in spastic paralysis and the like (fig 4) so readily revealed by both clinical examination and the characteristic dysfunction which it produces.

These characteristics of muscle spasm which we have recorded in almost every instance, have usually been of such low magnitude that there was seldom agreement between various individuals on clinical examination. However, we have on rare occasions seen intermittent contractions in an anterior tibial muscle. The tendon became prominent at the rate of ten to fifteen times per minute, for a period of twenty minutes in one

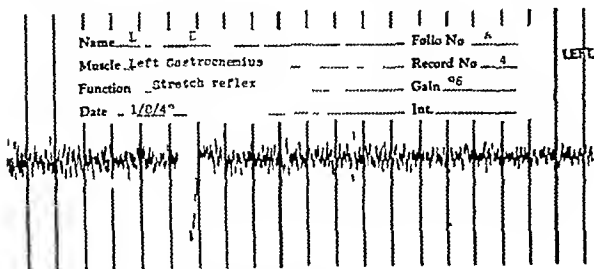


Fig 3—Reaction to stretch (stretch reflex) of left gastrocnemius muscle of patient with infantile paralysis.

iceps muscle which contracts to produce extension at the knee joint. The investigations of Renshaw<sup>10</sup> and of Lloyd<sup>11</sup> show that within a single spinal segment the large nerve fibers conducting afferent impulses from muscle receptors over the dorsal spinal roots synapse directly with the lower motor neuron without the mediation of internuncial cells thus creating a two neuron arc reflex pathway. In contrast reflex discharges over the ventral roots, as a result of impulses

instance The boy aged 6 stopped crying when the spasmodic contractions of the anterior tibial muscle ceased

But evidence of spasm was never present when a muscle literally failed to give any action current response to the stretch reflex In all such instances the muscle was considered as completely paralyzed at the time the record was made This was regarded as an important observation It provided a starting point from which we begin to answer questions regarding the evidence of spasm when it is expressed in association with weakened muscles or muscles of normal strength

From this finding we may conclude that the prevailing evidence of spasm is not due to the intrinsic reaction of muscle fibers as it has been described in association with inflammation or the fibrillation which is said to follow section of the motor nerve to a muscle We are therefore forced to conclude that in this instance the muscle is deprived of all motor impulses without any associated muscle fiber contractions An oscillographic record of a completely paralyzed muscle showing no evidence of action current reaction to a stretch reflex is illustrated in figure 5

The characteristic pattern of a weakened muscle's reaction revealed that its response to voluntary contraction stimulus was often less than the spasm which followed stimulation by stretch reflex

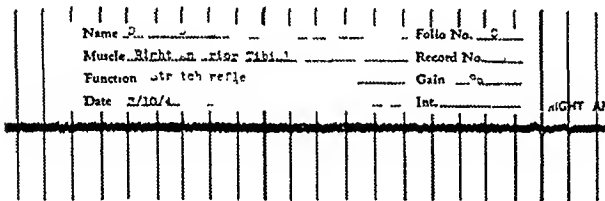


Fig. 5—Patient with infantile paralysis. The reaction to stretch in a completely paralyzed muscle (right anterior tibial) is a muscle which shows no evidence of action currents in maximal voluntary effort

This has been found to be a common behavior of weakened muscles There are two plausible interpretations (1) that more lower motor neurons are stimulated by the stretch reflex than the number which is activated by the voluntary effort to contract the weakened muscle, (2) that although an equal number of lower motor neurons are stimulated in each instance a greater number of impulses are induced by the stretch reflex than result from voluntary effort

This evidence further indicates that voluntary impulses from proximal centers may be more effectively blocked than the sensory impulses which are stimulated by the stretch reflex From this therefore one might conclude that the damage of lower motor neuron cells is not as great as the initial loss in voluntary function would indicate From this it would follow that impairment of muscle function in the acute stage of infantile paralysis may be due to any one or any combination of the following causes (1) injury or death of the lower motor neuron cell body, (2) partial or complete block of voluntary impulses from higher centers without damage to the lower motor neuron cell (3) inhibition of contraction due to the presence of impulses arising within the muscle i.e. muscle soreness and pain and that muscle spasm does not initiate the development of muscle weakness as indicated by clinical observation and the following action current records

The "nonfunctioning" or weakened muscle usually produces a characteristic pattern in response to voluntary and reflex stimulation The voluntary contraction

of the left gastrocnemius muscle free from clinical evidence of weakness is illustrated in figure 6 A The voluntary contraction of the weakened right gastrocnemius muscle same patient is illustrated in figure 6 B It is apparent that there was much less response in the weakened muscle than in the normal muscle On

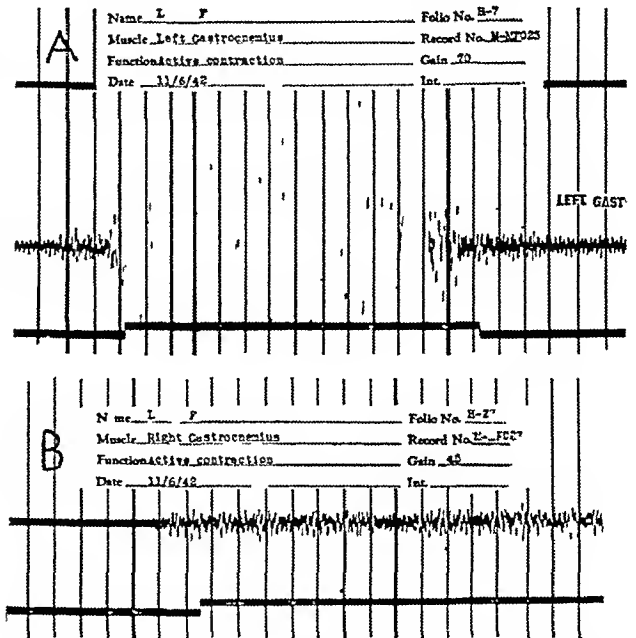


Fig. 6—Patient with infantile paralysis. A record of maximal voluntary contraction of relatively normal left gastrocnemius muscle upper line action currents of left gastrocnemius lower line signal indicating duration of movement B record of maximal voluntary contraction of weakened right gastrocnemius muscle upper line action currents of right gastrocnemius lower line signal indicating duration of movement

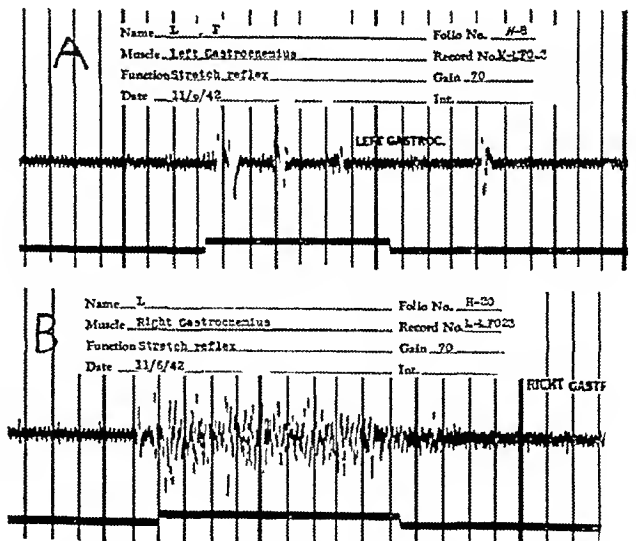


Fig. 7—Same muscle as figure 6 A record of reaction to passive stretch upper line action currents of left gastrocnemius lower line signal indicating duration of stretch B same muscle as figure 6 B record of reaction to passive stretch (stretch reflex) upper line action currents of right gastrocnemius lower line signal indicating duration of stretch

stretch reflex of the muscle with normal strength a low magnitude of spasm as previously defined was recorded as in figure 7 A while the stretch reflex of the weakened muscle figure 7 B produced spasm greater in degree than the reaction of the same muscle to voluntary effort as recorded in figure 6 B

In either situation it follows that estimation of the voluntary contraction strength of a weakened muscle does not provide a reliable index of the total capacity of the lower motor neurons which activate the muscle.

As a companion to this reaction there was another which was unanticipated. When the stretch reflex

cles (fig 8-1). Likewise when the gastrocnemius was subjected to stretch reflex, there was recorded evidence of spasm in both the weakened muscle and its antagonist as illustrated in figure 9A. This evidence has been interpreted as a reversal of Sherrington's principle of reciprocal innervation. The action current response of a normal left anterior tibial muscle to a stretch reflex applied to its antagonist, the left gastrocnemius, is illustrated in figure 10.

It was observations such as these which emphasized the need for recorded evidence of the reaction of four muscles simultaneously when the stretch reflex was applied to one of the four. Action current records were therefore made as indicated in figure 9. In this instance the stretch reflex was applied to the left gastrocnemius and evidence of spasm was recorded in both the gastrocnemius and the anterior tibial on the left leg and in the corresponding muscles of the right leg. The prevailing evidence of spasm in muscles of the side opposite to the applied stimulus is in sharp contrast with the corresponding reaction of normal muscles as indicated in figure 12. We have also found that the same cross stimulation was provoked by voluntary contraction of the left gastrocnemius, figure 13. A diagrammatic expression indicating how the prevailing dysfunction may provoke this particular behavior on the part of the lower reflex arc is presented in figure 11.

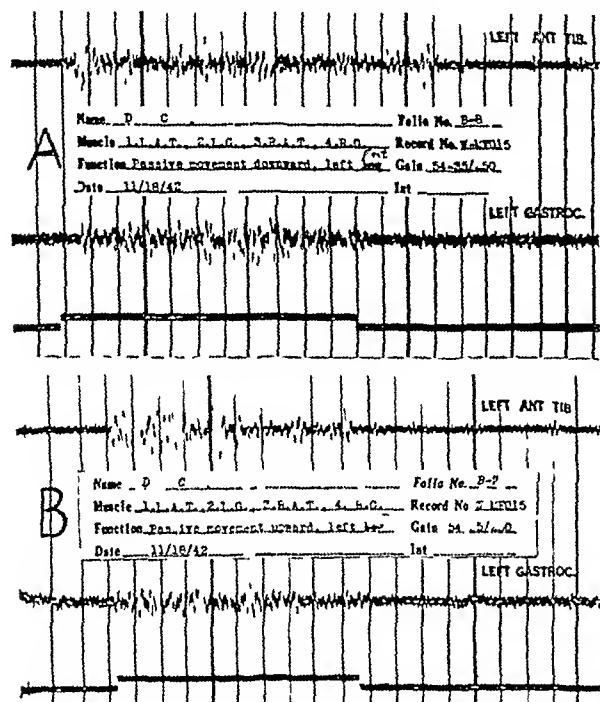


Fig 8.—Patient with infantile paralysis. *A*, reaction in left anterior tibial and gastrocnemius muscles to stretch of left anterior tibial muscle. Upper line action currents of left anterior tibial muscle, middle line action currents of left gastrocnemius muscle, lower line signal indicating duration of stretch. *B*, records from same muscles, record of passive stretching of left gastrocnemius.

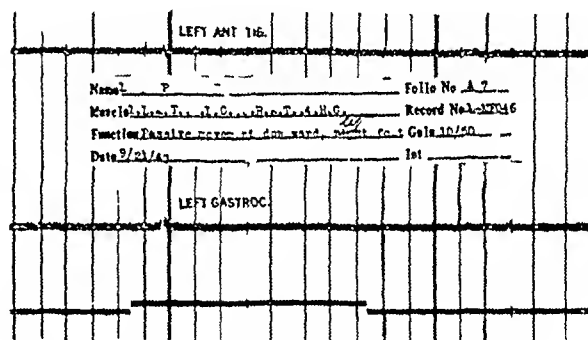


Fig 10.—Record of same muscles as in figure 8 in a normal person on passive stretch applied to left anterior tibial.

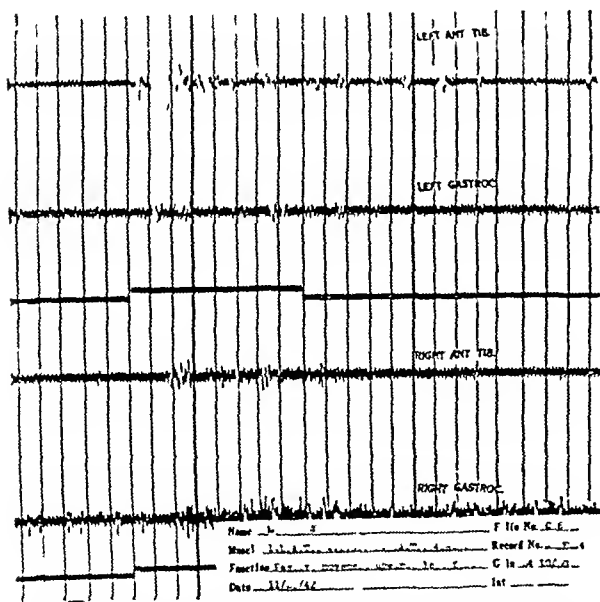


Fig 9.—Patient with infantile paralysis. Record of action currents of both anterior tibial and gastrocnemius muscles in passive stretch applied to left gastrocnemius. Top line action currents of left anterior muscle, second line action currents of left gastrocnemius, third and sixth lines signal indicating duration of stretch, fourth line action currents of right gastrocnemius.

reaction of a weakened left anterior tibial muscle was recorded simultaneously with its antagonist, evidence of spasm was definite in the records of respective mus-

The evidence presented, therefore, indicates that during the acute stage of infantile paralysis the normal function of the lower reflex arc is grossly altered. Such alteration is clinically expressed by partial or complete loss of muscle function. It is also revealed in action current records indicating the presence of spasm in weakened muscles and muscles of normal strength, when respective muscles are stimulated by stretch reflex. It is further emphasized by reversal of the Sherrington reciprocal innervation together with cross stimulation of agonist and antagonist when one of the corresponding muscles on the opposite side is stimulated by stretch reflex or voluntary contraction. But it should be emphasized that this recorded evidence of altered function, (1) spasm, (2) reversal of the Sherrington reciprocal innervation and (3) cross stimulation, all gradually disappeared subsequent to the passing of muscle soreness and pain, which is not always present but when present is always first to disappear. If and when disabilities prevail in the postacute stage, they are expressed in terms of muscle weakness or complete paralysis, usually the former, without clinical or recordable evidence of (1) spasm, (2) reversal of the Sherrington reciprocal innervation or (3) cross stimulation herewith described.

It is during the earlier months of the postacute stage that initially paralyzed muscles may show some return of function and weakened muscles usually regain an appreciable percentage of normal strength. It has been emphasized for fully three decades that such spontaneous improvement is most likely to express itself during the first six months after onset, the rate of improvement thereafter declining during the next six to twelve months.

Such evidence of improvement in strength of a weakened muscle is revealed in action current records of voluntary contraction against resistance of the observer's hand (fig 14 *A* and *B*). We have found that muscle spasm, stimulated by stretch reflex, diminishes during this period (fig 15 *A* and *B*). But it does not follow that the disappearance of spasm is necessarily accompanied by full restoration of strength in the weakened muscle. Action current records of weakened muscles, made one to four years after onset, revealed the weakness of voluntary contraction but failed to show evidence of spasm in any of the various manifestations herewith presented as common to the acute stage.

From the interpretation of records let us turn to the clinical record on which the Kenny concept is solely dependent. In 1932 work done by the International Committee on Infantile Paralysis<sup>12</sup> represented a critical analysis of more than 8 000 references. All authorities agreed on the high incidence of muscle spasm in

of muscle weakness or paralysis in and when either became apparent. But the presence of muscle spasm in the extremities was not noted and emphasized as it was in relation to the neck and back.

Moreover from the inverse relationship of the maximum degree of muscle spasm prevailing in the acute

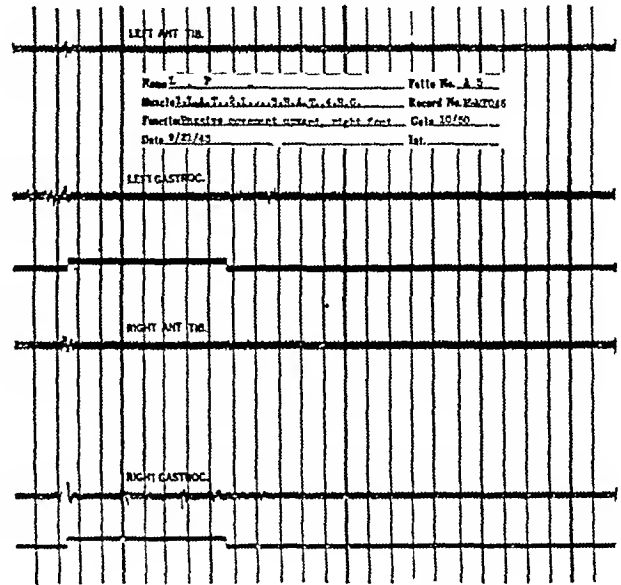


Fig 12—Records from same muscles as in figure 9 in a normal person on passive stretching of right gastrocnemius

stage of infantile paralysis and the least percentage of weakness or paralysis in the neck and back muscles there was no indication that this spasm was the primary cause of the disabilities which create fear of this disease.

From the available conclusive data we establish the following points:

- 1 In some patients spasticity has been recorded in all muscles which we have investigated.
- 2 Evidence of spasticity has been recorded from (a) weakened muscles, (b) the antagonists of weakened

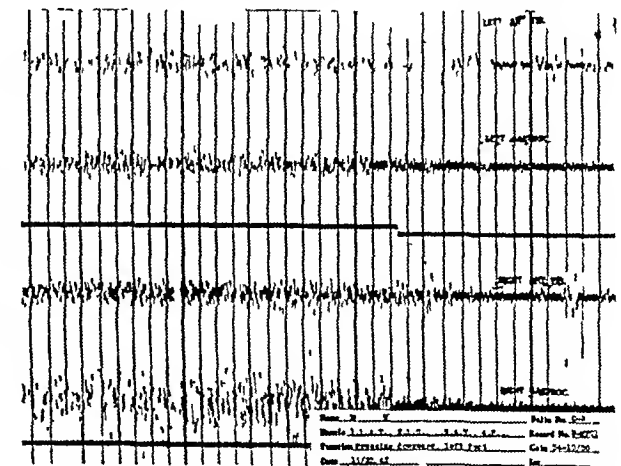


Fig 13—Same patient as in figure 9. Action currents of same muscles obtained during voluntary contraction of left gastrocnemius

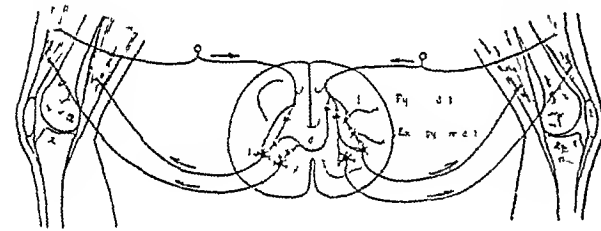


Fig 11—Diagram showing some of the neurons involved in a spinal reflex. Only one level of the second to fourth lumbar region which contributes to the knee jerk is shown. Other levels of the spinal cord show similar connections. For explanation see text.

the neck and back as characteristic of the early onset of infantile paralysis. But despite this fact it was also noted that the incidence of muscle function impairment in the neck and back was much less than at any other levels of the body. Wernstedt's<sup>14</sup> figures on 5,948 cases are typical of the percentage distribution of Lovett and other authorities: cranial nerves 13.3 per cent, throat and neck muscles 5.8 per cent, trunk 27.8 per cent, arm 41.3 per cent and leg 78.6 per cent. Lovett's<sup>15</sup> total of 1,529 cases gave the following distribution: one or both legs (with or without one or both arms) 83.3 per cent, one or both arms (with or without one or both legs) 38.7 per cent, abdomen 72.0 per cent, back 13.5 per cent and neck 11.0 per cent.

The common stiffness and less frequent rigidity of the neck and back was invariably accompanied by muscle soreness and pain. The presence of the latter in the extremities was noted to prevail before the onset

<sup>12</sup> Pohlman, C. A Survey Made Possible by a Grant from the International Committee for the Study of Infantile Paralysis. Baltimore: Williams & Wilkins Company, 1932, p. 173.

<sup>14</sup> Wernstedt, W. Klinische Studien über die zweite grosse Polio-epidemie in Schweden 1911-1913. *Ergebn. d. inn. Med. u. Kinderh.* 25: 705, 1924. *Epidemiologische Studien über die zweite grosse Polio-epidemie in Schweden 1911-1913* ibid. 26: 248, 1924.

<sup>15</sup> Lovett, R. W. *Treatment of Infantile Paralysis*, ed. 2. Philadelphia: P. Blakiston's Son & Co., 1917, p. 7.

muscles and (c) muscles which exhibit no clinical or other evidence of weakness.

3 The evidence does not support the view that fibrillation or inflammation of the muscle is responsible for the spasticity.

4 On stretching the antagonist of a weakened muscle the evidence of spasticity in the weakened muscle is frequently greater than the recorded reaction of the muscle in response to voluntary contraction

5 On stretch reflex of a weakened muscle spasticity not only is recorded from its antagonist but also is significantly present in records of the corresponding muscles of the opposite extremity

6 In association with voluntary contraction efforts this spasticity spread was recorded from the same group of muscles as resulted from stimulation by stretch reflex noted in 5

7 But a muscle which shows no clinical evidence of weakness always produces a stronger voluntary contraction record than the recorded evidence of muscle spasm

8 There has never been recorded evidence of spasm when a muscle failed to produce a record of reaction to the voluntary movement

9 Spasticity is a generalized phenomenon in the early stages of infantile paralysis<sup>16</sup>

10 As prevailing spasm diminished in a weakened muscle there was recorded evidence of increased strength in the voluntary contraction

11 The gross initial spasm of neck and back muscles, so characteristic with onset of the acute stage, invariably disappears without evidence of muscle weakness or paralysis

12 There was no correlation between the degree of spasm and the incidence of muscle weakness or paralysis

SUMMARY

From action current records made in relation to the study of the neuromuscular reactions of patients in the acute stage of infantile paralysis we conclude that the spine sign is a gross manifestation of the lesser degree of spasm recorded in muscles of normal and sub-normal strength

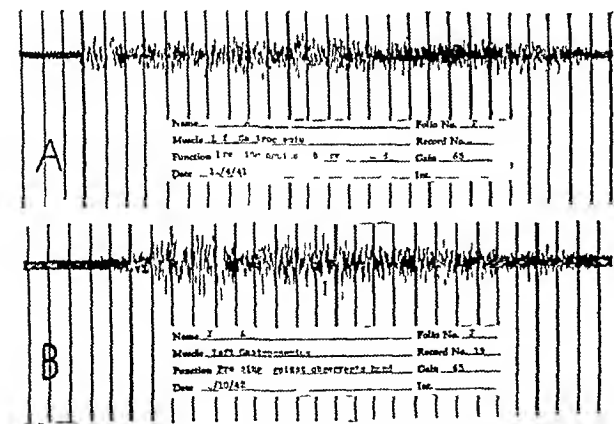


Fig 14—Patient with infantile paralysis A action current record of maximal voluntary contraction of left gastrocnemius taken Dec 4 1941 B action current record of maximal voluntary contraction of left gastrocnemius muscle taken March 10 1942

In association with the latter certain functional abnormalities other than muscle weakness were observed in the lower reflex arc They could be most readily explained in terms of a dysfunction at/or proximal

to the dendrites or cell body of the lower motor neuron This dysfunction resulted in a partial isolation of the lower motor neuron from the inhibition normally induced by other levels through long and short neural pathways The degree of lower reflex arc isolation thus established and the degree of viability-remaining in the

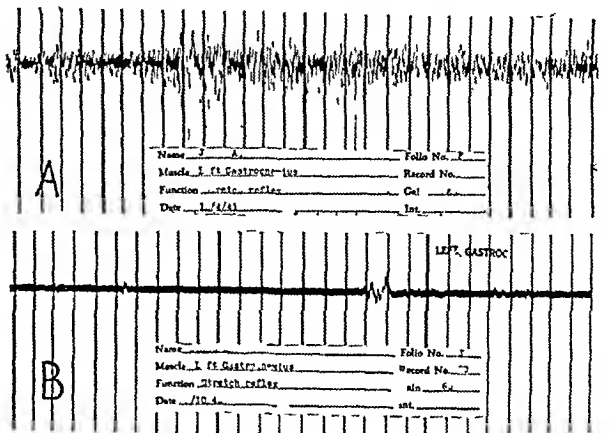


Fig 15—Same patient as in figure 14 A action current record of reaction to stretch (stretch reflex) of left gastrocnemius muscle taken Dec 4 1941 B action current record of reaction to stretch (stretch reflex) of left gastrocnemius muscle taken March 10 1942

lower motor neurons therefore determined the amount of muscle spasm in each instance

Without the involvement of levels proximal to the lower motor neuron there would be no spasm, but the muscle could be either weak or normal, dependent on the number of normal motor neurons innervating the muscle

If all motor neurons failed to be stimulated by the stretch reflex there would be no reaction to the stretch reflex even though relationships proximal to the dendrites were normal

Spasticity and weakening are two separate phenomena, each dependent on specific disturbances of functions of the anterior horn cells<sup>16</sup>

There was every indication that spasm ran its course like other clinical manifestations of the disease

The relationship between muscle tenderness and muscle spasm has not been clarified by the work thus far done As in the past, we should continue to differentiate between pain and hyperesthesia from discomfort due to muscle soreness

We have emphasized the clinical phenomena and the electromyographic evidence which indicates that muscle spasm does not initiate the development of muscle weakness

**Racial Theory**—The assumption that blood is transmitted at birth from parents to progeny and is inherent in the clan or race from the very origin of the racial stock was and is the cause of the blood feuds and wars among clans, tribes and nations and still remains the basis of strife between different nationalities The racial theory recently revived by Hitler in Germany is reminiscent of the primitive fantastic idea that the blood of a people is inherited from the very first progenitor of that people, or race, and that the blood of certain peoples contains higher spiritual powers than that of neighboring peoples The conclusion is drawn that the blood of mythological Roman heroes still flows in the veins of the modern Italians and that the mythical blood of Wotan still circulates in the vessels of the twentieth century Nazis—Gordon Benjamin Lee The Romance of Medicine Philadelphia F A Davis Company, 1944

16 Bouman H D and Schwartz R P The Degree the Extent and the Mechanism of Muscle Spasm in Infantile Paralysis New York State J Med 44 147 (Jan 5) 1944



## Clinical Notes, Suggestions and New Instruments

### BANTIS SYNDROME APPARENTLY DUE TO INFECTION WITH SCHISTOSOMA MANSONI

THOMAS P. ALMY, M.D. AND I. G. MASON HARPER  
NEW YORK

Infection with the blood fluke *Schistosoma mansoni* is a highly prevalent disease in Africa, in the northern parts of South America and in the West Indies as far north as Puerto Rico. In the continents of Europe and Asia there is only one small focus about the city of Aden, Arabia. The disease has apparently never been acquired on the North American continent (fig. 1).

The sharp limits of geographic distribution of the disease are due in part to the complicated life cycle of this flatworm which requires one of a number of species of snail (of the genera *Planorbis* and *Australorbis*) as intermediate host. After development within the snail, the schistosome emerges as a larva, the cercaria, which swims freely near the surface of fresh water streams and ponds and there is capable of penetrating human skin.

Within the human host the growing worms make an extended migration through the blood vessels before reaching their definitive site. They pass in succession through the systemic veins, the right atrium and ventricle, the pulmonary capillaries and the left atrium and ventricle to be distributed widely in the systemic circulation. Those which reach the mesenteric capillaries pass through into the portal vein where they reach maturity, mate and then migrate backward in the portal system to reach the venules in the mucosa and submucosa of the colon. This migration is usually not attended by symptoms. When, however, the gravid female worm deposits her eggs in minute venules just beneath the mucosa of the colon, the eggs induce local necrosis usually with slight hemorrhage, production of small ulcers and symptoms suggestive of mild dysentery. Over a period of many years during which the disease is clinically silent a considerable number of ova may be swept by the portal current to the liver where each produces a minute area of necrosis. These nodule necroses are healed by scarring and the nearly typical portal cirrhosis may be complicated by splenomegaly, ascites and other sequelae of portal hypertension.

In the case herein described, the typical features of Bantis syndrome were apparently due to infection with *S. mansoni*. A number of such cases in former residents of the endemic areas have been previously identified in the United States by Price<sup>1</sup> and others, yet in the records of our large urban hospital, covering thirty years (1914-1944) and nearly 350,000 admissions, this is the first case of schistosomiasis. It is reported not only for its relative rarity but also as an illustration of the influence of geography on clinical diagnosis.

#### REPORT OF CASE

This 44-year-old Mohammedan Arab was born near Aden, Arabia and lived there until 1914, when at the age of 15 he

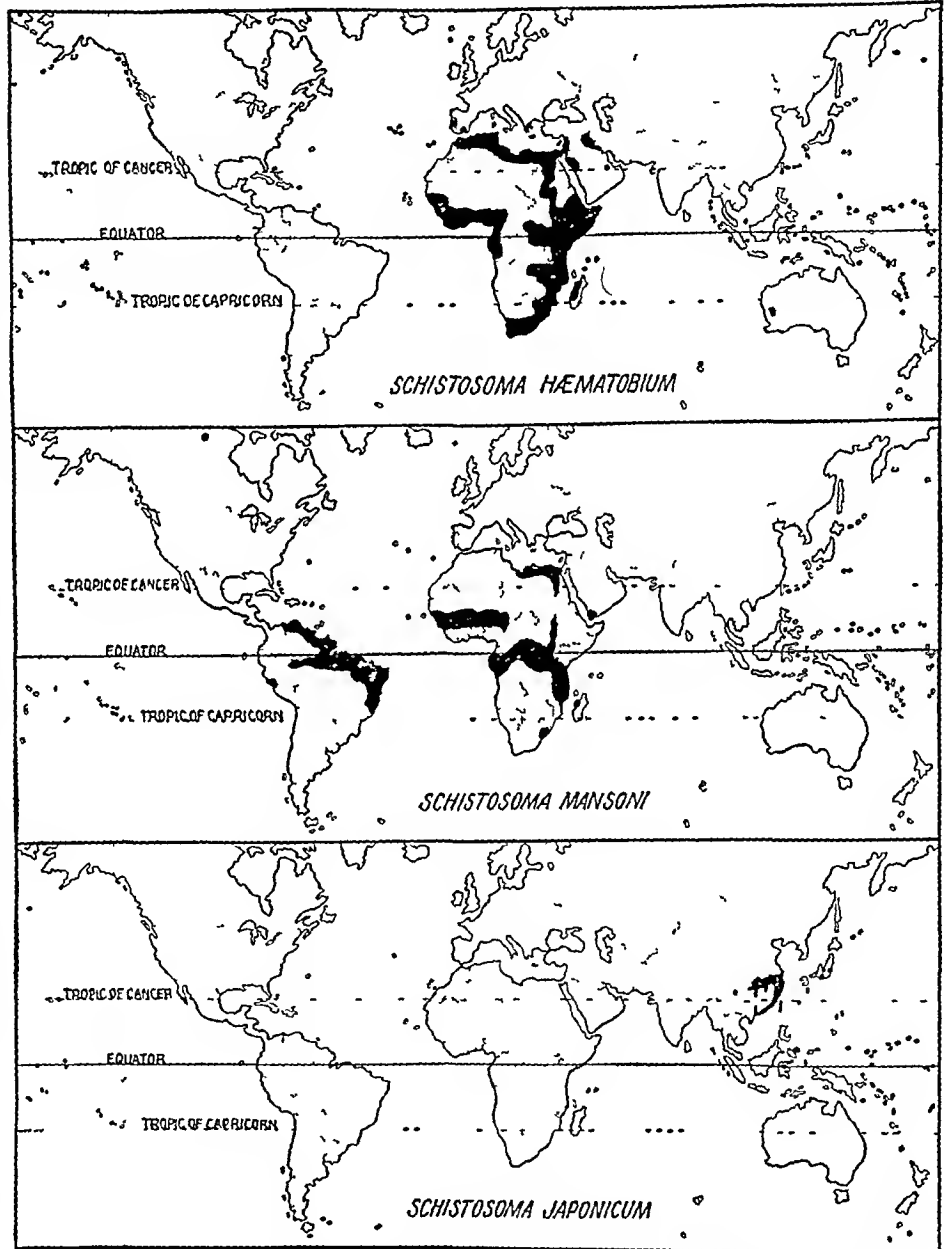


Fig. 1.—The world distribution of schistosomiasis mansoni (from Belding Textbook of Clinical Parasitology New York: D. Appleton Century Company).

joined the British navy. For five years he traveled widely in the navy and then in the merchant marine, only once going ashore for a few hours in an area infected with *S. mansoni*. This was at an Egyptian port, and he had no contact with fresh water while ashore. He landed at Portland, Maine, in 1919 and has remained in the United States since that time.

From the Department of Medicine of New York Hospital and Cornell University Medical College.

Dr. Henry E. Meleney, professor of preventive medicine at New York University, gave helpful suggestions as to diagnosis and therapy. Dr. J. T. Culbertson, assistant professor of bacteriology at the Columbia University College of Physicians and Surgeons, supplied antigen for skin testing.

1. Price, A. S. Schistosomiasis (*S. Mansoni*). A Report of 7 Imported Cases. Rev. Gastroenterol. 6: 115, 1939.

4 On stretching the antagonist of a weakened muscle the evidence of spasticity in the weakened muscle is frequently greater than the recorded reaction of the muscle in response to voluntary contraction

5 On stretch reflex of a weakened muscle spasticity not only is recorded from its antagonist but also is significantly present in records of the corresponding muscles of the opposite extremity

6 In association with voluntary contraction efforts this spasticity spread was recorded from the same group of muscles as resulted from stimulation by stretch reflex noted in 5

7 But a muscle which shows no clinical evidence of weakness always produces a stronger voluntary contraction record than the recorded evidence of muscle spasm

8 There has never been recorded evidence of spasm when a muscle failed to produce a record of reaction to the voluntary movement

9 Spasticity is a generalized phenomenon in the early stages of infantile paralysis<sup>16</sup>

10 As prevailing spasm diminished in a weakened muscle there was recorded evidence of increased strength in the voluntary contraction

11 The gross initial spasm of neck and back muscles, so characteristic with onset of the acute stage, invariably disappears without evidence of muscle weakness or paralysis

12 There was no correlation between the degree of spasm and the incidence of muscle weakness or paralysis

SUMMARY

From action current records made in relation to the study of the neuromuscular reactions of patients in the acute stage of infantile paralysis we conclude that the spine sign is a gross manifestation of the lesser degree of spasm recorded in muscles of normal and sub-normal strength

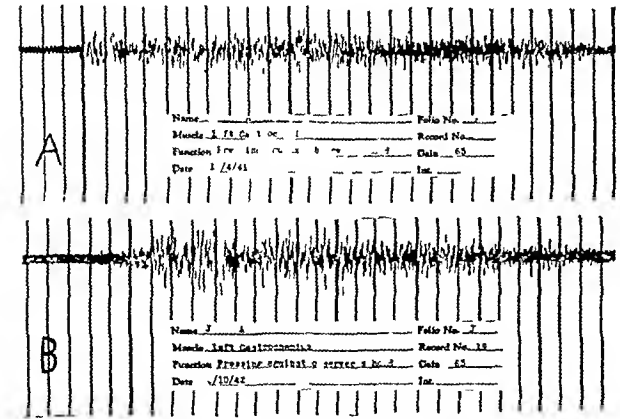


Fig 14—Patient with infantile paralysis. A action current record of maximal voluntary contraction of left gastrocnemius taken Dec 4 1941. B action current record of maximal voluntary contraction of left gastrocnemius muscle taken March 10 1942

In association with the latter certain functional abnormalities other than muscle weakness were observed in the lower reflex arc. They could be most readily explained in terms of a dysfunction at/or proximal

to the dendrites or cell body of the lower motor neuron. This dysfunction resulted in a partial isolation of the lower motor neuron from the inhibition normally induced by other levels through long and short neural pathways. The degree of lower reflex arc isolation thus established and the degree of viability remaining in the

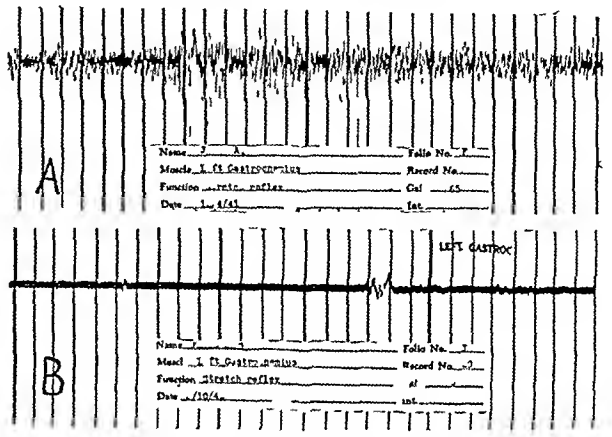


Fig 15—Same patient as in figure 14. A action current record of reaction to stretch (stretch reflex) of left gastrocnemius muscle taken Dec 4 1941. B action current record of reaction to stretch (stretch reflex) of left gastrocnemius muscle taken March 10 1942

lower motor neurons therefore determined the amount of muscle spasm in each instance

Without the involvement of levels proximal to the lower motor neuron there would be no spasm, but the muscle could be either weak or normal, dependent on the number of normal motor neurons innervating the muscle

If all motor neurons failed to be stimulated by the stretch reflex there would be no reaction to the stretch reflex even though relationships proximal to the dendrites were normal

Spasticity and weakening are two separate phenomena, each dependent on specific disturbances of functions of the anterior horn cells<sup>16</sup>

There was every indication that spasm ran its course like other clinical manifestations of the disease

The relationship between muscle tenderness and muscle spasm has not been clarified by the work thus far done. As in the past, we should continue to differentiate between pain and hyperesthesia from discomfort due to muscle soreness

We have emphasized the clinical phenomena and the electromyographic evidence which indicates that muscle spasm does not initiate the development of muscle weakness

**Racial Theory**—The assumption that blood is transmitted at birth from parents to progeny and is inherent in the clan or race from the very origin of the racial stock was and is the cause of the blood feuds and wars among clans, tribes and nations and still remains the basis of strife between different nationalities. The racial theory recently revived by Hitler in Germany is reminiscent of the primitive fantastic idea that the blood of a people is inherited from the very first progenitor of that people, or race and that the blood of certain peoples contains higher spiritual powers than that of neighboring peoples. The conclusion is drawn that the blood of mythological Roman heroes still flows in the veins of the modern Italians, and that the mythical blood of Wotan still circulates in the vessels of the twentieth century Nazis—Gordon, Benjamin Lee. *The Romance of Medicine*, Philadelphia 1 A Davis Company, 1944

16 Bouman H D and Schwartz R P. The Degree the Extent and the Mechanism of Muscle Spasm in Infantile Paralysis. *New York State J Med* 44: 147 (Jan 5) 1944

## Clinical Notes, Suggestions and New Instruments

### BANTI'S SYNDROME APPARENTLY DUE TO INFECTION WITH SCHISTOSOMA MANSONI

THOMAS P. ALMY, M.D. AND J. C. MASON HARPER,  
NEW YORK

Infection with the blood fluke *Schistosoma mansoni* is a highly prevalent disease in Africa, in the northern parts of South America and in the West Indies as far north as Puerto Rico. In the continents of Europe and Asia there is only one small focus about the city of Aden, Arabia. The disease has apparently never been acquired on the North American continent (fig. 1).

The sharp limits of geographic distribution of the disease are due in part to the complicated life cycle of this flatworm which requires one of a number of species of snail (of the genera *Planorbis* and *Australorbis*) as intermediate host. After development within the snail the schistosome emerges as a larva, the cercaria, which swims freely near the surface of fresh water streams and ponds and there is capable of penetrating human skin.

Within the human host the growing worms make an extended migration through the blood vessels before reaching their definitive site. They pass in succession through the systemic veins, the right atrium and ventricle, the pulmonary capillaries and the left atrium and ventricle to be distributed widely in the systemic circulation. Those which reach the mesenteric capillaries pass through into the portal vein where they reach maturity, mate and then migrate backward in the portal system to reach the venules in the mucosa and submucosa of the colon. This migration is usually not attended by symptoms. When, however, the gravid female worm deposits her eggs in minute venules just beneath the mucosa of the colon, the eggs induce local necrosis usually with slight hemorrhage, production of small ulcers and symptoms suggestive of mild dysentery. Over a period of many years, during which the disease is clinically silent, a considerable number of ova may be swept by the portal current to the liver, where each produces a minute area of necrosis.

These miliary necroses are healed by scarring and the nearly typical portal cirrhosis may be complicated by splenomegaly, ascites and other sequelae of portal hypertension.

In the case herein described the typical features of Banti's syndrome were apparently due to infection with *S. mansoni*. A number of such cases in former residents of the endemic areas have been previously identified in the United States by Price<sup>1</sup> and others yet in the records of our large urban hospital covering thirty years (1914-1944) and nearly 350,000 admissions this is the first case of schistosomiasis. It is reported not only for its relative rarity but also as an illustration of the influence of geography on clinical diagnosis.

#### REPORT OF CASE

This 44-year-old Mohammedan Arab was born near Aden, Arabia and lived there until 1914 when at the age of 15 he

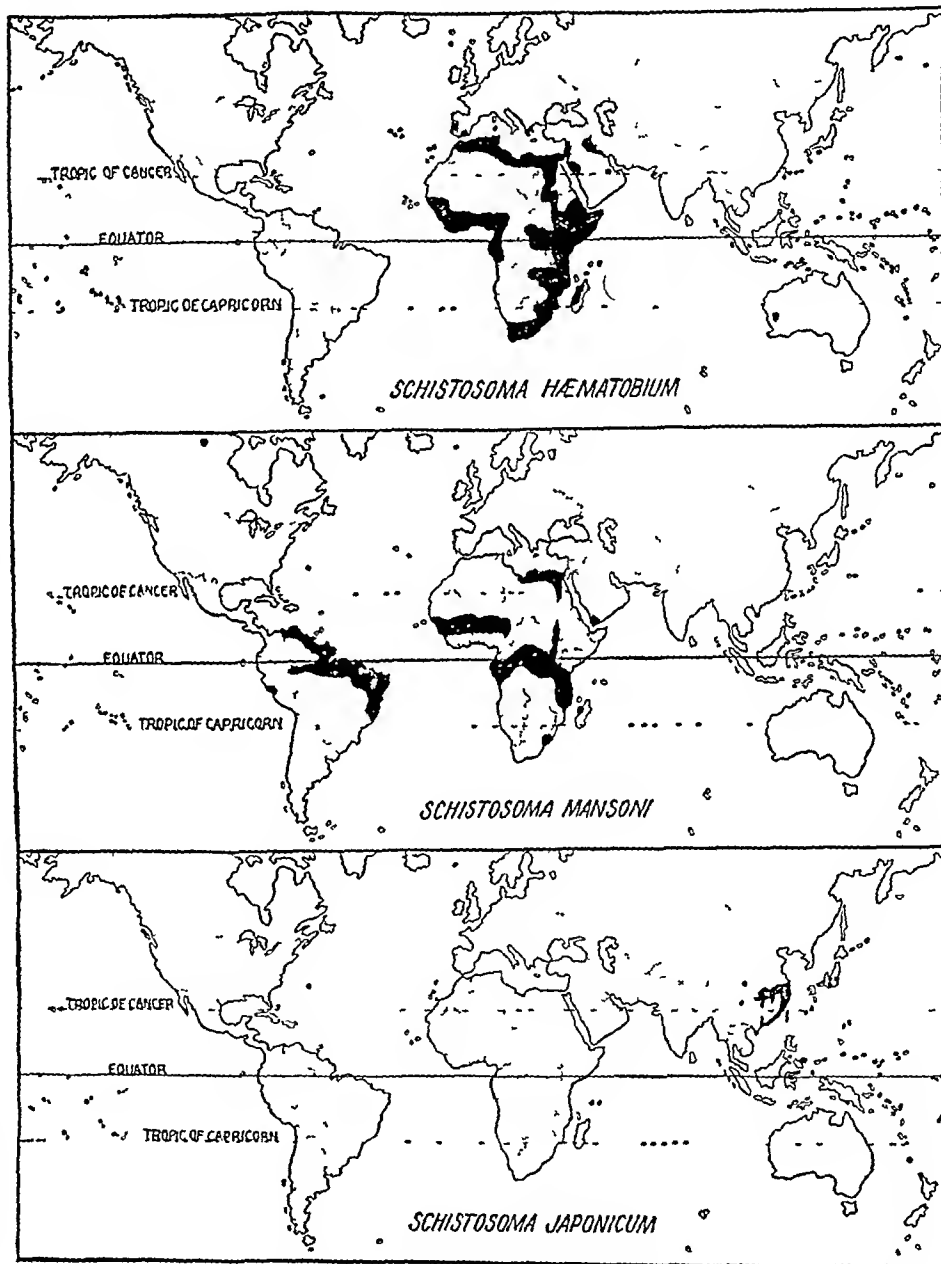


Fig. 1—The world distribution of schistosomiasis mansoni (from Belding Textbook of Clinical Parasitology New York: D. Appleton Century Company)

<sup>1</sup> From the Department of Medicine of New York Hospital and Cornell University Medical College.

Dr. Henry E. Meloney, professor of preventive medicine at New York University, gave helpful suggestions as to diagnosis and therapy. Dr. J. T. Culbertson, assistant professor of bacteriology at the Columbia University College of Physicians and Surgeons, supplied antigen for skin testing.

joined the British navy. For five years he traveled widely in the navy and then in the merchant marine, only once going ashore, for a few hours in an area infected with *S. mansoni*. This was at an Egyptian port, and he had no contact with fresh water while ashore. He landed at Portland, Maine, in 1919 and has remained in the United States since that time.

<sup>1</sup> Price, A. S. Schistosomiasis (*S. Mansoni*). A Report of 7 Imported Cases. Rev. Gastroenterol. 6: 115, 1939.

The patient recalled a few episodes of diarrhea with bloody stools at about 14 years of age but remembered no notable pruritus, severe cough or hemoptysis. He had enjoyed excellent health until his present illness. His diet included moderate amounts of fruits and vegetables and small amounts of lean

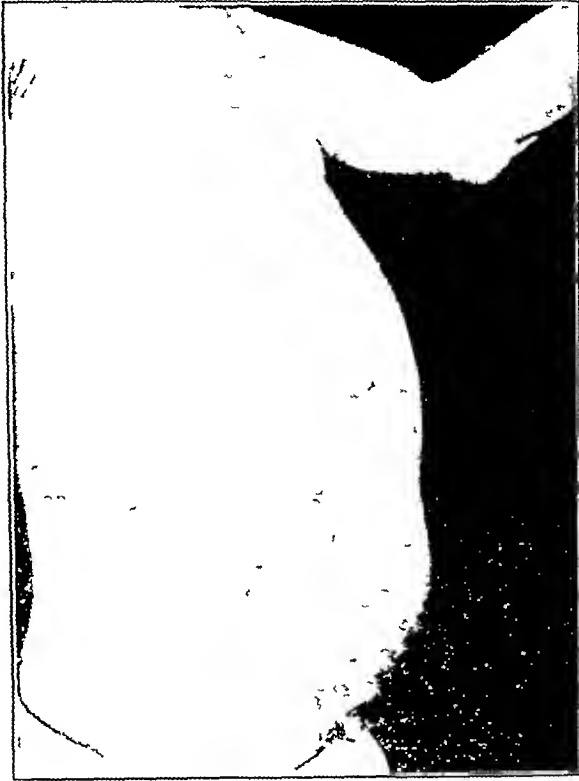


Fig. 2—Patient's protuberant abdomen with transverse groove

meat. He abstained from alcohol. Two years before admission when a left inguinal hernioplasty was performed, his spleen was found to be enlarged.

The patient had suffered from a chronic dry cough during the winter for many years. Ten months before admission



Fig. 3—Outline of liver and spleen

following a fracture of two ribs in a fall downstairs he had persistent, more severe coughing and mild malaise. Three months before admission he became conscious of increasing weakness and weight loss. One month later he first noted heaviness and swelling of the abdomen and swelling of the legs. He became decidedly dyspneic on mild exertion, having to stop

after climbing seven steps but had no orthopnea. He had no nausea or vomiting, no hematemesis or melena, no notable abdominal pain and no jaundice.

The patient was dark skinned and moderately well nourished. His abdomen was protuberant and he was coughing, but he could lie flat without distress. His mucous membranes were pale. The scleras were slightly yellow and displayed bilateral pingueculae. The diaphragms were high and there were five moist inspiratory rales at both bases. The heart was not enlarged and was without murmurs. The sharp edge of a hard nontender liver was felt 7 cm below the costal margin in the midclavicular line, and the hard, rounded tip of the spleen was felt at the level of the umbilicus. A shallow transverse groove about 3 cm wide extended across the abdomen at the level of the umbilicus (figs 2 and 3). There was no fluid. A reducible inguinal hernia was present under an oblique left lower quadrant scar. There was moderate edema of both ankles and pretibial areas.

Examination of the urine showed rare red blood cells and leukocytes. Blood examination revealed hemoglobin 52 Gm, erythrocytes 3,600,000, hematocrit 26 per cent, platelets 90,000, reticulocytes 0.5 per cent and leukocytes 4,000 with 6 per cent lymphocytes, 10 per cent monocytes, 12 per cent eosinophils, 2 per cent basophils, 53 per cent mature polymorphonuclears and 17 per cent band forms. The serum protein level was 6.3 to 7.4 per cent with globulin content 3.2 to 4.1 per cent. The cephalin



Fig. 4—Ovum of *S. mansoni* (from Giffen in Belding, Textbook of Clinical Parasitology, New York: D. Appleton Century Company)

flocculation test was 3 plus and the flocculation test for syphilis (Mazzini) was 3 plus with the Wassermann reaction negative. The icterus index was 6.0. The prothrombin level (Werner, Brinkhous and Smith method) was 53 per cent and rose only to 55 per cent after 2 mg of menadione was injected intramuscularly. Chest x-ray and barium enema were negative. A gastrointestinal series disclosed large esophageal varices. The stools were uniformly positive for occult blood.

The patient was given iron sulfate, elixir of choline chloride, daily intramuscular injections of crude liver extract and a high protein, high carbohydrate diet with supplements of crystalline vitamins. After three weeks his hemoglobin had risen to 11.9 Gm and his erythrocyte count to 4,900,000; his leukocyte count was unchanged and his eosinophil percentage had fallen to 4. Ankle edema was no longer present and he felt much stronger.

At this time it was suspected that he might have schistosomiasis and a skin test was performed with antigen obtained from the frog lung fluke (*Pneumoneces medioplexus*).<sup>2</sup> This was moderately positive. Repeated stool examinations were made by various methods of concentration. On the eleventh such examination in which the acetic acid-ether method of de Rivas<sup>3</sup>

<sup>2</sup> Culbertson, J. T. and Rose, H. M. Skin Tests in Schistosomiasis with Antigen from *Pneumoneces Medioplexus*. *Am. J. Hyg.* 26: 311, 1942.

<sup>3</sup> de Rivas, D. An Efficient and Rapid Method of Concentration for the Detection of Ova and Cysts of Intestinal Parasites. *Am. J. Trop. Med.* 5: 64, 1928.

was used, an ovum of *Schistosoma mansoni* was found (fig 4). This observation was repeated in six different preparations from two stools and the identity of the ova was confirmed by Dr Ralph W. Nauss, parasitologist to the New York Hospital.

The patient was then treated with fuadin in 63 per cent solution, given daily by muscle in dosage increasing from 0.8 cc to 5 cc and then maintained at this level for nine additional injections given every other day—a total of 626 cc. There were no toxic manifestations and no further change in the symptoms and signs of hepatic disease, or in the blood count, except for a secondary rise of the eosinophil percentage to 25 at the end of treatment. The cephalin flocculation reaction during treatment was 1 plus.

When the patient was last seen, ten weeks after the conclusion of treatment strength and exercise tolerance had improved. He had climbed ten flights of stairs slowly without stopping. Although ankle edema had disappeared, he had maintained his weight. The liver and spleen were not changed in size. The blood count had remained the same except for a secondary fall of the eosinophil percentage to 7.

#### COMMENT

In retrospect, there were several reasons for suspecting the parasitic origin of Banti's syndrome in this patient. He had spent the earlier years of his life in a recognized endemic focus of schistosomiasis *mansoni*. His abdomen presented a shallow transverse groove similar to that described by Faust and Meleny<sup>4</sup> in advanced cases of schistosomiasis *japonica*. It is thought by them to indicate adhesions of the omentum and mesentery to the abdominal wall, with contraction of scar tissue in these adherent structures. To our knowledge this clinical feature has not previously been described in schistosomiasis *mansoni*. The patient's blood showed an eosinophilia, which is rarely seen in Banti's syndrome of nonparasitic origin. The diagnosis was strongly suggested by a positive skin reaction to a trematode antigen but could not be considered as established until the ova of *S. mansoni* after a prolonged search, were identified in the stool.

The chronicity of this patient's disease was of special interest. It is probable that he was infected at his place of birth which he left thirty years ago. It is certain that he was infected more than twenty-five years ago since which time he has lived in the United States.

In the late stage of schistosomiasis which this patient illustrates, treatment with anthelmintic drugs is risky. It is widely held that in the presence of advanced hepatic damage antimony and potassium tartrate is contraindicated and fuadin must be used with caution. Furthermore, the benefit to the patient of such treatment is small because most of the clinical phenomena are due to irreversible scarring of the liver. The early stages of the disease those characterized clinically by skin rashes, asthmatic states and protean gastrointestinal symptoms, present greater therapeutic opportunities. In such cases there is usually less difficulty in finding the ova in the stools but their presence must first be suspected. The variable symptoms and physical signs do not often present a clue and the eosinophilia is inconstant but any patient may be logically suspected of having schistosomiasis who has exposed himself to fresh water in one of the sharply limited endemic foci of the disease. It is therefore suggested that the first consideration in diagnosis is a geographic one—the fact of exposure to the disease. In the near future, with many Americans returning from endemic foci of schistosomiasis such thinking may become important in clinical diagnosis.

#### SUMMARY

Banti's syndrome occurring in a 44-year-old Arab was found to be due to schistosomiasis *mansoni* although the patient must have acquired this infection more than twenty-five years before the onset of symptoms. The patient was treated with fuadin with indeterminate results. As it provides a valuable clue in the clinical diagnosis of schistosomiasis *mansoni*, stress is laid on the limited geographic distribution of endemic foci of this disease.

## Council on Physical Medicine

The Council on Physical Medicine has authorized publication of the following report HOWARD A. CARTER, Secretary

### TELEX NEW SUPER HEARING AID (Model #1550) ACCEPTABLE

Manufacturer: Telex Products Company, Telex Park, Minneapolis

This is a vacuum tube hearing aid consisting of four midrange tubes, a transmitter, a crystal receiver in a flesh-colored molded case and a battery unit. Weights and overall dimensions of the various parts of Model #1550 are as follows:

Transmitter: 4 inches by 2¼ inches by ¾ inch, weight with cords 5 ounces

Receiver, crystal, 1 inch in diameter

Batteries, weight 11 ounces

Total weight of the entire instrument is 16 ounces

Batteries—Voltages and current drains are as follows:

A battery, 15 volts

Current drain at ½ volume 110 milliamperes

Current drain at full volume 110 milliamperes

B battery, 45 volts

Current drain at ½ volume 15 milliamperes

Current drain at full volume 15 milliamperes

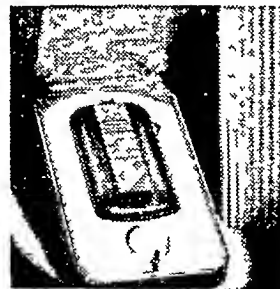
An additional drain of 0.3 milliamperes occurs with loud signal.

Acoustical Gain—The following data are the average of observations of two trained observers using fitted ear molds seated 5 feet from the loud speaker delivering frequencies of pure sine wave characteristics. (Test made with tone control at normal white dot position.)

| Volume Control Set at | Frequency |     |      |      |      |      |      |          |
|-----------------------|-----------|-----|------|------|------|------|------|----------|
|                       | 256       | 512 | 1024 | 1448 | 2048 | 2896 | 4096 |          |
| ½                     | 9         | 6   | 8    | 14   | 11   | 10   | 15   | Decibels |
| ¾                     | 15        | 10  | 15   | 19   | 16   | 14   | 18   | Decibels |

Overall gain for speech 31 decibels. This is an intelligibility speech measurement based on what the patient can understand without the hearing aid and with it.

Physical and Mechanical Features—The instrument consists of a black plastic molded case of convenient size and pleasing appearance. It is very well made. The electrical assembly has been done in a thoroughly workmanlike manner. There are two controls: one the volume control a studded disk placed on the top of the instrument. It operates smoothly and easily. A second, the tone control situated on the upper left hand corner of the side operates in three positions marked by blue, white and red dots. The cord connections are well made and seem to maintain their position without shifting. The battery pack is conventional in type.



Telex Hearing Aid Model 1550

Performance—In this test the instrument submitted performed as represented. At full volume however, there is definite feedback squeal even with a tight fitting receiver. At full control the instrument performs unusually well. As shown in the graph submitted by the firm, shifts in the low frequency are emphasized very definitely. The booklet of instructions is complete and adequate.

Recommendations—The aid itself and the descriptive matter which were submitted fulfill the requirements for acceptable hearing aids of the Council on Physical Medicine.

The Council voted to accept the Telex new Super Hearing Aid Model #1550 for inclusion in its list of accepted devices.

<sup>4</sup> Faust, E. C. and Meleny, H. E. Studies on Schistosomiasis Japonica. Monographic Series No. 3. Baltimore: American Journal of Hygiene, 1924, p. 222.

# THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

535 NORTH DEARBORN STREET CHICAGO 10, ILL

Cable Address

'Medic Chicago

Subscription price

Eight dollars per annum in advance

*Please send in promptly notice of change of address giving both old and new always state whether the change is temporary or permanent. Such notice should mention all journals received from this office. Important information regarding contributions will be found on second advertising page following reading matter.*

SATURDAY, NOVEMBER 11, 1944

## MEDICAL CERTIFICATES AND WAR PRODUCTION

In recent years medical certificates have been required for fuel and food rationing, public health disease prevention programs, food handler control marriage laws school regulations and sickness insurance.<sup>1</sup> The good name of the medical profession is sometimes jeopardized by too lenient compliance with appeals for certificates from patients who often have little or no real basis for requesting them. This problem is now especially concerned in present efforts to use limited manpower to its fullest extent in war industries.

Production of munitions would be far from completed even if Germany should capitulate this month. According to War Department announcements production of heavy trucks, large shells bombs, rockets smokeless powder heavy duty tires superbombers and large artillery is behind schedule for 1944. These activities must be continued for many months to come if urgent orders from overseas are to be met. The major problem in the production of these critical items is lack of manpower. Lack of labor reserves in many communities, excessive absenteeism and a high rate of labor termination are the controlling factors in producing enough munitions on time. Certain ordnance plants have reported absenteeism amounting to twenty days annually per man—and an annual labor turnover of 100 per cent. Many of these absentees and job terminators can be replaced only with the greatest difficulty.

Many observers believe that the principal underlying cause is the too common attitude that the war is almost over. The feeling of urgency is gone. Liberal disability benefits contribute to these delays. Others who drop out for a few days of hunting or to get in the crops cheerfully extend an unjustified absence and cover up

by alleging illness on return to work. Job quitters likewise are more common than ever because of their understandable desire to obtain more permanent work before present jobs terminate.

Industry, labor organizations, the War Manpower Commission and other interested agencies have instituted an aggressive plan of action to control the ordinary causes of absenteeism and labor turnovers by giving attention to such factors as housing transportation, shopping facilities, cafeterias, child care and impressing the workers with the urgency of staying on the job.

Illness, both alleged and real, as a frequent cause of absenteeism and work termination is probably the most difficult problem to control by lay agencies. The government and its contracting agents customarily require medical certificates to cover an absenteeism alleged to illness or a labor termination attributed to reasons of health. The medical profession is then put under pressure by thoughtless persons who see little harm in collecting disability benefits or in obtaining better jobs on pretext of illness. They fail to see the cumulative results of hundreds of thousands of such acts on critical war production.

Responsibility rests squarely on the physician to act as prosecutor, defense attorney and judge before issuing such a certificate. He fails himself, his profession and the war effort if certificates are issued without due cause. The Army<sup>2</sup> is prepared to cooperate closely with physicians in industry in order to accumulate facts about alleged illness of an employee and the possible effects of the working environment on the employees' health. Standard practices for the control of health hazards in war industries are available. The medical records of employees and diagnostic services of these plants are generally available to private physicians in troublesome cases and should be utilized fully.<sup>3</sup>

The medical profession is never out of the public eye. The ability of any group of workers persistently to evade the obligations of their jobs through easy availability of medical certificates must inevitably arouse unfavorable public reaction. The War Participation Committee of the Massachusetts Medical Society has established a system for review of medical certificates in that state<sup>4</sup> worthy of general consideration. Every physician must assure himself that each medical certificate is exactly what it implies—a certified statement of facts based on careful examination and disinterested judgment.

<sup>1</sup> McGee, L. C. Industrial Medical Certification. *New England J Med* 231: 215 (Aug 3) 1944.

<sup>2</sup> Medical Certification in Industry, editorial. *New England J Med* 231: 215 (Aug 3) 1944. Flinn, R. H. Absenteeism versus Ordnance Production—The Physician's Role to be published.

<sup>3</sup> Cooperation of Plant Physicians with Private Physicians. Industrial Hygiene Information Circular No. 20. Safety and Security Division Office of the Chief of Ordnance, Army Service Forces. Oct. 29, 1943. Pickard, Karl. The Relation Between the Family Physician and War Industry. *New England J Med* 229: 714 (Nov 4) 1943.

<sup>4</sup> Massachusetts Medical Society War Participation Committee. *New England J Med* 231: 215 (Aug 3) 1944.



## AIR BORNE TUBERCULOSIS

Following development of Topley's<sup>1</sup> method for the study of herd infections studies of the experimental epidemiology of tuberculosis were begun in the Henry Phipps Institute at the University of Pennsylvania. In the initial experiment Perla<sup>2</sup> exposed normal guinea pigs to tuberculous cage mates which had been previously infected intraperitoneally with highly virulent bovine type tubercle bacilli. The exposed guinea pigs readily contracted tuberculosis. This with few exceptions had the characters of an infection that had entered by way of the digestive tract. Involvement of the mesenteric and cervical lymph nodes was conspicuous in necropsies with an occasional tuberculous ulcer of the ileum. The infection was apparently the result of fecal contamination of the food material. After such intraperitoneal inoculation guinea pigs usually begin the elimination of tubercle bacilli in the feces within a week. There is a rapid increase in the number of tubercle bacilli per fecal bolus during the terminal weeks of the disease.

In the same experiments Perla found that out of 16 normal guinea pigs placed in the same room but not in the same cages with tuberculous animals 2 guinea pigs acquired tuberculosis, presumably as a result of air borne contagion. Each of these cases had the characters of a bronchogenic infection, the dominant lesions being in the lungs and tracheobronchial lymph nodes.

A more detailed study of air borne tuberculosis was therefore undertaken. Twenty-seven cages, each containing 2 normal guinea pigs, were evenly distributed and left undisturbed for several months in a large room harboring about 500 experimental animals, many of them tuberculous. Precautions were taken to rule out non-air borne infection. Lurie<sup>3</sup> found that none of the guinea pigs thus exposed for a period of six months developed tuberculosis. Of the guinea pigs exposed for periods ranging from six to twelve months, 9.1 per cent developed a typical respiratory tract infection. Among those exposed for from twelve to eighteen months 27.7 per cent developed air borne tuberculosis. The morbidity increased to 35.3 per cent among those exposed for periods ranging from eighteen months to two years. Of the 20 guinea pigs that did not contract the disease by the end of two years only 1, or 5 per cent, was subsequently infected. Apparently under his method of exposure animals that do not develop tuberculosis by the end of twenty-four months have a hereditary or acquired resistance to subsequent infection.

Following the demonstration by Wells<sup>4</sup> that pure cultures of tubercle bacilli suspended in air can be

killed within three seconds by exposure to ultraviolet light Lurie<sup>3</sup> and his associates developed a technic for testing the possibility of preventing natural air borne tuberculosis by ultraviolet rays. Two duplicate rooms were prepared. Each room contained a battery of individual cages for normal rabbits with a parallel group of cages for rabbits previously infected intravenously with highly virulent bovine type tubercle bacilli. These infected rabbits were shedding highly virulent tubercle bacilli in the urine. The two batteries were so placed that the natural air currents of the room were from the infected to the exposed rabbits. In the test room the space between the donor and recipient cages was flooded by ultraviolet light. No lamp was installed in the control room.

The recipients in each room were litter mates of the same highly inbred genetically uniform rabbits. Three genetic strains were used: a hereditarily highly resistant rabbit family and two families of low hereditary resistance. Every two weeks each of the exposed rabbits was tested for acquired skin sensitivity, and every four weeks it was x-rayed. At the end of fifteen months all surviving exposed animals were killed and carefully examined, guinea pig inoculation being resorted to in case of the least doubt.

In a typical experiment (1942-43 series) 8 hereditarily resistant rabbits and 7 rabbits of the susceptible families were placed in each room. Within six to twelve months all exposed rabbits in the control room had developed a high degree of skin sensitivity. Twelve of the 15 had developed from 2 plus to 4 plus tuberculosis of which 9 died. In the irradiated room no rabbit developed a positive skin reaction by the end of twelve months. But 1 ultraviolet room rabbit developed a questionable pulmonary lesion. From this lesion tubercle bacilli were isolated by guinea pig test.

Summarizing the results of three years' research, Lurie concludes that under the conditions of their experiments ultraviolet rays of high intensity completely protect all rabbits, whether of high or low natural resistance from an air borne contagion so severe as to be fatal to the great majority of rabbits of the same genetic constitution if not protected by such radiation. The protected animals do not develop tuberculin sensitivity. With irradiation of low intensity rabbits of high natural resistance are completely protected from acquiring demonstrable tuberculosis, though they do acquire tuberculin sensitivity. Low intensity irradiation however does not protect all rabbits of low natural resistance from acquiring lethal tuberculosis. From these encouraging results Lurie believes that it is probable that ultraviolet radiation may control air borne contagion of human tuberculosis.<sup>5</sup>

1 Topley W W C J Hyg 15 350 1920 1921

2 Perla D J Exper Med 45 209 1927

3 Lurie M B J Exper Med 51 741 1930

4 Wells W F and Lurie M B Am J Hyg 34 21 (see P) 1941

Lurie M B J Exper Med 70 559 (June) 1944

## Current Comment

### GRADUATE EDUCATION OF PHYSICIAN VETERANS

Elsewhere in this issue, page 709, appears a report on the graduate education of physician veterans which carries information of the greatest importance to all physicians now serving with the armed forces. Preliminary reports on the results of the questionnaire sent by the Committee on Postwar Medical Service to all physicians in the armed forces indicate that the majority of physicians wish graduate education including short and long courses in the postwar period. Under existing legislation physicians, like other veterans are entitled to payment of tuition and also to cost of subsistence when engaged in such courses subject to limitations which depend on the duration of the service and similar factors. A conference held by representatives of the Committee on Postwar Medical Service with representatives of the Veterans Administration and of the Vocational Rehabilitation and Education Service brought out the facts clearly.

### GENERAL MEDICAL COVERAGE FOR INDUSTRIAL EMPLOYEES

Recently in THE JOURNAL a series of articles<sup>1</sup> was published describing some of the variations in approach which representative industries have made to the problem of general medical coverage for their member-employees. The Council on Industrial Health in recognition of this trend has adopted a statement of policy which should be helpful to physicians and medical societies faced with these developments. This statement as approved by the Board of Trustees of the American Medical Association, is as follows:

Pressure is being placed on industry by management and by labor to extend the health services for which it is responsible. It has been recognized that industry has certain responsibilities in providing medical care for occupational injuries and diseases. These responsibilities have been extended to include various services in the field of preventive medicine. It is now proposed that industry provide over-all medical care for employees and their dependents, the term medical being used in a broad sense to include diagnosis and treatment in various special fields. The Council on Industrial Health believes that a statement along the following lines bearing the stamp of approval of the American Medical Association will be of assistance to physicians who are now confronted with this situation in many areas:

1. The principles on which medical care plans should be based have been defined by the House of Delegates of the American Medical Association. In developing medical care plans industry should be in agreement with the local county medical society as to the conformity of such plans with these established principles. Plans of this nature should include provision for health maintenance programs.

1 Adams J. M. Stanocola Medical Care Plan. J. A. M. A. 126:3 (Oct. 7) 1944. Bloom M. S. Variations in Current Industrial Medical Service Plan. Ibid. p. 35. Garfield Sidney R. Health Plan Principles in the Kaiser Industries. p. 337. Jones E. M. The Endicott Union Plan. p. 339. McCann James C. Medical Society Prepayment Program. Lessons Learned from Experience in Massachusetts. p. 341. Palmer John J. Variations in Current Industrial Medical Service. Ibid. p. 343.

2. Because of the essential medical nature of such plans their policies should be directed and the medical phases should be controlled by the medical departments of industry.

3. The attention of industrial management should be directed to the place of the physician in industrial organization. The expanding importance of health activities in industry demands that the physician be responsible directly to top management and that activities relating to health be centered in and directed through the medical department.

### THE DALLAS VENEREAL DISEASE CONTROL PROGRAM

A Venereal Disease Control and Educational Program was organized in Dallas, Texas, in the summer of 1943 at the suggestion of the commanding officers of the armed forces in that area. A report by the Dallas Venereal Disease Educational Committee<sup>1</sup> was issued on July 1, 1944. The Dallas program differs from the Chicago program<sup>2</sup> in that the Chicago program is a cooperative one in which the United States government, the state of Illinois and the city of Chicago are primarily concerned, whereas the Dallas program was carried out by two local committees, one on venereal disease control and the other on venereal disease education. The report outlines the procedures and describes the results. Pictures by the United States Army Signal Corps show the participation by community agencies and the public in the program. A typical double page spread layout shows a street corner with curb billboard, another billboard at factory gates, posters in a public waiting room, information on the inside of a washroom door, windshield stickers, car cards, a clinic scene, a dinner meeting and informational posters at soda fountains. Stickers were placed in juke boxes and elaborate exhibits displayed in public places. Films were used, these were seen by more than ninety-four thousand persons during the campaign. Fifty thousand water bills were stuffed with folders featuring venereal disease information. An active speakers' bureau, in which forty-four physicians participated, scheduled as high as three and four talks a day. Newspaper space was used to a total of 1,412 inches of paid advertising at a special rate lower than the regular advertising rate. In this program the people of Dallas got to work. The entire expense of the campaign was just over \$3,000, but this does not count the value of volunteer labor or the expense of materials received gratis from official agencies especially the state health department. Results are indicated as follows: "A recent report by the medical director of the Eighth Service Command showed that the average rate of infection among military personnel for the three month period ending June 1, 1944 was 10.5 cases per week, a drop of more than 80 per cent as compared with the average weekly rate at the beginning of the campaign." A year is a short time in public health history. Doubtless this campaign if continued will show even greater results not only in the military but in the civilian population.

1 Venereal Disease Control and Education in Dallas, Texas, 1944. 1944. A report by the Dallas Venereal Disease Educational Committee. July 1, 1944.

2 Progress Report Chicago Venereal Disease Control Program 1942-1943. Board of Health Chicago.

# MEDICINE AND THE WAR

## POSTWAR PLANNING

### GRADUATE EDUCATION OF PHYSICIAN VETERANS

#### Report of the Subcommittee of the Committee on Postwar Medical Service

Dr Frederick A Collier, Dr Walter Palmer and Father Alphonse M Schmittalla, three members of the Subcommittee on Postwar Education of Physician Veterans, were accorded interviews with officials of the Veterans Administration on the afternoon of October 16. The other two members of the committee, Dr Victor Johnson and Lieut Col Harold C Lueth, found it impossible to attend.

The subcommittee called first on Dr Charles M Griffith in the office of the Medical Director, Veterans Administration Building, and after an exchange of courtesies was escorted by him to the office of Mr Harold V Stirling, Director, Vocational Rehabilitation and Education Service. Dr Griffith explained that Mr Stirling was in charge of the administration of title II of education of veterans of Public Law 346, 78th Congress, known as the 'Servicemen's Readjustment Act of 1944' (the G I bill), and Public Law 16 was Mr Stirling's responsibility.

Dr Griffith explained that after the committee's interview with Mr Stirling to learn from him the present status of Public Law 346 and its application to the physician veterans he would discuss with the committee further the content and administration of the educational program itself which the Veterans Administration has projected or intends to project for the returning physicians.

#### I ELIGIBILITY OF INSTITUTIONS

Mr Stirling suggested that the committee discuss first the eligibility of institutions for recognition as educational centers in which veteran physicians might receive such educational benefits as are provided for under the law. He turned to section 400, part VIII, paragraph 4, and called attention to the fact that it is incumbent upon the administrator to

secure from the appropriate agency of each state a list of the educational and training institutions (including industrial establishments) within such jurisdiction which are qualified and equipped to furnish education or training (including apprenticeship and refresher or retraining), which institutions together with such additional ones as may be recognized and approved by the administrator shall be deemed qualified and approved to furnish education or training to such persons as shall enroll under this part.

Mr Stirling noted that the law distinguishes between institutions (giving training) 'and establishments furnishing apprentice training on the job' (see paragraph 5). The institutions in which discharged physicians would receive their postdemobilization education such as the hospitals, will, of course, qualify as institutions and will not be considered merely as "establishments furnishing apprentice training on the job."

To qualify as "institutions," the schools of medicine and the hospitals in which the returning physician will be further educated will have to appear by name on a list of educational and training institutions furnished by the appropriate agency of each state to the administrator. The administrator is given authority by the law to 'recognize and approve' institutions on his own initiative. Obviously, however, the administrator will not undertake as a rule an approving or accrediting program and will rely on such lists as are furnished him by the appropriate agency of each state.

As far as medical education is concerned there is very little difficulty about the schools of medicine since most if not all of the states would readily submit the names of schools recognized by the Council on Medical Education and Hospitals to

the American Medical Association. Much greater difficulty, however, will be found in supplying to the administrator a list of the recognized and approved hospitals, and a decision will have to be made concerning the list which all will agree will be the proper list to submit to the administrator. Mr Stirling is of the opinion that it might be well if the administrator's office send to the governors of the various states such lists of institutions, schools and hospitals as are recognized and approved by appropriate agencies with the request to the governor to indicate his approval or disapproval of these lists as appropriate educational centers for the further education of the physician veterans under the program. Naturally, there are other outstanding problems concerning the eligibility of institutions which will need further discussion.

The important conclusion, however, is that in Mr Stirling's opinion the schools and hospitals can be regarded as institutions within the intent and scope of the Servicemen's Readjustment Act of 1944, provided such institutions qualify under the provisions of paragraph 4, part VIII, title II, Public Law 346.

#### II ELIGIBILITY OF INDIVIDUALS

'Any person who served in the active military or naval service on or after Sept 16, 1940 and prior to the termination of the present war and who shall have been discharged and whose education or training was impeded, delayed, interrupted or interfered with by reason of his entrance into the service and who either shall have served ninety days or more shall be eligible for and entitled to receive education or training under this part (section 400, part VIII, paragraph 1). A number of provisions and limitations are included in the unquoted section of this paragraph but, in general, the substance of the provision is accurately given. Discharged servicemen under 25 years of age at the time they entered the service are assumed to have had their education impeded or delayed, while those 25 years of age or over at the time they entered the service will be expected to supply evidence that such a delay or obstacle to their education occurred.

With reference to the section just quoted, Mr Stirling was of the opinion that any physician who is now in any of the branches of the service and has been on active duty for more than ninety days will be eligible for any of the benefits provided by the law. Even those who are more than 25 years old and desire refresher or other courses will no doubt be considered eligible even though they may have entered the Army at a time when their education might have been assumed as completed, since the law in providing refresher and retraining courses is naturally to be interpreted in a liberal spirit.

Any person who has been in active service for three months will be entitled to a period of one year of education or for such lesser time as may be required for the course of instruction chosen by him. Those servicemen who have been in the service for more than the minimum period of three months may receive additional periods of education or training, the period 'not to exceed the time such person was in active service on or after Sept 16, 1940 and before the termination of the war'. Periods during which a serviceman was receiving his education under the auspices of the Army or Navy while on active duty cannot be counted toward time credit for a prolongation of the educational period. The committee asked Mr Stirling to apply this to the ordinary clinical residency. It was explained to him that the residencies in our hospitals for example, were one two or three years or more in length. He replied that

Those in service three months are entitled to one year further education,

Those in service twelve months are entitled to two years further education

Those in service twenty-four months are entitled to three years further education

<sup>1</sup> The problem of the state approved but not nationally approved schools of medicine was not touched on in this conference.

Intermediate periods of service entitle the serviceman to intermediately long periods of education, thus if a serviceman has served six months he is entitled to eighteen months of further education.

### III TUITION AND FEE BENEFITS

The law provides that the administrator shall pay to the educational or training institution the tuition costs and fees as are customarily charged and may also pay for books, supplies and equipment and other necessary expenses, provided the payments with respect to any one person should not exceed \$500 for an ordinary school year. These payments are not to be paid to establishments furnishing apprentice training on the job. The law provides that if the institution has no established tuition fee or if the administrator deems the established tuition to be inadequate compensation the administrator is authorized to provide for the payment. Again, however, with the \$500 ordinary school year limitation.

Applying these provisions of the law to the case of residencies in our hospitals and courses in our universities for our physician veterans, Mr. Stirling was of the opinion that there would be no difficulty about the payment of tuition and fees by the administrator for those physician veterans who elect courses in schools of medicine or for those who elect clinical courses in university hospitals where a formal program has been inaugurated. He was also of the opinion however that provided the hospital can be certified to the administrator by the appropriate state agency as a competent educational and training institution the administrator may fix the tuition to be paid to such an institution under the provisions of the law (see last sentence section 400 title VIII, paragraph 5).

The arrangements heretofore in use in hospitals were explained to Mr. Stirling it being pointed out that the hospital generally speaking not only did not charge tuition but actually offered the resident a stipend. He replied by saying that in his opinion if the hospital is certified as a bona fide educational institution the tuition for the physician veterans can be paid to that hospital even though the hospital still continues to pay a stipend to the veteran.

### IV SUBSISTENCE BENEFIT

The law provides further that on application to the administrator the person taking courses shall be paid a subsistence allowance of \$50 per month if without a dependent or dependents or \$75 per month if he has a dependent or dependents.

This provision again Mr. Stirling believes is applicable to the physician veterans who choose to take courses in medical schools or hospitals. Mr. Stirling is of the opinion furthermore that the subsistence benefit may be paid the physician veteran even if he receives a stipend from the hospital since in some cases the physician veteran will undoubtedly live outside the hospital and in many cases there will be a noticeable disproportion between the stipend paid by the hospitals and the salary level of the physician veteran before his discharge. It was pointed out, furthermore that the subsistence benefit includes regular holidays and leave not exceeding thirty days in a calendar year. There may still be some question whether the provisions of the law pertaining to attendance in courses on a part time basis and a corresponding part compensation for productive labor are applicable here but there seems no reason to anticipate an adverse ruling on this point. Furthermore it should be noted that the administration has thus far defined a school year as thirty weeks for the purpose of administering the law hence the tuition allowance of \$500 maximum can be made payable to the institution every thirty weeks if that is the interpretation and regulation under which the educational institution is operating. The subsistence benefit is not affected by the length of the school year.

### V STATUS OF THE VETERANS ADMINISTRATION PHYSICIANS

The provisions of the Readjustment Act as summarized apply of course to all institutions in which the physician veterans will expect to take courses, hence the committee asked Dr. Griffith whether in case the Veterans Administration opens its own hospitals to the physician veterans for refresher and retraining courses and for residencies just what the status of these physicians would be.

Dr. Griffith explained that this is one of the outstanding problems which the Veterans Administration must face. At the present time the Veterans Administration physicians under a civil service status are full time appointees and at present there is no provision in the organization for residents. A graduate of a school of medicine who has had a good education, if appointed, enters the Veterans Service at a salary of \$3,200. After about eighteen months his salary is approximately \$3,800 while after ten to fifteen years he may reach a base salary of \$6,400. Clearly the physician veterans if appointed to such positions would be in a particularly fortunate position at least with reference to salaries, but obviously such an arrangement is not the one which is contemplated by the Servicemen's Readjustment Act. Just how this problem will be solved if the facilities of the Veterans Administration are offered for this educational program is not clear at the present time. A medical corps within the Veterans Administration would obviously solve the problem.

It is expected that within approximately five years the Veterans Administration will have 300,000 beds in about 150 institutions. At present the administration has about 1,800 physicians approximately one fifth of whom are at the higher salary levels. This will give some indication of what might be expected in the future but the Vocational Rehabilitation Program of the Veterans Administration will require many more physicians than would be indicated by the present physician to patient ratio. It would seem briefly that it is highly desirable to establish an educational program within the Veterans Administration for the physician veterans so that these veterans may have the benefit of the unquestionably large and desirable facilities of the veterans hospitals and secondly that the administration must make provision for a much larger physician personnel.

### VI MEDICAL SERVICES OF THE VETERANS ADMINISTRATION

The committee was given the benefit of a further interview with Dr. Charles M. Griffith Medical Director and with Col. Hugo Mella M. C. Assistant Medical Director in charge of Postgraduate Instruction and Medical Research. Dr. Griffith explained the structure of the Veterans Administration, emphasizing the extent and variety of the medical responsibilities of the administration. The medical director is responsible to the administrator through an assistant administrator. He has a number of assistant medical directors (at present five) who are in charge of various divisions namely general medicine and surgery, neuropsychiatry, outpatient and authorization, tuberculosis and, lastly, postgraduate instruction and medical research. There are a medical executive officer and a medical consultant. The only medical activity of the administration which does not fall within the responsibility of the medical director is the medicolegal activity namely the activity of physicians on various boards dealing with claims, adjustments and insurance.

Dr. Griffith and Colonel Mella then went on to speak of the various kinds of physician veterans in whom the Veterans Administration is interested. The first class is the discharged physician who qualifies for further education under the G. I. bill and who is adequately taken care of. The second group is the group of those who would like to qualify for an educational program in the Veterans Administration itself. The status of this group is not clear at the present time since provisions must still be made for them. A third group of physicians might be those who would be discharged on the basis of physical disabilities and for whom both educational and other provisions will have to be made. If it was possible for the Veterans Administration to organize its own board and its own medical corps, many of the present difficulties with reference to medical care within the Veterans Administration could be promptly removed. At present the Veterans Administration has had assigned to it a number of physicians by the Surgeon General. Colonel Mella stated after being asked that for the next two years he estimates that in the veterans' hospitals there should be place for approximately 250 residents. He estimates furthermore that 50 per cent of these could be employed in surgical residencies, 35 per cent in psychiatric and internal medicine resi-

dencies and 15 per cent in tuberculosis residencies. He called attention to the great difficulty under which the administration labors in developing an educational program arising from the fact that neither psychiatric nor tuberculosis hospitals have thus far been approved for residencies. By whom and when will such approval take place and what agency will undertake the definition of staff membership qualifications?

It is obvious that the Veterans Administration has given considerable thought to the organization and content of an educational program for physician veterans. Colonel Mella is studying the outline for graduate instruction in surgery as given to him by the College of Surgeons. He and his assistants are planning, moreover, to organize an appropriate committee in each of the

veterans hospitals in which residents are to be instructed which will assume responsibility for the educational program, the committee to consist of the chief medical officer, the clinical director and the chiefs of the various services. The administrator has recently approved functional charts of organization for the various classes of facilities of the Veterans Administration, and with such clear definitions as have been given it should be a relatively simple matter to integrate with the existing functions the further function of education for our returning physician veterans.

FREDERICK A. COLLIER, MD, Chairman

WALTER PALMER, MD

ALPHONSE M. SCHWITALI, SJ, Secretary

## ARMY

### MEDICAL FIELD SERVICE SCHOOL AT CARLISLE BARRACKS

When a young man is enrolled in the medical department of the Army, he is likely to be sent in the vast majority of cases to the Medical Field Service School at Carlisle Barracks, Pennsylvania. The school is located in Cumberland County at the foot of the Appalachian Mountains. It is about 18 miles from Harrisburg. The primary purpose of this school is instruction and training of officers of the medical department—essentially what is called indoctrination. The needs of war have brought about a condensation of the usual five months course to a six weeks period. In this time the student officer is instructed in tactics, the operation of medical units, preventive medicine, field sanitation and the application of medicine and surgery in the field. Included are practical demonstrations and participation in maneuvers. An officer candidate school for enlisted men of the medical department is carried on simultaneously.

Physical conditioning is an important part of the work and is intended to develop physical stamina, agility and coordination. This involves the usual marching, physical drill and the handling of litters carrying wounded. One area is set apart for actual demonstration of field sanitation. This area occupies 8 acres of ground. Here are shown all the different techniques for disposing of kitchen waste and human waste, for the control of lice, flies, mosquitoes and other insects, rat proofing, the preparation of water for use in the field, the disposal of sewage, the setting up of bathtubs and many other sanitary measures. In the course of this work many new processes have been developed and are widely used in our armed forces.

In the mountain area closely associated with Carlisle Barracks, about 7 miles from the post, the medical officer learns how to read maps, set up medical installations for the transportation of the wounded and perform actually in the field many of the life saving procedures that he will have to do once he is in active service at the front. Furthermore, there is an infiltration course used to condition students mentally to the conditions of combat. Here the student gets out of a trench, crawls 80 yards, negotiates barbed wire obstacles, enters other trenches and thus with machine guns firing ammunition 36 inches overhead.

#### MEDICAL EQUIPMENT LABORATORY

The Medical Department Equipment Laboratory was established in 1920 by the Surgeon General of the U. S. Army and represents at this time one of the most fascinating museums of medical equipment to be found anywhere. Probably it is the only institution of its kind in the world. Here the visitors can see complete outfits of medical supplies for the operating room, the laboratory and the X-ray unit of the Japanese, Italian, German, French and other armies. Here are experiments in the development of light weight litters, operating units to be used in the field, motorized medical devices and innumerable other forms of apparatus. Here are models of ambulance trains and ambulance ships going back to the time of the Civil War and coming up to the latest of the devices available today. The dental equipment parallels that of medicine. When a need occurs anywhere among our troops in the air, on land or on the sea, a message sent to the Medical Department Equipment Laboratory puts the investigators to work and in the vast majority of instances they have been able to meet every request.

showing ingenuity that taxes the imagination. This laboratory is under the direction of Col. E. D. Quimmell, and any physician who has an opportunity to visit it and to study its content under the tutelage of Colonel Quimmell will be exceedingly well rewarded for his time and interest.

The textbook of Carlisle Barracks is the *Instructors Guide*, a comprehensive work on the service of the medical department in war, written especially for the condensed course now being given. Here are all the details of defense against chemical warfare, mechanized warfare, air and parachute attack, hand to hand combat and what not. The significance of this instruction and training for the good of the nation and for the health and fitness of our troops is so great that one may anticipate a time in the postwar period when the six weeks condensed course may well be part of every medical curriculum.

### NONCOMBAT DUTY TO SOLE SURVIVING SON IF TWO OR MORE BROTHERS HAVE BEEN KILLED

In recognition of the sacrifice and contribution made by a family which has lost two or more sons and has only one surviving, the War Department has approved a policy of returning to or retaining in the continental United States the sole surviving son of a family in cases in which two or more sons have been lost except when the surviving son is engaged in nonhazardous duty overseas.

Sympathetic consideration will be given to every application in cases of families who have lost two or more sons and have only one surviving for return of the survivor to this country for duty here or for discharge from the Army if the circumstances warrant. However, each case will be decided on its individual merits. In all cases of extreme hardship arising from family circumstances the Army has in the past cooperated to provide relief from active duty or discharge if the complaint has been found to have merit on investigation. The plan of removing men from the hazards of combat activity is an extension of this policy.

### HOSPITAL NAMED IN HONOR OF COLONEL MADIGAN

The Madigan General Hospital, Fort Lewis, Washington, has been named in honor of the late Col. Patrick Sarsfield Madigan for his long and faithful service in the Army Medical Corps. At the time of Dr. Madigan's death in May of this year he was chief surgeon at Fort Belvoir, Virginia Station Hospital. He graduated from Georgetown University School of Medicine, Washington, D. C., in 1912. Dr. Madigan began his army service in 1917, entering the Medical Corps and serving during the last war in France with the 7th Division. He was stationed in the Philippine Islands for two years and served four years in the Panama Canal Zone. In 1940 he was appointed medical adviser to the Surgeon General and the Adjutant General of the Army. Before going to Fort Belvoir in February he was commanding officer of Camp Lee, Virginia Station Hospital. Col. A. P. Clark is commanding officer at the Madigan General Hospital.

## MAJOR CLINTON S MAUPIN A JAPANESE PRISONER

Major Clinton S Maupin, formerly of Waurika Okla who has been a prisoner of war in Japanese prison Camp No 1, Cabanatuan Philippines since he was captured on Bataan, recently sent a card stating that he is in excellent health and is looking forward to seeing his family again soon Dr Maupin graduated from the University of Oklahoma School of Medicine Oklahoma City, in 1934 and entered the service Nov 8, 1940

## ARMY AWARDS AND COMMENDATIONS

### Captain John J McCallig

Capt John J McCallig, formerly of Rochester, Minn, has been awarded the Purple Heart Dr McCallig was in the invasion on D day as a first surgeon, and three days later, at night, his hip was struck by an E boat torpedo in the Channel His clothing and life belt were torn from him by the blast and he swam for an hour or more in the icy water until he found

a small raft, from which two hours later, a British destroyer rescued him Dr McCallig graduated from the University of Oregon Medical School, Portland in 1937 and entered the service July 12, 1942

### Major Paul L Dent

Presentation of the Bronze Star Medal for meritorious service in combat was made recently to Major Paul L Dent formerly of Louisville, Ky, by Brig Gen Ralph H Goldthwaite, commanding general, Army and Navy General Hospital, Hot Springs National Park, Ark Dr Dent, serving as operating surgeon in charge of a general surgical team in the Tunisian campaign, performed major surgery on battle casualties close to the front lines His force and guidance in the speedy and successful care of seriously wounded battle casualties, despite serious difficulties and handicaps contributed to the saving of the lives of several hundred men at his advance station For his vital performance and pioneering the principles on which major surgery in the forward areas is now based, Dr Dent was awarded the Bronze Star Medal Dr Dent graduated from the Medical College of Virginia Richmond, in 1931 and entered the service in July 1942

## MISCELLANEOUS

### CIVILIAN MEDICAL ATTENDANCE

Circular No 214 recently issued by the headquarters of the Sixth Service Command, states that civilian medical attendance at public expense is authorized for military personnel while on a duty status or when absent on authorized leave sick leave furlough or pass only when the required attendance cannot be provided from available facilities of the Army or other federal agency Other federal agencies include hospitals of the U S Navy U S Public Health Service, Veterans Administration facilities and Indian hospitals Prior authority for treatment of patients in these hospitals is not required

Commanding officers sending patients to hospitals of other government agencies will send at the same time a letter requesting treatment of the patient this letter to be signed by the responsible officer and to give the information required by paragraph 4 c (1) AR 40-525 If the patient is admitted to the hospital while on pass leave or furlough or while absent without official leave the responsible officer on notice from the hospital of admission of patient will write a request for treatment covering information outlined in paragraph 4 c (2) AR 40 505

### WARTIME GRADUATE MEDICAL MEETINGS

The following subjects and speakers for Wartime Graduate Medical Meetings have just been announced

U S Naval Hospital Philadelphia Neoplasms in Service Personnel Dr Stanley P Reimann November 17 Practical Aspects of Psycho-somatic Medicine Dr Louis J Karnosh November 28

Bruno General Hospital Santa Fe N M Address of Welcome Brig Gen Larry B McAfee Symposium on Coccidioidomycosis Introduction of subject Major Samuel I Koopstein Speakers Dr C E Smith Major Norman Dixon Lieut Col Brian Blades November 16 Symposium on the Repair of Soft Tissue and Bone Defects of the Extremities Introduction of subject Lieut Col John D Koucky Speakers Dr Edward L Compere Dr Earl C Padgett Major C L Robertson Lieut Col W W Schuessler November 16 Symposium on the Pathology of Tuberculosis Introduction of subject Lieut Col George J Kastlin Speakers Col Edmond R Long and Col Hugh Mahon November 17 Symposium on Pulmonary Tuberculosis Introduction of subject Major George C Owen Speakers Col Edmond R Long Lieut Col Brian Blades Col Hugh Mahon Capt William H Roper November 17 Symposium on Bone and Joint Tuberculosis Introduction of subject Major Frederick J Fischer Speakers Dr Edward L Compere Dr Earl C Padgett, Col Edmond R Long and Col Hugh Mahon November 18 Symposium on Chest Surgery Introduction of subject Lieut Col John D Koucky

Speakers Lieut Col Brian Blades and other speakers not yet announced November 18

U S Naval Hospital, Long Beach, Calif Some Phases of Peripheral Nerve Surgery Dr R B Raney, November 18

Mayo General Hospital Galesburg Ill Conditions Affecting Glucose Metabolism, Dr Arthur R Colwell, November 15

Camp Ellis Camp Ellis Illinois Dermatologic Diseases Drs Stephen Rothman, Robert M Craig and George X Schweinlein November 15

Chanute Field Rantoul Ill Low Back Pain Dis Fremont Chandler and Adrien H P F Ver Bruggen November 15

### PRISONERS OF WAR SERVICES

Through the cooperation of the American Red Cross special optical dental and orthopedic services are being provided for American prisoners of war The American Red Cross reports that in all European prisoner camps the detaining power provides eye examination service Prescriptions prepared by the camp optometrist are sent to Geneva where a large pool of lenses has been established When Geneva cannot fill the prescription it is filled elsewhere in Switzerland

It was also reported that each camp usually has its own dentists a German American or another Allied dentist who is a prisoner To meet shortages, dental supplies valued at about \$12,000 have been shipped to the International Committee of the Red Cross When special dental treatment is needed it is paid for out of a revolving fund

Temporary replacements are provided by their captors for prisoners who have lost a leg or an arm The British and American Red Cross societies follow through by providing the best permanent mechanical limbs as soon as possible To accomplish this a Swiss orthopedic mission visits all camps and measures the prisoners for artificial limbs These are constructed in Switzerland for American prisoners at the expense of the American Red Cross

### WAXED PAPER FROM CIGARET CARTONS USED AS SURGICAL DRESSINGS

Capt Richard A Twyman formerly of Rochester, Minn discovered that waxed paper from the wrappers of cigaret cartons can be used for surgical dressings when the usual nonadherent substances are unavailable Holes are punched at quarter inch intervals to permit drainage and irrigation The waxed papers are washed with soap and water placed in a shallow pan wrapped like other surgical dressings and then sterilized in the usual manner Dr Twyman graduated from Northwestern University Medical School Chicago in 1938 and entered the service June 19 1943



# ORGANIZATION SECTION

## Official Notes

### CHANGE 1945 ANNUAL MEETING PLACE

The House of Delegates of the American Medical Association at the annual session held in 1942 selected New York City as the place of meeting for the 1945 annual session. Certain preliminary arrangements were completed, but investigations recently made in New York clearly indicate that the necessary facilities will not be available in that city in 1945 because of conditions created by the war emergency. It is with regret that it is necessary to make the announcement that the annual session scheduled for New York, June 11 to 15, 1945, will have to be held in some other city where adequate facilities will be available. Under the direction of the Board of Trustees necessary investigations are now in progress and definite announcement as to the place of meeting for 1945 will be made through the columns of *THE JOURNAL* at the earliest possible time.

### ANNUAL CONFERENCE OF STATE SECRETARIES AND EDITORS

The Annual Conference of Secretaries and Editors of Constituent State Medical Associations will be held at the offices of the Association in Chicago on November 17 and 18. The program will be as follows:

FRIDAY, NOVEMBER 17, 10 A. M.

Call to Order James R. Bloss, Chairman of the Board of Trustees of the American Medical Association.

Address Herman L. Kretschmer, President of the American Medical Association.

The Functions and Operations of the Bureau of Information Lieut. Col. Harold C. Lueth, Army Medical Corps Liaison Office.

The Council on Medical Service and Public Relations John H. Fitzgibbon, Chairman of the Council.

12:30 p.m. LUNCHEON

FRIDAY, NOVEMBER 17, 2 P. M.

Address Roger I. Lee, President Elect of the American Medical Association.

The EMIC Program E. D. Plass, State University of Iowa College of Medicine and Thurgood B. Rice, State Health Officer of Indiana.

Medical Service Plans Robert E. S. Young, Member of Medical Service Committee of Ohio State Medical Association.

FRIDAY, NOVEMBER 17, 6:30 P. M.

DINNER MEETING OF EDITORS OF STATE MEDICAL JOURNALS  
PALMER HOUSE ROOM 14 CLUB FLOOR

W. R. Brookshier, Editor of the *Journal of the Arkansas Medical Society*, presiding.

Our State Journals as Molders of Opinion Hermann M. Jahr, Editor of the *Nebraska State Medical Journal*.

Attitude of State Medical Journals Toward Political and Social Trends That May Affect Medical Affairs Creighton Barker, Secretary of the Connecticut State Medical Society.

Our State Journals as News Services E. M. Shanklin, Editor of the *Journal of the Indiana State Medical Association*.

SATURDAY, NOVEMBER 18, 9:30 A. M.

Medical Attitudes, Opportunities and Responsibilities in a National Fitness Program J. W. Wilce, Ohio State University, and Member of Official Group of National Committee on Physical Fitness.

Radio Broadcasting by Medical Profession A. S. Brunk, President of the Michigan State Medical Society.

### COUNCIL ON MEDICAL SERVICE WASHINGTON OFFICE

The Washington Bureau of the Council on Medical Service is preparing a list of state association officers and the names of members designated to cooperate with it in the winter work. The list is about complete, only a few states remaining to be heard from.

The director, Dr. Joseph S. Lawrence, has met with the county legislative chairman of Indiana at a conference held in

Indianapolis and also with the County Secretaries' Association of Wisconsin at its annual meeting.

The council has had the first of its regional meetings held Sunday, October 29, in Cincinnati. Four states—Ohio, Indiana, Kentucky and West Virginia—composed the region and more than eighty physicians were in attendance. Dr. Edward J. McCormick, a member of the Council, presided, assisted by the three trustees, Drs. Bloss, Sensenich and Henderson, who reside in this district. The two subjects that commanded the most interest were the Council's program and the plans for prepayment insurance. The next regional conference will be held in Washington on December 6 and a third is scheduled for St. Paul on December 10.

## Washington Letter

(From a Special Correspondent)

Nov. 6, 1944

### Action Promised on Capital Hospital Center Bill

Despite authorized extensions to local hospitals, efforts will be pressed immediately after the November 7 election to pass the bill to establish a 1,500 bed hospital center in the District of Columbia. Senator Millard E. Tydings (Democrat, Maryland) heads a special subcommittee of the Senate District Committee, which was created to study the measure and hold public hearings on it. He sponsored the bill in the Senate and says that every effort will be made to enact it. A companion bill was introduced in the House by Representative Thomas D. Alesandro (Democrat, Maryland) and is pending. The federal government would bear the entire cost of the proposed medical center. It would be operated on a nonprofit basis by participating private hospitals, with Emergency and Garfield Hospitals forming the nucleus.

Senator Tydings said that the cost of the center was estimated at between \$5,000,000 and \$7,500,000. The center would be equipped with the most modern scientific devices and staffed with the best medical personnel available. The Senate bill has been given the first position on the Senate District Committee calendar, according to Senator Theodore G. Bilbo (Democrat, Mississippi) chairman.

### Robert H. Felix New Mental Hygiene Chief, Mental Hygiene Division, U. S. P. H. S.

Appointment of Dr. Robert H. Felix as medical director in charge of the Mental Hygiene Division in the Bureau of Medical Services, U. S. Public Health Service, has been announced by Dr. Thomas Parran, Surgeon General. Dr. Felix relieves Dr. Lawrence Kolb who retired October 31. A well balanced program of the advancement of mental health in the United States was described by Dr. Felix as his first effort on taking over his new post. He cited present needs for expansion of research and a nationwide extension of psychiatric services to apply the findings of research to the psychic problems of people. Dr. Felix was borne in Downs, Ky., May 29, 1904, received his degree in medicine at the University of Colorado in 1930 and interned at the Colorado General Hospital in Denver. He was granted a two year fellowship by the Commonwealth Fund and took his postgraduate training at the Colorado Psychiatric Hospital under Dr. Franklin R. Ebaugh. He was commissioned in the regular corps of the Public Health Service in August 1933 and had a varied experience in the service. He developed and operated a mental hygiene service for the Coast Guard at New London, Conn., with the advent of war. He is a Fellow of the American Medical Association, the American College of Physicians and the American Psychiatric Association, a member of the Association of Military Surgeons and the Southern Psychiatric Association and a past president of the Kentucky Psychiatric Association.

**Toxicity of DDT Described by Dr Paul A Neal**

In spite of its inherent toxicity, DDT in the desired insecticidal concentrations in the air is of such low order that it will not cause injurious effects on human beings, said Dr Paul A Neal of the U S Public Health Service in his address to the National Museum Entomological Society here. He reported that studies conducted at the Industrial Hygiene Research Laboratory of the National Institute of Health in Bethesda, Md, showed that DDT in concentrations up to 10 per cent in inert powders for dusting clothes, as in the extermination of lice, offers no serious health consequences. The use of a 15 DDT deobase mist mixture had no toxic effect on rabbits, and it should be safe to use as a fly spray. In a clinical and laboratory study of 3 men who had had several months' continuous occupational exposure to DDT in its various forms as an insecticide, an evaluation of results failed to indicate any definite toxic effects from exposure to DDT. Although this study dealt only with the appraisal of the potential dangers of DDT when inhaled as an aerosol, dust or mist, Dr Neal pointed out that massive doses either by mouth or by skin absorption will cause toxic reactions. Heavy contamination of foods should be avoided.

**National Hospital Service Society Ordered Dissolved**

Dissolution of the National Hospital Service Society, Inc., of Washington, D C, fraternal organization providing hospitalization insurance and medical care for 5,000 District of Columbia residents, was ordered by the federal government on technical charges of violating insurance laws. District Court Justice F Dickinson Letts consented to transfer of the five thousand policies to National Hospitalization, Inc., in Maryland. Attorneys for National Hospital Service Society state that its members do not face any loss of money or insurance benefits. Justice Letts signed a consent decree through which Cornelius H Doherty and Louis M Denit, attorneys, agreed to revocation of the organization's charter and dissolution of the business effective Jan 15, 1945. U S Attorney Edward M Curran and his aide Daniel B Maher said that under terms of the charter the society was a fraternal and benefit association required to carry on its business for the sole benefit of members and beneficiaries and not for profit. The government, however, charged that the society conducted its business for profit and issued policies that did not carry death benefits and which did not require medical examinations. Such provisions were ordered for potential policyholders under the terms of the charter. The organization was founded in 1935.

**Named to Joint Committee on Physical Fitness**

Chairman John B Kelly of the National Committee on Physical Fitness of the Federal Security Agency announced here that Capt Raymond Wells, USNR, and Dr Lon W Morrey have been appointed to the committee as representatives of the American Dental Association. Dr Wells is a past president of the American Dental Association, and Dr Morrey is a member of its central office staff.

**Society Proceedings****COMING MEETINGS**

- American Society of Anesthetists New York Dec 14 Dr McKinnis L Phelps 745 Fifth Ave New York 22, Secretary
- Annual Conference of State Secretaries and Editors Chicago Nov 17 18 Dr Olin West 535 N Dearborn St Chicago Secretary
- New York State Association of Public Health Laboratories Albany, Nov 17 Miss Mary B Kirkbride, New Scotland Ave Albany 1 Secretary
- Puerto Rico Medical Association of Santurce Dec. 15 17 Dr E. Martinez Rivera P O Box 3866 Santurce, Secretary
- Southern Medical Association St. Louis Mo Nov 13 16 Mr C P Lorant Empire Building Birmingham 3 Ala Secretary
- Southern Surgical Association Hot Springs Va Dec. 5 7 Dr Alfred Bialock Johns Hopkins Hospital, Baltimore 5, Secretary
- Western Surgical Association Chicago Dec. 12 Dr Arthur R Metz, 250 East Superior St Chicago Secretary

**Medical News**

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES NEW HOSPITALS EDUCATION AND PUBLIC HEALTH)

**ALABAMA**

**Changes in Health Personnel**—Dr John I Mitchell, Double Springs, health officer of Winston County for three years, has resigned effective October 1 to enter private practice either in Russellville or in Pell City, it was reported. —Dr Frank M Hall Athens, has been named health officer of Alachua County, Gainesville, Fla.

**ARIZONA**

**State Meeting to Be in Tucson**—The Arizona State Medical Association will hold its annual meeting at the Pioneer Hotel, Tucson, April 27-28, 1945. The scientific program will be presented by members of the staff of Baylor University College of Medicine, Houston, Texas.

**CALIFORNIA**

**Symposium on Psychotherapy**—The San Francisco Psychoanalytic Society held its semiannual meeting October 28 29 at the Ambassador Hotel, Los Angeles. One session was a symposium on short psychotherapy with Comdr Uno H Helgeson (MC) on "Experiences with Short Psychotherapy in Military Psychiatry", Dr Bernhard Berliner, San Francisco, "The Practice of Short Psychoanalytic Psychotherapy," and Drs Otto Fenchel and Ernst Simmel, Los Angeles, "Theoretical Considerations of the Indications, Limitations and Technique of Short Psychotherapy." Other speakers include Drs Emanuel Windholz, San Francisco, on "The Possibilities and Limitations of Group Psychotherapy" and Jacob S Kasanin San Francisco, "Vestigial Roots of Schizophrenia."

**State Board Activities**—Superior Judge Emmet H Wilson on September 12 upheld an order of the Board of Osteopathic Examiners revoking the license of Leslie R Nunn, osteopath on charges that he aided an unlicensed person in performing a tonsillectomy on 2 boys who died following an operation (THE JOURNAL, Oct 23 1943, p 495). According to the Los Angeles Examiner September 13, Nunn had asked for a writ of mandate compelling the board to vacate its order revoking his license as a "physician and surgeon" and charged that the board accepted evidence without his knowledge. Nunn and Harry Navarre, a chiropractor, are now in San Quentin serving terms for the deaths of 2 children who were operated on by them, it was stated.—The San Jose Mercury Herald, September 16 reported that probation had been granted to William G Cardew, chiropractor and confessed abortionist. The period of the probation, which is the second in two years is for five years. Superior Judge William F James, in addition to making surrender of the license and abandonment of practice, equipment and drugs conditions of the probation order, also stipulated that Cardew's premises be opened for inspection at all times by county or medical authorities. Another chiropractor, Max Otto Garten, Salinas, was reported on September 17 to have been released on \$2,000 bail following his arrest on a charge of performing an illegal operation.

**DELAWARE**

**Society News**—Dr Percy F Pelouze assistant professor of urology, University of Pennsylvania School of Medicine, Philadelphia, addressed the New Castle County Medical Society of Delaware, Wilmington October 17, on "Gonorrhea and Its Treatment." Col Arthur P Hitchens M C, discussed "Public Health and the Practicing Physician" before the society on September 19.

**DISTRICT OF COLUMBIA**

**Dr Ruffin Honored**—Dr Sterling Ruffin, professor emeritus of medicine, George Washington University School of Medicine, was honored when the October issue of the George Washington University news bulletin was dedicated to him. The news bulletin is entitled "Confidential—from Washington" and contains a tribute by Cloyd H Marvin, LL.D., president of the university, in which he declares that Dr Ruffin "as a distinguished practitioner and able teacher of medicine, has contributed greatly to the medical school and through it to the Washington community." Dr Ruffin graduated at the medical school in 1890 serving as professor there from 1902 to 1924 when he became emeritus.

## ILLINOIS

**Postgraduate Conference**—The Postgraduate Conference of Northern Illinois will be held at the Faust Hotel, Rockford, November 15. Among the speakers will be

Mr John W Neal secretary committee on medical service and public relations Illinois State Medical Society  
Dr William H Cassels Chicago Anesthetic Emergencies  
Dr Robert S Berghoff Chicago Heart Clinic with Demonstration of Patients  
Dr Henry G Poncher Chicago Management of Rheumatic Fever  
Lieut Col Okla W Sicks M C Penicillin Its Practical Applications with Case Reviews  
Lieut Col Earl R Denny M C Use and Abuse of Sulfa Drugs

**New Ruling on Boric Acid**—Dr Roland R Cross, Springfield, state director of public health, has requested hospitals in the state to eliminate boric acid from the inventory of drugs and other preparations kept on hand for use in the maternity divisions of the hospitals. The action was taken on the ground that boric acid is of very little, if any, antiseptic value but is highly toxic when ingested by infants. The request followed the death of 2 infants in an Illinois hospital attributed to boric acid poisoning. "The infant deaths reported from various hospitals throughout the country as due to boric acid poisoning have had their origin in the accidental substitution of boric acid powder for dried milk products or of the accidental substitution of weak boric acid solution for distilled water in the preparation of infant food formulas. Carelessness, improper labeling of bottles and shifting personnel seem to be contributory factors," Dr Cross announced.

## Chicago

**Personal**—Dr Louis J Halpern has been appointed assistant professor of pediatrics at the University of Illinois College of Medicine—Mrs Adaline Hayden has been appointed executive secretary of the American Association of Medical Record Librarians effective October 23. Her headquarters will be in the office of the American Hospital Association, 18 East Division Street—Dr Orpheus W Barlow, formerly director of research laboratories of Winthrop Chemical Company, has been appointed medical and research director of Nutrition Research Laboratories. Dr Barlow graduated at Rush Medical College in 1936.

**Memorial Service for Dr Besley**—A memorial service for the late Dr Frederic Atwood Besley, Waukegan, will be held under the auspices of the American College of Surgeons in Memorial Hall, 50 East Erie Street, November 19 at 3 p m. Dr Irvin Abell, Louisville, Ky, chairman of the board of regents of the college, will preside. Taking part in the program will be Rev Howard E Ganster, Rector, Christ Episcopal Church, Waukegan, Dr Irving S Cutter, emeritus dean, Northwestern University Medical School, Major General Robert U Patterson, M C (retired), Baltimore, formerly surgeon general of the Army, Dr Gilbert J Thomas Los Angeles, regent, American College of Surgeons, and Dr Donald C Balfour, Rochester, Minn associate, editorial staff, *Surgery Gynecology and Obstetrics*. Dr Besley, at the time of his death on August 16, was secretary of the American College of Surgeons, of which he was a founder-fellow in 1913.

**Tumor Diagnostic Service Inaugurated**—The University of Illinois College of Medicine and the division of cancer control of the state department of public health are cooperating in a new tumor diagnostic service at the Research and Educational Hospitals, Chicago. The operation of this service under these joint auspices provides for an augmentation of the facilities offered by the tumor clinic of the medical college, which has been conducted for some time under the direct supervision of Dr Dancly P Slaughter, assistant professor of surgery at the medical school. The activities of the state division of cancer control are under the direction of Dr Raymond V Brokaw, chief of the division. These facilities are available to all practicing physicians throughout the state as a consultation service in the care of their suspected cancer cases. Patients who can afford to pay will be diagnosed and returned to their referring physician with recommendations for treatment. Medically indigent patients who are approved by the social welfare department of the hospital will be treated without charge in accordance with the customary policy. Tumor clinic sessions are held on Tuesdays, Wednesdays and Fridays from 2 to 5 p m. Ambulant patients will be admitted to the clinic on any of these days, but cases requiring hospital care will be received only by previous arrangement and to the extent of available facilities. Additional tumor diagnostic services now operated under the auspices of the division of cancer control are located at St Anthony's Hospital, Rockford, Burnham City Hospital, Champaign and Memorial Hospital, Springfield. At all of these services specimens of

suspected tumor tissue from medically indigent patients which may be submitted by physicians from any part of the state are accepted for microscopic examination and diagnosis without charge. Suitable containers for mailing such specimens are available upon request. Further information regarding these facilities may be obtained by addressing the Division of Cancer Control, 505 South 5th Street, Champaign, or the director of any of the services named.

## INDIANA

**Personal**—Dr David A Boyd Jr, professor of psychiatry, Indiana University School of Medicine, Indianapolis, has been made the first full time director of the neuropsychiatric ward of the Indianapolis City Hospital—Dr Charles A Miller, Princeton, has been appointed health officer of Gibson County, succeeding the late Dr Bertis C Gwaltney, Fort Branch—Dr Karl R Luthy, formerly of Paducah, Ky, has been named medical director of the U S Rubber Company plant in Mishawaka.

## LOUISIANA

**Dr Bayley Goes to Oklahoma**—Dr Robert H Bayley, associate professor of medicine, Louisiana State University School of Medicine, New Orleans, resigned September 1 to become professor of medicine at the University of Oklahoma School of Medicine, Oklahoma City.

## MARYLAND

**Evander F Kelly Dies**—Evander F Kelly, Phar D, a member of the Maryland State Department of health since 1920 and secretary of the American Pharmaceutical Association, died at his home in Texas, Baltimore County, October 27. Dr Kelly had been dean of pharmacy at the University of Maryland from 1918 to 1926, when he became advisory dean. In 1933 he won the Remington Medal of the American Pharmaceutical Association.

**Emmett Holt Goes to New York Medical College**—Dr L Emmett Holt Jr, since 1930 associate professor of pediatrics at Johns Hopkins University School of Medicine, Baltimore, has been appointed professor of pediatrics at the New York University College of Medicine and director of the pediatric service at Bellevue Hospital. Dr Holt graduated at Johns Hopkins in 1920 and has been a member of the staff there since 1922. He was president of the Society for Pediatric Research in 1939.

## MICHIGAN

**Bequest for Cancer**—About one million dollars of the estate of Mrs James T Pardee, Midland, is to be used for the control of cancer under her will, the *New York Times* reported October 12.

**Personal**—Dr John H Law, formerly assistant director of Grace Hospital, Detroit, has been named director, succeeding the late Dr Edmund F Collins—Dr Milton H Erickson, assistant professor of psychiatry at Wayne University College of Medicine, Detroit, has recently been promoted to associate professor of psychiatry—Dr Henry J Pyle Muskegon, has resigned as school physician of Muskegon, a position he has held for the past twenty-four years.

**State Division of National Physicians Committee**—The Michigan Division of the National Physicians Committee for the Extension of Medical Services was organized at the Book-Cadillac Hotel, Detroit, October 11. Dr Clarence E Umphrey, Detroit, who has served for a number of years as chairman of the Metropolitan Detroit Group, was unanimously elected chairman of the state committee, which will now absorb the former Metropolitan organization. Other officers chosen include Drs William M LeFevre, Muskegon, vice chairman, Eldwin R Witwer, Detroit, secretary, and Wyman D Barrett, Detroit, treasurer. These officers will consider the appointment of an executive secretary.

**Scholastic Prizes**—The Distinguished Service Award of Wayne University College of Medicine, Detroit, was presented during the recent commencement to Dr Kenneth E McIntyre as the "student outstanding in scholastic and extracurricular activities." Dr Donald E Preshaw received the Alumni Award presented to the student who has maintained the highest scholastic standing during his four years in college. The Theodore A McGraw Memorial Award, given to the outstanding student of the junior year, went to Peter J Talso. This prize was given to Dr Preshaw during his junior year. Arthur D Harris and Dr Addison C Prince received the H Peyton Johnson scholarships, presented annually to Negro medical students of high ability and character. The Angus McLean Memorial Award, for the graduate student who has done the best research work during the year, went to Dr Robert O Bauer.

## NEW HAMPSHIRE

**Health Program at Colby College**—Seventeen physicians conducted an annual health clinic at the Colby Junior College for women New London October 21 examining the 190 entering students and reviewing the cases of returning students whose previous health records have not been perfect. Serving as the basis for the clinical work are the records presented by the students' family physician and results of the college's preliminary examination covering chest x-ray hemoglobin test heart rate blood pressure Wassermann test urinalysis blood analysis and audiometric reading. Following her examination each student meets with one of the conference physicians to clear up any questions and to determine her health program for the year. Where necessary appointments are made at neighboring clinics and hospitals for psychiatric treatment and dental work. In preparation for the clinic three medical technicians graduates of Colby have worked at the New London Hospital for two days to analyze specimens and to complete Wassermann tests. Undergraduates in the medical technician and medical secretarial courses receive practical experience at the clinic in making records and otherwise assisting the doctors. In addition to its purpose in preventing disease and discovering physical weaknesses the clinic is considered an effective educational measure in that it familiarizes students with complete efficient and modern medical methods and through the personal doctor-student conference gives them an opportunity to gain the maximum knowledge from the experience. The estimated expense to the college for the one day clinic is approximately \$2000. The college stresses the importance of student faculty and staff health throughout the year. Faculty housekeepers and groundsmen are required to pass a complete physical examination at least every three years while food handlers must undergo an annual examination that is thorough in every respect and designed to discover carriers of infection. A daily clinic is held every morning for students to check on slight illnesses and to segregate immediately those who need hospitalization in the college infirmary.

## NEW YORK

**Another Medical Plan**—At a meeting October 17 the Medical Society of the County of Monroe voted to launch the Genesee Valley Medical Care Inc. a nonprofit medical insurance plan for residents of the Rochester area. The name was selected to make the plan broad enough to attract medical persons in the area but outside Monroe County. A board of ten directors and two others to be named by the president of the society. Dr. Benedict J. Duffy, Rochester, will work with six lay members of the board of directors in planning details to submit to interested agencies.

**Meeting of Public Health Laboratories**—The New York State Association of Public Health Laboratories will meet at the state laboratory Albany November 17. Among the speakers will be:

- Dr. William Kaufmann Albany Laboratory Aids in the Diagnosis of Amebic Colitis in Temperate Climates
- Dr. Nathan Mitchell Albany Latent Primary Carcinoma of the Thyroid Gland
- Dr. Frank W. Foote Jr. Albany Mucoepidermoid Tumors of Salivary Glands
- Dr. Max M. Strumia Brooklyn Mammography Fractionation of Blood with Specific Reference to Modified Globin

On November 16 the association will sponsor its fifth conference on tropical diseases in cooperation with the division of laboratories and research of the state department of health. Participating will be Dr. George M. Lewis, New York, who will discuss 'Clinical and Immunological Aspects of Fungus Infection' and Rhoda W. Benham, Ph.D., New York, 'Laboratory Procedures in the Diagnosis of Fungus Diseases'.

**Resources to Be Pooled in Poliomyelitis Care**—A plan is under consideration in New York State whereby personnel resources can be pooled to meet the need for postacute and convalescent care of victims of this year's outbreak of infantile paralysis. At a meeting of hospital administrators called by the state department of health September 26, Dr. Edward S. Rogers, assistant commissioner for medical administration, stated that the estimate of cases in upstate New York will reach 4000 by the end of the present outbreak, now past its peak, equaling the figure for the epidemic of 1916. According to *Health News* publication of the state department of health, this does not hold true for New York City; the expected total for which is 1800 cases, only about one fifth of the number experienced in 1916. The group attending the meeting expressed serious concern over the problem in future months of providing the facilities required to meet upstate demands and a resolution was approved providing for the appointment by the state commissioner of health of an advisory coordinating committee to consist of three representatives of each of

the following groups: the Hospital Association of New York State, the New York State Association of Institutions for the Physically Handicapped and the New York State Department of Health. A function of the committee will be among other things to evaluate the needs of the postepidemic poliomyelitis period and to make recommendations to the commissioner of health concerning the allocation of personnel and patients to institutions qualified to care for such patients.

## New York City

**The Harvey Lecture**—Selman A. Waksman, Ph.D., microbiologist, Agricultural Experiment Station, State of New Jersey, New Brunswick, will deliver the second Harvey Society Lecture of the current series at the New York Academy of Medicine November 16. His subject will be "Production and Nature of Antibiotic Substances."

**Industrial Hygiene Courses**—A series of one week courses in the medical surgical and dental aspects of industrial hygiene opened at the DeLamar Institute of Public Health, Columbia University, October 30 and will continue to December 16. The program is designed to aid in the institute's expanding plan for teaching, practice and research in various aspects of public health. Studies in diagnosis and control of dermatoses began October 30. Other courses will be on general health in industry to start November 13, the use of plasticizers and solvents in industry and their toxicologic aspects, November 20, metals and their industrial uses and dangers, November 27, and the administrative aspects of industrial hygiene, December 4. Dental problems and practices in the field of industrial hygiene will be the subject of the final course in the series to begin on December 11.

**Rehabilitation Project**—The Hospital for Joint Diseases and the New York City Vocational Rehabilitation Bureau have worked out a joint program directed toward the early vocational rehabilitation of patients known to that hospital. The plan calls for an analysis of the social and vocational needs of the patients based on the medical survey, diagnosis and prognosis before patients are discharged from the hospital. Consideration will be given as to whether a patient can return to his former job, whether he requires assistance in returning to his previous job or work environment, whether he requires counseling and guidance in his job adjustment or whether he requires training or retraining toward a job objective. Where patients are discharged from the hospital to continue under medical care, consideration of medical, social and vocational needs of the patient will continue after his discharge from the hospital until the plan for the patient is fulfilled. This early consideration will aim to balance the patient's physical and psychologic capacity to the demands of the training and retraining program and the job objective as outlined. The project is under the direct guidance of the medical board which has assigned several of its members to the rehabilitation committee. In this project in which the doctors will take leadership, all departments of the hospital will be involved, including medical, nursing, social service, occupational therapy and physical therapy. The New York City Vocational Rehabilitation Bureau has assigned a member of its staff to the joint rehabilitation project who is serving at the hospital.

**Postwar Plans Feature Dinner for Physicians**—A dinner was held at the Hotel Roosevelt, October 26, celebrating the seventieth birthday of Drs. Samuel A. Brown, formerly dean of the New York University College of Medicine and George B. Wallace, professor of pharmacology at the college. The occasion also observed the many years of service of both physicians. Dr. Brown having been associated with the college since 1896, two years after his graduation there, and Dr. Wallace who has been associated with the teaching faculty since 1901. Dr. Brown served as dean from 1915 to 1932. He is currently chairman of its council, committee on medicine and dentistry. Harry Woodburn Chase, LL.D., chancellor of the university as a guest speaker, announced extensive postwar plans for the development of a medical-dental center in the Bellevue area by the New York University College of Medicine in cooperation with the city of New York and Bellevue Hospital. The plans would include a university hospital and diagnostic clinic which would offer all methods of modern diagnosis together with inpatient facilities to families of the middle-low income group, an institute of medical sciences where the clinical departments of medicine can offer opportunities to younger men for study and research in specially important fields and a general unit which would comprise the medical library, hall of residence and a large auditorium for postgraduate teaching to seat 500. In announcing the proposed plans, Dr. Chase paid tribute to Dr. Brown and Dr. Wallace for their efforts in the development of the New York University College of Medicine.

## OREGON

**Frank Menne Retires as Professor of Pathology**—Dr Frank R Menne since 1916 associated with the University of Oregon Medical School Portland has resigned as professor and head of the department of pathology. He has been succeeded by Dr Warren C Hunter a member of the staff of the school since 1925. Dr Menne graduated at Rush Medical College in 1915 going to Oregon the following year to become assistant professor of pathology. He was named professor in 1920 and head of the department in 1929. Dr Hunter graduated at Oregon in 1924 joining the faculty the following year as assistant professor of pathology. He was named professor in 1941.

## RHODE ISLAND

**Fraudulent License Revoked**—On August 9 the state board of medical examiners revoked the license to practice medicine issued to Charles Jacobson 984 Broad Street Providence. Appeal by Jacobson subsequent to this action serves as a stay of the revocation until the case is disposed of by the supreme court. The state board of medical examiners contends that Jacobson obtained his license to practice through fraud and deceit. It is reported that there is no evidence to prove that Jacobson had taken and passed his state examination in 1934 as he claimed and members of the board testified that they did not recall that he took the examination. A physician testifying at the trial, who took the examination in question testified that he did not see Jacobson present at the time and that Jacobson later came to him and asked him to state that he had seen the latter take the examination. Information concerning Jacobson shows that he graduated at the Middlesex College of Medicine and Surgery Waltham Mass in 1932 and served an internship at the Miriam Hospital Providence from July 1932 to July 1933. He is reported to have taken the Massachusetts State Board examinations in 1934 and 1935, failing to pass in either of them.

## SOUTH CAROLINA

**Changes in Health Officers**—Dr Robert D Hicks director of the York and Chester district health department has also been placed in charge of the unit at Cherokee County with headquarters in Chester. Dr James N Holtzclaw director of the Greenville County Health Department, has been given jurisdiction over the unit in Laurens County.

**Young Physician Wins Ravenel Cup**—Lieut (jg) Harry Boatwright (MC), who graduated at the Medical College of the State of South Carolina Charleston September 16 and who has received a commission in the U S Naval Reserve was during his graduation exercises presented with the Ravenel Cup for his thesis in the field of public health. The cup is awarded annually by Dr Mazzyk P Ravenel, formerly of Charleston and now emeritus professor of medical bacteriology and preventive medicine in the University of Missouri School of Medicine Columbia.

## TEXAS

**Proposed Expansion Program at State Medical School**—Chauncey D Leake Ph.D., dean and executive vice president University of Texas School of Medicine Galveston recently recommended a long range expansion program estimated to cost about four million dollars to meet the physical needs of the school of medicine. The recommendations were contained in a report to the medical committee of the board of regents of the university and include an addition of the main laboratory building to cost \$1,000,000 a library auditorium and general administration building \$300,000 and a building for a school of public health which according to the state medical journal probably could be housed in the main building of the medical college if other departments are transferred. The transfer of the Galveston State Psychopathic Hospital to the medical college to provide exceptional facilities for psychiatry was also recommended. Immediate needs proposed by Dr Leake include estimated repair costs \$10,000 pediatric clinical laboratories \$2,500 which will come from the Buchanan Foundation pediatric experimental facilities \$15,000 from the Buchanan fund housing for women medical students \$40,000 and locker rooms for hospital help \$12,000. Dr Leake also recommends that legislative appropriations be increased to provide appropriate salaries to insure additional teachers necessary to reach a reasonable approach of the optimum teacher-student ratio for American medical schools of one instructor to ten students per course and that a salary scale be provided that will assure competent teachers and research workers. The salary range in the preclinical departments of the better medical schools of the United States it was stated is as follows for

full time faculty members—professor \$12,000 to \$16,000 associate professor \$6,000 to \$10,000 assistant professor, \$4,500 to \$8,000 instructor, \$3,000 to \$6,000, assistant, \$2,000 to \$3,600.

## WEST VIRGINIA

**Questionnaires to Determine Psychiatric Program**—Results of questionnaires will be presented to the council of the West Virginia State Medical Association at its meeting this month to determine what part if any, the association will take to provide a general program on psychiatric education for practicing physicians in the state. Of the 350 physicians whose questionnaires have been reviewed 90 per cent would like additional knowledge on psychiatry and at least 80 per cent would like to know more about emotional illness. Less than 15 per cent of the physicians replying to the questionnaire sent out by the state society in August stated that they have had any training or developed any working concept in psychiatry. Almost all of the replies indicate a general lack of psychiatric assistance in the state. More than 90 per cent of the physicians are interested in seminars on psychiatry to be held evenings at meetings of component medical societies and 50 per cent of the group expressed their willingness to pay a nominal attendance fee. Seventy per cent signified their willingness to have a symposium on psychiatry presented in the *West Virginia Medical Journal*. The returned questionnaires indicated that doctors would be willing to have psychiatry presented in simple terminology and related to general medicine with stress being placed on the handling of psychoneuroses subclinical personality problems and psychosomatic disturbances.

**Medical Societies Merge**—On October 20 the Lewis County Medical Society was merged with the Central West Virginia Medical Society carrying out a unanimous vote of both groups. The consolidation of the two societies will mean an active roll of more than fifty doctors. The Lewis County Medical Society includes physicians in Gilmer County and members of the enlarged Central West Virginia Medical Society residing in six adjoining counties can conveniently meet at the county seat in any of these communities. The Lewis-Upshur Medical Society was organized in 1899 principally through the efforts of Dr Thomas M Hood Clarksbury who recently died in that city at the age of 91 years. That same year the state medical association held its annual convention at Weston and the late Dr Charles S Hoffman Keyser was elected president. In 1915 the doctors of Upshur County withdrew from the Lewis County Medical Society and became members of the Central West Virginia Medical Society then composed of doctors residing in Nicholas Braxton and Webster counties. Three members of the Lewis County Medical Society who were charter members at the time of the organization of the Lewis-Upshur Society are still in practice at Western and are members of the Lewis County Medical Society. These members Drs George Snyder Wessie P King and Edward T W Hall are now honorary life members of the local society and the state medical association.

## GENERAL

**Pediatric Society Opposes Children's Bureau Transfer to Public Health Service**—At a meeting of the American Pediatric Society in Atlantic City N J September 25-27 a resolution was adopted affirming the society's wish to continue the hitherto good relations between it and the Children's Bureau. Other resolutions affirmed that no change in the method of payment in the EMIC program is warranted or desirable and that the transfer of the health services of the Children's Bureau to the U S Public Health Service contained in the Miller bill now before Congress is undesirable. The resolution points out that this transfer would separate medical care from the other essential aspects of child care and emphasizes that the Miller bill does not make any provision for the development of a National Department of Health. Dr C Anderson Aldrich Rochester Minn was chosen president of the American Pediatric Society during this meeting. Dr Charles Hendee Smith New York vice president and Dr Hugh McCulloch St Louis secretary-treasurer. Dr Hewarth Sanford Chicago is the recorder editor.

**The Poliomyelitis Situation**—The 1944 epidemic of infantile paralysis has officially become the second worst in the recorded history of the disease in the United States. The National Foundation for Infantile Paralysis announced October 29. In the first forty one weeks of 1944 or up until October 14 there were 16,133 cases of poliomyelitis according



to the latest report from the U S Public Health Service. This is 353 cases more than were reported in the country for 1931 which previously had been the second worst year for the disease. The all time record was in 1916, when there were 27,621 cases. Although the peak of the outbreak had been passed a month before this report the epidemic itself has not yet ended it was stated. There were 710 new cases reported for the week of October 7-14 or nearly half the weekly total at the peak of the epidemic the week ended September 2 when 1683 cases were reported. The seven states most severely menaced were New York, North Carolina, Pennsylvania, New Jersey, Virginia, Ohio and Kentucky but emergency aid in the form of money, professional personnel and supplies has been sent this year by the National Foundation to twenty-one states and the District of Columbia.

**Earl Bonnett Named Medical Director of Metropolitan Life**—Dr Earl C Bonnett, associate medical director of the Metropolitan Life Insurance Company, New York, has been appointed medical director of the company, to succeed the late Dr Charles L Christernin who died October 18. In his new capacity Dr Bonnett will supervise a staff of about 8000 physicians who serve as medical examiners for the Metropolitan in the United States and Canada. He will be responsible for the formulation of rules for the medical examination of applicants for insurance and advise in the establishment of rules for the selection of risks. His duties will also involve the management of home office health activities which include the medical care and periodic physical and dental examinations of some 14000 employees. Dr Bonnett graduated at Cornell University Medical College in 1923 and joined the staff of the Metropolitan as a medical examiner in the home office in 1926. He was advanced to official rank as assistant medical director in 1928 and promoted to associate medical director in 1944.

**Music in Therapy**—The National Music Council recently conducted a survey to ascertain to what extent music is currently used in leading nervous and mental disease hospitals throughout the country. Two hundred and nine hospitals with various bed capacities answered a questionnaire. Only 192 of the 209 used music. The rest were refrained from adopting this form of therapy by war restrictions and economic shortage of personnel and lack of facilities. There are performances in 160 hospitals by visiting artists, gifted patients, church choirs, bands and glee clubs. Recorded music is played by 152 institutions. Only 23 hospitals reported that they used music for therapeutic reasons and 134 used it for both recreation and therapy. According to a report in the *New York Times*, most directors of hospitals find that 'recreation is therapy'. Active participation in the making of music is generally considered more effective than mere listening. Group performance develops a spirit of cooperation and fellowship and helps patients to overcome their inhibitions. The psychiatric staff of one hospital finds that the blare and dissonance of jazz is a disturbing influence to all types of patients. Band music, spirituals, American folk songs are soothing. But music is not a specific for mental disorders; it was stated, there is even the danger that the wrong music may be used by patients to express and reinforce delusional ideas.

**National Research Council Named for Pharmaceutical Award**—The American Pharmaceutical Manufacturers Association announces that the National Research Council has been chosen for its sixth annual award 'in recognition of its fundamental contributions to public health in the field of medical sciences and of its essential services to the country in World Wars I and II'. The award will be presented during the final day's session of the two day meeting of the American Pharmaceutical Manufacturers Association at the Waldorf-Astoria, New York, December 11-12. Among the speakers in a program devoted to some fundamental trends in chemotherapy will be:

Dr John S Lundy, Rochester, Minn., Progress in Conquest of Pain by New Anesthetics  
Dr Chester S Keefer, Boston, Progress in Conquest of Bacteria by New Medicinal Agents  
William C Roach, Ph.D., Urbana, Ill., Progress in Conquest of Malnutrition by Amino Acids  
Edwin J Cohn, Ph.D., Cambridge, Mass., Progress in Conquest of Disease by Blood Proteins  
Wendell M Stanley, Sc.D., Princeton, N.J., Progress in Conquest of Disease by Virus Proteins

Dr Alan Gregg, New York, director of medical sciences, Rockefeller Foundation, will give the presentation address on 'Essential Need of Fundamental Research in Medical Sciences for Social Progress' and Dr Ross G Harrison, New Haven, Conn., chairman of the National Research Council, the acceptance address entitled 'National Research Council and Its Action in Field of Medical Sciences'.

## LATIN AMERICA

**Health Activities in Latin America**—*Personal*—Lieut Col Leon H Collins Jr, M.C., who practiced in Philadelphia before entering military service in 1942, has been appointed section chief at Gorgas Hospital, Ancon Canal Zone.

**Report of Health and Sanitation Division**—A summary of activities of the health and sanitation division, Office of the Coordinator of Inter-American Affairs, has recently been published. Between February 1942 and July 1943 agreements for cooperative health work were signed with fifteen of the other American republics, according to the Newsletter of the division. Mexico was added in July 1943, the Dominican Republic in August 1943 and Uruguay in November 1943. Twelve republics which arranged to extend the program for periods of two and one-half to five years include Brazil, Colombia, Costa Rica, the Dominican Republic, El Salvador, Honduras, Mexico, Nicaragua, Peru, Paraguay and Venezuela. Renegotiations for Bolivia and Guatemala are pending. The report states that more than six hundred activities are under way or completed in the southern countries including 300 jobs for environmental improvement by permanent mosquito control measures, water supplies, sewerage systems and general sanitation. Construction work includes provision or improvement of facilities for a total of about one hundred and forty health centers, hospitals, infirmaries, dispensaries and other buildings. Over two hundred activities are devoted to provision of medical care and preventive services through operation of hospitals, health centers, clinics and laboratories, surveys and research in disease control, local training courses and widespread health education for the lay public. Although the division was established in February 1942, the report indicates the expansion of its activities during the period July 1, 1943 through June 30, 1944 in which projects reported completed total one hundred and forty-three and include complete construction additions to or remodeling of sixteen hospitals, seventeen health centers, twelve dispensaries and fifteen other buildings. Health centers were completed at Encarnacion and Concepcion and in the Barrio Obrero District of Asuncion. In the latter a combination 50 bed hospital and health center was constructed with x-ray and laboratory sections to serve both units. Since September 1943 operation and maintenance of the hospital section has been carried on by the ministry of health with supervision of all nursing personnel by a United States nurse serving with the field party. Operation of the health center is a cooperative project, with a Paraguayan doctor serving as health officer. Cooperative direction of medical facilities and specific disease control services was terminated by the completion of some thirty projects, many of which were turned over to the national departments of health for continuing operation. These included plague control in Ecuador and treatment services in many areas of Colombia. In other instances the closed projects consisted of prevalence surveys or were of an emergency nature, such as those in El Salvador. Here medical services were provided for the care and improvement of the health of employees on the Pan American Highway from March 10 through September 30, 1943. A medical supervisor had headquarters at Santa Rosa. Malaria surveys were made by means of routine blood smears and cases treated with quinine and atabrine. Inspections were also made periodically to diagnose and treat venereal disease. The project was in cooperation with the department of public works of the republic of El Salvador and the U.S. Army engineers in charge of the Pan American Highway. Under the professional training program arrangements were made for 212 persons from the other Americas for study or travel grants in the United States. These consisted for the most part of physicians or engineers who were enrolled in schools of public health for courses leading to certificates or degrees in this field.

## CORRECTIONS

**Globin Insulin**—The second article of the July issue of the *Annals of the District of Columbia* listed in THE JOURNAL, October 7, should read: Comparative Study of Action of Globin Insulin with Other Forms of Insulin. M. Protas. The word Globulin is a misprint in THE JOURNAL.

**Modified Miller-Abbott Tube**—At the request of Dr Franklin I Harris who wrote 'A New Rapid Method of Intubation with the Miller-Abbott Tube' (THE JOURNAL, July 15), credit should be given to Dr Ivar Sivertsen for independent use of metallic mercury in the balloon of the Miller-Abbott tube. This modification of the Miller-Abbott tube was mentioned in a paragraph in the book by Wangenstein entitled *Intestinal Obstruction*, second edition, page 164.



## Foreign Letters

### LONDON

(From Our Regular Correspondent)

Oct 11, 1944

#### Workmen's Compensation to Be Taken Over by the Government

The expansion of medical socialism, in the form of compulsory social insurance, has been described in a previous letter. In a further paper the government has outlined proposals for a new industrial injury insurance scheme to replace the present system of workmen's compensation. The legal liability of the employer to compensate an employee for loss of earning capacity due to accident or industrial disease arising out of his employment is swept away, and provision for disablement or loss of life from industrial injury or specified industrial diseases becomes a social service. This fundamental change is based on the recommendations of the Beveridge scheme, but the benefits are substantially more generous. Instead of being related to loss of earning capacity, as under the existing compensation law, the benefits will be paid on flat rates, with supplements for family responsibilities. A financial responsibility which rests on the employer will now be shared by him, the employee and the state. Contributions will be 12 cents a week for adult men and 8 cents for adult women and half these rates for boys and girls under 18. Employers will pay the same amounts. The scheme will apply to the 18,000,000 employed persons in the social insurance scheme.

A workman incapacitated by an industrial injury will receive \$7 a week up to thirteen weeks, with \$1.75 added for a wife and \$1 for the first child. Allowances for other children will also be payable under the family allowances scheme. If the disablement is likely to be permanent or prolonged, the allowance will be replaced by an industrial pension based on a medical assessment of the degree of disability. The pension rate for total disability will be \$8 a week, with allowances of \$2 a week for a wife and \$1.50 for the first child. Benefits are also payable to a widow or to other dependents on the death of an insured person. Before the war, workmen's compensation cost employers \$40,000,000 a year, which was increased to \$68,000,000 by wartime legislation. Under the new scheme benefits are estimated to cost \$80,000,000 annually, with a further \$12,000,000 required for administration. One sixth of the cost will be borne by the state, and the rest in equal shares by employers and employees. Thus the cost to either of the latter will be something less than \$40,000,000 a year. A great merit claimed for the new scheme is that it will remove workmen's compensation from the atmosphere of conflict with which it has been surrounded and avoid the ultimate recourse to litigation between employer and workman.

#### Sir Humphry Davy Rolleston

The death at the age of 82 of Sir Humphry Davy Rolleston, September 24, removes a prominent figure in British medicine. He came of a family distinguished in science, his father being George Rolleston M.D. F.R.S., Linacre professor of physiology at Oxford and his mother a niece of the physicist Sir Humphry Davy. He was educated at Cambridge, where he had a distinguished career and at St. Bartholomew's Hospital. After serving as house physician and demonstrator of anatomy he wrote 'A Manual of Practical Morbid Anatomy'. He was appointed assistant physician to St. George's Hospital, where he taught pathology. He became associated with Sir Clifford Allbutt, regius professor of medicine at Cambridge, and assisted him in the preparation of his 'System of Medicine' in eight volumes, which appeared from 1896 to 1899 and for many years was a leading textbook of medicine. In the revised edition,

which appeared from 1906 to 1911 his name appeared as co-author. He wrote several of the articles, notably those on alcoholism, diseases of the esophagus, small intestine, adrenal glands, spleen and lymphatics. In 1925 on the death of Allbutt he succeeded to the professorship. He was examiner in medicine in most of the universities and in 1922 was president of the Royal College of Physicians.

What distinguished him most was prodigious learning and utmost accuracy as a writer and editor. In his Harvardian Oration on Cardiovascular Diseases he quoted some three hundred authors. The first important work to appear under his name was 'Diseases of the Liver, Gallbladder and Bile Ducts', published in Philadelphia in 1905. A third edition in which Prof. J. W. McNee cooperated, appeared in 1929. Among shorter works from his pen were 'The Medical Aspects of Old Age', an essay on Writing Theses for the M.B. and M.D., which was a useful medicoliterary help, and the Osler memorial oration. He was the author of innumerable addresses and articles. In 1936 he began the editorship in twelve volumes of the British Encyclopedia of Medical Practice, writing many of the sections himself. From 1928 almost until the time of his death he was editor of the *Practitioner*. He took part in much administrative work, sitting on numerous government committees—the Medical Consultative Board for the Navy, the Medical Administrative Committee of the Royal Air Force, the Royal Commission on National Health Insurance, the Royal Commission on Lunacy and Mental Disorder and the Colonial Committee on Medical Services. In his full life he was much respected for his integrity, perfect courtesy and devotion to truth.

#### The Medical Staff at Arnhem

Of the 6,500 air-borne troops landed at Arnhem, only 2,000 returned unscathed after nine days of almost sleepless fighting. Some 1,200 wounded had to be left behind, but a wounded officer who afterward escaped said that the Germans were treating them with consideration. The divisional medical staff of all ranks chose to stand by their patients and went with them into captivity. A staff officer stated that the action of this fine division contributed much to the success of the operation, which should be looked on not as a brilliant failure but as an expensive success.

## Marriages

DOROTHY E. DONLEY, Columbus, Ohio, to Mr. Thomas P. Dowd of Somerset, Md., in Washington, D. C., September 4.

GEORGE HENRY BUCH, JR., Columbia, S. C., to Miss Nancie Riddleberger Hutchinson in Washington, D. C., October 1.

JOSEPH F. CORSARO, Cleveland Heights, Ohio, to Miss Dorothy Elizabeth Yopko of Munhall, Pa., September 23.

RICHARD HENRY STANTON, Newton, Mass., to Miss Elizabeth Celcha Eichorn of West Medford, September 4.

JAMES NATHAN SLEDGE, JR., Greensboro, Ala., to Miss Evelyn Camille Wohlers of Yakima, Wash., September 2.

MARVIN S. ALTER, Salt Lake City, to Miss Ellen Scott of San Gabriel, Calif., in Los Angeles, recently.

WALTER RANDOLPH CHITWOOD, Wytheville, Va., to Miss Ruth Anne Reed of Willis, September 18.

THOMAS D. DUANE, Peoria, Ill., to Dr. Julia A. McFlintney of Iowa City, Iowa, March 22.

THOMAS B. DANIEL, Oxford, N. C., to Miss Bette Mazgolis of Worcester, Mass., September 13.

HUGH HYDEN GREGORY, Dalton, Ga., to Miss Myrtle Louvenia Durham of Atlanta, September 21.

JAMES J. BARROCK, Milwaukee, to Miss Marie Theresa Ramo of Mankato, Minn., September 4.

LEONARD M. VAN STONE, to Mrs. Emelie Culbertson Kistler, both of Denver, August 8.

SVUL ROY KOREY, to Miss Doris Evelyn Broder, both of New York, October 15.

## Deaths

**Milbank Johnson**, Pasadena Calif. Northwestern University Medical School, Chicago 1893, member of the California Medical Association and the Southern California Medical Association, chairman of the special medical research committee at the University of Southern California, Los Angeles professor of physiology and clinical medicine from 1897 to 1901 for twelve years, from 1901 to 1913, chief surgeon for the Southern California Edison Company, president of the Municipal Charities Commission, Los Angeles, from 1913 to 1917, vice president and director of the Pacific Mutual Life Insurance Company from 1917 to 1936 director of the American Insurance Federation since 1917, president of the Western States Taxpayers Conference and the California Taxation Improvement Association 1925-1926 since 1926 chairman of the board of directors of the California Taxpayers Association, director and member of the executive committee of the National Tax Association member of the board of directors of the Pasadena Hospital Association served as a member of the board of health of Los Angeles from 1900 to 1904 and as a member of the board of freeholders which revised the Los Angeles city charter in 1916, member of the executive committee of the California Military Welfare Commission during World War I member and past president of the California Conference of Social Agencies, vice chairman of the California Educational Aid Foundation president of the Southwest Museum from 1920 to 1926 received the LL.D. from the University of Southern California in 1917 and Northwestern University in 1920 since 1942 member of the city defense council and the Red Cross Emergency, died in the Huntington Memorial Hospital October 3, aged 72.

**Sidney Morrill McCurdy** ♂ St. Johnsbury East, Vt., Western Reserve University Medical Department Cleveland, 1904 resigned in 1941 as chief medical director of the Ohio State Industrial Commission a position he had held since 1936 during World War I served as a captain in the medical corps 18th Infantry, first division and had been awarded the Croix de Guerre, the Bronze Star and the Presidential citation for bravery, recommended for the Distinguished Service Medal, member of a committee on industrial sanitation formed in 1915 by the Section on Preventive Medicine and Public Health of the American Medical Association lecturer on industrial medicine at the Ohio State University College of Medicine, Columbus for many years past president of the Mahoning County (Ohio) Medical Society, formerly chief surgeon of the Youngstown Sheet and Tube Company in Youngstown, Ohio and medical director of the Plumbrook Ordnance Works in Huron Ohio, served as a member of the staffs of the Youngstown Hospital, Youngstown, Ohio and the Brightbrook Hospital St. Johnsbury, died September 26, aged 63.

**Ralph Garfield Mills** ♂ Decatur Ill., Northwestern University Medical School, Chicago, 1907, an Associate Fellow of the American Medical Association, aided in building the Kennedy Hospital, Kangkai, Korea, of which he was head from 1908 to 1912 professor of pathology and bacteriology and in charge of the clinical laboratories and research department Severance Union Medical College, Seoul, Korea, from 1913 to 1918 served as head of the department of pathology in Peking Union Medical College and as instructor in pathology at Johns Hopkins University, Baltimore, formerly professor and head of the department of pathology at the University of Colorado School of Medicine, Denver, entered the Mayo Clinic Rochester, Minn., as an associate in pathologic anatomy and later became professor of pathology at the University of Minnesota Graduate School formerly on the staff of St. Agnes Hospital Fond du Lac Wis. member of the American Association of Pathologists and Bacteriologists and the Wisconsin Academy of Science, died in St. Mary's Hospital October 17, aged 63.

**Laird Sumner Van Dyck** ♂ New York, Rush Medical College, Chicago, 1924 associate in dermatology and syphilology at the New York Post Graduate Medical School, Columbia University, specialist certified by the American Board of Dermatology and Syphilology member of the American Academy of Dermatology and Syphilology diplomate of the National Board of Medical Examiners served on the staffs of the Welfare Hospital for Chronic Diseases and the New York Skin and Cancer Hospital chief of clinic, attending dermatologist and syphilologist to the dispensary and assistant attending dermatologist and syphilologist New York Post-Graduate Hospital where he died August 9 aged 51 of generalized lymphosarcoma toxis.

**Edward Charles Podvin** ♂ New York, Albany Medical College Albany, N. Y., 1898, member of the House of Delegates of the American Medical Association in 1941, 1942 and 1943, assistant secretary of the Medical Society of the State of New York, executive secretary and past president of the Bronx County Medical Society past president of the Catholic Physicians Guild chairman of the Bronx Tuberculosis and Health Committee, on the consulting staffs of the Fordham and St. Francis hospitals, in 1935 appointed by Governor Lehman a member of the state industrial council editor of the *Bulletin of the Bronx County Medical Society*, died September 27, aged 68, of arteriosclerosis.

**James Moorhead Murdoch** ♂ Pittsburgh, Western Pennsylvania Medical College, Pittsburgh, 1892 member of the American Psychiatric Association, the Central Neuropsychiatric Association and the Association for Research in Nervous and Mental Disease, president of the American Association on Mental Deficiency in 1903 and secretary from 1917 to 1921 formerly instructor in histology and pathology at his alma mater for many years physician and superintendent of the State Institution for the Feeble-minded of Western Pennsylvania Polk superintendent of the Minnesota School for Feeble-minded at Faribault from 1927 to 1937, when he resigned, died October 9, aged 75.

**Saul Berman** ♂ Boston Harvard Medical School, Boston, 1920 specialist certified by the American Board of Obstetrics and Gynecology, Inc. formerly assistant in obstetrics at his alma mater served an internship at the Boston City Hospital formerly a resident physician at the Boston Lying-in Hospital, on the staffs of the Newton Hospital, Newton, Massachusetts Women's Hospital, New England Hospital for Women and Children and the Boston Lying-in Hospital, founder of the fertility clinic and laboratory at the Beth Israel Hospital, died in the New England Deaconess Hospital September 18, aged 48, of carcinoma of the testis and uremia.

**Harlan Herbert Staats** ♂ Charleston W. Va. Barnes Medical College, St. Louis, 1899 an Affiliate Fellow of the American Medical Association, honorary member of the Kanawha County Medical Society and the West Virginia State Medical Association during World War I served in the medical corps of the U. S. Army as a plastic surgeon with evacuation hospital number 41 and had been honorably discharged with the rank of captain, founder and president of the Staats Hospital, formerly surgeon in charge of the Roane County Hospital Spencer died in a Huntington hospital September 30, aged 68, of myocardial failure.

**Wilbur Stuart Wood**, Decatur, Ill. University of Illinois College of Medicine, Chicago, 1925, member of the American Academy of Orthopaedic Surgeons and the Illinois State Medical Society, specialist certified by the American Board of Orthopaedic Surgery, Inc. served with the 149th Field Artillery in France during World War I, formerly an intern at St. Luke's Hospital in Chicago past president of the Macon County Tuberculosis and Visiting Nurses' Association, on the staffs of the Decatur and Macon County and St. Mary's hospitals died in Minoqua, Wis. August 7, aged 44 of coronary thrombosis.

**Henry Carter Metcalf** ♂ Connersville, Ind. University of Louisville Medical Department, Louisville, Ky. 1913 served as a member and at the time of his death president of the Indiana State Board of Health served as secretary of the Fayette County Board of Health county coroner and president of the Fayette-Franklin Counties Medical Society, served overseas as a first lieutenant with the 163d Depot Brigade, 132d Engineers during World War I, member of the Connersville Board of Health director of the Central State Bank, died in the Fayette Memorial Hospital September 23 aged 56 of hypertensive vascular disease.

**William Edwin Joiner**, Seattle, Bellevue Hospital Medical College New York 1898, member of the Washington State Medical Association and the Pacific Coast Oto Ophthalmological Society served during World War I lieutenant colonel medical reserve corps, U. S. Army not on active duty for many years affiliated with the Veterans Administration at one time served as assistant eye surgeon at the Brooklyn Eye and Ear Hospital Brooklyn, died in the Veterans Administration Facility Portland, Ore., August 7, aged 74, of bronchogenic carcinoma.

**John Robert Abercrombie** ♂ Baltimore University of Maryland School of Medicine Baltimore 1895, formerly associate professor of dermatology at his alma mater served as professor of materia medica and dermatology at the Woman's Medical College of Baltimore died August 3 aged 75.

**George Sheldon Adams** \* Yankton, S D, Rush Medical College, Chicago 1901 member of the American Psychiatric Association, medical superintendent of the Yankton State Hospital on the staff of the Sacred Heart Hospital, where he died July 28, aged 67, of chronic endocarditis and acute dilatation of the heart

**James Tevis Arwine**, Santa Rosa Calif, University of the South Medical Department, Sewanee Tenn 1894 member of the American Psychiatric Association, served during World War I, served on the staffs of various Veterans Administration facilities, including the one at Palo Alto, where he died August 24, aged 71, of arteriosclerotic heart disease

**Albra W Baker**, Elizabethtown Pa State University of Iowa College of Homeopathic Medicine Iowa City, 1887 died in the Masonic Home August 16 aged 85 of cerebral hemorrhage and arteriosclerosis

**William A D Barnhill**, Laotto Ind Cleveland Medical College, Homeopathic 1893, died in the Methodist Hospital, Fort Wayne September 25, aged 84 of pneumonia following a fracture of the left femur received in a fall

**Stephen Vincent Bedford**, Jefferson City, Mo., University of Missouri School of Medicine, Columbia, 1903 member of the Missouri State Medical Association served as presi-

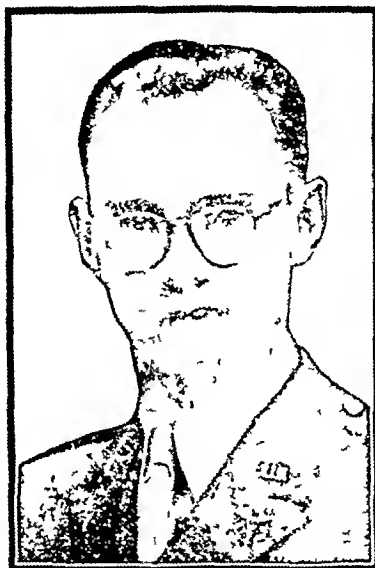
**William King Campbell** \* Long Branch, N J University of Pennsylvania Department of Medicine Philadelphia 1900, member of the American Academy of Ophthalmology and Otolaryngology, fellow of the American College of Surgeons past president of the Monmouth County Medical Society chief of the eye ear, nose and throat department, Monmouth Memorial Hospital vice president of the Long Branch Building and Loan Association died September 21, aged 65 of coronary thrombosis

**Charles Leonard Christiernin** \* Maplewood N J Harvard Medical School, Boston, 1906, member of the Massachusetts Medical Society, in 1916 became assistant medical director and in 1935 medical director of the Metropolitan Life Insurance Company New York a member of the executive committee of the Association of Life Insurance Medical Directors, of which he had been treasurer, vice president and president died suddenly October 18 aged 66 while on a vacation in Coreys, N Y of coronary thrombosis

**Francis Xavier Crawford**, Boston Harvard Medical School, Boston 1898, member of the Massachusetts Medical Society on the staffs of St Elizabeth's and Carney hospitals medical director for the United Fruit Company died August 19 aged 71 of cerebral hemorrhage



LIEUT WILLIAM C CRAIG M C,  
A U S, 1910-1944



LIEUT TENNYSON G JOHNSON  
M C A U S 1915-1944



MAJOR BERTRAM W MORSE  
M C A U S 1901-1944

dent of the Cole County Medical Society on the staff of St Mary's Hospital, chief surgeon for the Missouri Pacific Railroad, died August 23, aged 63 of myocarditis and multiple neuritis

**Edison William Brown**, Revere Mass Tufts College Medical School, Boston 1905 member of the Massachusetts Medical Society on the staffs of the Winthrop Community Hospital, Winthrop Whidden Memorial Hospital, Everett, and the Chelsea Memorial Hospital Chelsea where he died August 18, aged 67 of coronary thrombosis

**Emilio Deantonio** \* Scranton Pa Regia Università degli Studi di Pavia Facoltà di Medicina e Chirurgia, Italy 1894 in June 1944 presented with a testimonial plaque by the Medical Society of the State of Pennsylvania in recognition of fifty years of practice formerly associated with the Scranton Private Hospital died August 28 aged 72

**Bernard Walker Donohue**, Baltimore University of Maryland School of Medicine College of Physicians and Surgeons Baltimore 1931 served an internship at the University of Maryland Hospital and the Bon Secours Hospital served a

## KILLED IN ACTION

**William C Craig**, Wawnesboro Pa Ohio State University College of Medicine Columbus 1935, member of the Medical Society of the State of Pennsylvania served an internship at the Allegheny General Hospital Pittsburgh commissioned a first lieutenant in the medical corps Army of the United States, Sept 4 1942 and began active duty Oct 15 1942 a flight surgeon in the air corps killed in action in the South Pacific area April 28 aged 33

**Tennyson Gates Johnson**, Kerkhoven Minn University of Minnesota Medical School Minneapolis 1943, served an internship at the City of Detroit Receiving Hospital Detroit commissioned a first lieutenant in the medical

corps Army of the United States on Aug 6 1942 began active duty on July 3 1943 killed in action in the European area July 13 aged 28

**Bertram Wallace Morse**, Whitehall Mich Detroit College of Medicine and Surgery 1932 member of the Michigan State Medical Society served an internship at the Henry Ford Hospital in Detroit served as health officer and as vice president of the chamber of commerce commissioned a captain in the medical corps Army of the United States on May 21 1942 began active duty on June 22 1942 later promoted to major killed in action in the European area August 29 aged 43

residency at the University Hospital died August 19 aged 38 of bronchogenic carcinoma with metastasis

**Lovic Culver Ellis**, Florence Ala., University of Tennessee College of Medicine, Memphis, 1914 member of the Medical Association of the State of Alabama died September 22, aged 53, of coronary thrombosis

**Charles Henry Herrick**, Unadilla N. Y., Albany Medical College Albany N. Y. 1893 member of the Medical Society of the State of New York, health officer of the village and town of Unadilla formerly health officer of Gilbertsville on the staff of the Sidney Hospital Sidney, died in the Aurelia Osborn Fox Memorial Hospital, Oneonta August 30 aged 30 of arteriosclerotic heart disease

**George Ingels**, Oswego Ore. Rush Medical College Chicago 1884 died August 28 aged 88, of arteriosclerosis and myocarditis

**Ray Howard Johnson**, Los Angeles University of Michigan Department of Medicine and Surgery Ann Arbor 1904 member of the California Medical Association anesthesiologist at the Orthopaedic Hospital member of the staff of the California Hospital where he died July 24 aged 66 following a gastroenteritis and virus pneumonia

**Charles Warton Kidder**, Woodstock, Vt. University of Vermont College of Medicine Burlington, 1907 served during World War I died in the Veterans Administration Facility, White River Junction, August 6, aged 59 of cerebral hemorrhage

**Franklin Jacob Lins**, Durand Ill. Rush Medical College, Chicago 1897 died in St. Anthony's Hospital, Rockford, August 1 aged 80 of coronary sclerosis

**Eugene Alphonsus McCabe**, Sioux City Iowa John A. Creighton Medical College Omaha 1920 died August 21, aged 47 of coronary heart disease

**William Adam Mess**, Washington D. C. George Washington University School of Medicine Washington 1907 also a pharmacist medical examiner for Selective Service Board number 14 on the staffs of the Sibley Doctors Homeopathic Providence, Garfield Georgetown George Washington and Emergency hospitals killed in an automobile accident on the Mount Vernon Highway, Alexandria Va., August 11, aged 62

**Elmer Ewell Owen**, Batavia N. Y., University of Michigan Homeopathic Medical School Ann Arbor 1907 member of the Medical Society of the State of New York, served in France during World War I, died August 2 aged 62 of actinomycosis

**Peter Marius Pedersen**, Daanebrog Neb. University of Nebraska College of Medicine Omaha 1904 died August 2 aged 73, of heart disease

**John Henry Reichling**, Bennington, Vt. University of Vermont College of Medicine Burlington 1906 on the staff of the Henry W. Putnam Memorial Hospital died in St. Donat Canada September 18 aged 65 of cardiac syncope

**Charles William Smith**, Aliquippa, Pa., Western Pennsylvania Medical College Pittsburgh 1906 member of the Medical Society of the State of Pennsylvania examining physician for draftees during World Wars I and II served as president of the local board of health died August 2 aged 66 of carcinoma of the left kidney

**Arthur Gilman Tullar**, North Hollywood Calif. Northwestern University Medical School Chicago, 1906 died October 11 aged 67, of coronary thrombosis

**John David Vedder**, Johnstown N. Y., Albany Medical College Albany N. Y. 1896 member of the Medical Society of the State of New York served as secretary president and treasurer of the Fulton County Medical Society formerly city health officer city physician and member of the board of health, on the courtesy staff of the Nathan Littauer Hospital Gloversville, died August 7 aged 81, of pneumonia

**George Fritz Way**, Urbana Ill. University of Illinois College of Medicine Chicago 1911 died in the Wesley Memorial Hospital Chicago August 14 aged 59 of carcinoma of the rectosigmoid

**Carl Frederick Weinberger**, Chicago Rush Medical College Chicago 1907 member of the Illinois State Medical Society at one time principal of Muskegon High School, Muskegon Mich. on the consulting staff, Evangelical Hospital of Chicago, where he died August 14, aged 71, of cerebral hemorrhage

**Jacob Andrew Youngman**, St. Louis St. Louis College of Physicians and Surgeons 1905 on the staff of St. Anthony's Hospital died at his home in Sappington Mo. August 10, aged 66 of coronary sclerosis and chronic myocarditis

## DIED WHILE IN MILITARY SERVICE

**John Weyman Davis**, Athens, Ga., Emory University School of Medicine, Atlanta, 1927, member of the Medical Association of Georgia and the Southeastern Surgical Congress fellow of the American College of Surgeons on the surgical staffs of the Athens General and St. Mary's hospitals, commissioned a lieutenant commander in the medical corps of the U. S. Naval Reserve on Oct. 12, 1939 began active duty on May 19, 1941 promoted to commander on Aug. 1, 1942 died in the Naval Hospital Charleston, S. C., September 18 aged 42, of Rocky Mountain spotted fever

**Frank John Fischer**, Chagrin Falls, Ohio, University of Wisconsin Medical School Madison 1934, formerly an intern and resident in surgery at the City Hospital and a resident in surgery at St. John's Hospital, both of Cleveland fellow of the American College of Surgeons served on the surgical staff of St. Luke's Hospital in Cleveland certified as a commercial pilot by the Civilian Aeronautics Commission on July 1, 1942 commissioned a captain in the medical corps Army of the United States on Sept. 8, 1942 certified as an aviation medical examiner, stationed at the hospital, Camp Springs Army Air Field, Washington D. C. died September 21, aged 35, as the result of a plane crash following a forced landing 20 miles west of Leesburg Va.

**John Edward Fissel Jr.**, Newport News, Va., University of Maryland School of Medicine, College of Physicians and Surgeons, Baltimore 1936, formerly secretary and treasurer of the Warwick County Medical Society, served an internship at the Church Home and Infirmary in Baltimore and a residency in surgery at the Riverside Hospital, commissioned a first lieutenant in the medical reserve corps of the U. S. Army on Sept. 7, 1942, later promoted to captain, killed in Prestewick, Scotland, August 22 aged 32 in an airplane accident

**Frederick Hugh Greenwell**, Lieutenant (jg) M. C. U. S. Navy New Haven, Conn. University of Louisville (Ky.) School of Medicine 1943, intern at the Naval Hospital Jacksonville Fla., where he died August 10, aged 25, of primary atypical pneumonia

**George Bernhard Miller**, San Francisco Stanford University School of Medicine, San Francisco, 1935, served an internship and residency at the Lane and Stanford University Hospitals and a residency in tuberculosis at the San Francisco Hospital commissioned a first lieutenant in the medical corps Army of the United States on Nov. 11, 1942 died in Grass Valley July 15 aged 34 of myocardial infarction due to coronary disease

**Woodman Bradbury Pomeroy**, Lieutenant, M. C. U. S. Navy Pittsburgh Harvard Medical School Boston 1941 served an internship at the Pittsburgh Medical Center commissioned a lieutenant (jg) in the medical corps U. S. Navy, on July 14, 1942, promoted to lieutenant on May 1, 1943 flight surgeon died in the Pacific area July 12 aged 28, of extensive multiple injuries

**Stephen William Smith Jr.**, Hamden Conn. Tufts College Medical School Boston 1940, served an internship at the Memorial Hospital in Worcester Mass. diplomate of the National Board of Medical Examiners commissioned a lieutenant (jg) medical corps, U. S. Naval Reserve on Nov. 4, 1941 later assigned to the destroyer U. S. S. *Ingraham*, promoted to lieutenant on June 15, 1942 aged 28 presumptive date of death at sea in the Atlantic area Aug. 23, 1943 according to the Navy Department

**Jerome Daniel Solomon**, Chicago, University of Illinois College of Medicine Chicago 1941, served an internship at the Cook County Hospital commissioned a first lieutenant in the medical reserve corps of the U. S. Army on June 6, 1941 began active duty on Sept. 21, 1942 later promoted to captain died in the Southwest Pacific area September 16, aged 28 of tsutsugamushi fever and malaria

**John Wesley Speake Jr.**, Spartanburg S. C., Medical College of the State of South Carolina, Charleston, 1936 served an internship at the Spartanburg General Hospital commissioned a first lieutenant in the medical corps Army of the United States on Aug. 12, 1942 later promoted to captain a flight surgeon killed in the European area July 28 in an airplane accident aged 34

## Bureau of Investigation

### ADVENTURES OF A DODGER

#### "Oh Boy!" Perry's Scheme Declared a Mail-Order Fraud

Many of those who dispense health hokum to a credulous public might prosper indefinitely in their enterprises, did not a skeptical Post Office Department look into their schemes and scotch them with fraud orders. Such was the case of Victor Edison Perry of Philadelphia, who carried the letters N D after his name, indicating that he is either a naturopath or a naprapath.

In January 1943 the Post Office Department cited Perry to appear at a hearing and show cause why his business should not be debarred from the mails on the charge that it was a scheme to obtain money through the sale of 'GEN SEN' under fraudulent representations that it was an effective treatment for arthritis, diabetes, asthma, liver, kidney, bladder and stomach disorders, and some other ailments. Perry then signed an affidavit that his business had been absolutely discontinued and would not be resumed at any time under any name. This affidavit he admitted was filed for the purpose of obviating future fraud order proceedings. In it he agreed to acquiesce to such fraud order if he should be found to have violated his promise. And violate it he did. He continued his business, substituting the names 'Vita' and Nu-Vita for the old one 'GEN SEN,' adopting the new trade styles 'Vita Herbs Company,' 'Nu-Vita Herbs Company' and 'V E Perry' and using New York and Philadelphia addresses. Soon afterward he executed another affidavit for the Post Office Department in which he admitted that he had resumed the sale of his nostrum under the aforesaid new names, thus violating the earlier affidavit. In this second one he again declared that his enterprise had been absolutely discontinued and would not be resumed. In November 1943, however, the Post Office Department cited him again to show cause why a fraud order should not be issued against him. The outcome of the hearing will be mentioned later.

Perry's penchant for alliteration in calling certain of his later nostrums 'Perry's Peptone Pep Pills,' 'Peptone Perry's Pink Pep Pills' and 'Perry's Famous Peptone (Spanish Fly) Pep Pink Pills' recalls another medicaster's 'Pink Pills for Pale People.' As the names indicated the various 'Pep Pills' were promoted for sexual weakness. Another Perry nostrum, 'Natura,' was represented as a cure for rheumatism, catarrh, low or high blood pressure, swollen tonsils and many other disorders. Perry advertised all his nostrums in their time through periodicals of local and national circulation. What he formerly sold as GEN SEN was played up as "God's gift to India and India's gift to you" and also as 'India's Famous Herb Tea.' It consisted of three units which were contained, respectively, in red, white and blue packages carrying the American flag (an apparent violation of law) and prospective customers received return envelopes addressed to Perry on which he spelled his first name 'Victory.' Some of his advertising literature carried a large red heart on which was printed in white: 'Is your wife still your sweetheart? Try GEN SEN.'

The advertising of Natura instead of representing the product as being from India described it as a 'Mexico herb tea,' and this literature too, was done in red, white and blue. If one could believe the claims it was the 'World's Greatest Spring Tonic' and would help 'hubby and yourself over 30 feel like Sweet Sixteen. Oh Boy!' Besides, it was touted as a reducer under the slogan 'It's so easy to be streamline, with Natura.'

This 'streamliner' according to a government chemist who testified at the Post Office hearing contained sulfur, epsom salt, sodium bicarbonate, senna, cascara and licorice and was identical with GEN SEN. Perry's Peptone Pep Pills, the witness said, were essentially a mixture of gentian, phosphorus, strychnine, yohimbin, iodine, cantharides and U S P thyroid. None of the ingredients named for the two preparations constituted anything original or unfamiliar as was pointed out by another government witness, a Senior Medical Officer of the Food and Drug Administration, nor would such mixtures have any par-

ticularly beneficial effect on the ailments for which these were advertised. He showed that they would not purify the blood or restore the user to a 'new life of youth and pep' nor would Natura be of any value whatever in treating obesity. As for impotence he testified, the only proper treatment for this would have to be based on a careful diagnosis to ascertain the type and cause of the condition, which in some cases might be psychic.

At this hearing Perry offered no medical witness but when given opportunity to present his case devoted practically all his time to asserting that the use of his preparations had given him the vigorous health that was his despite his seventy-seven years. The charges against him were sustained by the evidence presented and on May 12 1944 a fraud order was issued covering the names Victor Edison Perry, Victory Edison Perry and the numerous variations that he used.

Reproduced on this page is the carton front of another Perry nostrum apparently a supplementary laxative 'Natura (Ovato Seeds).' On another side of the carton is the claim 'Ovato Seeds from Mother Earth—Contains the 16 Elements of Health,' and the further boast "Prominent M.D.'s all over also Metropolitan Life Insurance Co. N.Y. Life Extension Institute and U.S. Government recommend it very highly." The package also bears the name of the National Health University (whatever that may be) designating Perry as its president and giving addresses in New York, Boston and Worcester, Mass. besides mentioning "Operating 23 Fountains of Youth Pep Beauty Health Success in U.S.A." Possibly one of the "Fountains" was Dr. Perry's Famous Water Crystal and Mineral Salt Hotel and Baths, which, a report said, he was once operating in Beaumont, Texas. The same report stated that his National Health University had its main laboratory at Burbank, Calif. and that Perry gave lectures to promote the sale of many types of alleged health foods.

Apparently the activities of Victor Edison Perry, national dispenser of health can best be summarized by a term in his own advertising—"Oh Boy!" But he is now seventy-seven years old and if Post Office fraud orders won't stop him, the biologic life cycle probably will.

OPEN THIS END  
DON'T SPILL — IT'S PRECIOUS!

## A FOOD FROM HEAVEN FOR SUFFERING HUMANITY

GOOD BYE DOCTORS! — USE  
NATURA — (Ovato Seeds)

THE ONLY HARMLESS REMEDY FOR CONSTIPATION



NATURE'S NEW LAXATIVE A FOOD, NOT A DRUG!

Victor Edison Perry  
PRESIDENT

NATIONAL HEALTH UNIVERSITY  
Main Office 1560 Broadway, N.Y.C.

GOD'S Great GIFT to NATURE  
Nature's great Gift to Humanity

Not Genuine  
Without My Photo  
and Signature

PRICE, \$1 00

Carton front of Natura (Ovato Seeds)



## Correspondence

### MALIGNANT GROWTH AFTER SINGLE TRAUMA

*To the Editor*—As a contribution toward the solution of the problem raised by correspondents in *THE JOURNAL*, September 9 and 16, concerning the possibility of a malignant growth resulting from a single trauma I submit the following case report. Please note that it is based on the sworn testimony of physicians and others having personal knowledge of the facts of the case reported.

In April 1935 about 11 p. m., in Salina, Kan. Parker, in the course of his employment, was carrying a box of books. He stumbled, the box struck and damaged the top of a desk, and Parker's chest struck the box. Before quitting work, about 1 a. m., Parker left a note for his supervisor reporting the incident. Whether he reported at that time that he had been hurt is not clear, but when he reached home shortly after 1 o'clock he told his wife of the accident and that his chest had struck the box and was hurting. There was no evidence that he had up to that time suffered from any chest pain. His wife did not examine his chest until three or four weeks later. Then she found 'a red spot' about the size of a dollar. On May 15 Parker consulted a physician. About the same time—possibly a month or six weeks or possibly two months after the accident—he told his supervisor that he had hurt his chest when he fell with the box of books and that 'a bump' on his chest was caused by a bump or a bruise. Two weeks later, admittedly six weeks to two months after the accident he showed his supervisor 'the swelling' and told him that he got it when he dropped the box about two months previously. Parker continued at work for about fourteen months, although under the care of a physician. Dr. Jenney. By June 16, 1936 the tumor had grown to a lump 'the size of a baby's head.' It was then removed by an operation. Thereafter Parker was confined to his bed until his death, Sept. 16, 1936.

In proceedings by Parker's widow under the workmen's compensation act four physicians testified. Dr. Jenney who had treated Parker from about three weeks after his injury until the time of his death, testified that when Parker first came to his office he had 'a hard protuberance, tumor-like' and that he, Jenney, believed that the fall and hurt of which Parker told him was the cause of the injury that eventually developed into the sarcoma of the breastbone. Dr. Fitzpatrick, who had taken x-ray pictures of Parker's chest in March 1936 testified that they revealed a growth on the chest and bone, destruction of the sternum and cartilage of the ribs in the front of the chest, he gave it as his professional opinion that Parker's condition could have possibly come from the alleged injury to his chest in 1935. Dr. Mowery, who removed the growth gave it as his professional opinion that the tumor resulted from the injury. Dr. Sert, an expert called not by the claimant but by the respondent testified that sarcoma malignancies are not traceable to trauma in more than two percent of the cases, or even less but he added:

The important thing is the establishment of the fact of a trauma and finding within this tissue or that immediately adjacent to the periosteum and the structure of the bone or immediately adjacent to the point of the alleged injury evidence of the injury. If in such a tissue anywhere from four weeks to a year or even more a malignancy develops I believe it would be considered due to the trauma.

The foregoing clinical history is summarized from a decision of the Supreme Court of Kansas, Dec. 11, 1937 in *Parker Appeal*, *v. The Farmers Union Mutual Insurance Company and The Maryland Casualty Company* 146 Kan. 832 (73 P. 2d, 1032). In summarizing the evidence, the court said:

shall this court say that Parker's prompt report to Cameron his superior about his tripping and falling with the box of books his later statement to Cameron that he hurt his chest in the same fall the rapid growth of the malignant tumor on his breastbone and the professional opinions of the doctors that such a malignant growth was probably due to the injury as narrated by Parker—all the evidential matters including the pertinent circumstance—were not sufficient to establish the fact of the accident and the injury. How could the evidence be stronger?

Was not the injury described the exciting cause of the sarcoma that followed? Before denying a causative relation one should point out some reasonably likely cause other than the injury. Before attributing the entire incident to the so called laws of chance, one should consider the incidence rates of sarcomas of the sternum and of contusions of the sternum on the entire population and then estimate the chances of the occurrence of such a contusion and such a sarcoma coincidentally in site and in immediately chronological sequence. If it be admitted that a contusion has ever caused a sarcoma of the sternum, what ground is there for believing that other traumas may not cause other malignant growths? The relation between malignant growths and cleancut incised wounds and punctured wounds made with sharp instruments may merit separate consideration, for I cannot recall ever seeing a report of a claim for compensation based on the occurrence of a malignant growth as the result of such an injury. Even so, one must not overlook the etiology of keloids, sometimes attributed to even such trauma.

A large financial interest is involved in the problem here discussed. An employee who suffers from a malignant growth caused by a trauma arising out of and in the course of his employment is in most jurisdictions, if not in all, entitled by law to compensation for the injury, to be paid by the employer by whom he was employed when the injury was received. The presence of such a growth at the site of the injury cannot enter into the determination of compensation if the element of causation is not proved. Proof need not be conclusive or beyond a reasonable doubt. The award is made according to the preponderance of the weight of the evidence submitted by employee and employer. If a single trauma can never by any possibility cause a malignant growth, however, every award in favor of the employee in such a case obviously imposes an injustice on the employer, no matter what the weight of the evidence may be.

To prevent such injustice it has been urged that the dictum which denies the possibility of a causative relation between any single trauma and a malignant growth subsequently appearing on the site of that trauma be generally accepted. The universal acceptance of that dictum would go a long way toward preventing such injustice. But might it not give rise to injustice equally extensive and even more grave? It would certainly tend to deter injured workmen from filing claims based on such injuries and growths hinder lawyers in the prosecution of such claims embarrass physicians, regardless of their own studies, experience and observation, sought as witnesses in support of such claims, and operate subconsciously or otherwise, to warp the judgments of boards, commissions and courts required to pass judgment. For possible injustice to individual employers the adoption of the dictum of noncausation would substitute certain mass injustice to many employees if it should prove unfounded, as the case stated at the beginning of this communication indicates that it is. And by the time the fallacy of the dictum was demonstrated many employees and many persons in other walks of life who but for it might have sought damages for injuries suffered at the hands of others will have lost their rights to redress, through the limitations of time for presenting their claims fixed by the workmen's compensation acts and statutes of limitation and through the disappearance of essential witnesses.

Have biology and medical science already determined the causes of malignant growths in the human body so certainly as to call for affirmative action to cause the adoption universally of the dictum that no single trauma ever has caused a malignant growth or ever can do so. Do available records indicate that under existing medical and legal procedure so many employers are being unjustly required to pay compensation for malignant growths due to single traumas as to require a revision of medi-



cal opinion with respect to the cause or causes of such growths? If neither of these questions can be answered in the affirmative, why not wait for further evidence as to the causes that operate to produce such growths before undertaking to reform medical opinion?

WILLIAM C. WOODWARD, M.D., Washington, D. C.

### "YAWS, CUTANEOUS LEISHMANIASIS AND PINTA"

To the Editors—With reference to Dr. Howard Fox's communication (THE JOURNAL, April 8) replying to my comments (March 4) regarding his article "Yaws, Cutaneous Leishmaniasis and Pinta" (THE JOURNAL, Oct. 23, 1943) I should like to point out

1 If an incidence of 4 per cent of the macular rash of yaws is considered 'the equivalent of being nearly always absent,' then we are in agreement as to this type of lesion. As the macular rash appears early in the course of the disease its incidence should be calculated on the total number of lesions of all types seen in persons with a history duration of one year or less. My calculations on this basis gave an incidence of 65 per cent. Either figure (4 or 65 per cent) seems to me significant, particularly as in some cases there may be only a few macules and the tendency is for them to disappear early—perhaps before the patient comes up for examination. For purposes of comparison I should be glad to know what, in the experience of others, is the incidence of the roseola rash of syphilis.

2 In support of his statement "In the early stages the disease may be permanently cured by three successive injections of neoarsphenamine," Dr. Fox mentions the results of Morse, quoted by Strong, on 1,064 cases treated in Santo Domingo (in my edition Stitt Moss is quoted) and revisited after five years. Moss (again in my edition) found that 465 per cent of the cases re-examined—i.e., 419—remained uncured. He also quotes Strong to the effect that in the Philippines with two injections as the rule 94.3 per cent of clinical cures resulted. No mention is made of the period over which these cases in the Philippines were followed up or if by the term "clinical cure" a temporary clearing up only of the lesions is meant.

I quoted in my previous article the percentages of persistent positive Wassermann reactions at six, twelve and eighteen months in a series of 411 cases in which six successive injections of neoarsphenamine had been administered. I should have added that it was from these persistent positive reactions the relapsing lesions developed, that infectious relapsing lesions were more frequent during the first year following treatment of early cases than in the second or subsequent years, that environmental and climatic conditions were major factors in determining the time and percentage of relapses (consequently patients should be revisited in their districts toward the end of the rainy seasons to determine the real effects of treatment—an important point).

In a small series of 209 persons treated with four to six injections of neoarsphenamine (average 5.5 injections per patient) and revisited at six, twelve, eighteen and twenty-four months later, 28 had relapsing lesions (6 after six months, 7 after twelve, 9 after eighteen and 6 after twenty-four) a percentage of 13.4 relapsing cases. This percentage was found to be still higher for patients receiving one to three injections. Cases may relapse repeatedly in spite of an additional two to three injections after each relapse. The figure 28 represents the number of first relapses; further relapses are not included.

On the other hand before an estimate can be made of the results of treatment there should be a clear picture as to the course of the disease in cases in which treatment has never been given. In Jamaica active lesions attributable to yaws are quite rare in patients who give a history of yaws of thirty or more years duration.

Moss revisited his 1,064 patients in Santo Domingo after a period of five years. In two areas in Jamaica 1,520 persons with a history of yaws of five years upward who maintained that they had never had treatment by injections were seen and 1,424, or 93.65 per cent, showed no clinical evidence of active yaws, only 96, or 6.64 per cent, had such evidence. In these same areas 467 patients gave a history of yaws of four years or less without receiving treatment. 308, or 65.95 per cent, had active yaws lesions, 159, or 34.05 per cent, had no active lesions.

My contention is that specific treatment early in the course of the disease is of value primarily in limiting the spread of the disease in any community where environmental conditions cannot be speedily improved. Such treatment (even with six or more injections) does not necessarily indicate that the disease is cured. I would suggest that to regard the absence of physical lesions as evidence of cure is no more logical than to do so in cases of syphilis.

It would be comparatively easy to clear endemic areas of yaws if one to three injections could cure the disease. The fact is that there will always be some cases of relapsing infectious lesions from which a further spread of the disease by contagion is possible.

H. D. CHAMBERS, M.D.,  
General Hospital,  
Kingston, Jamaica

[The letter was referred to Dr. Fox, who replies.]

1 Dr. Chambers has made it appear that I considered a 4 per cent incidence of the macular eruption to be the equivalent of being "nearly always absent." In my answer to his communication in THE JOURNAL, April 8, I distinctly said that only one author had observed such an incidence. All others of long experience with yaws either failed to mention a macular eruption or definitely said that it did not occur in yaws.

2 The statement quoted from Colonel Strong was to the effect that in the early stages the disease *may* (italics mine) be permanently cured by three successive injections of neoarsphenamine. This would not mean that such a result was always bound to occur.

Dr. Chambers said that in his own series of 209 cases treated by an average of 5.5 injections of neoarsphenamine he found 13.4 per cent of relapses after periods of observation varying from six to twenty-four months. The freedom from relapse in 86.6 per cent of his cases supports my opinion of the curability of yaws in the early stages, certainly when compared with the curability of syphilis.

HOWARD FOX, M.D. New York

### PRIZE WINNING MONOGRAPHS IN BRAZIL

To the Editor—In THE JOURNAL, May 6, a mistake was noted in the letter from Brazil. The monographs are in error, since separate competitions were entered during the year, and the following is a correct listing of the prize winning monographs.

1 "History of Leprosy in Brazil and the Geographic Distribution of the Disease," by Flavio Maurano.

2 "Etiology and Pathology of Leprosy," by Abrahão Rotberg and Luiz Marino Bechelli.

3 "Epidemiology and Control of Leprosy," by Nelson Sousa Campos, Abrahão Rotberg and Luiz Marino Bechelli.

4 "Clinical and Therapeutic of Leprosy," by Luiz Marino Bechelli, Abrahão Rotberg and Flavio Maurano.

LUIZ MARINO BECHELLI, M.D.,  
Post-Graduate Medical Hospital,  
New York

## Bureau of Legal Medicine and Legislation

### MEDICOLEGAL ABSTRACTS

**Medical Practice Acts Conviction of Limited Practitioner for Exceeding the Scope of His License**—The Bureau of Medical Education and Licensure of Pennsylvania<sup>1</sup> in 1915 issued a limited license to Allison which conferred on him "the right to treat the sick by Herbs and Massage upon request of a person duly authorized to prescribe the same." Twice previous to the institution of the action here involved he was convicted of having exceeded the authority granted him by this license and of engaging in the practice of medicine and surgery. Both convictions were upheld by the superior court of Pennsylvania. *Commonwealth v. Allison*, 103 Pa. Superior 140, 156 A 812 id 132 Pa. Superior 606, 1 A (2d) 920. Again, in the case here abstracted he was indicted for and convicted of exceeding the scope of his limited license and engaging in the practice of medicine and surgery without restriction. He appealed to the superior court of Pennsylvania.

Either Allison, said the superior court has no respect for the law or he is mentally incapable of understanding the limitations implicit in the form of license he possesses. For not only did the prosecution show that at the times charged in the indictment, he accepted patients examined them diagnosed their ailments and prescribed treatments he glibly admitted these practices from the witness stand. And there is not even the pretense that he limited his patients to those referred for treatment by a properly licensed physician, in fact, one has the impression from reading his testimony that he regards all orthodox physicians as either fools or knaves and will have little or nothing to do with them. Having twice appealed to us in vain one would expect that in this his third, appeal the ingenuity of counsel, challenged by almost overwhelming odds, would produce a somewhat novel approach to the problem. We have not been disappointed. Allison now contends that, in restricting him to the treatment of patients referred to him by licensed physicians the licensing agency—composed according to him, of "professional competitors"—has arbitrarily discriminated against him, that there is no statutory authority in Pennsylvania for such a narrow limitation on his authority and that the limitation contravenes the Fourteenth Amendment to the Federal Constitution.

True, continued the court there is no express statutory authority for the particular limitation complained of by Allison. The Pennsylvania medical practice act gives the bureau broad, discretionary powers to establish a system of special licensure and to issue to persons who fulfil such special qualifications as the bureau provides a license to practice one or more of the limited branches of medicine or surgery. The constitutionality of this provision was upheld in *Long v. Metzger*, 301 Pa. 449, 152 A 572. Of necessity the bureau may make discriminations, they are inherent in the nature of the functions it performs. Yet we must grant that the acts of the bureau may always be subjected, by one affected, to the test of reasonableness under the Fourteenth Amendment. But, so far from being unreasonable, the requirement imposed by the bureau that practitioners of this kind should treat patients only at the request of, and hence under some supervision by, a licensed physician is a necessity if the public is to be protected adequately against exploitation.

Allison, continued the superior court, is a quack of the worst sort. It is easy to see why, if he were compelled to wait for

patients referred to him by physicians, he would have no practice. At the trial there was no proof of the chemical ingredients of the pills and nostrums he sold to his patients nor the type of massage he employed. But the miracles he professed to be able to accomplish would make the witchery of the Middle Ages seem by comparison an infant and underdeveloped craft. He professes to be a "bloodless surgeon, a botanic physician." When asked how he would cure a case of appendicitis he said

That is very easy. That would be cured in one hour's time ordinarily without shedding any blood or making any incision or like that. That is easily cured in one hour and a patient is ready to go to work in one hour.

When asked what he would do with ruptured appendix, he said

Why my friend I have been practicing forty three years and I have yet to see the physician that has ever saw [sic] a ruptured appendix.

He could remove diseased tonsils without cutting.

By the use of herbs taken internally and massage to the throat cure any case of tonsils just—well I'll say within a week or so.

He professed to have cured many cases of cancer, and as for paralysis

Often times paralysis is caused by an obstruction of circulation and by removing that obstruction in a few minutes time the party has the full use of their arms or legs.

It makes one shudder, continued the court, to think that a man like this should be entrusted with any part of the responsibility for the diagnosis or treatment of human disease. The story of this case is more persuasive than any abstract argument could possibly be of the wisdom of the bureau in limiting such practitioners to treatments requested by licensed physicians.

Accordingly, the judgment of conviction was affirmed.—*Commonwealth v. Allison* 38 A (2d) 535 (Pa., 1944).

## Medical Examinations and Licensure

### COMING EXAMINATIONS AND MEETINGS

#### BOARDS OF MEDICAL EXAMINERS BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Examinations of boards of medical examiners and boards of examiners in the basic sciences were published in THE JOURNAL Nov 4 page 656.

#### NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS Parts I and II Various centers Nov 13-15 Exec Sec Mr E. S. Elwood 225 S 15th St Philadelphia

#### EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY New York June 8-9 Final date for filing application is March 12 Sec, Dr George M. Lewis 66 E 66th St, New York 21

AMERICAN BOARD OF INTERNAL MEDICINE Written Feb 19 Final date for filing application is Dec 15 Asst Sec, Dr W. A. Werrell 1301 University Ave Madison 5 Wis

AMERICAN BOARD OF NEUROLOGICAL SURGERY Spring Final date for filing application is Feb 1 Sec Dr Paul C. Bucy 912 S Wood St Chicago 12

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY Written Part I Various centers Feb 3 Sec, Dr Paul Titus 1015 Highland Bldg Pittsburgh 6

AMERICAN BOARD OF OPHTHALMOLOGY New York, June Chicago October Final date for filing application is Dec 1 Sec, Dr S. Judd Beach 56 Irie Road Cape Cottage Maine

AMERICAN BOARD OF OTOLARYNGOLOGY New York June 5-8 Chicago Oct 3-6 Sec Dr Dean M. Lierle University Hospital Iowa City, Ia

AMERICAN BOARD OF PEDIATRICS Oral New York April 14-15 Final date for filing application is Dec 15 Chicago May 19-20 Final date for filing application is Jan 19 Sec Dr C. A. Aldrich 115½ First Ave S W Rochester Minn

AMERICAN BOARD OF RADIOLOGY Oral New York June 3 Final date for filing application is May 1 Sec Dr B. R. Kirklin 102 110 Second Ave S W Rochester Minn

<sup>1</sup> Now officially designated as the State Board of Medical Education and Licensure.

## Current Medical Literature

### AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1934 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (\*) are abstracted below.

#### American Journal of Diseases of Children, Chicago

68 83-156 (Aug.) 1944

- Clinical Adequacy of Single Measurement of Vitamin A Absorption. E. L. Pratt and Kathleen R. Fahey—p. 83.  
Group Psychotherapy for Withdrawn Adolescents. J. C. Solomon and Pearl L. Axelrod—p. 86.  
\*Management and Prognosis of Megacolon (Hirschsprung's Disease). Review of 24 Cases. K. S. Grimson, H. N. Vandergrift and H. M. Dratz—p. 102.  
Meningococcal Meningitis. Review of 100 Cases. K. Glaser—p. 116.  
Poliovirus III. Analysis of Results Following Treatment as Reported in Recent Literature. J. A. Toomey and P. M. Kohn—p. 124.

**Management and Prognosis of Megacolon (Hirschsprung's Disease).**—Grimson and his co-workers review the records of patients with megacolon seen since the opening of Duke clinic in 1930. The present status of the patients has been determined by correspondence and by return visits. Of 24 patients with megacolon, 21 were treated by conventional medical management consisting chiefly of diet, laxatives, enemas and parasympathomimetics occasionally supplemented by sympathectomy. Three of the 21 patients required emergency laparotomy. A severe fecal impaction was removed in 1. Volvulus of the sigmoid colon was reduced in 2. Six of the 21 patients have undergone a remission of symptoms without surgical intervention. One patient underwent a remission of symptoms after sympathectomy and is well at the age of 17. Seven have continued to have mild to severe symptoms and at an average age of 15 are receiving medical treatment. Five patients including 1 of the 3 who had a laparotomy have died. The remaining 3 of the 24 patients presented alarming symptoms and were treated by one stage resection of the megacolon and ileosigmoidostomy. These 3 are now living and well. Medical management was supplemented by sympathectomy for 4 of the 24 patients. The gross pathologic picture was not significantly altered. One sympathectomized patient improved and is living and well at the age of 17. Another improved for three years and then died at the age of 24 with an acute impaction and perforation of the colon. Two others experienced difficulty after sympathectomy. The initial observations indicate three types of involvement of the colon and the follow-up studies warrant classification of the 24 patients into three groups. The first group, of 12 patients, had uniform involvement of the entire colon terminating in a dilated or easily dilatable rectum. Eight are now living and evacuating their colons readily. It appears that protracted medical management of patients in this group is indicated as long as adequate nutrition can be maintained and persistent abdominal distention avoided. The 7 patients of group 2 had uniform dilatation of the proximal segments of colon terminating in a normal segment of bowel usually in the sigmoid region and a normal rectum. Four receiving conventional management died. The remaining 3 with enormous megacolons, were treated by resection of the megacolon and anastomosis between the terminal portion of the ileum and the remaining stump of normal sigmoid colon. These 3 are living and well. Patients in this group demonstrated greater abdominal enlargement than the other patients. The third group comprised 5 patients who had enormous enlargement of the sigmoid colon or of the sigmoid and descending colon with or without involvement of the proximal portions of the colon and of the rectum. The 5 are now living 2 free from symptoms and 3 with moderately severe symptoms. It seems that protracted medical management of patients in this group is justified.

#### American Journal of Physiology, Baltimore

142 1-152 (Aug.) 1944 Partial Index

- Design of Ballistocardiograph. J. L. Nickerson and H. J. Curtis—p. 1.  
Study of Substances in Blood Serum and Platelets Which Stimulate Smooth Muscle. Marjorie Bass Zucker—p. 12.  
Rate of Entrance of Radio Sodium into Aqueous Humor and Cerebrospinal Fluid. M. B. Visscher and C. Carr—p. 27.  
Influence of Temperature on Spinal Cord Damage Caused by Asphyxiation. A. van Harreveld and D. B. Tyler—p. 32.  
Hemoglobin Concentration of Blood of Intact and Splenectomized Dogs Under Pentobarbital Sodium Anesthesia with Particular Reference to Effect of Hemorrhage. D. T. Carr and H. E. Essex—p. 40.  
Augmentation of Left Coronary Inflow with Elevation of Left Ventricular Pressure and Observations on Mechanism for Increased Coronary Inflow with Increased Cardiac Load. D. E. Gregg and R. E. Shipley—p. 44.  
Respiratory Effects on Filling of Ventricle During Prolonged Diastole. Mary C. Patras, J. M. Brookhart and T. E. Boyd—p. 52.  
Tissue Electrolyte at Low Atmospheric Pressures. D. C. Darrow—p. 61.  
Depression of Normal Erythrocyte Number by Soybean Lecithin or Choline. J. E. Davis—p. 65.  
Palmar Skin Resistance During Standard Period of Controlled Muscular Activity as Measure of Physical Fitness and Fatigue. A. H. Ryan and E. L. Ranssen—p. 68.  
Maintenance of Normal Serum Calcium by Parathyroid Gland in Nephrectomized Dogs. E. P. Monahan and S. Freeman—p. 104.  
Synergistic Effect of Caffeine on Histamine in Relation to Gastric Secretion. J. A. Roth and A. C. Ivy—p. 107.  
Sensitivity of Respiratory Center to Hydrogen Ion Concentration. M. G. Banus, H. H. Corman, V. P. Perlo and G. L. Popkin—p. 121.  
Energy Expenditure in Swimming. P. V. Karpovich and N. Millman—p. 140.  
Radioactive Phosphorus Studies on Hexosemonophosphate Metabolism in Resting Muscle. J. Sacks—p. 145.

#### Am J Syphilis, Gonorrhea and Ven Dis, St Louis

28 529-660 (Sept.) 1944

- Review of 2144 Courses of Rapid Treatment for Early Syphilis. E. W. Thomas and Gertrude Wexler—p. 529.  
\*Intensive Chemotherapy of Early Syphilis. A. W. Neilson, L. F. Blaney, L. J. Stephens and R. W. Maxwell—p. 553.  
Contact Investigation in Gonorrhea. N. W. Guthrie—p. 571.  
Syphilis in Gonorrhea Patients and Contacts. N. W. Guthrie—p. 583.  
\*Polyarticular Arthritis and Osteomyelitis Due to Granuloma Inguinale. J. Lyford III, R. B. Scott and R. W. Johnson Jr.—p. 588.  
\*Penicillin in Treatment of Granuloma Inguinale. R. A. Nelson—p. 611.  
Enhancement of Virulence of Gonococcus for Mouse. C. P. Miller with technical assistance of E. Tamari—p. 620.  
Susceptibility of Sulfonamide Resistant Gonococci to Penicillin. A. W. Frisch with technical assistance of Beatrice Behr, R. B. Edwards and M. W. Edwards—p. 627.  
Statistical Studies in Female Gonorrhea with Evaluation of Yeast Supplement in Gonococcus Isolation. P. Rosenblatt, Edda Myer and Lillian Robbins—p. 634.

**Intensive Chemotherapy of Early Syphilis.**—The treatment routine used by Neilson and his collaborators at Isolation Hospital in St Louis was that devised by Chargin. 240 mg of mapharsen was given daily for five consecutive days total mg 1,200 mg. The daily dose of drug was given in 2,000 cc of 5 per cent glucose solution dripped intravenously over a twelve hour period. Because fatalities resulted in small persons the total dose for persons weighing less than 125 pounds (57 Kg) was reduced to 900 mg. The 5 per cent glucose solution was later replaced by a 10 per cent solution and the daily administration time was reduced from twelve hours to eight hours. Intensive therapy was completed 502 times on 487 patients. A few individuals were rejected because of a history of sensitivity to arsenic. In over one half of the cases insoluble bismuth was given in an attempt to create a chemotherapeutic regimen of maximum effectiveness. The authors describe and evaluate early and delayed reactions and discuss the 4 fatalities. Thirty-seven per cent of the first 414 patients receiving intensive therapy failed to make a single contact with the follow-up clinic. The time interval between treatment and the achievement of a negative Kahn test averaged 4.3 months in the group receiving mapharsen alone and 2.8 months in the group that received a bismuth compound in addition to mapharsen. Fifteen per cent of all patients followed for five months or longer developed serologic or mucocutaneous relapse. Many of these were given a second course of intensive treatment. Twenty pregnant women were treated and 17 were followed until delivery had occurred. Only 2 infants had definite congenital syphilis and 2 babies had positive Kahn reactions. The follow-up of treated patients has not yet been long enough for a proper evaluation of the results. The authors believe that the rate of complete cure will not be less than 70 per cent.

**Arthritis and Osteomyelitis Due to Granuloma Inguinale**—Lyford and his associates reported previous observations on a case of disseminated granuloma inguinale with polyarticular arthritis and osteomyelitis in which the Donovan bodies were found on microscopic examination and were grown in continuous tissue cultures of material from the bone and joint lesions. They have also seen 2 cases of osteomyelitis (forearm and spine) in which the Donovan bodies were demonstrated in the lesions. In 1 case there was a systemic dissemination of the disease with a massive polyarticular arthritis and ultimately ulceration of many of the joints, and a widespread destruction of the bones. In another there was involvement of two vertebrae and a hip joint communicating with sinus tracts presenting in the inguinal regions. The third patient had lesions in the bones of a hand and forearm but no joint involvement. These cases add further proof that granuloma inguinale can be a systemic as well as a local disease. All patients showed persistent anemia and gradual loss in weight. All had irregular spiking temperatures over a long period of time. The activity of the lesions and the systemic manifestations were characterized by recurring episodes of spontaneous remissions and exacerbations. The arthritis had an insidious onset with migratory pains in several joints and then swelling of several joints with pain locally but little free fluid. There was a slow subsidence into atypical "rheumatoid arthritis," followed by a recurrence of the acute swelling and pain of multiple joints, ending after many months in ulceration from within outward of many of the joints. Exploration of an elbow joint during the period of quiescence showed the synovia to be thickened and friable, but the articular cartilages were clean and smooth. The operative incision into the infected tissue of the joint healed by first intention and remained healed. The bone lesions on radiographic examination showed little or no sequestrum or involucrum formation and a lytic type of reaction. The lesions contained no pus and consisted of friable granulation tissue. Donovan bodies were seen in material from the bone and joint lesions in 2 cases and in material from the sinus tracts communicating with the involved bones in the third case.

**Penicillin in the Treatment of Granuloma Inguinale**—Nelson administered penicillin to 2 patients with chronic granuloma inguinale. The diagnosis was proved in both cases by biopsy, which in each case showed Donovan bodies. One patient was given 1,360,000 Florey units of sodium penicillin by intramuscular injection in a period of four and one-half days; the other received 2,800,000 units during a fifteen day treatment course. No significant change was observed in the lesions in either patient in the following thirty to forty days. Donovan bodies were still present in the tissues of the first patient twenty-seven days after therapy was begun.

### Archives of Internal Medicine, Chicago

74 81-154 (Aug.) 1944

\*Diabetes Insipidus. Clinical Observations in 42 Cases. G. M. Jones—p. 81.

Disease of Mitral Valve. Its Effect on Pattern of Electrocardiogram. B. V. White, R. C. Parker, Jr. and A. M. Master—p. 94.

\*Vasodepressor and Carotid Sinus Syncope. Clinical Electroencephalographic and Electrocardiographic Observations. G. L. Engel, J. Romano and T. R. McLin—p. 100.

Intestinal Malabsorption Associated with Tuberculosis of Mesenteric Lymph Nodes. A. Klein and W. B. Porter—p. 120.

**Diabetes Insipidus**—Jones reports 42 cases of diabetes insipidus treated at the University Hospital at Ann Arbor, Mich. In 34 of these the etiologic factors were clinically or pathologically determined. Diabetes insipidus is a symptom complex produced by injury to the supraopticohypophyseal tract and not a specific etiologic entity. In any case of diabetes insipidus thorough and repeated examination should be made to determine the etiologic factors. Urine concentration tests indicate that patients with diabetes insipidus receiving a limited intake of fluid continue to secrete urine of low specific gravity with resultant loss of body weight. Such a response indicates organic damage along the supraopticohypophyseal tract. Therapy should be directed toward the etiologic factor. Thus in some cases of neoplasm of the hypothalamus and pituitary and of Hand-Schüller-Christian disease a good response to roentgen irradiation is obtained, and antisyphilitic therapy corrects the diabetes

insipidus resulting from syphilis. As diabetes insipidus is not infrequently the first symptom in cases of neoplasm, occurring eight months and six years before other evidence of the malignant growth in 2 of the cases reported here, roentgen irradiation of the hypothalamohypophyseal region may be worth while when the cause of the diabetes is undetermined. Of the various methods of administration of posterior pituitary as replacement therapy in the absence of the antidiuretic principle, intramuscular injection of pitressin tannate in oil seems the most desirable. Intranasal application of pitressin in jelly was the least satisfactory. Use of a low salt diet as an adjunct to other therapy may be worth a trial. Thyroidectomy should not be performed for diabetes insipidus unless there are other specific indications for the procedure.

**Vasodepressor and Carotid Sinus Syncope**—Engel and his co-workers report the clinical, electroencephalographic, electrocardiographic and circulatory responses observed during a variety of syncopal reactions, including syncope provoked by venipuncture, by distention of the duodenum, colon, rectum or vagina, by hyperventilation and by carotid sinus reflex. Eighteen patients and volunteer subjects were studied. In some instances syncope was a chance occurrence in the course of an unrelated experiment. In other instances the clinical history suggested that a certain procedure such as distention of viscera or massage of the carotid sinus would provoke syncope. Vasodepressor syncope was provoked in 9 patients by venipuncture, by distention of the rectum, colon, duodenum or vagina, by hyperventilation or by stimulation of the carotid sinus. In addition, 6 cases of the cardioinhibitory type of carotid sinus syncope and 3 cases of the cerebral type were studied. Complete unconsciousness, characterized by unawareness, muscular relaxation and falling, was always accompanied by high voltage slow waves in the electroencephalogram, regardless of the mechanism by which unconsciousness was provoked. Lesser changes in consciousness, such as lightheadedness, giddiness and transient unconsciousness, were associated with less obvious slowing of the electroencephalogram, loss of alpha activity or no change at all. In 2 cases of the cerebral type of carotid sinus syncope the development of contralateral focal neurologic signs and symptoms without loss of consciousness was associated with abnormal waves from the ipsilateral cortex. Vasodepressor syncope could be provoked by a wide variety of sensory stimuli but the significance of the stimulus to the subject seemed to be more important than the specific modality involved. Most of the symptoms of vasodepressor syncope were associated with falling arterial blood pressure, and unconsciousness did not develop until blood pressure had fallen to a low level. Symptoms could be relieved by returning the subject to the recumbent position, but they often recurred if the subject stood up again, even if the original stimulus had been withdrawn. The derangement in circulatory dynamics was apparently compensated for but not corrected by assumption of the recumbent position, presumably by avoiding the pooling effects of gravity. Recovery of consciousness may occur in the erect position, convulsive movements and increase in muscle tone seemed to aid recovery, but they were not essential. The value of having the patient exercise before standing up was evident.

### Archives of Ophthalmology, Chicago

32 89-166 (Aug.) 1944

Chronic Keratoconjunctivitis Associated with Nocardia. W. L. Benedict and H. A. Iverson—p. 89.

Sarcoidosis with Retinal Involvement. Report of 2 Cases. S. Goldberg and F. W. Newell—p. 93.

White Rings of Cornea. Report of Microscopic Examination. M. W. Jacoby and R. Dominguez—p. 97.

Intraocular Drainage for Cure of Chronic Infection of Tear Sac. Initial Transcanalicular Inverted U Shaped Incision to Facilitate Full Opening of Tear Sac. D. J. Morgenstern—p. 101.

Buccal Mucous Membrane Grafts in Treatment of Burns of Eye. R. Siegel—p. 104.

Treatment of Metastatic Meningococcal Endophthalmitis. Report of Case. A. C. Krause and W. Rosenberg—p. 109.

Strabismus in Adults. Analysis of Operative Results in 65 Cases. I. I. Shure—p. 113.

Bilateral Teratoid Tumor of Limbus. E. Rosen—p. 120.

Intrinsic Variability of Astigmatic Errors. J. I. Pascal—p. 123.

Foster Kennedy Syndrome with Fusiform Aneurysm of Internal Carotid Arteries. J. S. Tassman—p. 125.

Pathogenesis of Acute Glaucoma. I. Hess—p. 128.

**Bull of the U S Army Med Dept, Washington, D C**

80 1-122 (Sept) 1944

- \*March Fracture Report of 313 Cases C W Hullinger and W L Tyler—p 72
- \*Colorado Tick Fever Report of 39 Cases J D Collins—p 81
- \*Meningococcemia L Ochs Jr T Weiss and M Peters—p 86
- False Positive Serologic Reactions for Syphilis Report of 100 Cases Following Routine Immunizations and Upper Respiratory Infections A B Loveman—p 95
- Postoperative Problems Following Perforation of Colon B P Colcock—p 106
- Method for Instructing Medical Technicians D E Casad T A Broderick and H T Haver—p 109
- Treatment of Mentally Disturbed Soldiers Overseas M Moore and P D MacLean—p 113

**March Fracture**—Hullinger and Tyler observed at Camp Wheeler 300 patients with 313 march fractures. Each patient showed either a fracture line or callus formation by x-ray examination. An additional large number of patients were seen who had many of the earlier signs of march fracture but never positive x-ray signs. There were about 450 patients in this group. The incidence of march fractures at this camp greatly increased beginning in March 1942, as a result of a training order issued in February, which stated that all trainees would carry rifles and full packs at all times during the training program, that the men would march by foot from one area to another instead of riding, and that they would move to adjacent areas frequently on the double time. This increased the admission to the hospital for march fractures to a peak of 66 for the month of May. On May 24 a memorandum was issued lessening the strenuousness of the training program, with the result that the number of cases fell off in June to 44 and in July to 17. While this type of fracture has been reported as occurring in the tibia, fibula, femur, calcaneus, pelvis and cuneiform, it is most frequently found in the second and third metatarsal bones. Prior civilian occupation may be a mild contributory factor in causing early fatigue. The weight of patients and their age do not seem to be contributory. The mechanism of fracture and healing would seem to be as follows. Because of the repeated minimal trauma, there is an incomplete fracture of a few of the bony trabeculations of the shaft, which is most often not visible on x-ray examination. This is followed by hemorrhage, which, being on the surface, produces an elevation of the periosteum. New bone is formed in the hematoma. Calcium deposits are seen in this area at an early date. If the trauma continues there is fracture of additional bone trabeculations and additional hemorrhage, further elevating the periosteum and giving rise to additional osteogenesis. There is then slight absorption of calcium at the fracture ends with the dehiscence becoming visible by x-ray examination. If the trauma ceases, the fracture proceeds to orderly healing with complete repair. Treatment should be complete immobilization to prevent motion at the fracture site. Complications are very few in cases treated by complete immobilization.

**Colorado Tick Fever**—Collins states that cases of Colorado tick fever were encountered in May and June 1943 at Camp Carson Station Hospital. Thirty-nine men became ill with fever, chills, headache and myalgia lasting from one to two days, followed two days later by a relapse of similar character. A leukopenia was an almost constant finding. All of the men had sojourned in tick country, and the majority gave a history of being bitten by ticks. All were between the ages of 20 and 40, in supposedly good health until the present illness. In every instance a history was obtained of having bivouacked for several days in the vicinity of Lake George, near Colorado Springs, a region notorious for the number of ticks found there. All ticks removed in the hospital from these patients were identified as *Dermacentor andersoni*. Therapy was symptomatic, although sulfonamide drugs were used in 6 cases without noticeable benefit. Salicylates and codeine relieved the myalgia and headache to a large extent, and dehydration was combated by copious fluid, given intravenously when necessary. Laboratory facilities to investigate the cause further were lacking. Attempts to reproduce the disease in laboratory animals by others have been unsuccessful and the etiologic agent is as yet unknown.

**Meningococcemia**—Ochs and his associates report that 6 cases of chronic meningococcemia without accompanying meningitis were recognized from a station hospital in this country during and following an outbreak of meningococcal meningitis. Chronic meningococcemia is characterized by irregular fever, arthralgias, myalgias and a skin eruption, the most characteristic lesion being a rose colored macule with a vesicular, pustular or petechial center of pinhead size. The diagnosis of meningococcemia can be suspected on clinical findings, but to the laboratory falls the responsibility of demonstrating the causative agent. Blood cultures for growing meningococci are more often positive if the blood is drawn when the temperature is rising or at its peak. Attempts to isolate organisms from the skin lesions were unsuccessful. Acute fulminating meningococcemia with or without meningitis is another form of meningococcal infection. Nine cases of this form have appeared at the authors' hospital during 1942, 1943 and 1944. One patient died suddenly before the disease was recognized, and 1 patient died suddenly twelve hours after treatment from pulmonary edema. The disease is so fulminating that one cannot wait for a confirmatory blood culture before instituting treatment. At present any patient showing a diffuse petechial, purpuric or macular rash, early coma or manifest restlessness with a leukocytosis is considered to have fulminating meningococcal septicemia. The blood culture is usually positive for meningococci. In 4 patients the diagnosis was immediately confirmed by demonstrating gram negative diplococci in a film of tissue juice obtained by cutting into a petechia. The authors were unable to determine the presence of hemorrhage into the adrenal glands. Although the clinical course of this disease is similar to the Waterhouse-Friderichsen syndrome, the authors have not diagnosed their cases as such. The histories of 3 patients with acute fulminating meningococcemia are described. The treatment of the fulminating cases is with one-sixth molar sodium lactate solution in isotonic solution of sodium chloride, sodium sulfadiazine intravenously and intramuscularly, adrenal cortex extract intravenously and intramuscularly, meningococcus antitoxin intravenously, 5 per cent glucose and saline solution intravenously, sodium citrate given with sulfadiazine orally, oxygen, recording of blood pressure, pulse, pulmonary signs for pulmonary edema and urinary output every two or three hours.

**Indiana State Medical Assn Journal, Indianapolis**

37 427-554 (Sept) 1944

- Study of Upper Respiratory Infections F E Ball and C D Berry—p 427
- Combat Flight Surgeon in England O C Olson—p 430
- Venereal Disease and Flying Personnel R Dyar and J R Scholtz—p 435
- Effect of Diet on Gastrointestinal Symptoms at Altitude J H Tillisch—p 439
- Reactions of Nasopharynx to Heat Cold and Disease with Some Therapeutic Considerations P S Mountjoy—p 443
- \*Sulfadiazine Prophylaxis of Acute Infectious Diseases H A Warren—p 447
- Low Back Pain J V Luck—p 452

**Sulfadiazine Prophylaxis of Acute Infectious Diseases**

—Warren reports experiences in the use of sulfadiazine in controlling both sick call and hospital admissions from acute infectious diseases in more than 9,000 men at the Army Air Forces Technical Training School, Truax Field, Madison, Wis. This study was conducted as a part of the Army Air Forces Rheumatic Fever Control Program. Sulfadiazine in a prophylactic dosage of 3 Gm once weekly proved ineffective in reducing the incidence of acute infectious disease among a group of 140 soldiers, but in prophylactic doses of 1 Gm daily it effectively reduced the incidence of certain acute infectious diseases among 9,000 soldiers. This effect was evident both on admissions to the outpatient department and on hospital admissions for acute infectious diseases. Diseases caused by beta hemolytic streptococci, scarlet fever and nasopharyngitis due to streptococci were most effectively influenced. A definite effect was also apparent on the incidence of rheumatic fever occurring at a later period than the effect on acute hemolytic streptococcus disease. There was no effect on diseases caused by virus infection or of unknown etiology under this method of prophylaxis. Among 9,000 men only 34 toxic reactions were encountered, and none of them were serious.



**Journal Industrial Hygiene & Toxicology, Baltimore**

26 211-254 (Sept.) 1944

- Aluminum Therapy in Silicosis Experimental Study Donald E Cummings Memorial Lecture St Louis May 11, 1944 L U Gardner M Dworski and A B Delahant—p 211
- Determination of Barium in Atmospheric Dusts H Yagoda—p 224
- \*Cadmium Poisoning in Industry Report of 5 Cases Including One Death L W Spolyar J F Keppler and H G Porter—p 232
- Absolute Efficiency of Impinger and of Electrostatic Precipitator in Sampling of Air Containing Metallic Lead Fume R G Keenan and J T Fairhall—p 241
- Liver Injury in Dogs Exposed to Trichloroethylene J Seifter—p 250

**Cadmium Poisoning**—According to Spolyar and his associates cadmium poisoning in industry occurs from the accidental absorption of fumes or dust by way of the respiratory tract, seldom by ingestion. A symptom complex develops that is primarily referable to the respiratory tract and is manifested within four to eight hours by irritation of the nasopharynx, cough, headache and a metallic taste in the mouth. This is followed by a latent period of twenty to thirty-six hours, when the chief complaints are dyspnea and severe pain in the chest. Gastrointestinal complaints may develop, depending on the amount of cadmium swallowed. Cadmium poisoning by ingestion is usually manifested by symptoms referable to the gastrointestinal tract, namely persistent vomiting for a period of four to six hours with or without diarrhea. Cadmium, being a powerful emetic, seldom produces death when taken orally. This dual symptom complex may explain the scarcity of reported cases of cadmium poisoning occurring as a result of inhaling cadmium fumes or dusts, in that the gastrointestinal symptoms may have been looked for and were missing. The authors report the histories of 5 men who worked in a shop for flanging steel inlet pipes. Flanging was accomplished by a team consisting of two men, one known as the heater and the other as the flanger. The heater heated one end of the 6 inch pipe by means of a propane oxygen blowtorch until it was cherry red. The flanger created a flange, or bevel, on the heated end of the pipe. This work had been done for six months, when a different type of pipe was supplied. Soon after beginning work, the men noticed more smoke than usual and a dense yellowish brown fume being emitted from the pipe. After all the 5 men who had worked on these pipes for about four hours each had become ill, the operation was discontinued. Death of 1 of these men, who had been longer exposed to the cadmium fumes led to inquiry by the insurance company, which disclosed that the pipe was coated with cadmium. The authors present data on 38 additional cases of cadmium poisoning by inhalation. Of the total of 43 cases 6 were fatal, indicating a mortality rate of 14 per cent. Death occurs between the fifth and seventh day after exposure. Recovery occurs within seven to eleven days.

**Journal of International College of Surgeons, Chicago**

7 257-336 (Jul-Aug.) 1944

- Blast H Bailey—p 257
- Administrative Procedures in Handling of Discharge of Disabled Service Men L Sanders—p 263
- Classification of War Wounds B Hughes—p 275
- \*Use of Plasma Whole Blood and Human Serum Albumin by Armed Forces D B Kendrick Jr—p 289
- Gas Casualties A H Waitt—p 296
- Anesthesia During Circumstances of War E A Rovenstine—p 301
- Total Rupture of Posterior and Inferior Aspects of Bladder Rectovaginal Fistula A J Pavlovsky—p 308
- \*Free Muscle Transplantation in Restoration of Lips and Cheeks A Prudente—p 312

**Plasma, Whole Blood and Human Serum Albumin**—Kendrick states that recent developments in the field of replacement fluids have not removed the necessity for whole blood transfusions. Whereas plasma and albumin are effective therapeutic agents in shock and burns, whole blood is still indicated in severe hemorrhage, secondary anemia from burns infections, carbon monoxide poisoning and many medical diseases. Fresh whole blood and stored blood are used. In order to make fresh blood available in the "theater of operations," the distilled water bottle from the Standard Army-Navy Plasma Package will be salvaged and utilized. It may be necessary to have stored whole blood on hand for immediate use. Equipment will be provided in large fixed medical installations where whole

blood can be collected under a "closed system" and stored in refrigerated boxes for a period of five to seven days. It is expected that most of the blood collected for storage will be taken from proved group O donors, thus making it possible to inject this blood into recipients of all types.

**Free Muscle Transplantation**—Prudente's method consists in the transplantation of a piece of muscle completely separated from its muscular body and transported through a skin tube. The sternocleidomastoid and pectoralis major are the muscles of choice for the face. This operation has been used in 4 cases. Three cases involved defects of the angle of the mouth and the cheek, 1 resulting from noma and 2 from cancer. The fourth was a case of cancer of the floor of the mouth involving the jaw and the inferior lip. Two cases of the first group have already been reconstructed both anatomically and functionally. The other 2 are in the last stages of restoration. The author stresses the following points: 1 Healing of the muscular skin flap is always by first intention, because the union is made between tissues of the same nature. 2 After the first stage, when the muscle strip is isolated before its transplantation, it is transformed into a fibrous tissue, but after that transplantation, when it lies close to the healthy muscles of the new region, it recovers its normal aspect, corresponding to a true rehabilitation of the tissue. 3 After a few months the grafted muscle recovers its function, probably as the result of nervous penetration from neighboring muscles, and the patient is able to perform every movement. Whistling and spitting are possible with real contraction of the grafted muscle. 4 Microscopic examination of the grafted muscle shows that its structure is perfectly normal.

**Journal-Lancet, Minneapolis**

64 253-290 (Aug.) 1944

- Suggested Therapeutic Procedure for Treatment of Empyema by Closed Method Preliminary Report E E Carpenter—p 278
- Counterirritation A C Moorhead—p 280

64 291-324 (Sept.) 1944

- Address of the President J C Ohlmacher—p 302
- Address of President Elect D S Baughman—p 310
- Students Health Service Experience in Outpatient Care of Army Students M M Weaver and R G Hinckley—p 311
- Differential Diagnosis of Acute Glaucoma F N Knapp—p 315

**Journal of Neurosurgery, Springfield, Ill**

1 299-364 (Sept.) 1944

- Basilar Impression (Platybasia) Case Secondary to Advanced Paget's Disease with Severe Neurologic Manifestations Successful Surgical Result H T Wycis—p 299
- Histologic Studies of Brain Following Head Trauma IV Late Changes Atrophic Sclerosis of White Matter J P Evans and I M Scheinker—p 306
- Extradural Cerebellar Hematoma Case Report F Turnbull—p 321
- Bilateral Nerve Deafness Persistent Cough and Paroxysmal Hyperpnea Due to Tumor in Floor of Fourth Ventricle D Weller—p 325
- Tantalum Cranial Clip W B Hamby—p 331
- \*Operative Results in Intervertebral Disks F C Grant—p 332

**Operative Results in Intervertebral Disks**—Grant reviews observations on 150 patients with ruptured intervertebral disks verified at operation. All of these patients had at least a six months follow-up period. Before operation 11 patients were bedridden, 27 were unable to do gainful work and 112 were working with disabilities. Of the 11 bedridden patients, 6 are back at their previous jobs, 3 are employed in less arduous labor and 2 are unable to work. Among the 27 unable to work preoperatively 17 are back at work, 6 are improved and 4 are unimproved. Of the 112 patients working with disability, 55 are cured, 47 are improved and 10 not improved following surgical intervention. The author also reviews the results of conservative treatment of 93 patients with an assured diagnosis of ruptured disk. Of 15 bedridden patients 9 have completely recovered and 3 have improved enough to carry on light work. Of 42 who were unable to work 36 have recovered sufficiently to return to less arduous work, the other 6 are still not working. Thirty-six who were working with disabilities are still at work, although 24 of them have had to change their employment. On the basis of this assessment the author sees no reason to change the conservative attitude he has adopted in the past two years. Surgery is not, in his opinion,



the only treatment for this condition. Many of these patients will recover with rest, leg traction, back support and other nonoperative means. If this is unsuccessful, or if a recurrence of pain is noted, surgery should be considered.

### Michigan State Medical Society Journal, Lansing

43 625-720 (Aug.) 1944

- War Casualties in General Hospital in U S A R H Kennedy—p 657  
Malaria Current and Postwar Medical Problem L T Coggeshall—p 662  
Intussusception L J Gariepy and R M Atchison—p 665  
Peculiarities in Physiology of Newborn Patients C A Smith—p 668  
Polymyositis Contrast Between Kenny and Orthodox Concepts with Results of Treatment Elizabeth Kenny—p 673

43 721-840 (Sept.) 1944

- Health Needs of Nation as Reflected by Selective Service L G Rowntree—p 769  
Neglected Interns L R Leader—p 777  
Analysis of Deaths Occurring in Michigan from Pneumonia (All Forms) A B Mitchell—p 779

### New England Journal of Medicine, Boston

231 279-314 (Aug 24) 1944

- \*Pain and Disability of Shoulder and Arm Due to Herniation of Nucleus Pulposus of Cervical Intervertebral Disks J J Michelson and W J Mixer—p 279  
Serologic Types of Hemolytic Streptococci Isolated from Scarlet Fever in Massachusetts 1942-1943 S M Wheeler and G E Foley—p 287  
Polyarthritis in Sickle Cell Anemia H G Brugsch and Dorothy Gill—p 291  
Recent Advances in Surgery (concluded) A Blalock—p 293

**Disability of Shoulder and Arm Due to Herniation of Nucleus Pulposus**—Michelson and Mixer report observations on 8 cases of herniation of the nucleus pulposus in the lower cervical spine. There were lesions at the fifth cervical interspace in 4 cases, at the sixth in 3 and at the seventh in 1, with involvement of the sixth, seventh and eighth cervical roots respectively. The clinical data were brought together in a syndrome that comprised root pain and local sensory and motor disturbances, as well as positive x-ray, cerebrospinal fluid and iodized oil findings. The distribution of the sensory abnormalities was compared with standard dermatome charts. In these cases the sixth cervical dermatome seemed to involve the scapula, the anterolateral aspect of the upper arm, the antecubital space, the radial forearm and its thumb and index finger. The seventh cervical dermatome seemed to involve the scapula, the posterolateral aspect of the upper arm and the dorsal surface of the forearm and the index and middle fingers. The eighth cervical dermatome seemed to involve the scapula, the inner and upper arm, the forearm and the little finger. The importance of a systematic neurologic examination in cases of pain or disability of shoulder and arm is emphasized in order to separate the apparently specific syndrome of cervical herniations of the nucleus pulposus from other extraspinal and intraspinal entities. All of the 8 reviewed cases were proved by operation. All the patients had various forms of treatment prior to their hospital admission, without permanent relief. Such measures comprised baking and massage, lamp treatments, strapings and head traction. One patient was injected locally with procaine hydrochloride. The laminectomy and removal of the disk fragment produced good results in 6 cases. In 1 case the improvement was not too impressive. In 1 case in which the disk fragment could not be removed for technical reasons the pain was relieved but the motor disability persisted.

231 315-342 (Aug 31) 1944

- \*Chronic Latent Hepatitis Following Catarrhal Jaundice M D Altschule and D R Gilligan—p 315  
Dislocation of Knee Joint Report of 2 Cases J W Sever—p 318  
Boston Medical Library D Cheever—p 320  
Late Effects of Total and Subtotal Gastrectomy T J Ingelfinger—p 321  
New Hampshire Medical Society Proceedings of the One Hundred and Fifth Third Anniversary House of Delegates May 15 and 16 1944—p 327

**Chronic Latent Hepatitis Following Catarrhal Jaundice**—Altschule and Gilligan state that there are now available in the literature records of the persistence of icterus as well as reports describing increased plasma bilirubin and decreased bilirubin excretory function in some patients who years previously had had an attack of catarrhal jaundice. Chronic gastrointes-

tinal complaints and chronic hepatic enlargement have also been reported as sequelae of acute catarrhal jaundice. The present report of laboratory and clinical studies made in an unselected series of 36 persons who had had catarrhal jaundice one to twenty-nine years previously similarly demonstrates in some cases the persistence for years of certain evidences of hepatic dysfunction. Hyperbilirubinemia was detected in 9 of the 36 patients. It is probable that the incidence of impairment of liver function was even higher, since the distribution of plasma bilirubin values revealed an abnormally large number in the high normal range. Nine subjects in the entire group had palpable livers and 1 a palpable spleen. The chronic latent liver disorder revealed by this study was not accompanied by symptoms and did not appear to be progressive. It is concluded that a mild, benign form of chronic hepatitis is frequent after catarrhal jaundice.

### North Carolina Medical Journal, Winston-Salem

5 265-312 (July) 1944

- Psychiatry Today K E Appel—p 265  
Treatment of Kidney Disease and Hypertensive Vascular Disease with Rice Diet H W Kemper—p 273  
Changing Phases in Treatment of Tuberculosis P H Ringer—p 274  
Child Guidance Responsibility of Every Physician M J Caron—p 277  
The 1915 Serbian Typhus Epidemic W C Davison—p 282  
Diagnosis of Eye Conditions Frequently Seen in General Practice G B Sharbaugh—p 285

5 313-412 (Aug.) 1944

- President's Message Some Further Considerations Relative to Extension of Medical Care in North Carolina P T Whitaker—p 313  
Benjamin Waterhouse (1754-1846) and Introduction of Vaccination into America J C Trent—p 317

### Review of Gastroenterology, New York

11 223-290 (July-Aug.) 1944

- Chronic Gastritis F Cunha—p 239  
Gastrointestinal Symptoms in Relation to Hypertension and Renal Disease B Jablons—p 246  
Management of Ulcer Syndrome B M Bernstein—p 254  
Celiac Syndrome B Kramer—p 256  
Inflammable Physiologic Gases in Rectum and Colon, with Report of Case W Lieberman—p 259

### Western J Surg, Obst & Gynecology, Portland, Ore

52 359-406 (Sept.) 1944

- Protection for Industrial Women Progress and Prospects Mary Anderson—p 359  
Why Do Women Stay Away from Work? Preliminary Report C O Sappington—p 363  
Practical Industrial Health for Women F B Wishard—p 368  
Report of Committee on Health of Women in Industry Section on Obstetrics and Gynecology of American Medical Association H C Hesseltine and others—p 372  
\*Use of Methergine (Synthetic Ergonovine) in Third Stage of Labor Preliminary Report P C Roberts—p 380  
Methergine (Synthetic Lysergic Acid Derivative) a New Oxytocic Preliminary Report D G Tollefson—p 383  
Treatment of Chronic Arthritis J A Key—p 385

**Methergine (Synthetic Ergonovine) in Third Stage of Labor**—Roberts reports observations on a new synthetic ergonovine which is known as methergine. This substance which was synthesized by Stoll and Hofmann of Basel, Switzerland is particularly important because of the potential shortage of rich ergot of rye. Methergine was first employed subcutaneously in 26 cases which were observed in the Department of Obstetrics of Stanford University Hospital. No systemic reactions were encountered in any of these cases. Methergine was then administered intravenously in the third stage, in doses of 1 cc containing 0.2 mg, to 34 patients, of whom 6 were primiparas and 28 multiparas. The contraction of the fundus following methergine was stronger and of considerably greater intensity and duration than with the usual ergonovine preparations. No increase in the incidence of postpartum morbidity or subinvolution of the uterus was noted in this series. Experience with methergine has convinced the author that it is a useful potent oxytocic of great value. Of particular interest has been the reduction of blood loss in the third stage of labor—not necessarily the lowering of the level within normal limits, but rather the elimination of those cases of severe hemorrhage of over 500 cc. In view of the small series, the results with methergine require further verification.

## FOREIGN

An asterisk (\*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

## British Journal of Experimental Pathology, London

25 27-80 (April) 1944 Partial Index

- Observations on Bactericidal and Bacteriostatic Actions of P Aminobenzenesulfonamide and P Hydroxylaminobenzenesulfonamide, with Special Reference to Their Suppression by P Aminobenzoic Acid J W McLeod Anna Mavr Harting and N Walker—p 27
- Effect of Cell Growth Promoting Tissue Extracts on Healing of Experimental Cutaneous Wounds in Rats I Local Application E Auerbach and L Doljanski—p 38
- Effects of South Wales Anthracite Coal and of Precipitated Amorphous Silica on Lungs of Mice J A Campbell—p 46
- Experiments on Inhibitor Occurring in Rous No 1 Sarcomas J G Carr—p 56
- Action of Sulfonamides Against Treponema Recurrentis F Hawking—p 63

## British Medical Journal, London

2 169-200 (Aug 5) 1944

- Penicillin Survey H W Flacey—p 169
- \*Treatment of Acute Empyema with Penicillin E C B Butler K M A Perry and E C O Valentine—p 171
- Penicillin in Ophthalmology J G Milner—p 175
- Penicillin and Sulfonamides in Infantile Gastroenteritis Elizabeth Burns and W Gunn—p 178
- Severe Hemolytic Transfusion Reaction Due to Rh Factor A Beck C V Harrison and J M Owen—p 180

**Penicillin in Treatment of Acute Empyema**—Butler and his associates dissolved penicillin in water to give a concentration of 1,000 units per cubic centimeter, and the dosage was adjusted to the size of the cavity. The sensitivity of the infecting organism having been established the initial injection varied between 10,000 and 40,000 units, 20,000 being usual. As treatment proceeded, 10,000 or 5,000 units often sufficed. The authors treated 18 cases. Seventeen of these were infected. In 10 the invading organism was the streptococcus and in 7 the pneumococcus. In 1 patient with sterile traumatic hemothorax treatment with penicillin prevented infection. The infected cases treated with penicillin show that, provided the infecting organism is susceptible, an empyema cavity can be sterilized by repeated aspiration of the pus and injection of penicillin and the toxic condition is thereby relieved. It is too early to assess the final results of the treatment since further improvement is expected in some cases, while symptoms may yet develop in others arising from pulmonary fibrosis. The period required for final sterilization is unpredictable since some cases showed recurrence after eight to ten days of continuous treatment, whereas some remained sterile after only five days treatment. After sterilization there was the tendency for sterile pus to be formed in which minute gram positive cocci persisted. It seems possible that these organisms although dead, may remain pyogenic. The source of these organisms and of normal cocci in cases of recurrence is probably to be found in the masses of fibrinous exudate lining the walls of the cavity, the removal of which might be expected to hasten sterilization and limit the formation of pus. To accomplish the removal of this exudate some recommend irrigation of the cavity with sterile saline solution before injecting penicillin, while others advise rib resection and removal of the fibrinous masses lining the cavity as soon as the infection is under control and the patient fit for the operation. There is little hope of avoiding a thickened pleura and rigid chest wall without removal of the fibrinous masses.

2 201-232 (Aug 12) 1944

- Nutritional Status of Cambridge School Children J Yudkin—p 201
- Nutrition and Scholastic Attainment I F MacKenzie—p 203
- Koilonychia and Its Recovery in Cases of Thyrotoxicosis Lorna Cooke and Stella M Lutz—p 207
- Histologic Effect of Injection of Mepacrine (Atabrine) Dihydrochloride F Hawking—p 209
- Sterilization of Skin by Colorless Flavine (o Amino-Acridine) V Bonney and H S Allen—p 210
- Pituitary Cachexia Treated with Corticotrophic Hormone R E Hemphill and M Reiss—p 211

**Pituitary Cachexia Treated with Corticotrophic Hormone**—Hemphill and Reiss describe the case of a woman whose menses ceased abruptly at the age of 39 without subjective menopausal disturbances. She became depressed, lost

appetite and imagined that her viscera were deranged and the bowels 'stopped up', she attempted suicide. She was thin, weak, and frail looking. The skin was extremely dry. The hair of the head was brittle and lusterless, that of the pubis and axillas scanty, muscle bulk was reduced. There was no assayable output of gonadotropic, corticotrophic or thyrotrophic hormones in the total urine of ninety-six hours, the output of 17 ketosteroids was only 2.6 mg in twenty-four hours. Forty sudanophobic units of corticotrophic units were administered daily for twenty-four days. There was immediate improvement. Two months later a further course of daily injections of 25 units was given for fourteen days. This treatment resulted in complete restoration of weight and cosmetic features. This was not a case of anorexia nervosa. The psychotic depression was not relieved until a considerable time after physical improvement was complete. It is now two years since hormone treatment has been given, but the improvement has been maintained.

## Edinburgh Medical Journal

51 209-256 (May) 1944

- Controversy on Contagiousness versus Noncontagiousness of Leprosy with Particular Reference to Dr W Munro's Contributions Published in Edinburgh Medical Journal E D W Greig—p 209
- Some Problems of Communal Feeding C P Stewart—p 215
- Abdominal Pain in Pregnancy E C Fahmy—p 229
- Biochemical Classification of Coliform Bacilli in Sputum R Salm—p 247

51 257-304 (June) 1944

- War Wounds of Abdomen Report of 64 Cases Treated by Laparotomy A G R Lowdon—p 257
- \*Propylene Glycol Vapor as Air Disinfectant I S W Challinor and J P Duguid—p 280
- Experimental Cancer Research J F Riley—p 290

**Propylene Glycol Vapor as Air Disinfectant**—Challinor and Duguid investigated the efficiency of propylene glycol vapor as an air disinfectant (a) in air continuously infected by atomization of suspensions of *Bacillus prodigiosus* and (b) in a crowded room with its natural largely dust borne, air infection. The effect of single vaporizations of the glycol was found to be transient. Reduction of air infection could be maintained by continuous vaporization of the glycol or by single vaporizations repeated at short intervals of about ten minutes. Vaporization at the rate of 1 cc of glycol per million cubic centimeters of air per hour produced a considerable reduction (about 85 per cent) in the naturally present air infection of a crowded room during the period of vaporization, perceptible mist formation, which might be found objectionable in practice, occurred at this dosage rate. Vaporization at lower rates did not result in mist formation but produced only small reductions in the air infection.

## Lancet, London

2 197-230 (Aug 12) 1944

- Major Complications of Penetrating Wounds of Chest A L D'Abreu J W Litchfield and C J Hodson—p 197
- Primary Tuberculous Infection in Nurses Manifestations and Prognosis M Daniels—p 201
- Processing of Plasma with Kaolin M Marzels—p 205
- Crush Kidney Syndrome in Cat M Grace Eggleton—p 208
- \*Treatment of Typhus with Anti Typhus Horse Serum M Wolman—p 210

**Treatment of Typhus with Anti-Typhus Horse Serum**—According to Wolman typhus in Addis Ababa is louse borne. Epidemiologic, immunologic and clinical studies have shown that it is epidemic typhus identical with the European disease. The mortality varies from year to year and from month to month. The observations reported in this paper extended over a period of eighteen months and covered two major epidemics. The patients were mostly Ethiopians. All patients admitted with symptoms of typhus were given a special chart with a serial number. Venous blood taken on the day the provisional diagnosis was made, was sent to the Medical Services Laboratory for Weil-Felix and Weigl tests. Patients with even numbers were given symptomatic treatment only. Patients with uneven numbers were given the same symptomatic treatment, plus serum. The total number of patients was 440. For the

preparation of the serum the Ethiopian army lent 2 horses living rickettsias contained in the intestines of lice, prepared for Weigl vaccine, were injected into the horses, usually every five to six days, in doses increasing over a period of two and one half months. The horses were then bled twice (five and ten days after the last injection). In each subsequent month a further series of injections was given (ordinarily 250, 375 and 500 louse intestines) followed by two further bleedings. The blood was collected in large sterile bottles one-tenth full of 5 per cent sodium citrate, and after two or three days the supernatant serum was siphoned off and enclosed in rubber capped bottles, with merthiolate or phenol as a preservative. The dosage of serum was 20 cc subcutaneously twice on the first day and once on three succeeding days. The mortality of the treated group was 3.6 per cent, compared with 10.9 per cent in the controls. The serum seemed to shorten the illness and reduce the incidence of psychotic symptoms. Its influence was greater when given early in the illness.

### Medical Journal of Australia, Sydney

2 49-76 (July 15) 1944

- \*March Hemoglobinuria. Description of Features of This Condition and Report of Case. Lucy M. Bryce—p. 49  
Some Observations on Tuberculosis Control. H. Roche.—p. 52  
Experiment on Complete Transformation of Scrotum into Marsupial Pouch in *Trichosurus Vulpecula*. A. Bolliger.—p. 56

2 77-100 (July 22) 1944

- Sporadic Occurrence of Influenza in Victoria During 1943. W. I. B. Beveridge and S. E. Williams.—p. 77  
Modern Management of Prostatic Obstruction. R. J. Silvertown.—p. 80  
Precipitin Agglutination. Indole and Methyl Red Reaction of Dysentery Bacilli. F. Draper.—p. 84

**March Hemoglobinuria**—This is a condition in which physical exertion, usually in the form of marching, is followed by the passage of red or dark colored urine. The author lists the following salient features of march hemoglobinuria: 1. It occurs in young males, usually in the second or third decade. 2. It is related to exercise in the upright position. 3. Constitutional symptoms are absent or mild. 4. The course is benign. The condition appears to have no permanent ill effects, and it progresses without specific treatment toward ultimate spontaneous recovery, which usually takes place within a period of months or a year or two after the initial attack. Occasionally it is of longer duration. In 1 case periodic attacks occurred for seven years, and in another case attacks occurred intermittently for twenty years. The essential nature of the condition—that is, its relation to exercise in the upright position and the absence of associated physical abnormalities or after-effects, may tend to cause delay in diagnosis. This occurred in the case reported. A corporal who enlisted in the Australian Military Forces at the age of 18 noticed that his urine was "dark" after more than usually strenuous military training exercises, but as he felt otherwise quite well, and as the condition did not persist, he did not report this attack at the time. Several months later another attack occurred, associated this time with some pain in the groins. Eight hours later he reported at the hospital. No abnormalities were detected on physical examination. Three days after his return to camp another attack occurred in which the passage of "dark" urine was associated with pain in the right loin. He was admitted to the hospital, but again no abnormalities could be detected. At several successive hospitalizations numerous tests were made, and finally it was discovered that a march of forty-five minutes' duration was followed by hemoglobinuria. The author points out that the usual program of investigations designed to demonstrate or exclude the more common causes of hematuria or the presence of abnormal pigments in the urine is almost certain to be carried out with the patient at rest. By virtue of this fact a sojourn in a hospital for investigation will actually tend to prevent the occurrence of march hemoglobinuria and so fail to reveal the symptoms of which the patient complains. Unless, therefore, the possibility of march hemoglobinuria, which at least in its severe form is rare, is kept in mind, considerable difficulty and delay may occur in confirming the patient's statements and establishing the diagnosis.

### Revista Chilena de Pediatría, Santiago

15 249-323 (April) 1944 Partial Index

- Medical and Social Problem of Asphyxia of the Newborn. E. Cienfuegos—p. 249  
\*Neurologic Complications of Typhoid. B. Bambach and P. Guerrero—p. 278  
Trichinosis in Children. F. Martinez L. de G.—p. 297  
Pulmonary Atelectasis in Children and Its Relation to Primary Tuberculosis—p. 316

**Neurologic Complications of Typhoid**—Bambach and Guerrero present the histories of 2 children with typhoid who had neuropsychic complications that masked the course of the typhoid. The first child, aged 5, had hemiparesis of the right side, which was probably of central origin. The process was most severe in the lower extremity, and since there was no involvement of the tongue it is assumed that the lesion was located in the upper part of the left Rolandic convolution. The neurologic symptoms completely disappeared, a neurologic examination made fifty-eight days after hospitalization was negative. The diagnosis of typhoid was amply corroborated by a positive Widal reaction and a typical blood picture. The second case concerned a child aged 6 who was hospitalized with an undetermined infectious disease. The symptomatology indicated involvement of the nervous system, but the case remained undiagnosed for a long time. Finally blood culture yielded Eberth's bacillus, and a 1:100 positive Widal reaction was obtained. The authors reviewed 100 cases of typhoid that were observed at their hospital during recent years. Excepting cases with only dulling of the sensorium, there were 15 with neurologic signs. This contrasts with only 1.73 per cent of neurologic involvement in an epidemic in Lyon in 1928-1929 and with only 4 per cent reported from Uruguay. The authors think that this diversity of percentages speaks for differences in the type of epidemic or for regional peculiarities. In the cases reviewed by them the mortality of the cases with neurologic involvement was 23 per cent. The cases which do not have a fatal outcome are usually reversible and have no sequelae.

### Munchener medizinische Wochenschrift, Munich

89 923-946 (Oct 30) 1942 Partial Index

- \*Differential Diagnosis of Icterus Catarrhalis and of Hepatitis Epidemica. I. Varieties of So-Called Icterus Catarrhalis. R. Mancke and W. Siede—p. 923  
Lead Poisoning from Drinking Water. Its Clinical Importance. Public Health Aspects and Prophylaxis. W. Kollath—p. 927  
Etiology and New Causal Lipoid Therapy of Neuroses. R. Bleibrunner—p. 931  
Problem of Combined Treatment with Strophanthin and Glucose. H. Lachmann—p. 935

**Differential Diagnosis of Catarrhal Jaundice and of Epidemic Hepatitis**—Mancke and Siede report their observations in 456 cases of so-called icterus catarrhalis. Three groups are differentiated: 1. The specific icterus catarrhalis, which starts with intestinal symptoms, frequently without any rise of temperature. Alimentary or endogenous intestinal toxins may reach the liver cells by the portal vein or by the intestinal lymph radicles. It is characterized by its deleterious effect on the membrane. Toxic edema of the liver, serous hepatitis combined with destruction of liver cells, may be the result ('forme fruste' of the acute and subacute atrophy of the liver). 2. Capillary cholangitis, which may develop by ascending from the large bile ducts or which may be of hematogenous origin, in the latter case one may have to deal with a cholangitis of excretory type. The injurious agent is bacterial in the majority of these cases. A lesion in the area of the 'intermediary portion' of the bile ducts may occur first. The bile ducts are lined with epithelium and are connected with the intercellular bile capillaries of the liver; 'intermediary portion' is the term used for this first portion of the bile ducts. It deserves special morphologic consideration as a particularly vulnerable area of the bile ducts. An icterus of fine mechanical origin from obstruction in the area which contains the sources of bile may result from the lesions in the aforementioned area. 3. The specific hepatitis. Direct destruction of liver cells may be caused by a hematogenous toxin of liver cells whose chemical structure may be more or less ascertained. Arsphenamine, cinchophen, chloroform and phosphorus may be mentioned. Fatal hepatargy may result from toxic hepatitis induced by mushroom poisoning.

## Book Notices

**The Chemistry and Technology of Food and Food Products** Prepared by a Group of Specialists Under the Editorship of Morris B. Jacobs Ph.D. Senior Chemist Department of Health City of New York Volume I Cloth Price \$10.00 \$19 per set of 2 volumes Pp 902 with 79 illustrations New York Interscience Publishers Inc 1944

This is the first of two volumes devoted primarily to a complete description of the technical aspects of foods, their sources, composition, processing and also the related body physiology. Each chapter has been prepared by a specialist in the field, altogether forty one individuals collaborated in the work with the whole edited by one well versed in the broad subject of food control. Two of the six sections of this treatise on foods comprise volume I. The first deals with fundamental food chemistry and body processes related to foods. The chemical discussion of the basic food constituents is extensive and well done. The physiologic coverage is less complete but this subject may be considered of secondary interest in this book. Use of the term "vitagen," referring to the so called essential fractions of the basic food constituents, is of dubious value. The brief mention of disease conditions resulting from lack of food substances is incomplete. For example, iodized salt is not included as a food source of iodine the preventive of simple goiter.

The second section of this volume presents widely diversified information on every basic type of processed and unprocessed foodstuff as well as beverages and condiments. For each class a historical sketch is given followed by information on growth and production varieties available, chemical composition, methods of preservation, government controls and standards of identity as well as other facts of interest. The numerous tables offer valuable sources of reference data although some of the data so supplied are not the most recently available and in some instances the vitamin values are given in units now considered obsolete. The presentation is strictly scientific throughout with support of frequent references to the literature and inclusion of a bibliography at the end of each chapter. This volume is a combination of textbook on food chemistry and encyclopedia of basic food information. It represents an ambitious undertaking which has gathered together a great deal of information heretofore unrelated for the benefit of science and industry.

**Lippincott's Quick Reference Book for Medicine and Surgery** A Clinical Diagnostic and Therapeutic Digest of General Medicine Surgery and the Specialties Compiled Systematically from Modern Literature By George E. Reiberger A.B. M.D. Twelfth edition Fabrikoid Price \$15 Pp 1460 with 305 illustrations Philadelphia London & Montreal J. B. Lippincott Company 1944

In this edition the sections on gynecology and genitourinary diseases have been entirely rewritten, and the list of drugs has been revised in accordance with the new Pharmacopoeia and National Formulary. The publisher points out that the advances in medicine have been so great that scarcely a page of the book has gone unchanged. Special attention is called however to new material on chemotherapy, shock treatment, burns, deficiency diseases and nutrition. Many new color plates have been added to the present edition of this well known encyclopedia.

**Health Counseling for Girls** By Margaret L. Leonard Ed.D. With a foreword by Ruth Straug Ph.D. Cloth Price \$1.00 Pp 131 New York A. S. Barnes & Company 1944

This is a valuable book for any one who has to interview girls in connection with physical education health education or administrative work (advisers and deans) and for personnel directors in industries employing many women. The book is devoted to an exposition of technique. It starts with a chapter in which are summarized interviews with eight girls presenting different health and personal problems. These interviews are analyzed in terms of approach, interview technique, the use of records and suggested ways of asking questions. The author concludes that allowing for emotional disturbance shyness, suspicion and the like, adolescents, for the most part appear to try sincerely to give honest answers to questions. The second chapter deals with health counseling as part of a total school program. This includes much valuable information as to the

role of the counselor and how it can best be discharged. Chapter III deals with specific health counseling problems, such as loss of weight, absence due to abdominal pain and nausea, return to regular physical education after illness, dental care problems, deafness, health in relation to selecting a college and the lighter school program after a month's absence due to pneumonia nail biting, cardiac patients and stair climbing, skin disorders and so on. Extreme overweight or underweight, menstrual problems, fatigue, posture, faulty elimination, personal fastidiousness, difficulties with school work, boy and girl relationships and getting along with other girls are other topics dealt with. Chapter IV deals with the interrelationship of counseling and group activities among adolescents. In these four brief chapters the topics are dealt with effectively, clearly and briefly but not dogmatically. This should be an excellent reference and handbook for the purposes suggested in its title.

**The Blood Plasma Program** By James A. Phalen M.D. Colonel U.S. Army. Issued by the Office of Medical Information (Under Grant of the Johnson & Johnson Research Foundation) National Research Council Division of Medical Sciences Paper Pp 67 Washington D.C. 1944

**Spontaneous Pneumothorax** By James I. Waring M.D. Issued by the Office of Medical Information (Under Grant of the Johnson & Johnson Research Foundation) National Research Council Division of Medical Sciences Paper Pp 34 with 2 illustrations Washington D.C. 1944

**Antimalarial Drugs General Outline** By Owsel Temkin M.D. and Elizabeth M. Ramsey M.D. Issued by the Office of Medical Information (Under Grants of the Carnegie Corporation and the Johnson & Johnson Research Foundation) National Research Council Division of Medical Sciences Paper Pp 123 with illustrations Washington D.C. 1944

These three mimeographed pamphlets, all issued by the Office of Medical Information of the National Research Council, are brief informative monographs on timely subjects. Of the three under review, the one on "Antimalarial Drugs" is the most extensive, since it includes a bibliography of 237 titles. The publication of these brochures has been made possible by grants from the Johnson and Johnson Research Foundation, and in the case of the publication on 'Antimalarial Drugs,' with the help of the Carnegie Corporation as well. All three publications are useful and authoritative within the limits of the space employed.

**Sex Education in Schools and Youth Organizations** Board of Education Educational Pamphlet No 119 Paper Price 15 cents 6d Pp 22 New York British Information Services London His Majesty's Stationery Office 1943

In Britain, as in the United States, sex education is approached gingerly, with many misgivings false starts, a furtive rather than forthright approach. Every one agrees that it should be done and every one gives a sigh of relief when some one else shows signs of doing it. Lectures conferences pamphlets and books have all been tried in Britain as they have in the United States, and it all comes down to the fundamental question of who is doing the teaching. Given a teacher of appropriate personal qualifications, all goes well, lacking such a teacher, no system and no literature has any effectiveness or validity. In Britain, as in the United States, "it is the general view that sex instruction should be given as a related part of a wider course, especially biology, so that sex and reproduction may be introduced in their proper places without undue emphasis. Many schools, however, are without biology teaching and in others the biology staff are not anxious to give the instruction. In these cases special classes are often necessary." This could have been written with equal validity about the American situation as could this "Invariably parents are relieved to know that the question has been discussed but get foolishly hot and bothered if their wishes are consulted beforehand."

**The Medical Annual A Year Book of Treatment and Practitioner's Index** Str. Henry Tidy K.B.E. M.A. M.D. and A. Rendle Short M.D. B.S. B.Sc. Editors Sixty Second Year 1944 Cloth Price \$7 Pp 404 with illustrations Baltimore Williams & Wilkins Company 1944

This yearbook continues through the war years and constitutes essentially a collection of abstracts largely from British and American publications. There are occasional rare references to the literature of central Europe and these are mostly in relation to subjects concerned in the war.

## Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT HOWEVER REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS BUT THESE WILL BE OMITTED ON REQUEST.

### ADOPTION FROM FAMILIES OF POOR STOCK

To the Editor—About two months ago I delivered a set of twins in the home. They weighed 6 and 6½ pounds (2725 and 2955 Gm.) and were the eighth and ninth babies of this mother. At about 1 month of age they were dehydrated and weighed about 4 pounds (1815 Gm.) each and since they were not well cared for by the mother they were entered in the hospital. The babies are back to normal now and the mother wants some one to adopt them. One of my best friends has asked my advice about adopting them. How to answer him is my problem. The father of the children is in the penitentiary for stealing the oldest son is in the county jail for the same offense. The mother is ignorant. The other children look and act well. The family is at the lowest economic level. What are the chances for these babies to inherit the traits of their father and brother?

M D Alaboma

ANSWER—While the general opinion is that children do not inherit acquired characteristics, in selecting a child for adoption the average foster parent should feel that the stock of the baby is at least average in order that he may get an even break in setting the environment for the child he takes into his household. It would be decidedly questionable to adopt children with the type of family history given in this case. It is quite evident that they come from less than average stock. The only thing which would change this opinion would be some additional information about the ancestry of this family which might be more favorable.

### FEVER OF UNKNOWN ORIGIN

To the Editor—A man aged 39 was admitted to the hospital because of nine days of remittent high fever of 105 to 99 F daily which did not respond to sulfonamides. The patient had had an occasional nonproductive cough and at the start of his illness had had a transient charleyhorse in his right leg which had not annoyed him since. There were no other symptoms. The patient had not traveled outside of New York City and there was no known contact with illness. The past history was entirely normal. On admission the patient appeared acutely ill and was shivering. Physical examination was entirely normal. The urine was normal. The blood count showed 11,000 white cells with 74 per cent polymorphonuclear cells, 4 per cent monocytes and 22 per cent lymphocytes. Of twelve blood cultures nine were sterile and three showed *Streptococcus viridans*. On one occasion blood agglutinations showed typhoid positive 1/80 paratyphoid A and B each positive 1/160. A smear for malaria was negative. The temperature curve by days was 105 98.6 102 98.6 100 F and normal thereafter. Spinal fluid examination was normal as was an electrocardiogram and a chest plate. The stools showed no ova or parasites. What significance is attributable to the repeatedly positive culture for *Streptococcus viridans* in the absence of any other evidence for bacterial endocarditis? What type of treatment and follow up are indicated? Can you suggest a diagnosis?

M D New York

ANSWER—Cases like the one described in which diagnosis cannot be made are not uncommon. It must be expected that not every case can be diagnosed. There are, no doubt, still some infections whose cause is unknown and in other instances well known infections may occur without telltale evidence by which diagnosis may be made.

Data given in the case in question are incomplete. At what season of the year did it occur? What was the sedimentation rate of the erythrocytes? What was the nature of the "charleyhorse"? Charleyhorse in Gould's Medical Dictionary is described as a rupture or strain of muscle or tendon fibers generally resulting from athletic efforts. If the patient had this condition, the local injury and hemorrhage into the tissue myositis, phlebitis or cellulitis may have served as the source of the trouble which could begin with a chill, last nine days with remittent fever and not be influenced by sulfonamide therapy. On the other hand, the charleyhorse may have been mistaken for a small embolus, phlebitis or other condition.

The significance of *Streptococcus viridans* in the blood on several occasions is uncertain. This ubiquitous coccus may appear transiently and apparently harmlessly in the blood stream in many febrile diseases and its presence has caused confusion in mistaking it for the cause rather than as a commensal. On the other hand, the attack described may be the first evidence of subacute bacterial endocarditis. If the patient remains well, no treatment is necessary. The patient should nevertheless be examined at intervals of several weeks for any abnormalities especially for fever and evidence of cardiac valvular injury.

To suggest further diagnoses would be guesswork but hidden, symptomless abscess (renal, perirenal, prostatic) may be mentioned.

### PANCREATIC EXTRACTS FOR PERIPHERAL VASCULAR DISEASE AND ARTERIOSCLEROSIS

To the Editor—Of what use are pancreatic extracts in the treatment of peripheral vascular disease and arteriosclerosis? I am familiar with Dragstedt's experimental use of lipocain in arteriosclerosis and have read the discussion of Wolffe's Desympatone. The Journal Oct 26 1940 (p 1454) which is not very conclusive. Have there been any good clinical studies of the effect of a fat mobilizing pancreatic extract in these conditions? Is a reliable preparation of this sort available for clinical use?

Elaine M Thomas M D Chicago

ANSWER—There have been several clinical studies of the use of pancreatic tissue extract (insulin, histamine and choline free) in peripheral vascular disease. Whatever beneficial effects have been obtained with these extracts have been attributed by the users not to a fat mobilizing enzyme but to a vasodilating substance titrated according to its ability to neutralize the effects of epinephrine. It is understood that this vasodilating substance is not peculiar to pancreas but is found in several other tissue extracts.

Klein, Saland and Zurrow (Pancreatic Tissue Extract [Insulin Free] in the Treatment of Peripheral Vascular Disease, *Ann Int Med* 18 214 [Feb] 1943) found that tissue extract injected intramuscularly in 3 cc doses twice a week for relatively long periods (six to eighteen months) produced improvement in claudication time and rest pain but had no effect on existing tissue changes. They could not confirm the observations of Fisher, Duryea and Wright (Deproteinized Pancreatic Extract [Depropanex] *Am Heart J* 18 425 [Oct] 1939) that pancreatic tissue extract produced an immediate improvement in claudication time. Gorham and Climenko (The Role of Insulin Free, Histamine Free Pancreatic Tissue Extract in the Treatment of Peripheral Vascular Disease, *Am Heart J* 25 486 [April] 1943), using the same type of pancreatic tissue extract, found it to have a beneficial symptomatic effect on nearly all patients with peripheral vascular disease when vasospasm was a prominent feature. In their series, patients obtained relief for periods of one to six months with administration at intervals of two to seven days. The pancreatic tissue extracts used in these studies included Depropanex (Sharp and Dohme) Tissue Extract No 568 (Sharp and Dohme) and Pancreatic Hormone (Grant).

There have been no extensive clinical studies made of the effect of fat mobilizing pancreatic substances on arteriosclerosis and peripheral vascular diseases. Choline and lipocain have thus far been studied chiefly in their effects on experimental animals. The standardization of lipocain is difficult. Its use in a single case of xanthoma tuberosum (Rosenak B D *Ann Int Med* 19 514 [Sept] 1943) was reported to have been without effect on the lesions or plasma lipids. However, in following the implications of this question we presume to possess a greater knowledge of the pathogenesis and course of arteriosclerosis than is the case at present. It is not at all certain that arteriosclerosis is dependent primarily on a hyperlipemia, although Leary (*Arch Path* 32 507 [Oct] 1941) has offered an interesting series of demonstrations to show that cholesterol esters are deposited in the subendothelium of the aorta by wandering tissue cells and the arteriosclerotic process thus initiated. Others believe that the accumulation of lipids in an artery is secondary to medial injury. Furthermore, Leary differentiates between atheroma formation in the subendothelium, which he states is a reversible process, and atherosclerosis, which is a permanent chronic process due to prolonged stay of cholesterol esters in the intima. He believes the latter responsible for most of the important lesions listed under arteriosclerosis. The ability to remove atheromas, according to Leary, is chiefly a cellular function being performed by fixed cells, "lipolytic fibroblasts," and this ability disappears gradually with age and other factors. However even if it is assumed that these demonstrations open an avenue of therapy, it is difficult to see how proper clinical evaluation of any chemical agent can be made on the basis of its ability to mobilize fat from the blood vessels since atherosclerotic changes cannot be detected by x-ray examination and most workers agree that there is no fixed relationship between blood lipid levels and arteriosclerosis.

### ACETARSONE FOR SYPHILIS

To the Editor—What is the consensus concerning the use of acetarsone (stovorsol) in the treatment of prenatal syphilis? I am particularly interested in the results of experiments in the use of acetarsone and the treatment of syphilis in adults whose veins are so small as to make intravenous treatment impossible. Cecil A Z Sharp M D Joliet Ill

ANSWER—Acetarsone is not suitable for the treatment of syphilis in adults, whether orally or by any parenteral route. The drug produces a high incidence of serious toxic reactions and cannot be recommended.



## SHOCKLIKE STATE AFTER PNEUMONIA

To the Editor—A man with an extensive right lower lobe pneumonia probably pneumococcal did not respond to sulfadiazine therapy in forty-eight hours and was given penicillin. On the fifth day of his illness his temperature began to drop and within twenty-four hours it dropped to 97 F. With this drop in temperature his pulse became rapid and thready, his color was ashen gray and his respirations were rapid and shallow. The blood pressure was 100 systolic and 88 diastolic. There was no pulmonary edema. There was no evidence of congestive heart failure. The heart sounds were of fair quality. I would appreciate the following information: 1 What is the probable mechanism of this reaction? 2 Are hemoconcentration, diminished circulating blood volume, capillary stasis and arteriolar spasm present? 3 What form of therapy is indicated to combat this emergency? 4 Are epinephrine, nikethamide and caffeine with sodium benzoate of value or are they contraindicated? 5 Are plasma, blood transfusion and parenteral fluids of value?

Captain M. C. A. U. S.

ANSWER—The type of alarming reaction described, for some unknown reason, seems to occur more commonly after the bacterial pneumonias which complicate influenza as in the pandemic of 1918-1919 than after typical pneumococcal pneumonia. It also occurs after viral pneumonia, influenza typhus and other acute infections. Its occasional occurrence during the crisis of pneumococcal pneumonia gave rise many years ago to the undue apprehension which still attends that phenomenon. It may occur at any time during the course of the disease.

The replies to the questions are as follows:

1 The mechanism of the reaction is poorly understood but the condition is evidently related to shock or the shocklike state. Whether it is the result of a general "let down" asthenia or exhaustion after a severe disease or the exhaustion failure or disturbance of a specific center or system such as the respiratory center (Cole R. I. in Nelson's Loose Leaf Living Medicine 1 203 1920-1928 Reimann, H. A. The Pneumonias Philadelphia W. B. Saunders Company, 1938 p. 59) or of vasomotor paralysis and failure of the circulatory system (Cecil R. L. *Arch Int Med* 41 295 [March] 1928 Perry C. B. *Quart J Med* 3 273 [April] 1934 Reimann The Pneumonias p. 68) is unknown. When it coincides with the crisis it may result from an inability of the particular system involved to readjust itself quickly to the suddenly changed condition arising between illness and recovery. Some (Warfield L. M. *THE JOURNAL* March 14 1936 p. 892) have ascribed the cause to toxins of the causative agents or to toxins resulting from their interaction with the tissues of the host. There is much to suggest a disturbance of the nervous system as an important factor. In the case described signs of failure of the respiratory center seem to predominate over those of circulatory failure. See also Heffron R. *Pneumonia* New York Commonwealth Fund 1939, page 545 for further discussion and references.

2 Hemoconcentration, diminished circulatory blood volume, capillary stasis and arteriolar spasm probably are present as in the other shocklike states but the writer is unaware of any particular studies being made of the condition occurring specifically during the crisis of infectious disease.

3 The usual measures prescribed for the treatment of shock are indicated (see Warfield *loc cit*).

4 The commonly used drugs mentioned have little or no value.

5 Parenteral injection of fluid, particularly of plasma is usually advocated but the problem of getting the fluid to move in the circulatory system seems to be of more importance than of simple replacement.

## INTRAVENOUS ADMINISTRATION OF SALICYLATES —ACTION OF COLCHICINE

To the Editor—Because of the local widespread use of intravenous sodium salicylate and the inconvenience caused both patient and doctor thereby could you please tell me if the intravenous use has any advantage over the oral use in patients who tolerate the drug well by mouth? As a second question I should like to ask of what particular value in cases of arthritis neuralgia or myalgia where gout is no factor would the intravenous preparation of sodium salicylate 1 Gm. and sodium iodide 1 Gm. with colchicine 0.65 mg. have over the administration of these substances by mouth? As a third question Has colchicine any rationale in the treatment of any other disease than true gout?

E. W. Soward M.D. Hanford Wash.

ANSWER—Oral administration of the ordinary doses of sodium salicylate relieves the symptoms of rheumatic fever promptly and completely, unless vomiting sets in before a sufficient amount has been absorbed. If the drug is tolerated there would be no advantage in intravenous administration and there would be the disadvantage of inconvenience and also some danger of colloidoclastic shock if the injection is made with ordinary speed as shown by Hanzlik, De Eds and Tauffer (*Arch Int Med* 36 447 [Oct] 1925).

However a new slant has been given to intravenous salicylate medication by A. F. Coburn (*Bull Johns Hopkins Hosp* 73 435

[Dec.] 1943). He conceives the salicylate action as an interference with the inflammatory process which produces the cardiovascular injury, especially in the polycyclic recurrences of children and young adults. This antiphlogistic salicylate effect is reflected in the return of the blood sedimentation rate. It is perhaps explainable by the prevention of the precipitation of antigen by antibody, which has been demonstrated in the test tube. It is proportional to the salicylate level of the plasma. Coburn reports that plasma concentrations of 10 to 20 mg. per hundred cubic centimeters, which are obtained by the customary dosage and which relieve the symptoms satisfactorily, do not control the inflammatory process sufficiently to obviate the cardiovascular injury and that this requires plasma levels of at least 35 mg. per hundred cubic centimeters which can be attained by daily administration of 10 Gm. of sodium salicylate. This may be done by oral administration, but it can be accomplished much more promptly by intravenous drip and according to Coburn with less nausea and other salicylism. He advises 10 Gm. of sodium salicylate in 1000 cc. of 0.9 per cent sodium chloride solution by intravenous drip during four to six hours daily for six days (in severe cases, 20 Gm. in 1000 cc. in eight hours), then 10 Gm. by mouth daily in divided doses for two weeks or more until a normal sedimentation rate has persisted for a week. This is very different from casual intravenous injections. It is a subject for controlled study, not for perfunctory routine use. Coburn's results are promising, but he concedes that the series is too small to discount the variable course of rheumatic fever.

Intravenous administration always involves some elements of risk and should be chosen only if the indications are clearcut, the advantages definite and the dangers minimal. Mixtures rarely fulfil these requirements; there is no therapeutic advantage in the intravenous injection of a salicylate-iodide colchicine mixture and it would be difficult to defend such practice in case of untoward reactions.

The action of colchicine in gout is unique and has not been adequately explained. It is effective only with doses that verge on the toxic. It has not been shown to be effective in other conditions and such use is inadvisable especially in view of its toxicity.

## FUNGUS INFECTION OF NOSE

To the Editor—A white man aged 30 has had a chronic vasomotor rhinitis for the past five years. Skin tests for possible allergy revealed a 3 plus reaction to dust and a 1 plus reaction to chocolate, rice, pear, cherry, cinnamon, grosses and rosgweed. Allergic management failed to give relief. Following chemical cauterization seven months ago of the right inferior turbinate there was a severe aggravation of the symptoms. X-ray examinations of the sinuses were negative on three occasions but clinically during the winter the patient has had sinusitis. Nasal smears on three occasions were negative for eosinophils but did reveal rather numerous yeast cells (2 to 3 per field). Cultures to identify the yeast organisms were unsuccessful on three occasions because of contamination with air-borne molds. Owing to the character of the mucous secretion (thick white sticky) one is led to believe that this finding of yeast cells is of some significance. Will you kindly discuss the problem of nasal fungus infection and its management?

L. M. D. Illinois

ANSWER—Castellani says that yeastlike and other fungi are often observed in the nasal mucus, they may play only a saprophytic role or they may give rise to an inflammation of the mucosa.

True yeast infection of the nasal mucosa and sinuses must be rare in this country at least. Its occurrence is not mentioned in a single one of a dozen well known textbooks on rhinology.

All observers are agreed that the commonest pathogenic fungi to be seen in the nose belong to the *Aspergillus* family. Practically all observers are agreed also that the symptoms of fungous infection of the nose closely resemble those seen in allergic rhinitis. Especially are the bouts of sneezing emphasized.

The yeast cells described in the query because they appeared after chemical cauterization of the nasal mucosa, may not be playing a pathogenic role but might be saprophytic in nature. Granting for sake of argument that they are truly disease causing the treatment which is far from being well defined will vary depending on whether the nasal mucosa alone or the accessory nasal sinuses (particularly the maxillary) are involved.

If the nasal mucosa alone is involved, iodine appears to be a favorite remedy. Lugol's solution may be given by mouth in increasing doses so also may potassium or sodium iodide be given in the conventional amounts. There seems to be little said or done about the use of antiseptics or other medicaments locally in the nose.

When the disease is present in the sinuses (most often the maxillary) failure to respond to the usual irrigations should be according to most authorities good reason for removing the diseased mucosa operatively preferably by way of a Caldwell-Luc procedure.



# The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL 126, No 12

CHICAGO, ILLINOIS  
COPYRIGHT, 1944 BY AMERICAN MEDICAL ASSOCIATION

NOVEMBER 18, 1944

## PERLÈCHE ITS NOSOLOGIC STATUS

CHAIRMAN'S ADDRESS

CLARK W FINNERUD, M D  
CHICAGO

The term *perleche*, until recently employed solely in the vocabulary of dermatology, has assumed popular proportions, it now being used rather freely by general physicians, pediatricians, internists, dentists and other practitioners. Likewise, equally or more popular, since the work of Sebrell and Butler,<sup>1</sup> followed by others, has become the diagnosis *ariboflavinosis* and *cheilosis*, the latter term having been coined by the original investigators to denote the commissural and other lip manifestations of that disease. Most writers, in describing the changes at the angles of the mouth in vitamin B complex deficiency, have captioned it "*perleche*," though some have referred to it as "*perleche-like*," involvement. Who of us has not seen many a patient of late who has been treated unsuccessfully by his pediatrician or general physician or dentist for fissuring of the oral commissures by administration of riboflavin, the treatment having been prescribed in the absence of other signs of vitamin deficiency? While it is true that in relatively subclinical states of hypovitaminosis the findings may be limited to fissuring or even milder involvement of the oral commissures in the vast majority of patients with vitamin B complex deficiency other signs of such deficiency are demonstrable. Aside from the point, I have been amazed, in view of the reported frequency of *ariboflavinosis* in certain localities, especially in the South, how rarely I have encountered classic manifestations of the disorder as described by Sebrell and Butler, followed by many others, in this locality. Personal communications with members of the Department of Dermatology of the Mayo Clinic and with many others have disclosed the fact that their experience is similar to mine. My object in this communication, as the title implies, is to determine the nosologic position of *perleche*, a fissuring inflammation of the oral commissures, which has, since its original description and naming in 1885 by Lemaistre,<sup>2</sup> been considered a disease entity.

### SYMPTOMATOLOGY

*Perleche* manifestations are now so well recognized that they scarcely warrant review. They are essentially the same in children and adults, irrespective of

etiologic factors. Symptoms often associated with *perleche* will be mentioned later.

Lemaistre gave this clinical picture one of the names prevalent for it in the Limousin dialect, a variant of *pourlecher*, to lick, it having been observed that persons having the disorder frequently moistened the affected areas with the tongue, a symptom which is of some etiologic significance.

The subjective symptoms of *perleche* are mild, usually consisting merely of a feeling of dryness and at times a slight burning sensation. Deep, infected fissures may be painful and though rarely encountered, occur chiefly in *perleche* of adults.

Objectively, one sees the epithelium of one or both labial commissures early to be mother-of-pearl colored, somewhat macerated, either adherent or easily detached, and wrinkled, later the wrinkles becoming deeper, often forming usually one, sometimes multiple transverse fissures with red bases, these fissures being with little if any tendency to bleed. The involvement usually stops rather abruptly just within the mucocutaneous junction of the commissure but extends as a localized erythematous scaling dermatitis, usually with fissuring, from a few millimeters to as much as 2 or more centimeters outward and downward from the mouth angle onto the skin. Inflammatory changes may extend from the commissures toward the middle of the lips for a centimeter or more, involving chiefly the lower lip. Untreated, the lesions in all types of *perleche* have a tendency toward spontaneous remission and exacerbation, but they rarely disappear completely.

### ETIOLOGY

There has always remained speculation as to the cause of *perleche*, especially the *perleche* of children. The final word with regard to all phases of its etiology cannot be stated at this time. It was long considered a disease entity of streptococcal origin. In Lemaistre's series of 300 patients, mostly children, he demonstrated what he termed *Streptococcus plicatilis* in many of them. Colcott Fox, Sabouraud, Cole and Jadassohn,<sup>3</sup> J. E. Lane,<sup>4</sup> W. L. Smith<sup>5</sup> and others also considered it of streptococcal origin on the basis of their bacteriologic studies. In Smith's instance an anaerobic streptococcus was isolated in pure culture in 135 out of 223 cases. There is no reason for doubting their findings. On the other hand, Raymond,<sup>6</sup> Planche<sup>7</sup> and others, as the result of their studies attributed the disorder to staphy-

Read before the Section on Dermatology and Syphilology at the Ninety Fourth Annual Session of the American Medical Association Chicago June 14, 1944.

1 Sebrell W H and Butler R E. Riboflavin Deficiency in Man. A Preliminary Note. Pub Health Rep 53: 2282-1938 54: 2121 1939  
2 Lemaistre J. Etude sur l'air de la ville de Lemoges de la perleche du streptococcus plicatilis. J Soc de med et pharm de la Haute Vienne 10: 41 1886

3 Cole Harold N. Bakteriologische histologische und experimentelle Beitrage zur Kenntnis der Ekzeme und der Psoriasis. Arch f Dermat u Syph 116: 207-242 1913

4 Lane J E. Perleche. J Cutan Dis 35: 413 1917

5 Smith W L. Perleche. Its Bacteriology Symptoms and Treatment in 223 Cases. Arch Pediat 34: 274 1917

6 Raymond Paul. Etude clinique et bacteriologique sur la perleche. Ann de Dermat et Syph 24: 578-584 1893

7 Planche R. La perleche. Thesis Paris no 246 1897

lococci, chiefly *Staphylococcus cereus*. In 1929 I<sup>8</sup> reported a study of over 100 children with perleche, all from the same institution, in 77 per cent of whom fungi imperfecti, *Monilia* chiefly, were isolated from the lesions, with cultures of which the disease was reproduced in children from the same institution, children who presented grossly normal oral commissures, and the organisms were recovered in pure culture from the experimentally produced lesions. Similar findings have been recorded, chiefly in adults, by Robinson and Moss,<sup>9</sup> Skolnik,<sup>10</sup> Freund,<sup>11</sup> Frank,<sup>12</sup> McLeod,<sup>13</sup> and a number of other investigators.

#### MALOCCLUSION PERLECHE

We have all of us all too frequently encountered treatment resistant chronic fissuring of the labial commissures, especially in elderly persons the majority of whom have false teeth. These cases include those instances primarily of mechanical origin, not only those resulting from malocclusion caused by ill fitting dentures but also those resulting from the sagging of tissues of elderly persons. Freund mentions among predisposing factors in addition to general lowering of resistance, salivation induced by dentures.

Under the title Pseudo Ariboflavinosis Ellenberg and Pollack<sup>14</sup> carefully studied a group of 34 patients with what they termed perleche, all except 1 of whom were aged from 40 to 72 years, some of them having an associated glossitis, none of whom had other signs of avitaminosis and none of whom responded to intensive riboflavin and other vitamin therapy. Thirty-two of the 34 patients had upper and lower artificial ill fitting dentures which resulted in a mechanical defect. Their other 2 patients with perleche, who did not have false teeth, had mechanical defects to explain the lesions, one a woman aged 26, who presented malocclusion, and the other an edentulous man aged 72, whose upper lip sagged so as to overlap the lower. They were able to demonstrate that the lesions in their cases were not due to specific allergy to the components of the dentures or to the presence of impurities in "undercured" vulcanite plates but definitely resulted from improper oral mechanics and in particular from an improper too short vertical dimension. As a result of the vertical dimension being too small, overclosure results, the upper lip overlapping the lower, thus producing creases at the corners of the mouth and sagging. They concluded that thus a pocket formation occurs at the lateral angles of the lips, a receptacle for saliva which becomes a medium for fungous growth, and that these fungi are a factor in the production of the cutaneous lesion of perleche. Swenson<sup>1</sup> also accomplished eradication of perleche associated with malocclusion by increasing the vertical

dimension. Usually perleche lesions do not appear until after dentures have been worn for as much as several years, during which time bone resorption is known to take place. The mechanical defect, causing a shortened vertical dimension with overclosure, has been concluded by several observers to result most often from ill fitting dentures, treatment for which consists of correction of the malocclusion.

Nippert and McGinty,<sup>16</sup> under the title of Riboflavin Deficiency versus Perleche, described intertrigo of the labial commissures of adults as resulting most frequently from a narrowed bite, either because the natural teeth have been worn down or because of improperly fitting artificial dentures. They observed that the narrowed bite produces an additional fold at the labial commissures and that the skin in this area then, because of constant moisture from saliva, becomes macerated, fissured and infected.

#### VITAMIN DEFICIENCY PERLECHE

The renowned experimental work of Sebrell and Butler proved conclusively that symptoms, among others identical to those long recognized as those of perleche often result in human subjects from riboflavin deficiency, manifestations formerly described as pellagra sine pellagra. The lesions in their cases "began as a pallor of the mucosa of the lip in the angles of the mouth without involvement of the buccal mucosa. This pallor was soon followed by maceration, and within a few days superficial transverse fissures appeared, usually bilateral and exactly in the angles of the mouth. These fissures extended somewhat downward from the angle and there was very little inflammatory reaction. The lesions remained moist and became covered with a honey colored crust which could be scraped off without bleeding. In some instances the fissures extended onto the skin for a distance of as much as 1/2 inch. The lesions resemble those described as perleche. At about the time the fissures were seen, the lips became abnormally red along the lines of closure. This was apparently due to a superficial denudation of the mucosa. In some cases, in addition to what was termed cheilosis, there was also seen a fine, scaly, slightly greasy desquamation on a mildly erythematous base in the nasolabial folds, on the alae nasi, in the vestibule of the nose and on the ears."

The cheilosis and other symptoms were identical with those experimentally produced by Goldberger, Wheeler and Tanner<sup>17</sup> and by Wheeler<sup>18</sup> and to those naturally occurring as described by Stannus<sup>19</sup> as angular stomatitis, by Wright<sup>20</sup> in Sierra Leone, responding to cod liver oil and yeast, by Fitzgerald<sup>21</sup> in Assam prison, by Moore<sup>22</sup> in 1934 in school children in Nigeria, by Landor and Pallister<sup>23</sup> in the prisons of

8 Finnerud C W Perleche A Clinical and Etiologic Study of 100 Cases Arch Dermat & Syph 20 434 (Oct.) 1929

9 Robinson L B and Moss M C Superficial Glossitis and Perleche Due to *Monilia Albicans* Arch Dermat & Syph 25 644 (April) 1932

10 Skolnik E A Perleche of Adults Arch Dermat & Syph 22 642 (Oct.) 1930

11 Freund H Ueber eine klinisch und aetiologisch charakterisierte Form von Perleche bei Erwachsenen Interlabialmukose und ihre symptomatische Bedeutung Arch f Dermat u Syph 164 614 1931

12 Frank L J Perleche in Adults Arch Dermat & Syph 26 451 (Sept.) 1932 abstr. Brit J Dermat 45 374 1933

13 MacLeod J M H Skin Diseases Due to *Monilia* and Other Yeastlike Fungi Brit J Dermat 42 549 1930

14 Ellenberg M and Pollack H Pseudo Ariboflavinosis J A M A 119 790 (July 4) 1942

15 Swenson M C Complete Dentures St Louis C V Mosby Company 1940

16 Nippert P H and McGinty A P Riboflavin Deficiency versus Perleche Differential Diagnosis of Fissuring of Labial Commissures J M A Georgia 32 295 1943 abstr. J A M A 123 793 (Nov 20) 1943

17 Goldberger J Wheeler G A and Tanner W F Yeast in the Treatment of Pellagra and Blacktongue Pub Health Rep 40 627 1925

18 Wheeler G A The Pellagra Preventive Value of Autoclaved Dried Yeast Canned Flaked Haddock and Canned Dried Peas Pub Health Rep 48 67 1933

19 Stannus H S Pellagra in Nyasaland Tr Soc Trop Med & Hyg 5 112 1912

20 Wright E J Polyavitaminosis and Asulphurosis Brit M J 2 707 1936

21 Cited by Sebrell and Butler

22 Landor J A and Pallister R A Avitaminosis B Tr Roy Soc Trop Med & Hyg 29 121 1935

Singapore and Johore as avitaminosis B., by Aylkroyd and Krishnan<sup>23</sup> in school children in southern India as angular stomatitis due to vitamin B<sub>2</sub> deficiency, although in A and K's cases beneficial results were obtained from the use of a yeast preparation treated to destroy flavin

Naturally occurring riboflavin deficiency with lesions identical to those described by Sebrell and Butler has since been commonly observed in children and adults by these authors, by Jolliffe,<sup>24</sup> by Jolliffe, Fein and Rosenblum,<sup>25</sup> by Sydenstricker<sup>26</sup> and by many others, at times in association with a magenta colored fissured tongue. In a study of 241 infants and children aged 5 months to 14 years having characteristic riboflavin deficiency, Spies, Bean, Vilter and Huff<sup>27</sup> concluded that ariboflavinosis is more common in children in the southern part of the United States than any other deficiency syndrome, the manifestations consisting of cheilosis, the reddened macerated areas at the angles of the mouth and the linear lesions, first described as responding to riboflavin by Sebrell and Butler, and the ocular symptoms, characterized by bulbar conjunctivitis, lacrimation, burning of the eyes and failing vision first found to respond to riboflavin by Spies, Vilter and Ashe<sup>28</sup>. Commonly the children were underweight and underdeveloped for their age. Some with advanced lesions of the eyes had no involvement of the mouth angles, and others presented severe involvement of the mouth angles whereas the eye lesions were slight. Bacteriologic study of the fissures of the mouth angles of 93 of the children showed either pure or nearly pure cultures of hemolytic *Staphylococcus aureus* in 80 per cent of the cases, and *Streptococcus hemolyticus* was the predominating organism in the remaining 20 per cent of the cases. Hemolytic strains of *Staphylococcus aureus* were isolated in 14 of 30 cases with conjunctivitis. They found the disease to be noncontagious. Under the simple treatment of 1 mg. of riboflavin three times daily or 1 ounce of brewers' yeast or liver extract daily, the lesions of the mouth angles healed and the ocular manifestations disappeared and it became impossible to demonstrate the presence of the micro-organisms which were present before therapy.

It has been repeatedly demonstrated and stressed by Sebrell and Butler, Spies, Bean and Ashe, Jolliffe and others that vitamin deficiencies are usually multiple. This fact undoubtedly accounts for perleche commonly occurring in pellagra, the Plummer-Vinson syndrome, sprue, beriberi, celiac disease of children, tropical avitaminosis and other diseases. It may also account for the "angulus infectiosus" described, among others, by Reiss<sup>29</sup> in 40 per cent of his vitamin A deficiency cases although he assumed that the lesions were due to the specific effect of avitaminosis A, expressed in

terms of keratinizing metaplasia which prepared a proper soil for the growth of monilias and bacteria.

Perleche manifestations in vitamin deficiency diseases have in rare instances been eradicated by nicotinic acid after failure with riboflavin and in the cases reported by Smith and Martin<sup>30</sup> by administrations of pyridoxine.

#### IDIOPATHIC PERLECHE

In some cases of perleche no etiologic factors can be elicited. Why, unless because of accompanying salivary drooling, or possibly excessive or chemically altered salivary secretion should perleche at times be seen in association with scrotal tongue, with geographic tongue or with macroglossia? Occasional instances of perleche are encountered devoid of concomitant clinical or laboratory findings which in the light of present knowledge must just plainly be considered as of idiopathic origin.

#### PSEUDOPERLECHE

The heading pseudoperleche might well be included to denote the instances of contact dermatitis, neurodermatitis, seborrheic dermatitis, atopic dermatitis, severe "chapping" herpes and so on which, because of their localization being such as to include the region of the oral commissures, and because of the movement in this area by mastication, talking and the like cause a perleche-like fissuring merely instances of the inflammatory skin of the respective disorder being so filled with fluid that it can no longer stretch and therefore breaks, just as occurs elsewhere in inflammatory disorders in anatomic locations subjected to movement. It should be remembered that perleche-like involvement is also seen at times in the rhagades of congenital syphilis and as an extension to this area from mucous patches of syphilis in the mouth. Transitorially, perleche-like involvement may result from the trauma of manipulations incidental to dental therapy.

#### COMMENT

We have learned that this clinical picture apparently can be produced by streptococci and possibly other bacteria by monilias and probably other yeastlike organisms, by ill fitting dentures which are responsible for malocclusion, by the tendency in some elderly persons as their skin becomes more lax, for the upper lip to override the lower especially at the lateral margins, and now we learn that nutritional deficiencies can produce the same clinical picture, with or without signs of such deficiency elsewhere.

All micro-organisms claimed to date as being etiologic of perleche have been repeatedly demonstrated as present in several large series of cases of this fissuring intertrigo of the oral commissures in ariboflavinosis and other hypovitaminotic processes and in mechanical defects resulting from malocclusion from ill fitting dentures and from the sagging tissues of the elderly. On correction of the hypovitaminosis or mechanical defect, the oral commissural fissuring and the organisms completely disappear. The streptococci monilias and other micro-organisms therefore appear to be secondary factors in these types of perleche factors which merely aggravate the process. In time we may learn that the infection present is always a secondary factor. The interesting

23 Aylkroyd W R and Krishnan B C. Stomatitis Due to Vitamin B Deficiency. *Indian J. Med. Res.* 24: 411, 1936. Treatment of Stomatitis Caused by Diet Deficiency. *ibid.* 25: 643, 1938.

24 Jolliffe N. Clinical Aspects of Vitamin B Deficiency. *Minnesota Med.* 23: 542, 1940.

25 Jolliffe N, Fein H D and Rosenblum I A. Riboflavin Deficiency in Man. *New England J. Med.* 221: 921, 1939.

26 Sydenstricker W P. Personal communication to Jolliffe.

27 Spies T D, Bean W B, Vilter R W and Huff N E. Endemic Riboflavin Deficiency in Infants and Children. *Am. J. Hyg.* 200: 697, 1940.

28 Spies T D, Vilter R W and Ashe W F. Pellagra, Beriberi and Riboflavin Deficiency in Human Beings. *J. Biol. Chem.* 113: 931 (Sept. 2), 1939.

29 Reiss F. A Contribution to the Cutaneous Manifestations of Vitamin A Deficiency. *Chinese M. J.* 50: 945, 1916.

30 Smith S G and Martin D W. Use of Vitamin B<sub>2</sub> in the Treatment of Cheilosis. *Proc. Soc. Exper. Biol. & Med.* 43: 660, 1940.

and timely observations of Paul Gross<sup>31</sup> certainly cannot go without mention, he having demonstrated that extensive monilial infections of the skin may respond promptly to liver extract therapy

Although I do not believe all cases of perleche to be primarily on a hypovitaminotic basis noteworthy is the fact that all the children in my study were from a single institution, an orphanage. They were poor children. Most of the epidemics reported since the time of the original description of perleche have occurred in similar institutions or in public schools composed of pupils of the poorer classes. In some instances all members of a single family have been affected. It appears likely to me that eventually these epidemic and endemic outbreaks might prove primarily to be on a nutritional basis, as is true of the prevalence of ariboflavinosis in certain areas of the South. My report fifteen years ago did not take into account the diets of the children in that institution. It occurred before the present era of nutrition mindedness. In a recent attempt, unfortunately I have been unable to obtain accurate information as to the diets administered to the 1,250 children in that institution back in the 1920's. Especially interesting is the fact that 18 per cent of the children in my series of cases presented seborrheic dermatitis-like involvement of the face elsewhere another 5 per cent of them a dermatitis of the alae nasi and nasal orifices and 2 per cent of them a cheilitis which changes were found in many of the children in the institution who did not have perleche.

These facts do tend to suggest that perleche epidemically or endemically occurring might well be the result of malnutrition, any micro-organisms that are found merely being secondary invaders thriving on a soil suitably prepared for them. Whatever applies to my reported group of cases of apparent mycotic origin probably also applies to the numerous groups reported as being of bacterial origin.

It is likely that there is such a thing as perleche which is primarily of bacterial or mycotic origin but this has not been proved beyond doubt. Other systemic and local factors about which at present we know but little undoubtedly operate in the preparation of the soil as a prerequisite to its production. Until now we have been satisfied to consider perleche an inflammatory change at the mouth angles of the infectious origin and let it go at that. The predisposing factors are undoubtedly systemic in nature, not alone avitaminotic but probably also the result of other nutritional and metabolic disturbances, such as might occur from lack of a sufficient supply of amino acids or minerals or from their improper assimilation. Otherwise why do we not see it in all children who habitually drool saliva at the corners of the mouth and all adults who have overhanging upper lips at the lateral margins? It elects its subjects, whether it occurs endemically, epidemically or sporadically.

It can no more be accurately stated why ariboflavinosis, for instance, elects the oral commissures as one of its favorite sites than why psoriasis, lichen planus, dermatitis herpetiformis, erythema multiforme and the

numerous other dermatoses have their sites of predilection. Perleche is no more of a disease entity than is onychia, paronychia, blepharitis or any one of the many disorders of manifold etiology which come to mind, in each instance it being necessary to modify the term by an etiologic descriptive adjective, such as, for example, traumatic, streptococcic or mycotic paronychia.

Any dermatitis is potentially an infectious dermatitis, due to the presence of micro-organisms which normally inhabit the skin and its accessory mucous membrane cavities. Perleche is no exception.

#### SUMMARY AND CONCLUSIONS

Perleche, a maceration with transverse fissuring of the oral commissures, has to date been regarded as a disease entity of infectious origin, some claiming it to be of bacterial etiology, usually streptococcic or staphylococcic some of mycotic origin, usually monilial.

Identical cutaneous changes, with or without associated skin, tongue, scleral and systemic manifestations, have been repeatedly demonstrated, experimentally and naturally occurring, in vitamin deficiency diseases, in ariboflavinosis chiefly, but apparently also in nicotinic acid and pyridoxine deficiencies.

Furthermore, the same fissuring occurs at the mucocutaneous junction of the lips in persons with malocclusion the result of ill fitting dentures and in the aged in whom atrophy of the tissues has caused some overhanging of the upper lip at its lateral margins.

In all instances the cutaneous changes in the vicinity of the mouth angles are practically identical consisting merely of a maceration with transverse fissuring in this area, popularly referred to as "cracks at the corners of the mouth."

Personal observations, together with a study of the literature, indicate that perleche should no longer be regarded as a disease entity but rather merely as a cutaneous symptom occurring in the form of an intertrigo of the labial commissures, analogous to intertrigo elsewhere and of manifold etiology. Because of the necessary movement of this mucocutaneous junction, this localized dermatitis is usually associated with transverse fissuring. It therefore probably becomes proper to speak of as infectious perleche those instances of the disorder which are considered to be primarily of bacterial or mycotic origin, as malocclusion or mechanical perleche those seen in elderly persons and usually resulting from ill fitting dentures, as vitamin deficiency perleche those of hypovitaminotic or avitaminotic origin, and as idiopathic perleche those cases in which no etiologic factors can be determined.

Through respect for the individual who originally described and named this cutaneous change, and in view of the fact that through common usage perleche has long been employed to denote transverse fissuring of the oral commissures, and because of its etiologic meaning and its brevity, it is suggested that the word perleche, taken from the French word *pourlecher*, to lick, rather than interlabial dermatitis, angular stomatitis, oral commissural intertrigo or any of the other terms by which it has been designated be retained as indicative of this symptom.

55 East Washington Street

31 Gross P. Nonpellagrous Eruptions Due to Deficiency of Vitamin B Complex. Arch. Dermat. & Syph. 43: 504 (March) 1941.

AUTOLOGOUS PLASMA CLOT SUTURE  
OF NERVES

ITS USE IN CLINICAL SURGERY

I M TARLOV MD

NEW YORK

The conventional method of repairing severed nerves is by the use of silk sutures, which are introduced ideally through the connective tissue sheath of the nerve. Actually it is very difficult to avoid the inclusion of some nerve fibers in each suture, and these fibers may be strangulated when the threads are tied. This is especially true of small nerves with delicate connective tissue sheaths. A further objection to silk suture of nerves is that, when the threads are tied, there tends to occur some knuckling of fibers with disturbance of the longitudinal organization of nerve fiber pattern at the suture site. The knuckling of nerve fibers is very striking when pronounced retraction of the nerve sheaths has occurred, so that when the sutures are passed through the sheaths (which often do not come back over the bundles) and then tied, the stumps become pressed against one another and a tangle of fibers is apt to result. A third shortcoming of silk suture results from the difficulty in introducing the sutures at exactly corresponding circumferential points along the nerve stumps, which results in some degree of axial rotation when the sutures are tied, leading to malalignment of the groups of sensory and motor fibers in the two stumps. That is to say, motor fibers destined for one group of muscles may innervate another group or grow down sensory pathways into sensory end organs, and sensory fibers from the central stump may innervate motor schwannian tubes. Many of these misdirected fibers would represent a considerable loss from the functional standpoint. These factors then, i.e. the strangulation of nerve fibers with the fibrosis that ensues and the disruption of the normal alignment of nerve fibers at the suture site, together with the misdirection of axis cylinders, are probably important factors, although certainly not the only ones, in accounting for the incomplete recoveries and the failures that not infrequently follow silk suture of the peripheral nerves. Recently fine tantalum wire has been used instead of silk for suturing nerves. Although it is true that less inflammatory and fibrotic reaction occurs with tantalum, the objections raised to the use of silk hold also for tantalum wire or any other type of thread apposition suture.

Young and Medawar<sup>1</sup> recognized the need for an improved technic of nerve suture and conceived the brilliant idea of using clotted plasma instead of silk to unite divided nerves. This technic was in fact used by Seddon and Medawar<sup>2</sup> for the suture of the median nerve at the wrist in a man. I had been working on

the problem of experimental nerve root suture for several years and was well aware of the shortcomings of the silk technic. The experiments of Young and Medawar were repeated,<sup>3</sup> and it was found possible to obtain successful sutures by their method of using fortified cockerel plasma clotted with chick embryo extract. However, microscopic studies following nerve suture with these substances in rabbits demonstrated that not infrequently an appreciable inflammatory and fibrotic reaction occurred. Because such a reaction might hamper the downgrowth of nerve fibers through the suture site, our experiments at this point were directed to the study of other types of plasma clots which would possess sufficient strength for successful suturing and yet not provoke as much tissue reaction as the use of cockerel plasma and chick embryo extract. The tensile strength of various types of plasma clots was studied by a simple method,<sup>4</sup> and it was found<sup>5</sup> that unmodified plasma (plasma prepared without the use of anticoagulants) allowed to clot spontaneously yielded stronger clots than those prepared from plasma to which anticoagulants (heparin, sodium citrate or potassium and ammonium oxalate) were added and later coagulated by the addition of rabbit clotting globulin or extracts from lung or muscle. In other words, the addition of the aforementioned anticoagulants and coagulants to the plasma tended to weaken the clots prepared from it. Moreover, it has been found<sup>3</sup> that the use of autologous plasma resulted in very little inflammatory or fibrotic reaction at the suture site—definitely less than with the use of heterologous plasma and clotting agent. For the purpose of suturing nerves we have therefore used autologous unmodified plasma which is allowed to clot spontaneously. More recent experiments<sup>5</sup> have shown that heparinized plasma coagulated by means of protamine sulfate yields clots which are as strong as those prepared from unmodified plasma and they provoke no significant tissue reaction. The use of heparin-protamine plasma clots offers a practical advantage in that one may avoid certain inconveniences involved in the preparation of unmodified plasma, such as the necessity of drawing the blood in a syringe coated with liquid petrolatum, transferring it into paraffin lined test tubes packed in ice and centrifuging it in metal cups of 100 to 250 cc capacity filled with ice in order to prevent clotting. On the other hand the use of unmodified plasma eliminates the necessity of adding carefully measured small amounts of heparin and protamine sulfate to the blood and plasma respectively and of premixing the two solutions before they are introduced into the mold for nerve suture. We have used unmodified plasma regularly because of its simplicity and have had very little trouble as a result of premature clotting of it. As a further precaution against clotting of the plasma before use, one may chill the syringe used to collect the blood by spraying its outer surface with ethyl chloride or by placing it in the refrigerator for a few hours before it is used. After the test tubes containing the blood are centrifuged for three to five minutes at a speed of approximately 2,500 revolutions per minute they are transferred to pots of approximately 1 pint (500 cc)

From the Neurosurgical Services of the Jewish Hospital of Brooklyn and the Flower Fifth Avenue Hospital, New York.

This work was done under a contract recommended by the Committee on Medical Research between the Office of Scientific Research and Development and the Jewish Hospital of Brooklyn; it was also aided by a grant from the American Medical Association.

Dr L. M. Davidoff gave considerable help in furthering the progress of this work. Major William Antopol, Dr A. S. Wiener and Dr T. I. Hoen offered helpful suggestions. The latex molds and the development of the various special instruments used are the result of collaboration with Mr. Cornelius Denslow and Mr. Saul Swartz. Dr J. A. Moldaver and Dr P. A. Hoefel carried out the chronaxia and electromyographic studies in several of the cases included in this report. These electrical tests were done at the New York Neurological Institute.

<sup>1</sup> Young, J. Z. and Medawar, P. B. Fibrin Suture of Peripheral Nerve. *Lancet* 1: 126, 1940.

<sup>2</sup> Seddon, H. T. and Medawar, P. B. Fibrin Suture of Human Nerves. *Lancet* 2: 87, 1942.

<sup>3</sup> Tarlov, I. M. and Benjamin, B. Autologous Plasma Clot Suture of Nerve. *Science* 95: 258, 1942. Plasma Clot and Silk Suture of Nerves. *Surg. Gynec. & Obst.* 76: 366, 1943.

<sup>4</sup> Tarlov, I. M., Goldfarb, A. I. and Benjamin, B. A Method for Measuring the Tensile Strength and Stretch of Plasma Clots. *J. Lab. & Clin. Med.* 27: 1337, 1942.

<sup>5</sup> Shapiro, A., Tarlov, I. M., Oliver, R., Goldfarb, A. I., Bojar, S., Kaslow, R. and Rockenmaier, M. Plasma Clot Tensile Strength II. The Effect of Some Physical Factors. Anticoagulants and Coagulants. *J. Lab. & Clin. Med.* 29: 282, 1944.

capacity filled with ice. Salt should not be added to the ice, since the plasma may thus be frozen and it has been shown<sup>6</sup> that freezing impairs the strength of the clots prepared from the thawed plasma. Experimental nerve suture has been carried out successfully with clots prepared from dried plasma and from fibrinogen and thrombin.<sup>7</sup> Clots prepared from dried plasma are, however, weaker than those formed from fresh unmodified plasma<sup>6</sup> and they are therefore less desirable for nerve suture. Fibrinogen-thrombin clots are, in contrast to those formed from fresh unmodified plasma practically irretractile, and it is as yet uncertain whether they are as desirable as the latter from the standpoint of the histologic reaction that they provoke when the fibrinogen is added in concentrations sufficient to impart adequate strength to the clots.

The technic of suturing nerves with plasma clot as used by Young and Medawar and also in our early experiments consisted in bringing the nerve ends together with fine forceps, depressing the junction into the fascial and muscle bed so as to form a trough and adding first the plasma and then the clotting agent. One of the most serious objections to this technic lay in the fact that the procedure of holding the nerve ends in apposition at the base of a trough formed by the neighboring tissues permitted the plasma to coat only the upper side of the nerve junction. Furthermore, unless a pool for the plasma could be formed around the suture site, the technic could not be used. Moreover, it proved to be difficult to hold the nerve ends in good apposition without any movement until clotting had occurred, and the junctions formed were often unsatisfactory. It became apparent then that, in order to obtain stronger unions and better apposition of nerve ends and to increase the field of usefulness of the technic, a method would have to be devised whereby the suture site could be completely surrounded by clot while the nerve ends were kept in accurate alignment regardless of the position of the nerve. After a long series of experiments<sup>8</sup> a rubber mold was designed for this purpose (fig 8). The technic of plasma clot suture of peripheral nerves with the use of the mold was found to lead to satisfactory functional recovery only when the nerve ends could be brought together

great. Under conditions of tension following a suggestion made to me by Col R Glen Spurling, fine tantalum wire (0.003 inch in diameter) was employed to overcome the strain and plasma clot then used for accurate coaptation of nerve ends. The tantalum wire tension sutures are introduced mainly through the



Fig 2-4 application of hemostatic forceps (fig 8 J) to nerve stumps for the control of bleeding. The use of the airfoam rubber in the jaws of the instrument prevents damage to the nerve stumps. The grip of the forceps is relaxed gradually every few minutes until bleeding ceases and then the nerve is flooded out of the airfoam with squirts of isotonic solution of three chlorides. B nerve ends in case 2 accurately adjusted on wire rails in latex mold with clips applied. C suture site (marked by arrow) in hypoglossal facial anastomosis (case 4) hardly visible—pronounced retraction of clot had occurred.

epineurium at a distance of about 1 cm from the nerve ends. The technic of combined tantalum wire-plasma clot suture of peripheral nerves<sup>8</sup> has given very good results in animals and the technic was therefore applied in human cases. The results in those individuals in whom sufficient time has elapsed to justify some evaluation of the technic are gratifying and prompt publication of this report. Detailed accounts of the technic of plasma clot suture of nerves have been published elsewhere.<sup>9</sup>

#### REPORT OF CASES

**CASE 1**—The first patient in whom a nerve was sutured by means of autologous plasma clot was a woman aged 43 referred to in a previous report.<sup>8</sup> In brief, the spinal accessory nerve was sutured at a point about 4 cm before its entrance into the sternocleidomastoid muscle. The suture was done about one hour after the nerve had been severed at operation, and complete recovery of function of the sternocleidomastoid muscle occurred five and one-half months later (fig 1).

**CASE 2**—While a man aged 24 was carrying a plate glass, the glass broke cutting the right forearm and wrist. Within an hour the ulnar nerve was said to have been sutured. The patient complained of weakness of his right hand especially of the little finger, and loss of sensation along the inner border of the palm. There had been no change in the condition of his hand for six months. On examination the abnormal findings confined to the right hand were (1) smooth and delicate skin over the palm with two oblique scars in the midportion of the volar surface of the forearm 4 cm above the wrist, (2) well defined atrophy of the interosseal spaces with flattening of the hypothenar and to a less extent of the thenar eminences, (3) inability to extend the little finger fully at the proximal or distal interphalangeal joints (4) inability to abduct or adduct the index, middle, ring or little finger, (5) moderate weakness of flexion at the distal interphalangeal joints of the little and ring fingers (6) moderate weakness of adduction of the thumb

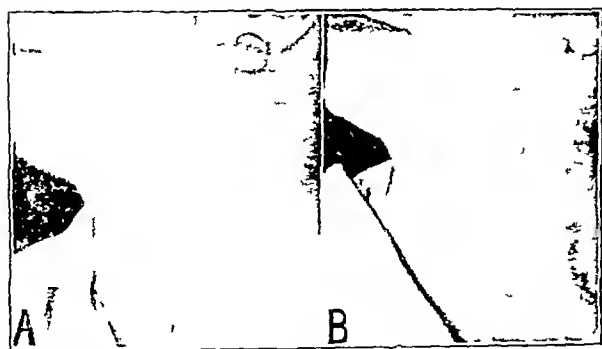


Fig 1 (case 1) — Absence of contraction of sternocleidomastoid muscle is seen in patient soon after operation A but good contraction is apparent five and a half months after operation B.

without appreciable strain at the suture site. When tension did exist at the suture site, the risk of subsequent detachment of the nerve ends was found to be

<sup>6</sup> Wagreich, H., Sobel, A. E., Levine, C., and Tarlov, I. M. Studies on the Strength of Dehydrated Plasma to be published.  
<sup>7</sup> Tarlov, I. M., Denslow, C., Swarz, S., and Pineles, D. Plasma Clot Suture of Nerves. Experimental Technic. Arch Surg 47: 44 (July) 1943.

<sup>8</sup> Tarlov, I. M. Plasma Clot Suture of Nerves. Illustrated Technic. Surgery 15: 257, 1944.

<sup>9</sup> Tarlov, I. M., Denslow, C., Swarz, S., and Pineles, D. Tarlov, I. M.



and (7) loss of appreciation of pin prick and cotton wool and diminution of hot and cold sensation over the little finger and ulnar half of the ring finger and the inner part of the hand, both on the dorsal and on the volar aspects. It was apparent then that the signs and symptoms were the result of a complete severance of the ulnar nerve just above the wrist.

Operation was done fifteen months after the injury. The two bulbous ends of the nerve were firmly adherent to the surrounding tissues and were found to be separated by a gap of 2 cm, occupied by a band of fibrous tissue. The nerve stumps were liberated from the scar tissue and after the main portions of the neuromas were excised thin slices of the nerve ends were trimmed off serially until the funiculi appeared to be of a healthy pink hue without appreciable scar tissue and bleeding freely. The bleeding from the cut ends of the nerve was arrested by means of pieces of crushed muscle which were kept in place for a few minutes and then washed off with isotonic solution of three chlorides. The trimming of the nerve ends was done with the aid of a special nerve holder<sup>8</sup> (fig 8C). Following excision of the neuromas the gap between the cut ends measured 4 cm. The nerve segments were then mobilized for about 6 cm upward and 3 cm downward. After they were thus freed from all neighboring restraints and the wrist flexed to an angle of 45 degrees it was possible to bring the ends of the nerve together without strain. The procedure of suturing the nerve ends was then begun. Two tantalum wire tension sutures were introduced mainly through the epineurium at a distance of 1 cm from the cut surfaces of the nerve one at each side of the plane of greatest diameter of the nerve. The wires were tightened until the nerve ends just touched each

clotted in about five minutes. A few minutes later the wire rails were withdrawn the clips were removed and the mold was peeled from the clot while it was protected with a special spoon the width of the mold during the withdrawal of the latter. The suture appeared to be quite a satisfactory one. The wound was closed with silk sutures. After a dressing was

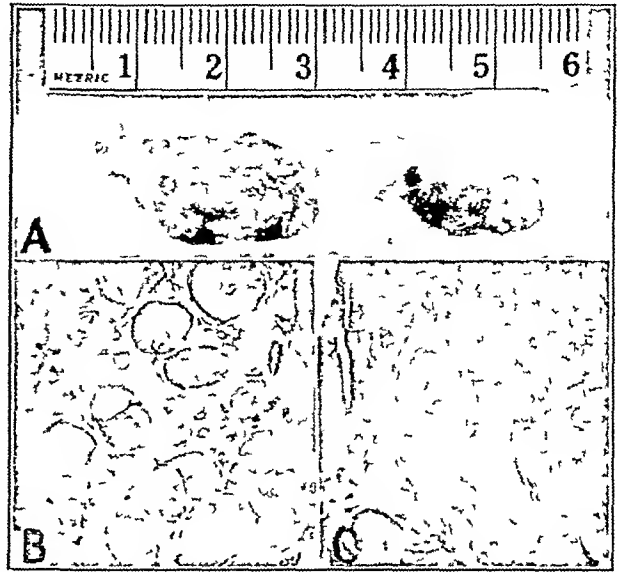


Fig 4 (case 2)—Stumps of ulnar nerve (A) with sections through proximal (B) and distal (C) stumps contiguous to sutured surfaces of nerve (slightly reduced from photomicrographs with a magnification of 30 diameters). Note well formed bundles of nerve fibers showing slight increase of interfascicular connective tissue in proximal stump in contrast to the diffuse admixture of schwannian tubes and connective tissue in the distal stump in which little bundle topography is discernible.



Fig 3—A mold filled with autologous unmodified plasma. B wire rails withdrawn from mold and clips removed.

other and then they were tied well away from the suture site. The purpose of the tension sutures is to absorb any sudden strains and prevent forces from pulling on the primary suture line. The nerve was then placed in a latex mold of appropriate size and the nerve ends were accurately adjusted on the wire rails. Good apposition was thus obtained (fig 2B). The clips were applied to the fins of the mold and then 40 drops of autologous unmodified plasma were added. The plasma

applied the wrist was immobilized at an angle of 45 degrees in a plaster of paris cast for a period of six weeks followed by gradual extension of the wrist.

The slices of neuroma adjacent to the stumps finally united were studied microscopically. The sections of the proximal stump showed funiculi of nerve fibers (in Gross-Bielschowski preparations) with normal cellular and fibrillar sheaths. Between the bundles of nerve fibers there was a moderate increase of connective tissue (fig 4). The distal stump presented fewer well formed fasciculi with a sprinkling of tubular structures made up of cells within a considerable fibrocellular matrix. Nerve fibers were not seen within the distal stump.

Massage and electrotherapy (galvanic stimulation) were begun when the cast was removed and continued three times weekly. Thirteen weeks after plasma clot suture of the nerve the patient had shown a considerable return of sensation for pin prick, cotton wool and hot and cold objects over the hand and fingers down to and including the proximal half of the fifth finger. Improvement in the power of flexion of the fourth and fifth fingers was apparent at this time also. Eight and one-half months after operation, sensation for pin prick touch and hot and cold was felt over the entire hand although not as acutely over the area supplied by the ulnar nerve as elsewhere. Full extension of the little finger was possible and slight abduction and adduction was possible. Adduction of the thumb was good. When last seen eighteen months after operation fairly good adduction and abduction of the index finger was possible, abduction of the little finger was good but adduction of this finger was only fair and considerably limited in range. These movements were barely discernible in the middle and ring fingers. Definite diminution in atrophy of the hand occurred (fig 5).

Chronaxia studies carried out by Dr Joseph Moldaver four-teen months after the nerve was sutured led to the following summary. Stimulation of the ulnar nerve at the level of the wrist gave a response in the abductor minimi digiti. The latter muscle tested at its motor point had a chronaxia within the normal range. By longitudinal stimulation the chronaxia

was still increased, showing that some of the muscle fibers had not become reinnervated. The figures of chronaxia of the interossei are those found in partial denervation, there being a progressive decrease in chronaxia from the first to the fourth one. In summary there was evidence of partial reinnervation of the muscles supplied by the ulnar nerve."

Electromyograms were recorded with surface electrodes from the first interosseus and the hypothenar group of muscles fourteen and one-half months after operation. The report of Dr. Paul Hoefer was that "no activity at rest was noted. With voluntary innervation (spreading fingers apart) good, well sustained activity was recorded from both muscles, perhaps a little more from the hypothenar group. The impression was better than fair reinnervation of muscles supplied by the ulnar nerve."

The patient is delighted with the degree of recovery of function which occurred and does not consider himself appreciably handicapped in his profession as a photographer. The fascicular pattern revealed by microscopic study of the nerve ends was such as to indicate that perfect bundle matching was impossible and is probably seldom obtainable, although one should strive for this ideal. However, during regeneration the axon cylinders from the proximal stumps undergo con-

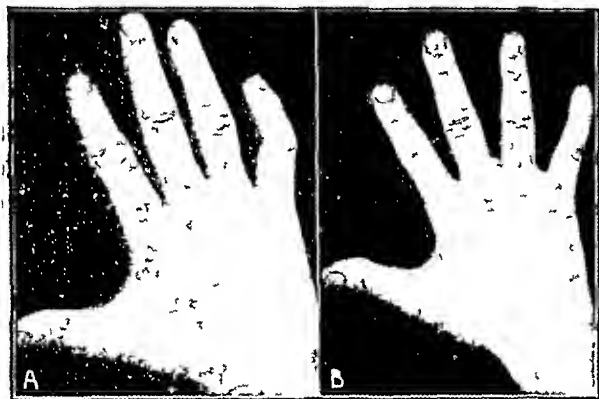


Fig. 5 (case 2)—Atrophy of the interosseal spaces and limitation of extension of the little finger is apparent before the plasma clot suture was done, with definite increase in atrophy of hand and return of ability to extend little finger shown at B fifteen months after operation.

siderable branching, which results in a great excess of them so that many find appropriate pathways, reach proper end organs and lead to satisfactory restoration of function, such as occurred in this case. At operation the nerve ends were found to be separated by a gap of 2 cm. and, in view of the fact that a fifteen month interval elapsed before the nerve was sutured with plasma clot, the result appears to be quite a satisfactory one.

**CASE 3**—A woman aged 43 sustained a laceration of the right arm just below the elbow in 1933. Immediately after the injury she was aware of inability to extend her right little finger and, to a less extent the ring finger. Six months later atrophy of the hand became apparent to her. In 1935 the ulnar nerve was sutured by the conventional method, using silk, following which some recovery occurred. The patient stated that all improvement ceased in 1940 and she became aware of an increasing stiffness of the ring and little finger. In May 1942 her attention was called to a tender lump on the anteromesial aspect of the right forearm. It was chiefly because of the tender mass that the patient consulted a physician. The following were the abnormal findings on examination (Feb. 12, 1943): 1 There was a 7 cm. scar beginning at a point just posterior to the medial epicondyle and running toward the volar aspect of the arm. Underlying the scar just distal to the medial epicondyle was a firm nodule about the size of a

hazelnut unattached to the skin but fixed to the underlying tissues. Palpation of the mass resulted in pain, which radiated downward along the ulnar aspect of the forearm and hand to the little finger. 2 The little finger was acutely flexed at the interphalangeal joints and hyperextended at the metacarpophalangeal joint. The finger could not be extended at all. 3 There was moderate hollowing of the interosseal spaces with flattening of the thenar and hypothenar eminences. 4 The patient was unable to adduct or abduct the little finger. Adduction of the thumb was impaired to the extent of 50 per cent, and adduction and abduction of the other fingers was approximately 75 per cent below normal in power. 5 There was well defined diminution in appreciation of pin prick, cotton wool and hot and cold over the little finger, the ulnar half of the ring finger and the corresponding portion of the volar and dorsal aspects of the hand.

On Feb. 12, 1943 operation was done and a large neuroma in continuity was found on the ulnar nerve 2 cm. below the medial epicondyle. The bulbous neuroma with the short attached segments of ulnar nerve measured 4.5 cm. long and 1.5 cm. in diameter. This was excised and the nerve ends were fairly normal looking. The gap between the nerve ends measured approximately 6 mm. The ulnar nerve was freed upward to the point of junction of the lower and middle thirds of the arm and downward to the middle of the forearm. The elbow was flexed to a right angle and, to help further in overcoming the gap between the nerve ends and also in order to transplant the nerve to an unscarred bed the procedure recommended by Learmonth<sup>10</sup> was followed. Accordingly the flexor-pronator muscles were detached and reflected. The nerve was sutured and placed alongside the median nerve, and the flexor-pronator muscles were reattached to their origin. The combined tantalum wire plasma clot suture technique was employed, using 30 drops of autologous unmodified plasma. The peripheral stump was somewhat smaller than the central one and, in order to equalize the cross sectional areas of the contact surfaces which were to be united, a small amount of isotonic solution of three chlorides was injected into the distal stump just beyond the cut surface. The apposition of the nerve ends appeared quite satisfactory. The arm was immobilized in plaster of paris at an angle of 90 degrees flexion at the elbow and kept in this position for a period of eight weeks after which it was put up in a right angle metal splint which could be bent to a set contour. Gradual extension of the elbow was then begun, and full extension was accomplished in six weeks. This was accompanied by very little pain.

Microscopic examination of the slice of nerve adjacent to the proximal contact surface revealed large bundles of nerve fibers with but slight increase of the perineurial connective tissue, but sections prepared from the distal stump presented very small bundles of nerve fibers with a moderate increase of connective tissue between them.

The patient received two to three massage or electric treatments for a period of several months beginning six weeks after operation. Sixteen weeks after operation sensation for pin prick had returned to the inner part of the hand, the ulnar half of the ring finger and the proximal phalanx of the little finger. Examination six months after operation revealed ability to feel pin prick over the entire little finger and the adjacent portion of the ring finger. The little finger was still in the flexed position, but it could be extended about 35 degrees at the proximal and 25 degrees at the distal interphalangeal joints. When last seen sixteen months after operation, sensation was almost normal although very little improvement in motor power had occurred.

Dr. Moldaver's summary of chronaxia studies carried out twelve months after the plasma clot suture was done follows: "Stimulation of the ulnar nerve above the injury gave a response in the abductor minimi digiti. The latter muscle, as well as the interossei, had an increased chronaxia. The figures were within the range of those generally found in partial denervation. The amplitude of the contraction was diminished. The suture was apparently successful although part of the muscle fibers

<sup>10</sup> Learmonth, J. R. A. Technique for Transplanting the Ulnar Nerve. *Surg., Gynec. & Obst.* 75: 792, 1942.

supplied by the ulnar nerve had become wasted. The flexor carpi ulnaris could not be stimulated and seemed to have completely disappeared. When the plasma clot suture was performed, part of the muscle fibers had apparently undergone complete atrophy. This explains why the sensory fibers might show evidence of complete regeneration but not the motor."

Electromyograms were recorded by Dr Paul Hoefer with surface electrodes from the right hypothenar group of muscles. This was done twelve and one-half months after the nerve suture. Dr Hoefer's report states that "a good deal of activity at rest was noted often in runs suggestive of repetitive discharges of single motor units. A fair amount of activity was recorded with volitional innervation (abduction of the fifth finger). Impression: The record suggests fascicular discharges and fair reinnervation of the hypothenar group."

A considerable degree of atrophy of the hand and contracture of the little finger had occurred in the ten year interval between the time of the initial injury and the plasma clot suture. The findings indicated also that there had taken place a considerable degree of fibrosis around the joints and in muscle, with possibly consequent atrophy or disintegration of some nerve terminals. Under such circumstances it is doubtful that a satisfactory result can be expected even though regeneration of the nerve may occur. Whether reconversion of fibrous tissue into muscle or the reappearance of nerve terminals can occur is unsettled. It is, however, of the greatest importance to take precautions against overstretching or other types of damage to muscles and joints both before and after operation. Massage, electrotherapy and passive movements appear to be of some value in this respect, although precisely to what extent has not yet been determined.

**CASE 4**—A man aged 44 had complete removal of a perineural fibroblastoma arising from the left acoustic nerve by Dr L. M. Davidoff, the inevitable price paid for the complete removal of his tumor being a left facial paralysis. Seventeen days after the intracranial operation a left hypoglossal-facial anastomosis was done. The facial nerve was cut at its point of exit from the stylomastoid foramen, and the cut end of the distal segment was sutured to the central segment of the cut hypoglossal nerve (fig 2 C). Two tantalum wire tension sutures and 15 drops of autologous unmodified plasma were used for the suture. In order to avoid to some extent the sacrifice of function following section of the hypoglossal nerve, the distal end of this nerve was anastomosed to the cut end of the central segment of the descendens hypoglossi. The descendens hypoglossi was injected with isotonic solution of three chlorides just before the anastomosis was done in order to decrease the inequality in cross sectional areas of the contact surfaces of the nerves to be joined. Eight drops of plasma were used for the second suture. Following operation, support was given to the facial muscles in order to prevent overstretching of them. This was done by adhesive strapping to the skin over the supralabial and infralabial muscles and then fastening the tape to the temporal region. Also for a period of ten months the patient received massage and galvanic stimulation to the facial muscles twice weekly. The facial deformity had lessened considerably thirteen weeks after the anastomosis and the face had become almost symmetrical at rest. At this time the patient had become able to move the angle of his mouth to a slight extent and he was able to close his left eye (figs 6 and 7).

Eleven months after operation the patient's face was almost symmetrical at rest and eye closure was strong. He was able to draw the corner of his mouth upward and outward. His chief handicap is inability to protrude his tongue, to show his teeth fully or to retract the angle of his mouth on the left side without closing his left eye.

Dr Moldaver carried out chronaxia studies on this patient eleven months after the nerve anastomosis and summarized his results as follows: "Muscles of the left side of the face had chronaxias close to the normal range except for the quadratus labii superior and orbicularis oris superior. In the latter muscles there was still a slight increase of the chronaxia. Stimulation of the peripheral end of the facial nerve gave a

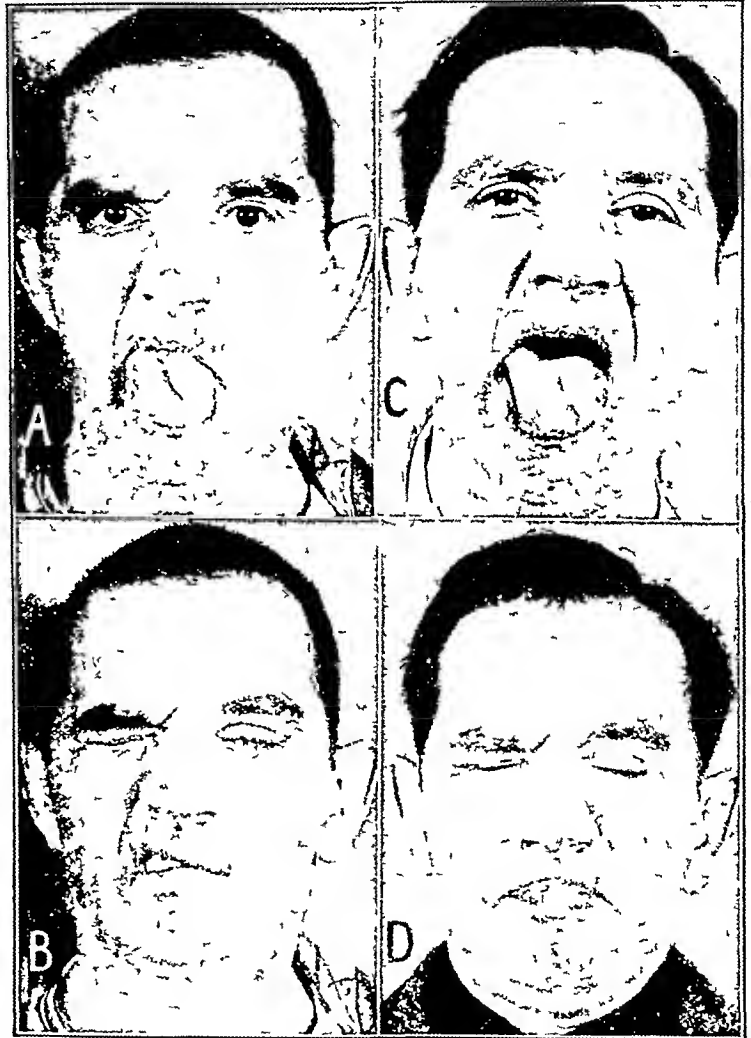


Fig. 6 (case 4)—Asymmetry of face is seen when the tongue is protruded; the eyes are closed and the teeth are shown in A and B soon after operation. Improvement is apparent in retraction of the corners of the mouth and in closure of the eye (C and D, seven and four months respectively after operation).

fairly good response in all the muscles supplied by it. Compared with the right side, the amplitude of the contraction was smaller. Muscles of the left half of the tongue had an increased chronaxia, and the figure was that generally found in partial reinnervation. In summary, reinnervation took place in all the muscles of the left side of the face and partially in the left side of the tongue.

Electromyograms recorded with surface electrodes from the left frontalis, orbicularis oculi, zygomatic and platysma muscles eleven and one-half months after operation led to the following report by Dr Hoefer: "All muscles showed a slight irregular continuous amount of activity at rest. No single unit discharges could be identified. With attempts at wrinkling his

forehead closing his left eye, wrinkling his nose, tightening his platysma and putting his tongue out, irregular activity was recorded simultaneously in all four muscles. Impression: The findings have to be interpreted as indicative of undifferentiated mass innervation of all muscles supplied by the faciohypoglossal anastomosis."

It is now fifteen months since operation and the patient believes that he is making some headway in the dissociation of the various face and tongue movements, although this is not yet very apparent. He remains unable to wrinkle his brow on the left side, a function which uncommonly returns after anastomosis of the facial nerve.<sup>11</sup>

The first evidence of regeneration in this patient was the increase of tone with decrease in asymmetry of the face followed by return of motor power of the orbicularis oculi and then the orbicularis oris. The atrophy of the patient's tongue is pronounced but probably not as much as it would have been if the central end of the ansa hypoglossi had not been sutured to the distal



Fig. 7 (case 4).—Asymmetry of the face had lessened considerably four months after operation.

end of the hypoglossal nerve. At any rate the patient prefers the paresis of one half of his tongue to his previous complete facial paralysis. The chronaxia studies confirm the impression that some reinnervation of the tongue on the left side had taken place. The hypoglossal nerve was chosen in this case rather than the spinal accessory, since the patient is a manual worker and would probably have been more severely handicapped by a paralysis of his shoulder had the latter nerve been used. In 2 patients (both salesmen) subsequently operated on the spinal accessory nerve was used rather than the hypoglossal, since they considered that they would be more handicapped by a paralysis of one half of their tongue than of one shoulder.

Autologous plasma clot suture of nerves was employed in 10 additional cases, 3 spinal accessory-facial and 1 hypoglossal-facial anastomosis, 2 cases of

neuroma of the ulnar and 1 of the median nerve, a patient with severance of the common peroneal nerve and in 2 patients with severed digital nerves of the index finger. In 1 of the latter cases the use of a nerve autograft (lateral femoral cutaneous) was necessary to repair the defect after resection of the neuromas. In both of these cases the tissues surrounding the nerves to be sutured formed an almost perfect receptacle in which the plasma pooled around the apposed nerve ends. One of the patients of this series failed to return for follow-up study. Another patient was a physician in whom a hypoglossal-facial anastomosis was performed four and one-half months ago with the result that considerable return of facial symmetry has occurred and there is definite voluntary facial movement around the angle of the mouth, first noticed three months post-operatively. A similar type of recovery is occurring in 1 of 2 patients in whom spinal accessory-facial anastomoses were performed five months ago. In another patient an adult, a neuroma of the ulnar nerve at the level of the elbow was excised four weeks after injury by a bullet wound. The combined tantalum wire-plasma clot technic was used. Twelve weeks later Tinel's sign was present at the level of the junction of the middle and lower thirds of the forearm, and seventeen weeks after operation it had migrated downward to the middle of the ulnar aspect of the palm of the hand. Pin prick appreciation had returned in patchy distribution over the palm and volar aspect of the little and adjacent portion of the ring finger. In the other patients insufficient time (three to ten weeks) has elapsed for evaluation of results. No neuromas were palpable at the suture sites in any of the patients.

#### COMMENT

That satisfactory results do frequently follow silk or tantalum wire suture of nerves cannot be doubted. However, in those instances in which very little or no recovery of function follows the classic silk technic, it seems likely that fibrosis at the suture site or malalignment of nerve ends may represent important factors in accounting for the imperfect results. The use of the combined tantalum wire-autologous plasma clot technic overcomes many of the objections to the use of any type of thread apposition suture. Tissue reaction to the tantalum wire and autologous clot is either minimal or absent, and no neuromas were palpable at the suture site in any of the human cases, little or no handling of the cut surfaces of the nerves is necessary with the combined technic, and no strangulation of tissue at the suture site with subsequent fibrosis which interferes with regeneration occurs, although accurate point to point apposition in a microscopic sense is impossible, to obtain a closer approach to this ideal may be made with plasma clot than with thread suture, and less disorganization of the nerve fiber pattern at the suture site is apt to occur.

Certainly the foregoing factors are not the only ones that govern the functional result from any type of nerve suture. The condition of the muscles and end organs innervated by the nerve are of great importance in this regard, and this is determined largely by the interval which has elapsed between the time of the injury and that of operation and the treatment administered in the interim. Muscles that have been allowed to become overstretched and fibrotic and end organs that have

<sup>11</sup> Coleman, C. C. Surgical Lesions of the Facial Nerve with Comments on Its Anatomy. *Ann. Surg.* 119: 641, 1944.

become atrophied as a result of inactivity are not as readily restored to a functional state by satisfactory nerve suture as those which have been massaged regularly and protected from the trauma of being over-pulled by antagonistic muscles during a shorter interval before nerve repair.

The condition of the nerve stumps to be sutured is also important, since even though a perfect apposition of them may be obtained the functional result will be unsatisfactory if the stumps contain a tangle of nerve fibers amid scar tissue. In instances in which it is difficult to be certain whether the cut ends of a nerve present a fairly normal pattern of nerve bundles it seems wise to excise a thin slice and examine the tissue microscopically after a frozen section has been stained with hematoxylin and eosin or the van Gieson technic

graft would appear to be preferable either to suturing the nerve ends under great tension or failing to excise the neuroma and accomplishing primary end to end suture of neuromatous stumps.

Although the condition of the nerve stumps and of the innervated muscles and end organs is of paramount importance in regard to the outcome of nerve suture, the technic of joining the ends too plays an important role in determining the result which may be expected from the procedure. Since better apposition of nerve ends with less disorganization at the suture site seems possible with the use of tantalum wire tension sutures in conjunction with autologous plasma clot than with any type of thread apposition suture it seems worth while to continue the use of this technic for the repair of peripheral nerves in human beings.

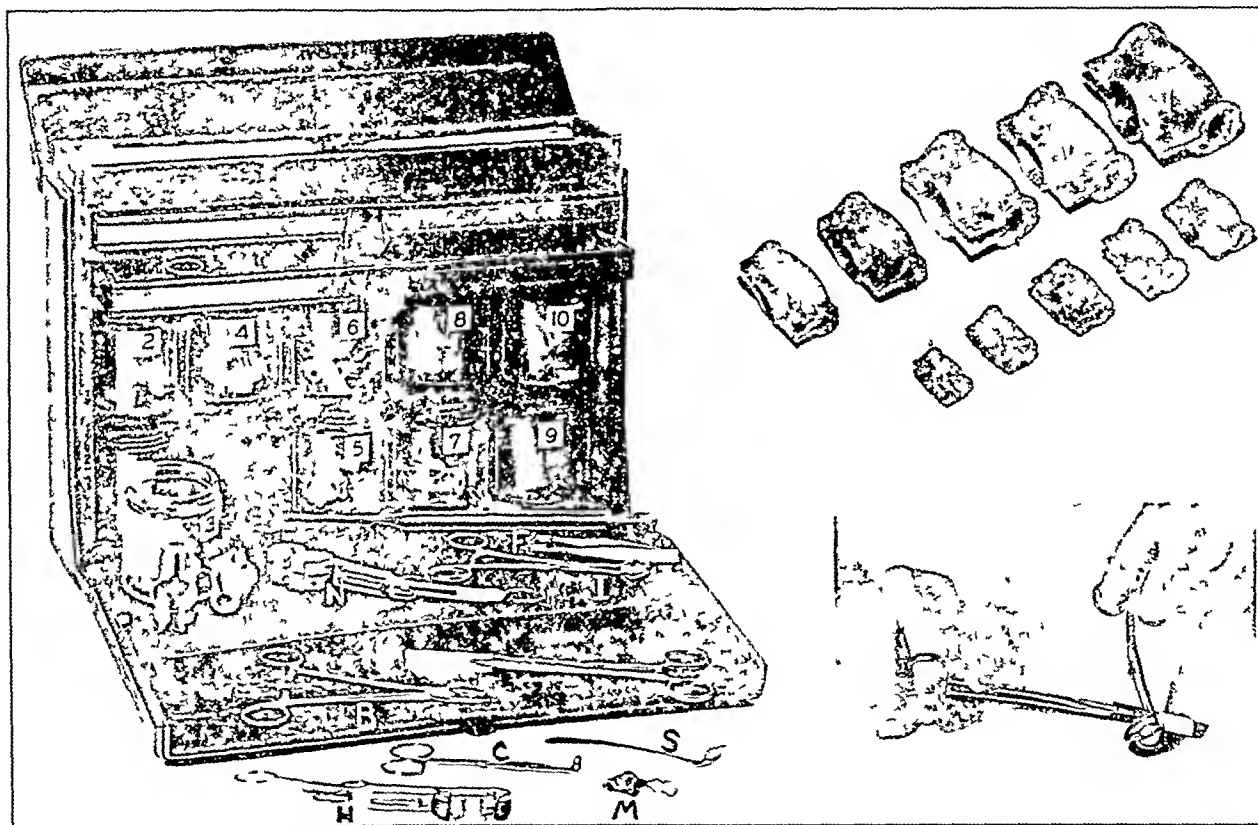


Fig 8—Plasma clot suture kit contains an assortment of molds (upper right inset) suitable for suturing nerves ranging in size from those 1 mm in diameter to others the size of the sciatic nerve. The molds which are made in ten sizes are sterilized in 70 per cent alcohol in the bottles shown. The lower right inset illustrates the method of excising thin slices of nerve stump with the use of the special nerve holder (H) which differs from the one (N) shown in the kit in having toothed blades on one side of the slot rather than airfoam. By means of the special nerve holder (H) one is enabled to trim off thinner slices of nerve than with the other type of holder (N). The razor blade contains two holes into which fit the two prongs of the blade holder (B) thus preventing movement of the blade in the holder. The spoon (S) is made in an assortment of sizes corresponding to the length of the mold employed in a particular case. It is used for the protection of the sutured nerve during the withdrawal of the mold. By means of the clip holder (C) the metal clips are applied to the fins of the rubber mold (M). The tips of the forceps (F) are covered with airfoam rubber so that damage to nerves consequent to the handling of them, especially thin nerves with delicate connective tissue sheaths is minimized. The instrument I is a nerve hemostat the jaws of which are covered with airfoam rubber which is grooved to accommodate the nerve. The lock of the hemostat is closed notch by notch until bleeding from the nerve stump ceases. The end of the stump must be flush with the edge of the airfoam or if it protrudes from it a hematoma is apt to form. In the top compartment are shown paraffin lined test tubes for the collection of blood from which the unmodified plasma is prepared. The special instruments are made by Edward Weck & Co. Brooklyn. The latex molds are made by Mr. Cornelius Denslow, 455 East 107th Street, Brooklyn.

If the tissue proves to be neuromatous the excision should be continued serially until the stumps appear free from appreciable scar tissue. In some cases such a procedure might result in a gap which precludes primary end to end suture even when the usual methods are used for the reduction in size of gaps such as the mobilization or rerouting of nerves or positioning of the joints of an extremity to shorten the course of a nerve. Under these circumstances some form of nerve

There has been a tendency to surround sutured nerves by cuffs made of various materials<sup>12</sup> most recently tantalum, for the purpose of protecting the suture site in those instances in which its bed consists of scar tissue. Following the use of this procedure in the experimental animal (dog) I have found that the tantalum foil cuff becomes enveloped in a connective tissue



membrane and although it is true that fixation of the suture site is thereby prevented, the nerve does become adherent to the surrounding tissue above and below the cuff—a rather dubious advantage. The use of tantalum or other types of foil or membrane to prevent the ingrowth of connective tissue between the nerve ends is unnecessary, since plasma clot by virtue of its being converted into an epineurial sheath accomplishes this purpose. Rather than surrounding the suture site with tantalum foil it would appear to be more advisable, when performing nerve suture in a cicatricial bed, to attempt, if possible, transplantation of the nerve to a bed relatively free from scar tissue.

The question has been raised as to the necessity of using plasma clot in addition to tension sutures for uniting nerves. In other words, will not tension sutures alone suffice for this purpose? Experiments on dogs have shown that an epineurial sheath is reconstructed from the plasma and the ingrowth of connective tissue between the nerve ends is thus prevented. The use of plasma clot in addition to tantalum wire tension sutures is further indicated for nerve sutures, since the latter alone will not prevent shearing forces, such as pressure from the neighboring muscle or other tissue, from displacing the nerve ends. This fact was demonstrated by suturing nerves with plasma clot *in vitro* and measuring the forces, including shear, similar to those exerted on sutured nerves in the body by lateral pressure from adjacent structures. The values obtained from these experiments were roughly of the same order as those for the tensile strength of nerves sutured with plasma clot and also for the adhesiveness of plasma clot to nerves.

In those instances in which not enough space is available around the nerve ends to be united for introduction of the latex mold, the nerve may be sutured by the original technic of Young and Medawar, in which the nerve ends are depressed into the neighboring tissues to form a trough in which the plasma can collect. An alternative, however, for suturing nerves under such conditions is, after the tension sutures have been introduced, to apply a coat of plasma with a sable hair brush or a pipet. This technic of painting plasma around the suture site has been used for suturing nerve roots of the cauda equina, and satisfactory nerve union is thus obtainable.

The advantages of plasma clot suture of nerves become especially apparent in the suture of small nerves, where excellent apposition may be obtained in cases in which the use of thread suture would result in considerable damage to the nerve stumps. This superiority of plasma clot suture was clearly demonstrated in the 2 cases of digital nerve suture, in 1 of which a nerve graft was used. In the latter case the newly made juncture was barely apparent after the suture was completed. For the suture of cable grafts—and there is evidence that such grafts are superior to single thick grafts for the repair of large nerves—the use of plasma clot is virtually indispensable, since thread suture under these conditions is unsatisfactory.<sup>13</sup>

#### SUMMARY

Autologous plasma clot suture of peripheral nerves was carried out in 14 cases, in about half of which sufficient time has elapsed since the operation to enable

one to draw some conclusions about the procedure. In 1 case complete recovery of function of the sternocleidomastoid muscle occurred five and one-half months after the spinal accessory nerve was sutured at a point 4 cm before its entrance into the muscle. In a patient in whom the ulnar nerve was sutured at the level of the wrist, good recovery of sensory and motor function of the hand occurred together with lessening of the extent of the atrophy, and the patient is continuing to show improvement at present, eighteen months after the operation. The result in this case seems especially gratifying in view of the long interval (fifteen months) which elapsed between the time of injury and that of the plasma clot suture and the fact that at operation the nerve stumps were found to be separated by a gap of 2 cm. In a third patient satisfactory recovery of sensation occurred one year after a neuroma in continuity was excised at a level 2 cm below the medial epicondyle of the humerus. The fact that only a slight degree of recovery of motor power followed the operation is not surprising in view of the very long interval of over nine and one-half years that elapsed after the injury before the plasma clot suture was done and also considering the advanced degree of atrophy of the hand muscles. In the fourth case a satisfactory degree of reinnervation of the facial muscles occurred fifteen months after a hypoglossal-facial anastomosis was done. In this patient, some return of innervation of the tongue followed suture of the proximal end of the ansa hypoglossi to the distal end of the cut hypoglossal nerve. In 3 other cases, two facial anastomosis operations and one ulnar nerve suture, recovery of function is becoming manifest four to five months after operation. In general the results of autologous plasma clot suture of nerves in man are encouraging and warrant continued use of this technic.

1150 Fifth Avenue

---

**Hospitals of the Future**—Tomorrow's hospital will clearly reflect the great strides made in medical research and invention. Unfortunately we have applied our inventive powers only to the small mechanical parts of the hospital today. While these specialties have been kept abreast of medical science, imaginative design has not embraced the hospital building as a whole. The exterior of the hospital is still too often a monumental structure which could be taken for a school, a courthouse—any number of things—but seldom a hospital. However, architects today are gradually freeing themselves from the stylistic building traditions of the past. See to it that your building is designed from the inside out, that its functional relationships and its efficiency of operation are the first considerations. Remember that a hospital is a complicated piece of machinery and that it is a machine which serves a rapidly progressing profession. The last few years have seen astonishing progress in diagnostic, operative and therapeutic technics. The end is in sight. Keep the plan flexible. Design it so that there will be an opportunity to fit it into the medical science of tomorrow. Do not make it a monument to any architect or building committee. Do not necessarily build it to last a hundred years. It may be obsolete in twenty. New methods of lighting and of heating are upon us. New materials, new types of construction will be available. Scientific and engineering progress have been moving faster than that of the architectural profession and have attained such speed that it is unwise to attempt to solve the future generations' problems for them—New Architecture and City Planning, A Symposium edited by Paul Zucker, New York Philosophical Library 1944.

<sup>13</sup> The problem of nerve grafts is to be dealt with in an article now being prepared for publication.



RATIONALE FOR USE OF VITAMINS  
IN THE THERAPY OF SHOCK  
AND ANOXIA

WILLIAM M GOVIER MD

GLENOLDEN, PA

To many it may seem that a discussion of the rationale for the use of vitamins in the therapy of conditions other than those produced by avitaminosis is, on the face of it, absurd. However, as I hope to be able to point out, there is a very definite reason for their use, and probably for their administration in fairly large quantities, in conditions associated with anoxia of various types.

I believe that I can best clarify this concept by a brief discussion of research done at the Department of Pharmacology of Vanderbilt Medical School by a group under the direction of Dr Paul D Lamson.

In 1940 work was begun in this laboratory in an effort to discover something about the causation and therapy of shock. Of course it had been well established by other workers that shock is associated with a pronounced decrease in circulating blood volume, with tissue anoxia and with various other measurable changes, but the exact mechanism of action of these changes in producing irreversible shock was not too well understood. It was also well known that plasma was an efficient remedy if given early enough in the course of the syndrome.

This research group found very early in the study that the occurrence of prolonged hyperglycemia in shock induced by hemorrhage was recognized but that very little attention had been paid to its significance. It seemed not unreasonable that a hyperglycemia should occur in view of the intense sympathetic nervous system stimulation, but it was not clear as to why the elevation of blood sugar should remain for several hours, only gradually decreasing as the animal became moribund. It seemed to us that results beneficial to the animal might be obtained if this blood sugar could be replaced in the liver as glycogen or be burned. A number of experiments were carried out, using insulin, in an attempt to achieve this result, without success.

However, our attention was drawn to the work of Tonutti and Wallraff<sup>1</sup> which showed that the liver of a thiamine deficient mouse cannot store glycogen. In addition, Blotvogel and Tonutti<sup>2</sup> had used thiamine as an apparently successful treatment for severe burns.

On the basis of these investigators' results, shock was induced in a number of dogs by fractional bleedings and thiamine administered to half of them, with an apparent beneficial result in that the thiamine treated dogs lived longer than did the controls.<sup>3</sup> This result led us to consider the question as to whether the thiamine was acting in its normal manner as a coenzyme in tissue metabolism because an animal in shock was in some way thiamine deficient or whether the thiamine was acting in some other manner.

A diagnostic test for thiamine deficiency well known to clinicians is the estimation of the level of pyruvic acid in the blood. Since breakdown of pyruvic acid requires phosphorylated thiamine or co-carboxylase as a coenzyme, a deficiency of thiamine will cause pyruvate to pile up in the circulating blood. Blood pyruvate determinations were done on a number of animals in shock, and the pyruvate level of the circulating blood was seen to rise from a normal amount of 10 to 20 mg per hundred cubic centimeters to 40 or 50 mg per hundred cubic centimeters of blood.<sup>4</sup> This level is actually higher than that seen in most cases of beriberi, clinically. Thus it would appear either that these animals became thiamine deficient as shock was induced or that their thiamine became incapable of functioning in a normal manner.

By way of attack from a slightly different angle on this problem, it was thought of possible interest to find out whether the amount of thiamine initially present in the dog might have some relation to the ease with which shock was induced in the animal. Consequently, avitaminosis B<sub>1</sub> was produced in a number of dogs, whereas others were given a stock diet fortified with thiamine. An index of deficiency was given by the determination of plasma thiamine levels. The difference in ease of production of shock was very striking. Seven of 9 thiamine deficient dogs went into shock after a total bleeding of less than 40 per cent of body weight, whereas all of 16 thiamine fortified dogs required more than this amount of bleeding, and 44 per cent of them required even more than 5 per cent of body weight in blood removed before prolonged hypotension was produced.<sup>5</sup> Other pronounced differences were noticed between these two groups of animals. The blood pressure of the low thiamine dogs dropped precipitously after the first few bleedings and remained low (between 45 and 60 mm of mercury) throughout the experiment whereas the blood pressure of the thiamine fortified dogs showed a constant tendency to rise, even after more than 50 per cent of the body weight in blood had been removed in some cases. Copious intestinal hemorrhage occurred in 86 per cent of the low thiamine animals and was not seen at all in the high thiamine dogs. Hemoconcentration was also much less frequent in the dogs having high plasma thiamine levels. The paucity of changes occurring in the fortified dogs led us to be of the belief that these dogs probably did not go into shock at all.

With reference to the use of thiamine in the treatment of shock in this series of animals, it may be said that, rather surprisingly, the best results (800 per cent recoveries) occurred in those dogs having intermediate plasma thiamine levels. None of these dogs were given fluids to replace the blood withdrawn, and one could not expect the high thiamine animals to live without transfusion when half or more of their circulating blood volume was removed. The extensive pathologic changes in the low thiamine group as exemplified by the intestinal hemorrhage probably prevented their responding to thiamine alone.

In most cases the plasma thiamine level rose as the animal went into shock. This point is of importance when considered in the light of work to be discussed later.

It was mentioned before that the intermediate group of dogs having normal plasma thiamine levels, were

From the Department of Physiology and Pharmacology, Bowman Gray School of Medicine, Winston-Salem, N. C.

Read in the symposium on Vitamins, Amino Acids and Enzymes before the joint meeting of the Section on Practice of Medicine and the Section on Experimental Medicine and Therapeutics at the Ninety-Fourth Annual Session of the American Medical Association, Chicago, June 16, 1944.

<sup>1</sup> Tonutti E and Wallraff J. *Ztchr f mikro ant Forsch* 44: 532, 1938.

<sup>2</sup> Blotvogel H and Tonutti E. *Klin Wchnschr* 18: 471, 1939.

<sup>3</sup> Govier W M and Greer C M. *J Pharmacol & Exper Therap* 77: 11, 1941.

<sup>4</sup> Govier W M and Greer C M. *J Pharmacol & Exper Therap* 77: 121, 1941.

<sup>5</sup> Govier W M. *J Pharmacol & Exper Therap* 77: 40, 1943.

membrane, and, although it is true that fixation of the suture site is thereby prevented, the nerve does become adherent to the surrounding tissue above and below the cuff—a rather dubious advantage. The use of tantalum or other types of foil or membrane to prevent the ingrowth of connective tissue between the nerve ends is unnecessary, since plasma clot by virtue of its being converted into an epineurial sheath accomplishes this purpose. Rather than surrounding the suture site with tantalum foil it would appear to be more advisable, when performing nerve suture in a cicatricial bed, to attempt, if possible, transplantation of the nerve to a bed relatively free from scar tissue.

The question has been raised as to the necessity of using plasma clot in addition to tension sutures for uniting nerves. In other words, will not tension sutures alone suffice for this purpose? Experiments on dogs have shown that an epineurial sheath is reconstructed from the plasma and the ingrowth of connective tissue between the nerve ends is thus prevented. The use of plasma clot in addition to tantalum wire tension sutures is further indicated for nerve sutures, since the latter alone will not prevent shearing forces, such as pressure from the neighboring muscle or other tissue, from displacing the nerve ends. This fact was demonstrated by suturing nerves with plasma clot *in vitro* and measuring the forces, including shear, similar to those exerted on sutured nerves in the body by lateral pressure from adjacent structures. The values obtained from these experiments were roughly of the same order as those for the tensile strength of nerves sutured with plasma clot and also for the adhesiveness of plasma clot to nerves.

In those instances in which not enough space is available around the nerve ends to be united for introduction of the latex mold, the nerve may be sutured by the original technic of Young and Medawar, in which the nerve ends are depressed into the neighboring tissues to form a trough in which the plasma can collect. An alternative, however, for suturing nerves under such conditions is, after the tension sutures have been introduced, to apply a coat of plasma with a sable hair brush or a pipet. This technic of painting plasma around the suture site has been used for suturing nerve roots of the cauda equina, and satisfactory nerve union is thus obtainable.

The advantages of plasma clot suture of nerves become especially apparent in the suture of small nerves, where excellent apposition may be obtained in cases in which the use of thread suture would result in considerable damage to the nerve stumps. This superiority of plasma clot suture was clearly demonstrated in the 2 cases of digital nerve suture, in 1 of which a nerve graft was used. In the latter case the newly made juncture was barely apparent after the suture was completed. For the suture of cable grafts—and there is evidence that such grafts are superior to single thick grafts for the repair of large nerves—the use of plasma clot is virtually indispensable, since thread suture under these conditions is unsatisfactory.<sup>13</sup>

#### SUMMARY

Autologous plasma clot suture of peripheral nerves was carried out in 14 cases, in about half of which sufficient time has elapsed since the operation to enable

one to draw some conclusions about the procedure. In 1 case complete recovery of function of the sternocleidomastoid muscle occurred five and one-half months after the spinal accessory nerve was sutured at a point 4 cm before its entrance into the muscle. In a patient in whom the ulnar nerve was sutured at the level of the wrist, good recovery of sensory and motor function of the hand occurred together with lessening of the extent of the atrophy, and the patient is continuing to show improvement at present, eighteen months after the operation. The result in this case seems especially gratifying in view of the long interval (fifteen months) which elapsed between the time of injury and that of the plasma clot suture and the fact that at operation the nerve stumps were found to be separated by a gap of 2 cm. In a third patient satisfactory recovery of sensation occurred one year after a neuroma in continuity was excised at a level 2 cm below the medial epicondyle of the humerus. The fact that only a slight degree of recovery of motor power followed the operation is not surprising in view of the very long interval of over nine and one-half years that elapsed after the injury before the plasma clot suture was done and also considering the advanced degree of atrophy of the hand muscles. In the fourth case a satisfactory degree of reinnervation of the facial muscles occurred fifteen months after a hypoglossal-facial anastomosis was done. In this patient, some return of innervation of the tongue followed suture of the proximal end of the ansa hypoglossi to the distal end of the cut hypoglossal nerve. In 3 other cases, two facial anastomosis operations and one ulnar nerve suture, recovery of function is becoming manifest four to five months after operation. In general the results of autologous plasma clot suture of nerves in man are encouraging and warrant continued use of this technic.

1150 Fifth Avenue

---

**Hospitals of the Future**—Tomorrow's hospital will clearly reflect the great strides made in medical research and invention. Unfortunately we have applied our inventive powers only to the small mechanical parts of the hospital today. While these specialties have been kept abreast of medical science, imaginative design has not embraced the hospital building as a whole. The exterior of the hospital is still too often a monumental structure which could be taken for a school, a courthouse—any number of things—but seldom a hospital. However, architects today are gradually freeing themselves from the stylistic building traditions of the past. See to it that your building is designed from the inside out, that its functional relationships and its efficiency of operation are the first considerations. Remember that a hospital is a complicated piece of machinery and that it is a machine which serves a rapidly progressing profession. The last few years have seen astonishing progress in diagnostic, operative and therapeutic technics. The end is not in sight. Keep the plan flexible. Design it so that there will be an opportunity to fit it into the medical science of tomorrow. Do not make it a monument to any architect or building committee. Do not necessarily build it to last a hundred years. It may be obsolete in twenty. New methods of lighting and of heating are upon us. New materials, new types of construction will be available. Scientific and engineering progress have been moving faster than that of the architectural profession and have attained such speed that it is unwise to attempt to solve the future generations' problems for them—*New Architecture and City Planning, A Symposium* edited by Paul Zucker, New York: Philosophical Library, 1944.

<sup>13</sup> The problem of nerve grafts is to be dealt with in an article now being prepared for publication.

RATIONALE FOR USE OF VITAMINS  
IN THE THERAPY OF SHOCK  
AND ANOXIA

WILLIAM M GOVIER MD

GLENOLDEN, PA

To many it may seem that a discussion of the rationale for the use of vitamins in the therapy of conditions other than those produced by avitaminosis is, on the face of it, absurd. However, as I hope to be able to point out, there is a very definite reason for their use, and probably for their administration in fairly large quantities, in conditions associated with anoxia of various types.

I believe that I can best clarify this concept by a brief discussion of research done at the Department of Pharmacology of Vanderbilt Medical School by a group under the direction of Dr Paul D Lamson.

In 1940 work was begun in this laboratory in an effort to discover something about the causation and therapy of shock. Of course it had been well established by other workers that shock is associated with a pronounced decrease in circulating blood volume, with tissue anoxia and with various other measurable changes, but the exact mechanism of action of these changes in producing irreversible shock was not too well understood. It was also well known that plasma was an efficient remedy if given early enough in the course of the syndrome.

This research group found very early in the study that the occurrence of prolonged hyperglycemia in shock induced by hemorrhage was recognized but that very little attention had been paid to its significance. It seemed not unreasonable that a hyperglycemia should occur in view of the intense sympathetic nervous system stimulation, but it was not clear as to why the elevation of blood sugar should remain for several hours, only gradually decreasing as the animal became moribund. It seemed to us that results beneficial to the animal might be obtained if this blood sugar could be replaced in the liver as glycogen or be burned. A number of experiments were carried out, using insulin, in an attempt to achieve this result, without success.

However, our attention was drawn to the work of Tonutti and Wallraff,<sup>1</sup> which showed that the liver of a thiamine deficient mouse cannot store glycogen. In addition, Blotevogel and Tonutti<sup>2</sup> had used thiamine as an apparently successful treatment for severe burns.

On the basis of these investigators' results, shock was induced in a number of dogs by fractional bleedings and thiamine administered to half of them, with an apparent beneficial result in that the thiamine treated dogs lived longer than did the controls.<sup>3</sup> This result led us to consider the question as to whether the thiamine was acting in its normal manner as a coenzyme in tissue metabolism because an animal in shock was in some way thiamine deficient or whether the thiamine was acting in some other manner.

A diagnostic test for thiamine deficiency well known to clinicians is the estimation of the level of pyruvic acid in the blood. Since breakdown of pyruvic acid requires phosphorylated thiamine or cocarboxylase as a coenzyme a deficiency of thiamine will cause pyruvate to pile up in the circulating blood. Blood pyruvate determinations were done on a number of animals in shock, and the pyruvate level of the circulating blood was seen to rise from a normal amount of 10 to 20 mg per hundred cubic centimeters to 40 or 50 mg per hundred cubic centimeters of blood.<sup>4</sup> This level is actually higher than that seen in most cases of beriberi, clinically. Thus it would appear either that these animals became thiamine deficient as shock was induced or that their thiamine became incapable of functioning in a normal manner.

By way of attack from a slightly different angle on this problem, it was thought of possible interest to find out whether the amount of thiamine initially present in the dog might have some relation to the ease with which shock was induced in the animal. Consequently, avitaminosis B<sub>1</sub> was produced in a number of dogs, whereas others were given a stock diet fortified with thiamine. An index of deficiency was given by the determination of plasma thiamine levels. The difference in ease of production of shock was very striking. Seven of 9 thiamine deficient dogs went into shock after a total bleeding of less than 40 per cent of body weight, whereas all of 16 thiamine fortified dogs required more than this amount of bleeding, and 44 per cent of them required even more than 5 per cent of body weight in blood removed before prolonged hypotension was produced.<sup>5</sup> Other pronounced differences were noticed between these two groups of animals. The blood pressure of the low thiamine dogs dropped precipitously after the first few bleedings and remained low (between 45 and 60 mm of mercury) throughout the experiment whereas the blood pressure of the thiamine fortified dogs showed a constant tendency to rise, even after more than 50 per cent of the body weight in blood had been removed in some cases. Copious intestinal hemorrhage occurred in 86 per cent of the low thiamine animals and was not seen at all in the high thiamine dogs. Hemoconcentration was also much less frequent in the dogs having high plasma thiamine levels. The paucity of changes occurring in the fortified dogs led us to be of the belief that these dogs probably did not go into shock at all.

With reference to the use of thiamine in the treatment of shock in this series of animals, it may be said that, rather surprisingly the best results (80 per cent recoveries) occurred in those dogs having intermediate plasma thiamine levels. None of these dogs were given fluids to replace the blood withdrawn, and one could not expect the high thiamine animals to live without transfusion when half or more of their circulating blood volume was removed. The extensive pathologic changes in the low thiamine group as exemplified by the intestinal hemorrhage probably prevented their responding to thiamine alone.

In most cases the plasma thiamine level rose as the animal went into shock. This point is of importance when considered in the light of work to be discussed later.

It was mentioned before that the intermediate group of dogs having normal plasma thiamine levels, were

From the Department of Physiology and Pharmacology Bowman Gray School of Medicine Winston-Salem, N.C.

Read in the symposium on Vitamins, Amino Acids and Enzymes before the joint meeting of the Section on Practice of Medicine and the Section on Experimental Medicine and Therapeutics at the Ninety-Fourth Annual Session of the American Medical Association Chicago June 16 1944

<sup>1</sup> Tonutti E and Wallraff J Ztschr f micro ant Forsch 44 537 1938

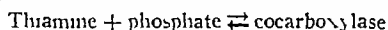
<sup>2</sup> Blotevogel H and Tonutti E Klin Wchnschr 18 471 1939

<sup>3</sup> Govier W M and Greer C M J Pharmacol & Exper Therap 77 317 1941

<sup>4</sup> Govier W M and Greer C M J Pharmacol & Exper Therap 77 321 1941

<sup>5</sup> Govier W M J Pharmacol & Exper Therap 77 40 1943

benefited by thiamine therapy. One explanation of this fact would be that the animals' own tissue thiamine became ineffective. I have also mentioned that thiamine must be phosphorylated to diphosphothiamine or cocarboxylase in order to be effective as a coenzyme in pyruvate metabolism. In the tissues there is probably an equilibrium between thiamine (and/or its monophosphate) and cocarboxylase as shown in this reaction:



Under normal conditions most of the thiamine is in the phosphorylated form, but it seemed possible that under abnormal conditions, such as in shock, the cocarboxylase might become dephosphorylated, thus shifting the equilibrium to the left and concomitantly reducing the amount of metabolically "active" thiamine. Ochoa<sup>6</sup> has shown *in vitro* that under anaerobic conditions such breakdown of cocarboxylase does occur, probably by means of a phosphatase. We have confirmed his results.<sup>7</sup> Both cocarboxylase and total thiamine were determined in the skeletal muscle, liver and duodenum of dogs before and after shock, and after thiamine therapy. Dephosphorylation of cocarboxylase occurred in 92 per cent of the cases in muscle, in 69 per cent of the cases with duodenum and in 46 per cent of the liver samples. The magnitude of the dephosphorylation was variable, there being some tendency for more dephosphorylation to occur in dogs which went into shock with relatively small amounts of bleeding.<sup>8</sup> These results have been confirmed by Alexander.<sup>9</sup>

Thus these animals, although well supplied with thiamine, were in a sense vitamin B<sub>1</sub> deficient, since their thiamine was in a form which was useless in tissue metabolism. Administration of more thiamine in large doses to these dogs as treatment resulted in resynthesis of cocarboxylase. Large doses of thiamine are probably required in order to raise the intracellular concentration of thiamine so that resynthesis may occur, even when oxidative processes supplying energy for phosphorylation of thiamine are greatly reduced.

In an effort to determine whether or not similar breakdown of cocarboxylase would occur in anoxia other than that of shock, a number of dogs were allowed to breathe oxygen-nitrogen mixtures containing 10 per cent oxygen.<sup>10</sup> The same breakdown of cocarboxylase occurred. It would thus appear that anemic anoxia and anoxic anoxia both produce a tissue anaerobiosis which results in breakdown of cocarboxylase.

It has been mentioned that as a dog goes into shock the animal's plasma thiamine level rises. This can now be explained by diffusion of free thiamine from tissues to circulating plasma after cocarboxylase is dephosphorylated since thiamine is more diffusible than cocarboxylase.

There is no reason to suppose that cocarboxylase is the only coenzyme which may be broken down in anoxic conditions or that shock and anoxic anoxia should be the only conditions in which the coenzymes should be broken down. Greig has recently shown that in shock a pronounced breakdown occurs in coenzyme I, the nicotinamide containing coenzyme which is essential for the metabolism of many substrates, such as lactate, malate, beta-hydroxybutyrate and diphosphoglycerate-

aldehyde and that resynthesis of the coenzyme occurs after administration of nicotinic acid.<sup>10</sup> She has also demonstrated a similar breakdown in alloxazine adenine dinucleotide (flavine adenine dinucleotide), the riboflavin containing coenzyme which is essential for the reoxidation of reduced coenzyme I and for the metabolism of amino acids. Alloxazine adenine dinucleotide is resynthesized in the animal in shock when riboflavin is administered.<sup>11</sup>

With reference to coenzyme breakdown in other conditions than those of shock and anoxic anoxia, it may be said that we have been able to show that experimental coronary ligation is accompanied by considerable destruction (up to 80 per cent) in coenzyme I.<sup>11</sup>

Recently Long and his co-workers<sup>12</sup> have noticed accumulation of amino acids in the peripheral blood in shock, a finding which would be explained by Greig's demonstration of breakdown in riboflavin-containing coenzymes. In *in vitro* experiments this group found that the respiration of liver slices from shocked animals was much less than that of controls and that the addition of a coenzyme-containing boiled liver extract increased the oxygen consumption of mildly shocked tissues. One may consider this to be additional evidence that the replacement of coenzymes is of great importance in the therapy of shock.

The facts demonstrating that coenzymes are broken down in shock have been admirably summarized by Greig<sup>10</sup> in her recent paper, and I quote her summary:

- 1 The resistance of dogs to shock was found to be significantly greater in those animals having high plasma thiamine levels than in those showing low plasma thiamine values.
- 2 Animals which were susceptible to shock showed a diffusion into the plasma of large amounts of thiamine indicating a breakdown of tissue cocarboxylase.
- 3 Cocarboxylase was found to decrease in muscle, liver and duodenum in animals subjected to hemorrhage and to anoxic anoxia.
- 4 Some degree of correlation was found between the amount of bleeding necessary for the onset of shock and the degree of destruction of cocarboxylase.
- 5 Coenzyme I and alloxazine adenine dinucleotide decrease in brain, muscle and liver in shock.
- 6 Dogs requiring more than average amounts of bleeding to go into shock showed less destruction of tissue coenzyme I than did dogs which went into shock with small amounts of bleeding.

It will be obvious to most that the prevention and treatment of coenzyme breakdown is of the utmost importance if normal metabolism or, in fact, any metabolism is to be maintained in anoxic conditions. In view of the recent work demonstrating well defined pathologic findings in thiamine deficiency,<sup>13</sup> it is apparent that a cell which is deprived of its coenzymes does not merely stop metabolizing foodstuffs but actually dies. To put it another way, one may say that, to a cell, life and metabolism are synonymous. Under the conditions of the experiments discussed here, the administration of vitamins in large doses has been found of great value in the preservation of tissue coenzymes in anoxic conditions. I do not mean to imply, however, that other means of therapy are unimportant, and certainly in the therapy of shock one should employ all of the remedies available.

6 Ochoa, S. *Biochem. J.* **33**, 1262, 1939.  
7 Govier, W. M. and Greig, Margaret E. *J. Pharmacol. & Exper. Therap.* **79**, 240, 1943.  
8 Greig, Margaret E. and Govier, W. M. *J. Pharmacol. & Exper. Therap.* **79**, 169, 1943.  
9 Alexander, B. *J. Clin. Investigation* **23**, 259, 1944.  
10 Greig, Margaret E. *J. Pharmacol. & Exper. Therap.* to be published.

11 Govier, W. M. *Am. Heart J.* to be published.  
12 Engel, F. L., Winton, Mary G. and Long, C. N. H. *J. Exper. Med.* **77**, 397, 1943. Russell, J. A., Long, C. N. H. and Engel, F. L. *ibid.* **79**, 1, 1944. Engel, F. L., Harrison, H. C. and Long, C. N. H. *ibid.* **79**, 9, 1944. Russell, J. A., Long, C. N. H. and Wilhelm, A. E. *ibid.* **79**, 23, 1944.  
13 Folli, R. H. Jr., Miller, M. H., Wintrobe, M. M. and Stem, H. J. *Am. J. Path.* **19**, 341, 1943.

ADULT NEEDS OF VITAMINS  
A AND C

ELMER L SEVRINGHAUS, MD

MADISON, WIS

It is still as true as ever that the diet can and should be a sufficient source of vitamins A and C for all the healthy human needs. Even with the difficulties of the current high cost of food, with restrictions imposed by food rationing and with shortages in the market, it is possible for many people to meet the best of standards of securing these vitamins as well as the other nutrients in a diet. On the other hand, clinical experience in recent months, as before, convinces me that a very considerable number of adult Americans, whether urban or rural, are not securing a sufficient amount of vitamin C, or ascorbic acid, for the best health. The increased cost of citrus fruit is less frequently a cause of this deficiency than the failure to realize the urgent necessity for the use of those foods which contain ample amounts of vitamin C. The problem is essentially educational.

In urging more liberal use of fruits and vegetables, the two chief sources of ascorbic acid, it is necessary to know the minimum daily requirement of this vitamin for the healthy adult. The standard accepted by the United States Food and Drug Administration is 30 mg. That recommended by the Food and Nutrition Board of the National Research Council is 75 mg. There are careful scientific workers who still defend both extremes of this rather wide difference. Probably the reason for the divergence of opinion is to be found fundamentally in two circumstances. The first is that we still lack a consensus as to the criterion for a beginning deficiency. What chemical manifestations may we depend on as evidence that a person is getting just a bit less than the optimum amount of ascorbic acid regularly? Must the person show frank scurvy with its changes in periosteum, joints, subcutaneous hemorrhages and loosening of the teeth, or is the occurrence of edematous gums and the low grade inflammation spoken of as gingivitis adequate evidence for deficiency? Until agreement is achieved on this matter, there will be wide differences of opinion about the minimum required dose.

A second difficulty is the consequence of the great lability of ascorbic acid particularly in easy oxidation by the air. Diets made up from known amounts of food, carefully analyzed for ascorbic acid content, may still be found seriously inadequate, owing to the manner of preparation of the food and especially to its being held after preparation, exposed to the air for considerable periods of time before it is eaten. One of the very interesting recent bits of evidence on this point is a study by United States Army nutrition chemists of the status of a group of soldiers who are subsisting on an army ration which is approved and which, on paper, contains a liberal excess of ascorbic acid. Nevertheless the examination of blood and urine specimens from these soldiers can be interpreted only as evidence that a very significant proportion of the subjects were not in a state of saturation with the vitamin. Such a state of saturation should have been produced if they

were really eating the amount of ascorbic acid which the diets are calculated to contain. The data do not indicate a scandal involving the source of the food but merely that food assays for such a purpose would have to be based on samples taken at the time that the food is eaten. Some students of ascorbic acid need feel that no one who does not use citrus fruits or tomatoes liberally can have a really adequate amount of vitamin C.

Observations made on persons in highly variable circumstances are tending to an agreement that the daily intake of ascorbic acid which will really prevent gum disease must be of the order of magnitude of 75 mg. each day. Amounts as small as 25 or 50 mg. are distinctly ineffective. In order to secure this amount of ascorbic acid the diet is best made up with a variety of fresh fruits and vegetables, recognizing, however that cooked vegetables supply some vitamin C also. If one was to plan on getting all his vitamin C from citrus fruit juice it would probably require an 8 ounce glass daily to be certain of adequate amounts. If he was to depend on tomato juice he would have to insist on at least 1 pint daily. For those whose diets must be limited for any reason to small amounts of these and other fresh fruits and vegetables it is probably wise that by prescription they should be provided with from 50 to 75 mg. of ascorbic acid in tablet form to be taken daily. With the recent improvement in manufacturing details, it is now no more expensive to get the pure crystalline vitamin in tablet form than to secure it from foods, although one must never forget that the foods themselves provide other important nutrients in addition to the vitamin C.

On planning the treatment for a patient obviously desaturated in ascorbic acid one needs to know how rapidly he may prescribe vitamin C without significant loss of this material through the urine. Recent careful trials of graded doses have proved that 500 mg. of ascorbic acid may be given orally per dose with efficiency in severely desaturated patients. This may be done at least three times daily. For most desaturated patients such a total of 1,500 mg. in one day will accomplish saturation of the body, and this will be shown by urinary excretion of a part of the later dose. If prolonged desaturation of ascorbic acid has preceded the treatment it may be necessary to administer the 1,500 milligram dose daily for two or even three days before saturation is achieved. Exceptions may be found in leukemias and certain metabolic disturbances. However, once the plasma vitamin C has been brought above 0.8 mg. per hundred cubic centimeters the administration of 100 mg. daily of ascorbic acid should be more than enough to keep the body saturated.

Deficiencies of vitamin A are less easily identified in the individual case. On postmortem examination, changes in the respiratory and excretory epithelium as well as in the skin may all be grouped under the term of keratinizing metaplasia. These changes probably represent the rather advanced stages of deficiency. Recent studies of the ability of different daily intakes of vitamin A to maintain a stable and normal light adaptation by human adults would indicate that for the adult not much less than 5,000 units daily is required. It is not possible at this time to state what would be the first consequences of a continuous but slight lack of this vitamin. Whether this would be expressed as an increased susceptibility to respiratory infections, disorders of the skin or slight disturbances of vision are all debatable points. The green colored vegetables, car-

From the University of Wisconsin Medical School.  
Read in the symposium on "Vitamins, Amino Acids and Enzymes" before the joint meeting of the Section on Practice of Medicine and the Section on Experimental Medicine and Therapeutics at the Ninety-Fourth Annual Session of the American Medical Association, Chicago, June 16, 1944.



benefited by thiamine therapy. One explanation of this fact would be that the animals' own tissue thiamine became ineffective. I have also mentioned that thiamine must be phosphorylated to diphosphothiamine or cocarboxylase in order to be effective as a coenzyme in pyruvate metabolism. In the tissues there is probably an equilibrium between thiamine (and/or its monophosphate) and cocarboxylase as shown in this reaction:



Under normal conditions most of the thiamine is in the phosphorylated form, but it seemed possible that under abnormal conditions, such as in shock, the cocarboxylase might become dephosphorylated, thus shifting the equilibrium to the left and concomitantly reducing the amount of metabolically "active" thiamine. Ochoa<sup>6</sup> has shown in vitro that under anaerobic conditions such breakdown of cocarboxylase does occur, probably by means of a phosphatase. We have confirmed his results.<sup>7</sup> Both cocarboxylase and total thiamine were determined in the skeletal muscle, liver and duodenum of dogs before and after shock, and after thiamine therapy. Dephosphorylation of cocarboxylase occurred in 92 per cent of the cases in muscle, in 69 per cent of the cases with duodenum and in 46 per cent of the liver samples. The magnitude of the dephosphorylation was variable, there being some tendency for more dephosphorylation to occur in dogs which went into shock with relatively small amounts of bleeding.<sup>8</sup> These results have been confirmed by Alexander.<sup>9</sup>

Thus these animals, although well supplied with thiamine, were in a sense vitamin B<sub>1</sub> deficient, since their thiamine was in a form which was useless in tissue metabolism. Administration of more thiamine in large doses to these dogs as treatment resulted in resynthesis of cocarboxylase. Large doses of thiamine are probably required in order to raise the intracellular concentration of thiamine so that resynthesis may occur, even when oxidative processes supplying energy for phosphorylation of thiamine are greatly reduced.

In an effort to determine whether or not similar breakdown of cocarboxylase would occur in anoxia other than that of shock, a number of dogs were allowed to breathe oxygen-nitrogen mixtures containing 10 per cent oxygen.<sup>10</sup> The same breakdown of cocarboxylase occurred. It would thus appear that anemic anoxia and anoxic anoxia both produce a tissue anaerobiosis which results in breakdown of cocarboxylase.

It has been mentioned that as a dog goes into shock the animal's plasma thiamine level rises. This can now be explained by diffusion of free thiamine from tissues to circulating plasma after cocarboxylase is dephosphorylated, since thiamine is more diffusible than cocarboxylase.

There is no reason to suppose that cocarboxylase is the only coenzyme which may be broken down in anoxic conditions or that shock and anoxic anoxia should be the only conditions in which the coenzymes should be broken down. Greig has recently shown that in shock a pronounced breakdown occurs in coenzyme I, the nicotinamide containing coenzyme which is essential for the metabolism of many substrates, such as lactate, malate, betahydroxybutyrate and diphosphoglyceralde-

hyde and that resynthesis of the coenzyme occurs after administration of nicotinic acid.<sup>10</sup> She has also demonstrated a similar breakdown in alloxazine adenine dinucleotide (flavine adenine dinucleotide), the riboflavin containing coenzyme which is essential for the reoxidation of reduced coenzyme I and for the metabolism of amino acids. Alloxazine adenine dinucleotide is resynthesized in the animal in shock when riboflavin is administered.<sup>10</sup>

With reference to coenzyme breakdown in other conditions than those of shock and anoxic anoxia, it may be said that we have been able to show that experimental coronary ligation is accompanied by considerable destruction (up to 80 per cent) in coenzyme I.<sup>11</sup>

Recently Long and his co-workers<sup>12</sup> have noticed accumulation of amino acids in the peripheral blood in shock, a finding which would be explained by Greig's demonstration of breakdown in riboflavin-containing coenzymes. In in vitro experiments this group found that the respiration of liver slices from shocked animals was much less than that of controls and that the addition of a coenzyme-containing boiled liver extract increased the oxygen consumption of mildly shocked tissues. One may consider this to be additional evidence that the replacement of coenzymes is of great importance in the therapy of shock.

The facts demonstrating that coenzymes are broken down in shock have been admirably summarized by Greig<sup>10</sup> in her recent paper, and I quote her summary:

1 The resistance of dogs to shock was found to be significantly greater in those animals having high plasma thiamine levels than in those showing low plasma thiamine values.

2 Animals which were susceptible to shock showed a diffusion into the plasma of large amounts of thiamine, indicating a breakdown of tissue cocarboxylase.

3 Cocarboxylase was found to decrease in muscle, liver and duodenum in animals subjected to hemorrhage and to anoxic anoxia.

4 Some degree of correlation was found between the amount of bleeding necessary for the onset of shock and the degree of destruction of cocarboxylase.

5 Coenzyme I and alloxazine adenine dinucleotide decrease in brain, muscle and liver in shock.

6 Dogs requiring more than average amounts of bleeding to go into shock showed less destruction of tissue coenzyme I than did dogs which went into shock with small amounts of bleeding.

It will be obvious to most that the prevention and treatment of coenzyme breakdown is of the utmost importance if normal metabolism or, in fact, any metabolism is to be maintained in anoxic conditions. In view of the recent work demonstrating well defined pathologic findings in thiamine deficiency,<sup>13</sup> it is apparent that a cell which is deprived of its coenzymes does not merely stop metabolizing foodstuffs but actually dies. To put it another way, one may say that, to a cell, life and metabolism are synonymous. Under the conditions of the experiments discussed here, the administration of vitamins in large doses has been found of great value in the preservation of tissue coenzymes in anoxic conditions. I do not mean to imply, however, that other means of therapy are unimportant, and certainly in the therapy of shock one should employ all of the remedies available.

6 Ochoa S. *Biochem J* **33** 1262 1939  
7 Govier W. M. and Greig Margaret E. *J Pharmacol & Exper Therap* **79** 240 1943

8 Greig Margaret E. and Govier W. M. *J Pharmacol & Exper Therap* **79** 169 1943

9 Alexander B. *J Clin Investigation* **23** 259 1944

10 Greig Margaret E. *J Pharmacol & Exper Therap* to be published

11 Govier W. M. Am Heart J to be published

12 Engel F. L. Winton Mary G. and Long C. N. H. *J Exper Med* **77** 397 1943  
Russell J. A. Long C. N. H. and Engel F. L. *ibid* **79** 1 1944  
Engel F. L. Harrison H. C. and Long C. N. H. *ibid* **79** 9 1944  
Russell J. A. Long C. N. H. and Wilhelm A. E. *ibid* **79** 23 1944

13 Folliot R. H. Jr. Miller M. H. Wintrobe M. M. and Stern H. J. *Am J Path* **19** 341 1943



ADULT NEEDS OF VITAMINS  
A AND CELMER L. SEVRINGHAUS, MD  
MADISON, WIS

It is still as true as ever that the diet can and should be a sufficient source of vitamins A and C for all the healthy human needs. Even with the difficulties of the current high cost of food, with restrictions imposed by food rationing and with shortages in the market, it is possible for many people to meet the best of standards of securing these vitamins as well as the other nutrients in a diet. On the other hand, clinical experience in recent months, as before, convinces me that a very considerable number of adult Americans, whether urban or rural, are not securing a sufficient amount of vitamin C, or ascorbic acid, for the best health. The increased cost of citrus fruit is less frequently a cause of this deficiency than the failure to realize the urgent necessity for the use of those foods which contain ample amounts of vitamin C. The problem is essentially educational.

In urging more liberal use of fruits and vegetables, the two chief sources of ascorbic acid, it is necessary to know the minimum daily requirement of this vitamin for the healthy adult. The standard accepted by the United States Food and Drug Administration is 30 mg. That recommended by the Food and Nutrition Board of the National Research Council is 75 mg. There are careful scientific workers who still defend both extremes of this rather wide difference. Probably the reason for the divergence of opinion is to be found fundamentally in two circumstances. The first is that we still lack a consensus as to the criterion for a beginning deficiency. What chemical manifestations may we depend on as evidence that a person is getting just a bit less than the optimum amount of ascorbic acid regularly? Must the person show frank scurvy with its changes in periosteum joints, subcutaneous hemorrhages and loosening of the teeth, or is the occurrence of edematous gums and the low grade inflammation spoken of as gingivitis adequate evidence for deficiency? Until agreement is achieved on this matter, there will be wide differences of opinion about the minimum required dose.

A second difficulty is the consequence of the great lability of ascorbic acid particularly in easy oxidation by the air. Diets made up from known amounts of food, carefully analyzed for ascorbic acid content, may still be found seriously inadequate, owing to the manner of preparation of the food and especially to its being held after preparation, exposed to the air for considerable periods of time before it is eaten. One of the very interesting recent bits of evidence on this point is a study by United States Army nutrition chemists of the status of a group of soldiers who are subsisting on an army ration which is approved and which, on paper, contains a liberal excess of ascorbic acid. Nevertheless the examination of blood and urine specimens from these soldiers can be interpreted only as evidence that a very significant proportion of the subjects were not in a state of saturation with the vitamin. Such a state of saturation should have been produced if they

were really eating the amount of ascorbic acid which the diets are calculated to contain. The data do not indicate a scandal involving the source of the food but merely that food assays for such a purpose would have to be based on samples taken at the time that the food is eaten. Some students of ascorbic acid need feel that no one who does not use citrus fruits or tomatoes liberally can have a really adequate amount of vitamin C.

Observations made on persons in highly variable circumstances are tending to an agreement that the daily intake of ascorbic acid which will really prevent gum disease must be of the order of magnitude of 75 mg each day. Amounts as small as 25 or 50 mg are distinctly ineffective. In order to secure this amount of ascorbic acid the diet is best made up with a variety of fresh fruits and vegetables, recognizing, however that cooked vegetables supply some vitamin C also. If one was to plan on getting all his vitamin C from citrus fruit juice it would probably require an 8 ounce glass daily to be certain of adequate amounts. If he was to depend on tomato juice he would have to insist on at least 1 pint daily. For those whose diets must be limited for any reason to small amounts of these and other fresh fruits and vegetables it is probably wise that by prescription they should be provided with from 50 to 75 mg of ascorbic acid in tablet form to be taken daily. With the recent improvement in manufacturing details, it is now no more expensive to get the pure crystalline vitamin in tablet form than to secure it from foods, although one must never forget that the foods themselves provide other important nutrients in addition to the vitamin C.

On planning the treatment for a patient obviously desaturated in ascorbic acid one needs to know how rapidly he may prescribe vitamin C without significant loss of this material through the urine. Recent careful trials of graded doses have proved that 500 mg of ascorbic acid may be given orally per dose with efficiency in severely desaturated patients. This may be done at least three times daily. For most desaturated patients such a total of 1,500 mg in one day will accomplish saturation of the body, and this will be shown by urinary excretion of a part of the later dose. If prolonged desaturation of ascorbic acid has preceded the treatment it may be necessary to administer the 1,500 milligram dose daily for two or even three days before saturation is achieved. Exceptions may be found in leukemias and certain metabolic disturbances. However, once the plasma vitamin C has been brought above 0.8 mg per hundred cubic centimeters the administration of 100 mg daily of ascorbic acid should be more than enough to keep the body saturated.

Deficiencies of vitamin A are less easily identified in the individual case. On postmortem examination, changes in the respiratory and excretory epithelium as well as in the skin may all be grouped under the term of keratinizing metaplasia. These changes probably represent the rather advanced stages of deficiency. Recent studies of the ability of different daily intakes of vitamin A to maintain a stable and normal light adaptation by human adults would indicate that for the adult not much less than 5,000 units daily is required. It is not possible at this time to state what would be the first consequences of a continuous but slight lack of this vitamin. Whether this would be expressed as an increased susceptibility to respiratory infections, disorders of the skin or slight disturbances of vision are all debatable points. The green colored vegetables, car-

From the University of Wisconsin Medical School.  
Read in the symposium on Vitamins, Amino Acids and Enzymes  
before the joint meeting of the Section on Practice of Medicine and the  
Section on Experimental Medicine and Therapeutics at the Ninety Fourth  
Annual Session of the American Medical Association Chicago June 16  
1944

rots, sweet potatoes and tomatoes, the dairy products and liver carry such abundant supplies of this vitamin that there is little reason why anybody on a normal and varied diet should have a deficiency of vitamin A. The vegetable sources provide carotene or provitamin A, which the body under normal circumstances readily enough converts into vitamin A for its own uses.

If for any reason an individual diet must be highly restricted as to the succulent vegetables and the dairy products, then it is wise for a physician to prescribe amounts up to but not exceeding 5,000 international units of vitamin A daily. This is easily accomplished by any one of a number of the preparations containing vitamin A alone, the fish liver oil concentrates, or in special capsules containing vitamin A with other vitamin materials.

### DETECTION AND TREATMENT OF SEVERE ATYPICAL DEFICIENCY DISEASE

TOM D SPIES, MD  
ROBERT C COGSWELL, MD  
AND  
CARL VILTER, MD  
BIRMINGHAM, ALA

The very essence of good medical practice is correct diagnosis followed by persistent and adequate therapy. Most physicians recognize the so-called textbook case of deficiency disease and know how to treat it, but to date the practicing physician has been taught little about the very early case, the case with asymmetrical lesions or the very severe case with atypical lesions. This paper is devoted exclusively to the last group, since it is the type of case most difficult to diagnose and the one most likely to be fatal if proper therapy is not applied.

Many physicians believe that it is possible merely to look at a patient and by some magic process know that he has nutritive failure. Yet, with all the experience we have had, we still find deficiency disease more difficult to diagnose than diabetes, tuberculosis, anemia, leukemia or any other general medical disease. Perhaps in no other disease complex is there so much variation in the individual patient's pattern of symptoms as in nutritive failure. The average patient with nutritive failure when first seen by the physician, has a mixture of diseases arising from a deficiency of many nutrients, and most, and sometimes all, his symptoms are ill defined rather than clearcut. During the long period of time that deficiency diseases are developing, deep seated changes occur in the cells. These changes vary from person to person and the disturbances arising

from them are different in every case. Compensating bodily mechanisms conceal the deficiencies for varying periods of time, but when they are of such degree and sufficiently protracted, lesions may appear. If these lesions are characteristic and if the physician has nutritive failure in mind, he usually makes a correct diagnosis. Many patients, however, do not have such definite criteria, and it is with such cases that this paper is concerned. In the brief time that we have at our disposal, it is perhaps best to present a few representative cases and discuss their diagnosis and therapy.

**CASE 1—History**—B W, a Negro boy aged 5 months, was returned to the hospital in June 1940 because of diarrhea and refusal to eat. This child was born three and one half months premature and remained in an incubator four months. During this time he was given a formula of evaporated milk, water and Karo syrup. Orange juice and cod liver oil were first added when he was 3 months of age. He took these foods well while in the hospital and for two weeks after he went home. He then developed severe pneumonia which lasted one week. During this period he took less than half the food offered and for the next two weeks refused to take a large part of each feeding. Suddenly he began having ten to twelve watery stools daily. Camphorated tincture of opium helped little in controlling them. The day after the diarrhea developed he refused all his food and on admission to the hospital had eaten no food for three days. He still continued to have frequent small, watery stools.

Physical examination revealed that the infant was fretful, pale weak, dehydrated and obviously severely ill. He cried feebly but almost constantly. His tongue was fiery red at the tip and over the upper surface except for small grayish ulcerated areas over the affected portion. On the undersurface near the tip there were two ulcers, a large one at the left and a smaller one at the right, both covered by a thick grayish white membrane (fig 1). A smear from this membrane showed myriads of organisms indicative of Vincent's infection.

**Laboratory Examination**—The B E S test<sup>1</sup> of the urine was strongly positive. No other laboratory determinations were made.

Since the child was obviously in a critical condition within a few minutes after admission he was given by means of a medicine dropper, the first of a formula containing niacin amide. During the first hour 60 cc of this formula, including 50 mg of niacin amide was swallowed. Within four hours he was better, and 50 mg of niacin amide was added to 180 cc of the next formula. He took this without difficulty. Twelve hours later the diarrhea ceased. On the second day 50 mg of niacin amide was given again, and he took the whole day's formula. By this time the tongue obviously was healing. Each day thereafter he took 50 mg of niacin amide and all his formula. At the end of his sixth hospital day his tongue was normal in appearance and we gave him 30 cc of orange juice. He was discharged the next day to his home, and his mother was given instructions as to how to feed him. She succeeded in getting him to take all the food offered. Four years later finds him in excellent health and growing normally.

In this premature infant the history of a severe infection, followed by a greatly reduced food intake, suggested to us that the diarrhea and ulcerated areas on the tongue might be due to a deficiency of some nutrient. The administration of 50 mg of niacin amide was followed by prompt cessation of the diarrhea, healing of the glossitis and return of his appetite.

University of Cincinnati Studies in Nutrition at the Hillman Hospital Birmingham Ala. From the Department of Internal Medicine University of Cincinnati.

Miss Monette Springer RN did most of the nursing care and obtained the specimens. Mrs Sue Sanders and Mrs Thelma Thomas made the chemical analyses.

Owing to lack of space this article has been abbreviated for publication in THE JOURNAL by the omission of cases 7 and 8. The complete article may be found in the reprints which will be sent on request to the authors.

Read in the Symposium on Vitamins Amino Acids and Enzymes before the joint meeting of the Section on Practice of Medicine and the Section on Experimental Medicine and Therapeutics at the Ninety Fourth Annual Session of the American Medical Association Chicago June 16 1944.

The tremendously heavy expenses of the general nutrition study have been borne by grants from a number of philanthropic persons foundations and commercial concerns without which this study could not have been made. The necessary expense of frequent observations of these patients in their homes and in the clinic over a long period of time has been defrayed by grants from the Nutrition Foundation and from E R Squibb and Sons.

1 The B E S test the colorimetric method described by Bechh Ellinger and Spies is of clinical importance in detecting certain abnormal pigments in the urine of persons with subclinical and clinical states. It is simple and useful but not pathognomonic. Bechh W Ellinger P and Spies T D. Porphyrinuria in Pellagra. Quart J Med 6 305 319 (July) 1937.

CASE 2—History—N C, a white woman aged 23 was brought to the Nutrition Clinic in a state of mental confusion by her mother in June 1941

The patient was so apprehensive and agitated that we found it futile to try to question her or to do a complete physical examination. From the mother we learned that the patient had been in good health until she was 21 years of age. At that time she married but two months later was deserted by her husband. Before returning to the home of her parents, she became "depressed, lost interest in everything, lost her appetite and went down to skin and bone." Three months later she behaved so peculiarly that the neighbors and family became seriously disturbed. She hid in her room when neighbors came to call. She refused meals because she thought her food was being poisoned. She refused to leave her room except at night, when she wandered from room to room. During her nocturnal wanderings, her mother observed, she ate crackers, bread, butter and sugar but never any other type of food. Her parents became alarmed about her condition and called a physician, but she locked herself in her room and refused to see him. Soon after, her mother said she became "delirious" and openly threatened to kill herself or any one who tried to interfere with her. The physician was called again and she



Fig 1 (case 1)—The tongue was red over the tip, the lateral margin and the undersurfaces. Note two ulcerations, the larger on the left. The membrane covering these lesions was grayish white in appearance and contained myriads of Vincent's organisms.

was forcibly sent to a hospital. During her stay in the hospital she never smiled or spoke and became annoyed when her mother or any one tried to persuade her to eat. She was discharged after two months in the hospital. A neighbor whose mental symptoms had disappeared following treatment by us suggested that the mother bring the girl to the Nutrition Clinic.

Examination of the skin, mouth and eyes showed no stigmas of vitamin deficiency disease, and we were uncertain as to whether or not her mental symptoms arose from the lack of some nutrient.

**Laboratory Examination**—The red blood cell count was 3.1 million hemoglobin 11.9 Gm (77 per cent), white blood count 8,200. The pantothenic acid<sup>2</sup> content of her blood averaged 0.07 microgram per cubic centimeter of whole blood, contrasted with the blood of normal subjects whose values range from 0.13 to 0.31 microgram per cubic centimeter of whole blood. Her blood contained 0.28 microgram of riboflavin<sup>3</sup> per cubic

centimeter of whole blood as compared with the normal persons in this laboratory who range from 0.29 to 0.56 microgram per cubic centimeter of whole blood. Repeated determinations of the concentration of ascorbic acid in her plasma<sup>4</sup> varied from 0 to 0.1 mg per hundred cubic centimeters in contrast with the desired level of 0.7 to 1.1. The urine was negative for albumin, sugar, cells and casts. The B E S test was slightly positive in the beginning and gradually became negative. When the urine was tested for nicotinic acid<sup>5</sup> and similar compounds before treatment it was negative. One hour following therapy it became positive. No measurable amount of thiamine was excreted in the urine.<sup>6</sup>

Suspecting that she had been on a high carbohydrate diet for a long period of time and certain that she had been on a poor diet for six months prior to admission, we were led to prescribe 1,000 mg of niacin amide daily. The following day she was calmer, less apprehensive and more cooperative. At this time we prescribed a 4,000 calorie, high protein diet. A week later improvement was obvious to all. She was friendly and cooperative, and she answered our questions willingly, although her responses were retarded and she made no attempt to initiate conversation. Her appetite had improved, and since the third day of treatment she had eaten all the food prescribed. The following week she offered to help her mother with the housework and went shopping with her. At the end of six weeks she had gained 12 pounds (5.4 Kg) in weight and appeared to be perfectly normal. The niacin amide was discontinued at this time. Two months later she began working in an office as a file clerk. Six months later she divorced her husband and subsequently remarried. She now has a normal, healthy child, takes care of her house and child, and does secretarial work for her husband two afternoons a week.

Following an emotional disturbance, this young woman, who had always eaten a high carbohydrate diet, lost her appetite and subsisted on a grossly unbalanced and inadequate diet. Within three months she developed mental symptoms so severe that she was hospitalized. When first seen by us, two months after her discharge from the hospital, she showed no stigmas of deficiency disease other than severe mental symptoms frequently associated with pellagra. The history of an extremely inadequate diet led us to suspect that these symptoms might be nutritional in origin. The administration of 1,000 mg of niacin amide was followed by dramatic improvement in the mental symptoms and appetite. After six weeks on therapy she gained weight and strength and appeared perfectly normal. During the five years that have elapsed since she was treated she has lived a normal, happy life and has had no recurrence of symptoms.

CASE 3—History—Mrs N S, white, aged 67, came to the Nutrition Clinic in March 1943 complaining of an intense burning sensation of the soles of the feet which had persisted for over a year. She had bought various types of shoes and had consulted various physicians and two chiropodists without relief. The burning had become so severe that she could not keep the covers over her feet on the coldest night. She could sleep little and became nervous, restless and depressed. During the winter she had frequent colds, and after each cold the burning of her feet increased and she became more depressed.

Physical examination showed that the patient was well developed and 20 pounds (9 Kg) overweight, otherwise it was negative. Neurologic examination showed that the soles of the feet were extremely sensitive to stroking. Fine passive

<sup>4</sup> Mindlin R L and Butler A M. Determination of Ascorbic Acid in Plasma. *J Biol Chem* 122: 673-686 (Feb.) 1938.

<sup>5</sup> Vilter S P, Spies T D and Matthews, A P. A Method for the Determination of Nicotinic Acid, Nicotinamide, and Possibly Other Pyridine-like Substances in Human Urine. *J Biol Chem* 125: 85-98 (Sept.) 1938.

<sup>6</sup> Schultz A S, Atkin L and Frey C N. A Fermentation Test for Vitamin B<sub>1</sub>. *J Am Chem Soc* 59: 2457, 1937.

<sup>2</sup> Spies T D, Stanbery S R, William R J, Jukes T H and Babcock S H. Pantothenic Acid in Human Nutrition, *J A M A* 115: 523-524 (Aug 17) 1940.

<sup>3</sup> Snell E E, Strong F M and Peterson W H. A Microbiological Assay for Riboflavin. *Indust & Engin Chem (Analyst Ed)* 11: 346 (June) 1939.





changes in the position of the toes were not appreciated, however she named large displacements properly

**Laboratory Examination**—The red blood cell count was 4.12 million, hemoglobin 13.7 Gm (89 per cent), white blood cell count 7,500. There was no ascorbic acid in the plasma. The urine was negative for sugar, albumin, cells and casts. The B E S test was negative, and nicotinic acid was low although the exact amount was not determined. The twenty-four hour excretion of thiamine in the urine, estimated by the fermentation test, was 0.01 mg, whereas the excretion of persons on a good diet is 0.1 mg or above. Following the administration of sterile saline solution the twenty-four hour thiamine excretion remained unchanged. Following the intravenous administration of a 100 mg test dose of thiamine hydrochloride, 90 per cent of the thiamine was retained in contrast with a retention of some 60 per cent or more when tissue stores are adequate.

When questioned about her diet, she told us that she was especially fond of bread, potatoes, desserts and candy. Until her husband died two years previously, she had prepared a varied well balanced diet for him and had eaten an adequate though somewhat high carbohydrate diet herself. Following the death of her husband she ate irregularly and usually ate only the foods she liked best—bread, butter, desserts and candy.

Because of the history of an unbalanced, high carbohydrate diet for two years, we decided to try a therapeutic test for thiamine deficiency despite the fact that the neurologic examination showed no clearcut evidence of nutritional neuritis. Accordingly, she was given 10 cc of sterile saline solution on three consecutive days without therapeutic effect. The following day she was given 100 mg of thiamine hydrochloride intravenously. That night she had no burning of the feet and slept more than she had any night in months. Since she was overweight an 1,800 calorie diet was prescribed and an injection of 50 mg of thiamine was given weekly for four weeks. She has followed the prescribed diet for two months and has lost 5 pounds (2.3 Kg) in weight. The burning of the patient's feet has not returned, she sleeps well, she is more active than she has been for over a year and she is no longer nervous or depressed.

Following the ingestion of a poorly balanced, high carbohydrate diet, this patient developed severe burning of the feet, and, because of this, as well as of nervousness and depression, she could sleep but little. Repeated injections of sterile isotonic solution of sodium chloride had no beneficial effect, but she was completely relieved of symptoms by repeated injections of 50 mg of thiamine hydrochloride intravenously, with the result that she has become her normal self and is no longer nervous or depressed.

**CASE 4—History**—K B, a white man aged 63, came to the Nutrition Clinic in April 1942 complaining of pain and of failing vision of the left eye.

The patient said that he had been in excellent health and had eaten a liberal diet until a year before when he and his wife separated. He began eating in restaurants despite his dislike for the way the food was prepared. He voluntarily restricted his diet to bread, sandwiches, cake, pie, fruit, soft drinks and coffee. He remembers that he drank no milk and seldom ate meat or vegetables. Within two months he lost 15 pounds (6.8 Kg) in weight, noticed that he tired easily and for the first time in his life had insomnia. Six months later his right eye began burning and itching and it felt as if it had a scum over it. He noticed that it appeared 'blood-shot'. He was working in a sawmill at the time and thought that perhaps his eye had been injured by sawdust. He went to a physician who prescribed an eye wash but the eye grew progressively worse. It began to 'water' more and more, and in bright light the pain was so intense that he could not

keep it open. In vain he bought dark glasses to relieve his photophobia. He was certain that he would lose this eye, so he gave up his job and for a month sat at home brooding about his eye and worrying over what would become of him when he had used up his small savings. He became very depressed and thought of suicide for relief. He lost his appetite and for two weeks prior to coming to the clinic ate nothing but crackers, soup and coffee. He came to the Nutrition Clinic at the suggestion of a neighbor whose eyes had improved following treatment.

Examination of his eyes showed that the left eye was normal except for slight redness of the conjunctivas, whereas the right eye showed thickening and intense redness of the conjunctivas and capillary dilatation most pronounced at the inner canthus and extending in triangular formation to the cornea on which there was a small ulcer. He had difficulty keeping the eye open and could distinguish light from dark but could not read or distinguish colors with the left eye. Thorough physical examination revealed no other lesions and no symptoms attributable to nutritive failure except loss of weight, dizziness, weakness, nervousness and depression.

**Laboratory Examination**—The red blood cell count was 4.50 million, hemoglobin 14.6 Gm (94 per cent), white blood cell count 7,600. Determination of the riboflavin content of the blood before treatment was 0.28 microgram per cubic centimeter of whole blood in contrast to values ranging from 0.29 to 0.56 microgram per cubic centimeter in normal persons. Ascorbic acid was absent from the plasma. The urinary excretion of nicotinic acid and thiamine was reduced. The B E S test was negative. Tests for sugar, albumin, cells and casts likewise were negative. Gastric analysis showed in the fasting specimen no rennin (L. Michaelis technic) or pepsinogen (Metts tubes) and no hydrochloric acid, total acidity was 6 degrees. Fifteen minutes after histamine injection free hydrochloric acid was 0, total acidity was 12 degrees.

The patient was given intravenous injections of 20 mg of riboflavin daily. Three days after treatment was initiated the redness of the conjunctivas had decreased, the burning and itching had stopped, photophobia had disappeared, there was less engorgement of the capillaries extending into the cornea, and the ulcer had begun to heal. When his eye began to improve his desire for food returned with the result that he ate a great deal more food than he had been eating. Two weeks after treatment was initiated his eye appeared normal to gross examination, although the corneal scar was evident by slit lamp examination. The riboflavin was discontinued at this time, and he was given 10 mg of thiamine daily by mouth for four weeks and instructed in regard to what foods he should eat.

Almost as dramatic as the improvement in the patient's eye was the change in his personality. Within two weeks he changed from a nervous, depressed man to whom life was a burden to a happy person who looked forward to his job. He went back to work the day after the injections of riboflavin were discontinued. At the present time his weight is normal, he feels well, and recently he was promoted to foreman in the lumber yard in which he works.

Although unilateral ocular lesions are common in riboflavin deficiency, this man was incorrectly treated because his physician did not realize that the severe involvement of the right eye, his loss of weight and strength, and mental depression might have arisen from nutritive failure. Twenty mg of synthetic riboflavin daily was administered intravenously for two weeks. At the end of this time all the eye symptoms had disappeared, his appetite and strength had returned and he went back to work. The administration of 10 mg of thiamine for four weeks resulted in further improvement in his feeling of strength and well-being. He now eats a good diet and has had no return of symptoms.



CASE 5—*History*—G B, a white girl aged 17 years came to the Nutrition Clinic in June 1941 complaining of loss of weight and strength and of nervousness.

She had eaten a liberal, well balanced diet and had been in excellent health until she began working as a clerk in a grocery store a year previously. At this time she decided she was overweight and began reducing her food intake. She drank "coffee for breakfast" and had "a coca cola and candy bar for lunch." She usually stayed in town for the evening and for dinner ate only a sandwich and a piece of cake. She lost weight and strength rapidly and within six months began having burning and pain in the stomach and occasional vomiting. By this time she was sleeping but little and was so nervous that she gave up her position one month prior to the time we first saw her. She said that noises made her nervous and that when she heard the radio or the voices of children she put her fingers in her ears to shut out the sound. At times she heard voices, bells ringing or knocking at the door, although she knew it was "only imagination." She would not stay in the house alone because she was afraid she was going to die or that some one would come and "get" her. At night she had anxiety dreams and refused to sleep without a light. She could not remember what she said to people or what they said to her. She complained of being cold and feeling "dead." Several times in each twenty-four hours she had smothering spells and palpitation associated with fear of death.

Physical examination showed that she was pale and underweight. From her facial expression it was obvious that she was extremely nervous and apprehensive. She cried frequently while she was talking to the physician but said that she did not know why she was crying. Her skin felt cold to the touch and had a mottled blue appearance. Her pulse rate at times was 130 to 150. The electrocardiogram was normal except for increased rate. Otherwise the physical and neurologic examinations were negative.

*Laboratory Examination*—The red blood cells numbered 356 million, hemoglobin 11.5 Gm (75 per cent) and white blood cells 6500. Ascorbic acid was absent from the plasma. In order to study the blood entering and leaving the brain we took samples from the carotid artery and the jugular vein. These samples were examined for oxygen, sugar and lactic acid. The average difference between venous and arterial oxygen was 5.35 volumes per cent contrasted to 7.43 volumes per cent in normal subjects. Simultaneous glucose determinations of venous and arterial blood showed a utilization of 69 mg per hundred cubic centimeters of blood compared to 146 mg per hundred cubic centimeters in normal blood. There was no difference between the lactic acid content of venous and arterial blood. Examination of the urine showed no sugar, albumin, cells or casts. The B E S test was slightly positive. The excretion of nicotinic acid in the urine was below normal levels and thiamine was absent. Gastric analyses showed no free hydrochloric acid, pepsinogen or rennin even after histamine injection.

The intravenous injection of sterile saline solution on three consecutive days was not followed by subjective or objective change. On the fourth day she was given 50 mg of thiamine hydrochloride in sterile saline solution intravenously. Within an hour her whole appearance had changed. She was smiling and calm. Her pulse rate was down, her skin appeared and felt normal. She went home and when she came to the clinic the next morning she said she had slept ten hours and felt more rested than she had for months. She felt warm again and her desire for food had returned. She was given another 50 mg injection of thiamine and instructed to eat a 3000 calory diet high in protein and vitamins supplemented with 2 ounces (60 Gm) of dried brewers' yeast powder mixed with 6 ounces (180 cc) of tomato juice. Within two weeks she

gained 10 pounds (4.5 Kg) in weight the vomiting stopped, the nervous symptoms disappeared and she returned to work. On the numerous occasions on which we have seen her since, her heart rate has not been increased and she has had no more palpitation. She has continued to eat the diet prescribed, and at the present time she is working in a defense plant and is in excellent health.

This girl voluntarily reduced her food intake in order to lose weight. She chose an unbalanced diet and lost weight and strength and developed pseudohallucinations, smothering spells, nervousness and palpitation associated with the fear of impending death. Repeated injections of sterile isotonic solution of sodium chloride failed to give relief. The intravenous administration of 50 mg of thiamine hydrochloride was followed by dramatic relief of all her symptoms. She started eating a well balanced diet high in calories, protein and vitamins supplemented with dried brewers' yeast and tomato juice. At the present time she is in excellent health and is working every day.

CASE 6—*History*—B V, a Negro woman aged 44, admitted in June 1942, was brought to the hospital on a litter in an ambulance by her niece, who had come from a nearby town to visit her and found her very ill. The niece could give no information about the patient except that she had lived alone following the death of her husband two years previously.

Physical examination revealed that the patient was underweight, was irrational and mumbled almost constantly. She had delusions and was disoriented as to time and place. She had both visual and auditory hallucinations. She frequently thought snakes were biting her and that people were trying to kill her. Her tongue was swollen and slightly red at the tip. The lips were reddened, cracked and dry. She vomited water every time she took a drink, and within the first hour after she was admitted she passed three watery, foul smelling stools. The skin was dry and rough, but there were no lesions except for one on the left side of her neck (fig 2). This area, which was 6.5 by 8.5 cm, was red, swollen and covered with vesicles and bullae, many of which subsequently ruptured.

*Laboratory Examination*—Red blood cells numbered 352 million, hemoglobin was 12.8 Gm (83 per cent) and the white blood cell count was 12,800. Ascorbic acid was absent from the plasma. Examination of the urine showed no sugar, a slight trace of albumin, a few cells and casts. Tests for thiamine and nicotinic acid were negative. The B E S test was strongly positive.

Although the patient had a minimal degree of pellagra, involvement of the mucous membrane and only a small unilateral pellagrous skin lesion, because of her obvious loss of weight, her severe mental symptoms and our experience of having seen small unilateral lesions before we made a positive diagnosis of niacin amide deficiency and instituted therapy without any information in regard to her past diet. Soon after she came under our care 2000 cc of isotonic solution of sodium chloride containing 500 mg of niacin amide was injected subcutaneously. During the night she changed from an irrational and screaming person to one who was quiet and cooperative. A slight redness on the tip of the tongue was now replaced by a grayish white color. Even before we offered her food, she requested it. That day she took a 3000 calory diet and six 100 mg doses of niacin amide. On the third hospital day she was completely oriented and ate a 4,000 calory diet with great relish. Niacin amide in the same amount and the diet were continued for one week. By that time she had gained in weight, she was strong enough to walk around the ward, the lesion on her neck had desquamated and begun to heal and her mind was perfectly clear. Three days later she was discharged from the hospital and went home alone on the street car.

Before leaving the hospital however, she told us that her husband had died two years previously and that thereafter

7. Himwich, H. E., Spies, T. D., Fazekas, J. F. and Vesin, S. Cerebral Carbohydrate Metabolism During Deficiency of Various Members of the Vitamin B Complex. *Am J Med Sci* 199: 849-853 (June) 1940.

she had lived alone. Her only income during the past two years had been what she had earned doing laundry work. She seemed to think her diet had been adequate prior to the death of her husband, and she was certain that she had not had any serious illnesses. Following the death of her husband, however, she had no money except what she earned by occasionally doing laundry work, so she restricted her diet to corn bread biscuits, salt pork and dried beans. She liked these foods, and they were relatively inexpensive. Four months prior to admission to the hospital she said that she had severe influenza and pneumonia, and from that time on her appetite had been poor and she had been too weak to take in washing, with the result that she had very little money. She began eating only oatmeal, partially because it was inexpensive but chiefly because she was weak and found it easy to prepare. One month later for the first time she noticed severe pains in her stomach, and she became nauseated and had frequent vomiting and occasional



Fig 2 (case 6)—Note irregular shaped area of pellagrous dermatitis. It is well demarcated from the adjacent normal appearing tissue. The reddish border does not show in black and white photograph. No other clinical evidence of pellagra visible in the form of either dermatitis or mucous membrane lesions.

watery stools. These symptoms persisted, and six weeks later a spot appeared on her neck, but she said she paid no attention to it despite the fact that it burned and itched. Each day she realized that she was weaker than the day before. She became so forgetful that she thought her mind "was leaving her." She refused to take food the neighbors offered her because she was afraid of being poisoned, and she did not go to see a doctor for fear of being lost. She didn't wish to let her relatives know of her plight as she thought they would think her "crazy headed." She remembered nothing that had happened for a week prior to her admission to the hospital.

Within two weeks after she was discharged from the hospital she began working in a bag factory. Her income is adequate; she has gained in weight and strength, and she continues to eat a liberal diet and volunteers that she is in excellent health.

Without a nutrition history, which was unobtainable in this case, and in the absence of clearcut diagnostic lesions, a diagnosis of pellagra is difficult. The diag-

nosis in this case was based on the patient's obvious loss of weight, her severe mental symptoms and the appearance of the small unilateral skin lesion on the neck. The correctness of the diagnosis and the adequacy of therapy were demonstrated by the dramatic improvement which followed the parenteral injection of 500 mg of niacin amide. Overnight she changed from a critically ill, mentally diseased and agitated person to one who was completely oriented and calm. Therapy was continued for a week, during which time her appetite became enormous, her strength returned and all her symptoms disappeared. She returned home alone a week after she was admitted to the hospital and subsequently returned to work.

**CASE 9—History**—Mrs. O. J., a white woman aged 67, came to the Nutrition Clinic in June 1941 complaining of "nervousness." She gave a history of having had perfect health until she was 32 years of age, at which time a number of emotional problems concerning one of her daughters arose. She worried so much over this daughter that she lost her appetite and ate very little despite the fact that there was a liberal and varied food supply available. Within twelve months she lost 30 pounds (13.6 Kg) in weight, and the following spring her mouth and tongue became sore and she had diarrhea for the first time in her life. Each spring and fall she had had recurrences of the sore mouth and tongue and diarrhea. Her husband died nine years prior to the time she came to the clinic. Her income, which had been adequate, became inadequate, and her diet became poorer than it ever had been. The time came when she seldom ate eggs or milk and never had lean meat. She stated that for the last nine years, each spring and fall, the sore mouth and tongue and the diarrhea had become increasingly severe and that for the past five or six years she had been "crazy headed" at these times. Gradually she stopped going to visit the neighbors because she was afraid of becoming too confused to find her way back. She had not been away from home for two years. The children playing nearby made her feel, to quote her own words, "like I want to scream." She never scolded them, however, for she realized it was "just nerves."

For an indefinite period extending over at least five years, she had seen flashing lights and crowds of people, out of both eyes, but always toward the right. She understood that these were pseudohallucinations and knew that actually there were no people there. In fact it rather amused her at times, but at other times it seriously disturbed her. Frequently, each day for five years, she had heard the voices of a daughter who had died and of another daughter who lived several hundred miles away. She had complete insight, but that did not always relieve her distress at hearing their voices. Many times she had a premonition of some impending calamity which would destroy herself and her family. Her greatest worry, however, was the sudden spells of dizziness which made her feel, as she described it, "as if I will pitch over on my head."

The burning of her feet had been so severe for two years, especially at night that she used to get up and bathe them in cold water. Her sleep was fitful. She dreaded sleeping because she had "scary dreams." She was afraid to sleep alone, and yet she had such insight into her condition that she was ashamed to ask any one to sleep with her. Many times she sat up until the rest of the family went to bed, then she sat just outside their door all night. She often hoped that she would die before she went "plumb crazy."

Throughout the time she was giving this history—and the times we have seen her since—she has stressed the increase in severity of all these symptoms during the spring and fall each year since their onset.

Physical examination showed that she was well developed, overweight, timid and nervous. Her tongue was greatly swollen and slightly red at the tip. Her skin was generally dry and scaling slightly over the elbows and forearms. There was slight injection of the vessels of the conjunctivae. Neurologic

examination showed definite tenderness to deep pressure in the muscles and over the nerve terminals of the legs, feet, forearms and arms. Vibratory sense was diminished in the forearms and below the knees, and there was some diminution in touch sense below the knees. Sensitivity to pinprick was decreased in the hands and feet. The reflexes were normal.

**Laboratory Examination**—The red blood cell count was 340 million, hemoglobin 11.5 Gm (75 per cent), and white blood cell count 8,100. Ascorbic acid was absent from the plasma. Examination of the urine showed no sugar, albumin, cells or casts. No thiamine was detected in the twenty-four hour excretion of urine, whereas the excretion of persons on an adequate intake is 0.1 mg or above. Following the administration of 100 mg of thiamine hydrochloride intravenously, 87 per cent of this amount was retained, in contrast to the retention of some 60 per cent or less in persons whose tissue stores of thiamine are adequate. The B E S test was negative. Gastric analysis showed no free hydrochloric acid, pepsinogen or rennin even after histamine. A gastrointestinal series was negative.

Our past experience led us to realize that this woman had nutritional failure with thiamine deficiency predominating. As a matter of testing under controlled conditions, we gave her three separate injections of saline solution intravenously. As she did not improve in any way, we then added 100 mg of thiamine hydrochloride. Her response, subjectively and objectively, was amazing. Within an hour her distressed facial expression disappeared, and she said that her head had stopped "swimming." The following day she volunteered that she had not heard the voices of her daughters and had not seen flashing lights or crowds of people since the thiamine was administered. Her feet had stopped burning and she had slept well for the first time in several years.

This patient had been on an inadequate diet for several years. She began having "stomach trouble," became nervous and dizzy and developed pseudohallucinations. She saw crowds of people and heard the voice of a daughter who was dead and of another daughter who lived in a distant town. She had severe burning of the feet. The repeated intravenous injection of sterile saline solution gave her no relief. The administration of 100 mg of thiamine hydrochloride intravenously relieved her within an hour. Her feet stopped burning,

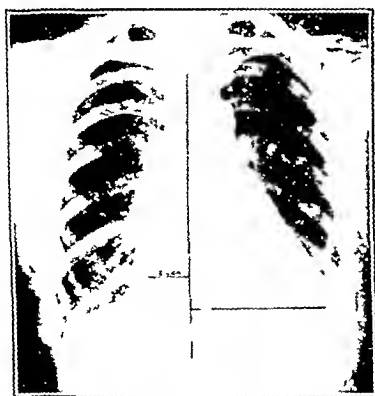


Fig 3 (case 10)—Note dilatation of enlarged beriberi heart. Contrast measurements in this view before therapy with figure 4.

and she no longer saw crowds of people or heard the voices of her daughters.

**CASE 10—History**—D E, a Negro woman aged 40, was admitted to the hospital in October 1942 in a stuporous condition but obviously in acute distress. A history could not be obtained until later.

Physical examination revealed that she had dyspnea and orthopnea, edema with general anasarca, and fluid in the abdomen. Her heart was enlarged, there was a systolic murmur

over the entire precordium, the pulse rate was over 140. The neck veins were greatly extended. The liver was enlarged and painful.

**Laboratory Examination**—The red blood cell count was 333 million, hemoglobin 11.3 Gm (73 per cent) and white blood cell count 12,300. No ascorbic acid was present in the plasma. Examination of the urine showed no sugar, albumin, cells or casts. The B E S test was positive. Ninety-one per cent of the initial dose of 100 mg of thiamine was retained. No

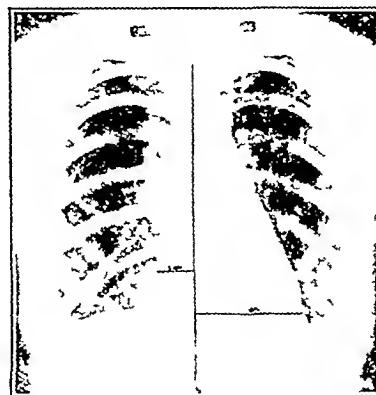


Fig 4 (case 10)—The heart has decreased in its transverse diameter as evidenced by change in size following thiamine administration. See case 10 for full description.

nicotinic acid was detected in the urine. Gastric analysis showed no free hydrochloric acid, pepsinogen or rennin even after histamine.

The patient was digitalized without benefit. It occurred to us that the edema and anasarca might be covering up general malnutrition and that she might have a "beriberi heart," where upon 100 mg of thiamine hydrochloride was injected intravenously. Within twenty-four hours she began feeling better and in seventy-two hours her pulse rate was normal and she had lost 30 pounds (13.6 Kg) of fluid (water). Thiamine was given each day for ten days, at the end of which time she had lost 10 additional pounds of fluid. The dyspnea and heart murmur disappeared. Six foot x-ray films taken before (fig 3) and after (fig 4) thiamine therapy showed clearly the decrease in the size of the heart. After she started to improve, it was found that the peripheral nerves were tender. Prior to this time she had been too stuporous to respond to pressure. After the edema had subsided, general atrophy of the body, especially the muscles, could be seen.

After the patient was better, we obtained from her the following dietary history and history of the onset of her illness. For years she had eaten chiefly refined carbohydrates and fats. About two years before admission to the hospital she noticed that she was beginning to lose strength. About one year later she experienced a feeling of heaviness and stiffness of the legs. For many months she had burning of the ankles and the soles and dorsal surfaces of the feet. Concurrently she had headaches, insomnia, nervousness, dizziness, dyspnea, orthopnea and palpitation. Two months prior to admission her feet began to swell and the swelling gradually extended up the body. She went to a number of physicians who told her she had "heart trouble" and to a number of "herb doctors" who failed to relieve her. Two weeks before she came to the hospital she became unable to walk.

The patient, who was admitted to the hospital in a stuporous condition, had an enlarged heart, cardiac murmurs, tachycardia and a sore and tender liver. Since she did not respond to digitalis, we thought of the possibility of thiamine deficiency masked by stupor and anasarca. We treated her accordingly, with the results described. At the present time she is working and is in excellent health.

## SUMMARY AND CONCLUSIONS

1 The result of the clinical and laboratory studies of severe atypical deficiency diseases indicates that the very essence of successful medical practice is dependent on a precise diagnosis followed by adequate and persistent therapy

2 Improvement in the health and nutritional status of 10 representative cases illustrates the thorough study required before diagnosis of nutritive failure is justified

Case 1 illustrates how a severe infection, followed by greatly reduced food intake, led to nutritive failure in an infant. The symptoms were relieved by prompt therapy, and the child is growing normally and in good health

Case 2 illustrates how an extremely unbalanced diet led to a psychosis that could be relieved quickly by judicious nutritive therapy, allowing this person to lead a normal and happy life

Case 3 illustrates severe sensory symptoms arising from the peripheral nerves of the legs and feet that were promptly relieved by means of thiamine. With the disappearance of these symptoms the person was no longer nervous or depressed

Case 4 illustrates a severe unilateral ocular lesion associated with loss of weight and strength. Treatment with riboflavin was followed by healing, and this person was able to return to work

Case 5 is illustrative of a girl who voluntarily reduced her food intake in order to lose weight. She developed pseudohallucinations, smothering spells, nervousness and palpitation. Repeated injections of sterile saline solution failed to give relief, but all these symptoms disappeared following the administration of thiamine. The laboratory findings were suggestive of diminished cerebral metabolism and offer an explanation of some of the symptoms

Case 6 is illustrative of a Negro woman who became psychotic and who fortunately had a small unilateral skin lesion on the side of her neck which could be diagnosed as pellagra. After treatment she was able to return to her work and remains in excellent health

Case 9 illustrates the effects of a diet which had been inadequate and unbalanced for an indefinite period. The patient became nervous and felt "like she wanted to scream" and she developed pseudohallucinations and heard voices even though she knew the people were hundreds of miles away. She saw people although she actually knew they were not there. She developed severe burning of the feet. Three separate injections of saline solution intravenously did not give relief, but 100 mg of thiamine hydrochloride relieved her within an hour. Her feet stopped burning and she volunteered that she no longer heard the voices of her daughters or saw the crowds of people

Case 10 was one in which a woman was brought in a stuporous condition into the hospital. She had an enlarged heart, cardiac murmurs, tachycardia, anasarca, and a sore and tender liver. She failed to respond to digitalis. Her "beriberi" heart was treated with excellent results, as described in the history. At the present time she is working and is in excellent health

3 These findings show that severe atypical deficiency disease like other forms of nutritive failure, can be successfully corrected by the application of the following four essentials for therapy

(a) Diet 4,000 calories, 120-150 Gm of protein, rich in vitamins and minerals

(b) Basic Therapy thiamine, riboflavin, niacin amide, ascorbic acid, orally

(c) Additional Medication synthetic vitamins as indicated, orally or parenterally

(d) Natural B Complex brewers' yeast or extract, or rice bran extract, and/or liver extract orally or parenterally

## PANEL DISCUSSION

ON PAPERS OF DR GOVIER, DR SEVRINGHAUS AND  
DRS SPIES, COGSWELL AND VILTER

DR MORRIS FISHBEIN, Chicago, Moderator. It is difficult to be moderator on a subject in which there has been so much exaggeration and so much exploitation. It is easy to see, however, why there should be a Dr Jekyll and a Mr Hyde aspect to the subject, because vitamins lend themselves to a type of use by the public without medical direction which would not be possible for the sulfonamides or penicillin. The majority of the responsibility for the present stage of the vitamin situation must rest on the medical profession but certainly equally at this time a tremendous responsibility must rest on the governmental officials charged with regulation in this field. I refer, of course, to the Food and Drug Administration which has to do with the standardization of formulas and dosages, and particularly to the Federal Trade Commission, which must bear the major responsibility for the control of claims made to the public in newspapers and periodicals and on the radio. Now, as an example of the conditioning of the public to excessive use of unnecessary vitamins I should like to read a letter sent by Mr Donald Nelson to a leading manufacturer in Chicago whose firm has some 6,000 employees. The letter was sent within the past week. "I have made a careful study of a project which has been conducted for more than a year to provide a daily vitamin supplement to the diets of war workers in large aircraft plants. This project is sponsored by the National Research Council and administered by a group of scientific people. The development has been chartered with scientific precision and the results have proved convincing. Absenteeism has dropped to a new low level, and the general health and attitude of the workers has risen to an unexpected high. I have reason to know that this resulted in a marked improvement in production." That means of course, that under the auspices of the War Production Board extra combined vitamin pills have been given to hundreds of thousands of workers in American industry and that under the apparent auspices of a National Research Council committee the word is going out that the daily taking of such combined pills by workers results in a fall in absenteeism, an increase in production, an improvement in general health and a benefit to the mental attitude. Now if that statement is made under those auspices how can we blame the public generally for believing what they read in the advertisements? Certainly the worker who is told under the authority of the plant management that the taking of these pills every day by all the workers has brought about these wonderful results is going to wonder why he should not at once go and buy a few bottles for his wife and the rest of the family. So it is that this conditioning is not wholly the fault of the medical profession. It must rest with many other agencies. The first question that I have here reads "To what extent is vitamin C helpful in the treatment of arthritis?"

DR ELMER L SEVRINGHAUS, Madison Wis. As far as I know there has been nothing published on an extensive series of arthritic patients relieved by vitamin C treatment. Of course, severe scurvy may involve acute or subacute arthritic phenomena in the adult but more frequently in children. I have seen 1 case and I only that I know of with a bilateral arthritic involvement promptly helped by vitamin C. It must be uncommon.

DR FISHBEIN. The next question says "What is the value of thiamine which is much recommended in arthritic conditions?"

DR TOM D SPIES, Birmingham Ala. As far as I know thiamine does not help people with arthritic conditions unless they also have a superimposed thiamine deficiency. Not infre-

quently people have a neuritis which may be of thiamine lack in origin, and it is not surprising that some people may be told that they have arthritic pains and that they receive some relief following administration of large amounts of thiamine

DR FISHBEIN The next question is 'Is there any danger in giving thiamine hydrochloride intravenously?'

DR SEVRINGHAUS That would depend entirely on the dose I have not known of any catastrophes or difficulties from it. Some people are using enormous doses which do not appeal to me. I think it is far more important if it is to be used parenterally, that there should be repeated doses of moderate size, say from 5 to 50 milligrams, rather than enormous doses with which there might be risk. With such doses I think there is no such risk.

DR FISHBEIN For Dr Holt 'What methods of analysis for amino acids are employed? Are these of sufficient accuracy to justify conclusions?'

DR L EMMETT HOLT JR, Baltimore There are accurate analyses for the measurement of amino acids in protein hydrolysis—fairly accurate methods suitable for foods and only a few methods accurate for urine assay. We have about six amino acids that can readily be determined in the urine and we get information of value by using those measurements. In the near future there is a prospect that the number will be extended from six to ten but there are still a number of important amino acids that cannot be accurately assayed in the urine.

DR FISHBEIN Dr Spies, "What do you do with persistent, profuse salivary flow when the patient is otherwise well?"

DR SPIES I do not do anything with such a patient unless the person has pellagra. One of the symptoms of pellagra is excessive salivation. That, however, isn't the only thing that causes excessive salivation, and unless pellagra is behind it we do not do anything about it.

DR FISHBEIN For Dr Spies 'Much has been done in denoting minimum requirements of vitamins. No attention has been paid to the ability of the organism to absorb and synthesize vitamins. Is it not true that such entities as infection and endocrine dyscrasias interfere with absorption? Has not the vitamin been unjustly misjudged as useless when actually the organism is not brought up to balance to utilize the vitamin?'

DR SPIES A vitamin deficiency may arise from a number of different causes. A person may eat an adequate diet. He may not absorb it properly or he may absorb it properly and not utilize it properly or his requirement may be excessive, as in the case of hyperthyroidism or people with fevers. Any one who has absorption trouble or who has trouble in utilization or whose requirement is abnormal is obviously a medical problem. The vitamin disturbance is engrafted on this.

DR FISHBEIN Dr Sevringhaus

DR SEVRINGHAUS There is a further answer to that question, and I am going to take the liberty of asking Dr Holt to tell about his work on the synthesis of vitamins.

DR HOLT We made some observations in Baltimore a few months ago on persons placed on a thiamine deficient diet. There was definite evidence that under certain conditions in our experiments quantities of thiamine that were considerable could be manufactured by the intestinal bacteria. There were not enough entirely to provide for the thiamine requirements and furthermore this biosynthesis was abolished by the administration of sulfonamides. We have finished some experiments, unpublished as yet on persons on a low riboflavin intake. The diet was as before, a synthetic diet in which all vitamins were supplied as pure substances. These persons—there were 12 of them—were continued on the experiment for more than three months. They were getting merely traces of riboflavin in the diet, about 60 to 70 grams a day. They continued throughout this period to put out in the urine twice as much as they were ingesting and in the stools four times as much each day as they were digesting. In other words, they were secreting six times as much riboflavin as they were taking and these values in the excreta continued unchanged. We tried to stop the riboflavin

synthesis by giving sulfonamides in the maximum doses. We were unable to stop it as we had in the case of thiamine, so we are under the impression that it is a difficult thing to get a riboflavin deficiency. I do not doubt that it has been done and can be done under particular situations, but I really do not know what those are yet. However, it is clear that under many conditions the riboflavin requirement is minimal.

DR FISHBEIN Dr Sevringhaus, 'What about the large dosages of vitamin A recommended by Cuban authors for hypertension? Are there any dangers in these large dosages of vitamin A?'

DR SEVRINGHAUS In addition to the poor economics of feeding large amounts of the material which has already been shown to be futile with commercial supplies of vitamin A, we must recognize that big doses of vitamin A, such as 100,000 or more units daily, sometimes cause disturbance in the gastrointestinal tract. The most exaggerated form of it is the illness that has been caused to some explorers who ate bear liver, which has enormous amounts of vitamin A and their overdose is perhaps one of the few instances of illness from too much vitamin.

DR FISHBEIN Apparently some one, impressed by the advertisements for vitamin E, wants to ask Dr Holt "Has there been any relation between arginine and vitamin E?"

DR HOLT The answer is no.

DR FISHBEIN A question also addressed to Dr Holt 'What is the influence of the sulfonamides on the vitamins?'

DR HOLT The sulfonamides inhibit the growth of certain bacteria in the intestinal tract, and by that means they may reduce the available thiamines.

DR FISHBEIN I have a question for Dr Sevringhaus 'How long would you continue to give thiamine and other factors of the vitamin B complex to a patient with peripheral neuritis when they do not appear to be producing satisfactory results before coming to any conclusion regarding the therapeutic value?'

DR SEVRINGHAUS Not more than three months but I do not believe one could be positive that there was no benefit if one made the program of treatment a month or less. The changes are certainly slow, and the more extensive the lesion the longer the time it will take until recovery has been achieved.

DR FISHBEIN Apparently the one speaker who was completely able to satisfy the audience so that there are no questions for him was Dr Govier. I would say, in closing the panel, that in the present evolutionary stage of the use of vitamins in the United States it has been clearly established that serious vitamin deficiencies do exist although the exact extent of such deficiencies in the so called subclinical stage is not yet clearly apparent regardless of pronouncements made by any governmental industrial or manufacturing agencies. The greatest portion of the promotion of vitamins to the public is in such clearly undefined conditions as the arthritic conditions, the common cold, beauty charm and rejuvenation. It is quite possible to sell almost anything for those conditions and get a fair degree of response from the public. The responsibility rests largely on the medical profession as to the extent to which the public is conditioned to the indiscriminate use of vitamins. The worst evil in the picture today is the sale of vitamin combinations containing large amounts of vitamin A, large amounts or relatively small amounts, depending on the market price at the time, of vitamin C and totally unnecessary vitamin D for adults as nearly as we can determine, at least except when prescribed by a physician. I believe the future is going to bring us back more and more to that point of view in relationship to the use of vitamins which we had to adopt in 1906 or '07 on the so called shotgun prescription of drugs. So long as we permit the sale of combinations containing anywhere from seven to ten different vitamins and five to eight different minerals in a single pill, with the hope that something in the mixture will hit something that the patient has we are getting farther and farther away from scientific medicine.

## DIGITALIS POISONING

GEORGE R. HERRMANN, M.D.

GEORGE M. DICHERD, JR., M.D.

AND

W. FRANK MCKINLEY, M.D.

GALVESTON, TEXAS

Digitalis, like many other potent drugs, exhibits a narrow zone between therapeutic effectiveness and toxicity. The symptoms and signs of what may be considered poisoning should be clearly set forth, albeit they may be somewhat arbitrarily and dogmatically delineated. We may consider as manifestations of overdigitalization the development of symptoms more serious than anorexia and nausea, i.e., the appearance, with or without symptoms, of premature ventricular contractions, bigeminy, atrial fibrillation, paroxysmal atrial tachycardia with or without auriculoventricular block or prolongation of the PR conduction time or S-T segment changes. In extreme cases death has occurred, presumably from cardiac or ventricular inhibition or ventricular fibrillation.

Serious toxic manifestations from overdosage of digitalis glucosides have been more and more frequently observed during the past few years. Isolated cases<sup>1</sup> of severe intoxication have been reported from various clinics, but few statistics as to the actual frequency are available. It would be well worth while to have these for comparison with our figures and for study. In

the reports of clinical investigations of some of the newer crystalline preparations, as in Chavez's<sup>2</sup> recent paper on the advantages of ouabain (Arnaud's), the author records the fact that no serious toxic reactions were observed in his twenty years of experience with the drug. This exemplifies the success that attends the personal use of potent drugs by a painstaking, careful physician.

Fahr and LaDue<sup>3</sup> stated that only 10 of 256 patients who were given lanatoside C intravenously or orally suffered from nausea and occasional vomiting and that these symptoms cleared up with discontinuation of the drug administration. They state that no patients showed mental or visual disturbances or absolute intolerance to lanatoside C. They admit that 8 patients did not tolerate the usual dose, because of nausea and vomiting and extrasystoles. Three others showed extrasystoles, in 2 of which there was bigeminy. One elderly patient who had arteriosclerotic coronary artery disease was observed to develop complete heart block in the presence of auricular fibrillation following digitalization with lanatoside C.

The subject of digitalis poisoning has apparently not been particularly popular, probably because it does not reflect credit or bring prestige to the reporter. Teachers, and especially cardiologists, recognize certain responsibilities in their own spheres of influence or communities in the matter of the use of potent drugs. The increase in the number of toxic reactions of any drug calls for investigation of all the possible factors that have contributed so that steps may be taken in the prevention of further difficulties.

## OUR EXPERIENCES

For some time we have suspected that there has been an undue and undesirable increase in the frequency with which we have been confronted with cases of digitalis poisoning. We therefore have attempted to determine the actual frequency with which these embarrassing conditions with disturbing symptoms have been occurring. We have established and compared the average incidence of digitalis poisoning cases admitted to the medical service of the John Sealy Hospital for the ten year period 1930-1939 and each year thereafter 1940, 1941, 1942 and 1943, as shown in table 1.

It was seen in the ten year period that there were only 8 cases, an average of about 1 case a year as compared with 3 cases in 1940, 6 cases in 1941, 11 cases in 1942 and 16 cases in 1943. There was thus a tenfold to twentyfold increase in poisoning. This occurred in a relatively small service of 500 to 600 hospitalized cardiac patients a year. Of these 1 case in every 3, or about 225 each year, presented congestive heart failure and received digitalis medication.

On this rough statistical basis only 1 in 300 was poisoned up to 1940, when 1 in 100 then 1 in 50 in 1941, 1 in 20 in 1942 and finally 1 in every 15 cases in 1943 treated with digitalis showed symptoms of moderate to severe intoxication.

A study shown in table 2 of the age, sex and color distribution of our patients that had been overdigitalized to the point of poisoning revealed little suggestive information. There was a grand total of 44 cases, 28 were observed in males, as contrasted with 16 in females. There were more cases among Negroes than among white persons, particularly among the Negro females.

From the Cardiological Service of the John Sealy Hospital and the University of Texas Department of Medicine.

Read before the first Pan American Cardiological Congress held at the inauguration of the Instituto Nacional de Cardiología in México D. F. April 20, 1944.

- 1 Reports of isolated cases.
  - Murgel L. Ventricular Paroxysmal Tachycardia Due to Digitalis Intoxication. Case Rev. med. munic. 5: 323 (March) 1943.
  - Zubillaga R. Auricular Flutter Precipitated by Ampule of Ouabain (Crystallized Strophanthin) in Previously Digitalized Patient. Bol. hosp. Caracas 41: 145 (May-Aug.) 1942.
  - Matte, R. Lira E. and Valle E. Digitalis Intoxication. Case in Child. Rev. chilena de pediat. 12: 850 (Nov.) 1941.
  - Wilkinson K. D. Digitalis Poisoning 2 Cases. Brit. Heart J. 4: 1 (Jan-April) 1942.
  - Horacio Liccioni. Transitory Auricular Flutter Due to Digitalis Intoxication. Case Rev. policlin. Caracas 10: 192 (May-June) 1941.
  - Imelio L. and Taltavull R. J. Pericardiac Calcification and Digitalis Auricular Flutter. Case Rev. med. de Rosario 30: 1195 (Nov.) 1940.
  - Cohen R. V. and Brodsky M. L. Digitalis Allergy. Case J. Allergy 12: 69 (Nov.) 1940.
  - Gonzalez Aguirre S. Massive Intoxication of a Boy 5 Years Old. Arch. argent. de pediat. 11: 169 (Aug.) 1940.
  - Varga T. and Greiner K. Digitalis Poisoning in Child. Case Kinderarztl. Praxis 11: 218 (July) 1940.
  - Varga T. and Greiner K. Digitalis Poisoning in a Child. Case Orvosi hetil. 84: 188 (April 13) 1940.
  - Malamani V. Unusual Behavior of Electrocardiogram (Type of Myocardial Infarct After Administration of Digitalis in Patient with Rheumatic Cardiopathy). Gazz. d. osp. 60: 683 (July) 1939.
  - Kiss P. and Wollek B. Interesting Digitalis Poisoning in Child. Orvosi hetil. 83: 225 (March 11) 1939.
  - Lorenzo R. Auricular Fibrillation as a Manifestation of Intolerance to Digitalis Preparations with Report of Case. Premsa med. argent. 25: 811 (April 27) 1938.
  - Dry T. J. and Koelsche G. A. Complete Auriculoventricular Disconnection Due to Digitalis Without Systemic Effects of Overdosage. Case Ann. Int. Med. 11: 2043 (May) 1938.
  - Allen F. M. B. Digitalis Poisoning in Child with Recovery. Brit. M. J. 1: 896 (April 23) 1938.
  - Duvour M. Pollet L. Desoille H. and Gaultier M. Severe Digitalis Intoxication. Electrocardiographic Study. 3 Cases. Bull. et mem. Soc. med. d. hop. de Paris 54: 159 (Jan. 31) 1938.
  - Halbron P. Lenormand J. and Meyer Heine A. Complete Arrhythmia Caused by Intoxication Following Attempted Suicide. Case. Paris med. 2: 124 (Aug. 14) 1937.
  - Cattaneo L. Dangers of Additive Effect of Calcium and Digitalis Therapy. Fatal Case. Atti Soc. ital. di ostet. e ginec. 33: 47 (Jan-Feb.) 1937.
  - Lambert G. Digitalis Coupling or Extrasystolic Coupled Rhythm. Roy. Berkshire Hosp. Rep. 1934 and 1935 p. 69.
  - Bower J. O. and Meagle H. A. K. Additive Effect of Calcium and Digitalis. Warning with Report of Two Deaths. J. A. M. A. 106: 1151 (April 4) 1936.
  - Tomaszewski W. and Lapa W. Electrocardiographic Study of Cardiac Disturbances Resulting from Attempted Suicide with Digitalin. Arch. d. mal. du cœur 29: 196 (March) 1936.
  - Poumailloux V. Desoille H. and Végreanu. Digitalis Poisoning. Personal Cases. Medicolegal Interest. Ann. de med. leg. 15: 789 (July) 1935.
  - Tourreilles J. F. and Vazquez P. C. Total Auriculoventricular Block Caused by Digitalin. Premsa med. argent. 22: 1119 (June) 1935.
  - Parson G. W. Visual and Cerebral Manifestations of Digitalis Poisoning. Tri-State M. J. 137: 5 (Nov.) 1934.

2 Chavez I. Comparative Value of Digitalis and of Ouabain in the Treatment of Heart Failure. Arch. Int. Med. 72: 168 (Aug.) 1943.

3 Fahr G. and LaDue J. A. Preliminary Investigation of the Therapeutic Value of Lanatoside C (Digilamid C). Am. Heart J. 21: 133 (Feb.) 1941.



There were three times as many Negro females as white females. The Negro and white males were about equally distributed. The average ages varied but little. The Negro males had the highest age average. There were 25 cases of poisoning among the Negro and 19 cases among the white patients. This does not warrant any assumption of the less careful treatment

TABLE 1—Cases of Digitalis Poisoning

| Year   | 1900 to 1909 | 1910 | 1911 | 1912 | 1913 |
|--------|--------------|------|------|------|------|
| Number | 8            | 3    | 6    | 11   | 16   |

TABLE 2—Distribution of Cases of Digitalis Poisoning

| Year   | 1900 to 1909 | 1910 | 1911 | 1912 | 1913 |
|--------|--------------|------|------|------|------|
| Number | 8            | 3    | 6    | 11   | 16   |

for the Negroes but probably is due in a large part to lower intelligence and may indicate less careful observance of directions on their part.

Types of heart disease associated with digitalis poisoning are shown in table 3. In this series of 44 patients who showed signs of overdigitalization the great majority presented evidences of hypertensive arteriosclerotic heart disease. This is, of course, the most common cause of heart failure in general city hospitals. There were 21 pure hypertensives, 8 showed evidences of advanced arteriosclerosis in addition to hypertension, and 5 showed evidences of coronary sclerosis without hypertension. Four were hypertensives with syphilis and 3 with syphilitic aortic disease. There was only 1 case of rheumatic heart disease, 1 with congenital heart disease and 1 with no heart disease in the series.

The type of heart disease with congestive failure that predominated in our series is just the type that our Latin American colleagues<sup>3</sup> found to respond most spectacularly to the preliminary use of ouabain in doses of 0.25 mg intravenously once or twice a day for six days. In such treatment the patient must not have had any digitalis or cardiac glucosides within two weeks of admission in congestive failure.

Very few patients of this type come to us in this day without having been treated with potent digitalis preparations. Most of the hospitalized patients have been previously digitalized without achieving the desired prompt reestablishment of circulatory equilibrium.

The symptoms and signs exhibited by the 44 patients admitted with digitalis poisoning varied widely, as

TABLE 3—Age, Sex and Color

|               |          |               |          |             |    |
|---------------|----------|---------------|----------|-------------|----|
| Males white   | 15       | Males Negro   | 13       | Total       | 28 |
| Ages          | 46 to 63 | Ages          | 36 to 76 |             |    |
| Average age   | 46       | Average age   | 53       |             |    |
| Females white | 4        | Females Negro | 19       | Total       | 16 |
| Ages          | 14 to 66 | Ages          | 18 to 63 |             |    |
| Average age   | 44       | Average age   | 43       |             |    |
| Total white   | 19       | Total Negro   | 25       | Grand total | 44 |

shown in table 4. A surprisingly large number, 17, did not complain of any symptoms of poisoning whatever but showed signs of poisoning, particularly disorders of the cardiac mechanism, which were recorded by electrocardiographic studies. In those with symptoms, anorexia was present in 21, nausea in 18, vomiting in 16, diarrhea in 5, weakness and fatigue in 4, yellow vision in 6 and scotomas in 3.

Abnormal electrocardiographic signs exhibited were most important. Peculiarly enough in our series, the

most common disturbance in cardiac action, induced by overdigitalization was paroxysmal tachycardia with auriculoventricular block, which was recorded in 20 cases. Isolated premature contractions were noted in 6, trigeminy once, and bigeminy was found in 12 cases, ordinary atrioventricular heart block in 7 and sinoatrial block in only 1. Nodal rhythm in 2 and conspicuous bradycardia in 2. Atrial fibrillation developed in 10 cases and flutter in 1. Depression of the R-S-T segments and negativity of T waves, so commonly associated with digitalization were present in only 15 cases. Death followed shortly after intravenous injection of a crystalline digitamid in 0.5 mg dose in 2 cases. Death was presumably the result of ventricular fibrillation in each case. Two other patients with old hypertensive coronary arteriosclerosis in severe congestive failure refractory to diuretic treatment had been digitalized to the limit. They were then given a half milligram of digoxin by mouth as a last resort in the hope of augmentation and died during the following night, possibly as the result of the medication.

## COMMENT

The questions raised by our findings are numerous. The data are not extensive and permit of no far reaching conclusions but command serious consideration and further investigation. They call attention to the need

TABLE 4—Symptoms and Signs in 44 Cases of Digitalis Poisoning

|   | Cases |
|---|-------|
| Anorexia  | 21    |
| Nausea  | 18    |
| Vomiting  | 16    |
| Diarrhea  | 5     |
| Weakness and fatigue                                  | 4     |
| Yellow vision   | 6     |
| Scotomas  | 3     |
| No symptoms   | 17    |
| Paroxysmal tachycardia with auriculoventricular block | 20    |
| S T and T dep   | 15    |
| Premature contractions                                |       |
| Irregular   | 6     |
| Bigeminy  | 12    |
| Fast bradycardia                                      | 2     |
| Auriculoventricular block                             | 7     |
| Auricular fibrillation and flutter                    | 10    |
| Deaths  | 2     |

of greater respect for and greater care in the administration of potent digitalis and full realization of our responsibilities in the matter. Every factor possibly contributing to an increase in poisoning should be searched out and removed when it is possible to do so. Further safeguard must be added for the protection of the patient.

Some of the older physicians who have become active again, and some who are not so old who practiced medicine more than a decade ago, when many of the digitalis preparations on the market were weak and had lost practically all of their glucoside content, may have got in the dangerous habit of giving tincture of digitalis in teaspoon doses three times a day and tablets three times a day, just as elixirs or any other pills were given. Such practices in this day, when most of the digitalis preparations on the market are of full potency, would of course prove disastrous and produce much poisoning.

To add to the confusion, as Geiger<sup>4</sup> pointed out, the U S P XI, which became effective in June 1936, authorized changes in the methods and in the actual standard of digitalis which definitely increased the potency of digitalis preparations on the market. This increase, which amounted clinically to 50 per cent, was

<sup>4</sup> Geiger A. J. Digitalis U S P XI. Recent Changes in Potency and Designation. Connecticut M J 4: 331 (June) 1940.

not adequately publicized. Therefore among the factors that have contributed to an increase in poisoning with digitalis we must place well up in the list the increased potency of the standard powdered leaf as well as the tendency to make superpotent preparations. Clinically, the potency hasn't been significantly affected by a change from U S P XI to U S P XII. A more uniform standard for digitalis preparations must be worked out and rigidly enforced on all manufacturing chemists.

Many pharmaceutical houses have been particularly interested in placing on the market very effective pills or other oral preparations as well as purified extracts and crystalline glucosides of great potency. The detail men of many firms extol the great advantages of their specific preparation over all others. Since each firm has its own trademarked preparation and the number of firms is considerable, much confusion arises in the mind of the practitioner who uses now this company's and now another company's product. Present day tinctures of digitalis cannot be used in teaspoon doses three times a day for more than a day, and modern tablets and pills cannot be given three times a day for more than five days without risking intoxication. It is to be remembered that there is retention or accumulation of about half of this daily dose, which in time will bring some patients to the point of intoxication even on so-called maintenance dosage.

Many practitioners furthermore do not seem to realize that digitalization of some patients is obtained by as little as 3 units given intravenously. The addition of even one or two ampules of a digitalis to an intravenous infusion given to a patient who is already digitalized may cause serious complications. Patients who are hospitalized with congestive failure in these days probably have much more severe myocardial insufficiency than those who were hospitalized a decade ago. Patients of today are usually given very adequate digitalis therapy of strong preparations by the practitioner, who carries them along as long as he can do so and sends them on only after he has failed.

#### STANDARDIZATION

The standardization of digitalis preparations is still far from satisfactory. A more uniform and clinically effective standard for oral and for intravenous use must be worked out. Human standardization by various methods<sup>5</sup> is perhaps a bit more satisfactory but less applicable than the biologic methods using animals. The cat method of standardization of digitalis by intravenous perfusion is most widely used and has been adopted by the U S P XII and other pharmacopoeias and by the Committee on Hygiene<sup>6</sup> of the League of Nations.

Guerra<sup>6</sup> has pointed out that the cat method is unsatisfactory for *Digitalis lanata* for which it is necessary to consider a gastrovenous coefficient. He has also contended that the biologic response to intravenous injection of pure glucosides is qualitatively and quantitatively different from that obtained by use of the standard powdered leaf.

He has attempted to establish a reference standard that would be stable and clinically effective when administered by different routes. He followed the method of the U S P XII and titrated five samples of pure digitalins using two groups of 6 cats for each sample. He adjusted the technical details to those of the international collaborative assay of the standard of digitalis leaves and developed the data in terms of the statistical theory. The relative potency of the samples studied was established, using as comparative standard the titration of the samples of digitalin D (digitoxin) because of its stability and susceptibility for accurate control both from a technical and from a clinical standpoint.

The ideal of absolute uniformity and standardization of all preparations of digitalis on the market should be approached as nearly as possible.

#### DOSAGE

The variability of standardization and the increased potency of digitalis preparations must be kept in mind in calculating the dosage. In the methods recommended for digitalization the total dose should be kept well below the toxic level. The total dose calculated according to body weight and then administration of this amount in divided doses within a day or two has resulted in toxic manifestations in a large percentage of cases. It is probably safer, as W D Stroud<sup>7</sup> has suggested, to fix a maximum dosage of 18 grains (12 Gm) of standardized powdered leaf for digitalization of patients who have had no digitalis previously. This should be given in divided doses according to the urgency of the situation and administered for a period of twenty-four to thirty-six hours a few days or a week, followed by a maintenance dose of 1 grain (0.065 Gm) per day.

#### CONCLUSIONS

It seems highly desirable that the practitioner become thoroughly versed in the use of one good powdered leaf digitalis, preferably one produced by a pharmaceutical house of good repute that grows its own digitalis leaf and standardizes it in its own laboratory. This practice is far better than using now this preparation and now that preparation, urged on physicians by the detail men of this pharmaceutical house or that pharmaceutical house, whose product has this advantage or that advantage.

It may be desirable to put digitalis powdered leaf of 0.02 Gm, or  $\frac{1}{50}$  gram, so that three tablets might be given a day over a period of time without causing poisoning.

Every practitioner should also become fully acquainted with one good intravenous preparation, preferably a crystalline substance. He must know the few indications and the contraindications for the use of such a potent drug. He should be familiar with the dosage and the dangers that accompany its use, particularly after a patient has received one of the glucosides already.

One of the crystalline *eg lanata*, preparations, preferably the safest one, should be chosen for regular use, remembering always that the intravenous use of drugs is fraught with danger. It must be remembered that 3 units intravenously constitutes a digitalizing dose, or a toxic dose, if oral digitalization has been carried out.

Some such strict ruling as outlined concerning the manufacturing of digitalis products and their use must be promulgated for the most effective and safe general use of this sovereign remedy.

<sup>5</sup> Martin L E. A Clinical Standardization of Digitalis. *J Pharmacol & Exper Therap* 31: 229 (July) 1927. Gilchrist A R and Lyon D M. The Chemical Control of Three Preparations of Digitalis. *ibid* 31: 319 (Aug) 1927. Dieulaide F R, Lung C L and Bien C W. A Study of the Standardization of Digitalis. I. *Clinical J Clin Investigation* 14: 725 (Nov) 1935. Gold H, Kuntz A T, Cattell M and Travell J. Studies on Purified Digitalis Glucosides. IV. The Single Dose Method of Digitalization. *J A M A* 119: 928 (July 18) 1942.

<sup>6</sup> Guerra F. Digitalinas estudio biometrico. *Bull Inst de cardiologia Mexico* to be published per oral communication to the author at the sessions of the Pan American Cardiological Meeting held in honor of the inauguration of the Instituto Nacional de Cardiologia in Mexico D F April 18 to 22 1944.

<sup>7</sup> Stroud W D. The Modern Use of Digitalis. personal communication to the authors and presentation at the inauguration of the Instituto Nacional de Cardiologia in Mexico D F April 20 1944.

THE MANAGEMENT OF TRAUMATIC  
HYPHEMIA

RALPH O. RICHENER, MD

MEMPHIS, TENN.

Contusions of the eyeball result in varying degrees of trauma to the ocular structures, depending on the amount and direction of transmitted force. The resultant complications are recognized as hyphema or hemorrhage into the anterior chamber, rupture of the iris sphincter and traumatic mydriasis, various stages of traumatic cataract with or without dislocation of the lens, vitreous hemorrhage and ruptures of the retina and choroid. When no rupture of the cornea or sclera occurs the traumatic hyphema may result in the consecutive secondary complications of bloodstaining of the cornea, atrophy of the iris, secondary glaucoma and glaucomatous optic atrophy with anterior staphyloma, occasionally necessitating enucleation. Very rarely sympathetic ophthalmia has followed the latter chain of events.

The ophthalmologist is helpless in treating the first group of traumatic complications, since the damage has already been done before the patient is ever seen for treatment. However, most of the complications of the latter group may be avoided by early and effective treatment, consisting only of simple paracentesis whenever the intraocular pressure is increased or when the anterior chamber is completely filled with blood and the instillation of miotics thereafter. Indeed, it may be possible in many cases to avoid surgery entirely if miotics rather than mydriatics are employed before secondary hemorrhage ensues.

A review of the patients whom Dr. E. C. Ellett and I have seen in the past eighteen years demonstrated that we had seen many cases of anterior chamber hemorrhage of mild degree which absorbed quickly and permanently with simple rest in bed and the use of atropine. However, in some instances when such patients were apparently recovering satisfactorily and particularly in those who were cooperating well, a secondary hemorrhage much greater than the first occurred from the iris on the third to the fifth post-traumatic day, and if paracentesis of the cornea was not done immediately, bloodstaining of the cornea followed. One patient was being carefully watched, being seen at the hospital morning and night. Hyphema filling half of the anterior chamber was present, but the intraocular pressure was normal. At 2 a. m. the patient complained of pain in the eye and when seen at 8 a. m. the chamber was filled with blood and the pressure was elevated. Paracentesis was immediately performed and, although absorption of the blood was rapid and complete, faint central bloodstaining of the cornea was observed at paracentesis, demonstrating the narrow margin which exists between hyphema and bloodstaining and that an increase in intraocular pressure is the factor which determines the production of keratohemia.

Duke-Elder states that the only permanent result which may follow hyphema is a bloodstaining of the cornea with the products of broken down red corpuscles in the anterior chamber. He feels that it is a rare

condition and along with Parsons, Collins and others, concludes that it follows hemorrhage only in conditions of raised intraocular pressure. Alta G. Charles, in a review of the subject of bloodstaining of the cornea, recorded Romer's observation that it occurred in 1 out of 400 severe eye injuries at the Giessen Clinic, and at Moorfield's Hospital it was observed in about the same proportion.

Macroscopically the condition varies in color from a rusty red-brown to a greenish black or greenish yellow to white. The staining is usually disciform with a clear portion of cornea around the limbus and at certain stages of resolution may simulate the appearance of a lens dislocated into the anterior chamber, although the matter of diagnosis should never be confusing if examination is made by biomicroscopy. Clearing takes place gradually from the periphery inward and usually leaves a gray central patch but may be complete after two or more years. However, if the secondary glaucoma is persistent the cornea may never clear but becomes white and unsightly, as illustrated by the following case report.

F. C., a boy aged 11, was seen by Dr. Ellett, July 25, 1928, five months after suffering a contusion of the left eye from a rock thrown by an angry Negro. He was treated by a colleague in Jackson, Miss., but nothing but local treatment was attempted. Visual acuity was reduced to light perception. Disciform bloodstaining of the cornea was present, associated with photophobia and lacrimation. The tension was normal. Atropine, hot applications and rest were prescribed with immediate improvement in subjective symptoms. Partial clearing of the cornea took place through the following year, so that the iris became faintly visible. However, the cornea never did clear entirely. The tension rose to 60 Schiotz, the eyeball became injected and photophobic and did not look well from a cosmetic standpoint, so the globe was removed and a 16 mm. glass ball implanted in Tenon's capsule on July 19, 1931. The pathologic report of the section by Dr. Jonas Friedenwald follows:

'Edema of the corneal epithelium. Softened distorted, cataractous lens adherent to the undersurface of the cornea, which shows edema on the inner fibers. The iris has disappeared. There is a dense organized cystic membrane, which surrounds the ciliary body in part and extends to the lens capsule in front of the anterior of the cystic retina behind. Lamina cribrosa is depressed. Central vessels are engorged. Nerve is degenerated and there are very few ganglion cells in the retina. Impression. Secondary glaucoma. Lens at least partially dislocated at the time of injury.'

Visual acuity of the right eye was 6/6 throughout observation.

Since 1926 we have seen 9 such patients, all of them in consultation, weeks and months after bloodstaining and secondary glaucoma had occurred, and in none of them was any useful vision restored even though the cornea cleared. The injured eye of 4 patients had to be removed because of intractable pain or unsightly appearance, and 1 of these patients developed sympathetic ophthalmitis and also lost the sympathizing eye.

In addition to the foregoing, hyphema and increased pressure may result in an essential type of iris atrophy continuing to total aniridia, as illustrated by the following case report.

K. W., a child aged 11, was seen eight weeks after an injury to the left eye in which hyphema occurred and no treatment but atropine was given. Bloodstaining was present and the pressure was 45 Schiotz. Miotics were prescribed and clearing of the cornea gradually ensued after which it was possible

to see the iris for the first time. Atrophy of isolated areas was observed which gradually enlarged to coalescence and eventually the entire iris was absorbed. Traumatic cataract was present and visual acuity was restricted to hand movements. Intraocular pressure after three years was 18 Schiotz.

As a result of clinical experience we attempted in cases seen early enough to relieve the embarrassed drainage apparatus of the anterior segment by temporarily reducing the increased pressure by simple paracentesis. Results were uniformly favorable, although surgery was occasionally repeated once or twice before secondary hemorrhage ceased. This was easily accomplished by inserting a spatula in the anterior chamber through the original paracentesis wound, which was uniformly made at the temporal limbus. Occasionally the paracentesis was done by the subconjunctival route, but usually it was transcorneal. There seems to be little danger of infection by this procedure. We have never seen an infected paracentesis wound even in the presence of purulent corneal ulcer.

Some writers have advocated lavage of the anterior chamber as though the presence of the blood clot in the anterior chamber was the main factor influencing the production of keratohemia. We have found this to be unnecessary. Although we have attempted it on numerous occasions, we have never been successful in washing the chamber completely free from bloodclot and finally observed that the patients in whom simple paracentesis was the only procedure did as well as the others. Since it is difficult to follow the irrigation tips through the bloodclot, the iris and lens may unwittingly be injured by instrumentation and we believe this procedure to be both dangerous and unnecessary. Simple reduction in intraocular pressure is the desired effect of surgery and, if a little blood or serum is evacuated by paracentesis, readjustment of the intraocular factors of hydrodynamics is usually established.

Since most of these injuries happen to youngsters, examination is often difficult and there is a tendency to postpone surgery because of the danger of post-operative hemorrhage due to the noncooperation of the patient and the reaction to general anesthesia which must occasionally be employed. However, these possibilities must not be allowed to sway the surgeon's judgment, for when surgery is imperative delay is disastrous. Constant attention must be given to the hydrodynamic situation and an attempt made to keep the pressure within the eyeball at a normal level by miotics.

Prevention of secondary hemorrhage was attempted frequently by the intramuscular injection of calcium gluconate and hemoplastic serums. We cannot be certain that any of these were of value.

Thirteen patients with traumatic hyphema and increased intraocular pressure were treated by paracentesis with gratifying results. A few had other complications such as partial traumatic cataract which resulted in diminished visual acuity, but most of them were comparable to the following case report.

J. M. H. Jr., a boy aged 15, was seen on April 11, 1939 immediately after being struck in the left eye by a thrown baseball. The anterior chamber was half filled with blood. Atropine and bed rest were prescribed, but three days later a secondary hemorrhage filled the anterior chamber and the pressure was 48 Schiotz. Paracentesis was done at once and repeated the following day, as no clear aqueous or iris could be seen. No further hemorrhage occurred and the pressure was controlled by physostigmine. Vision was very poor because

of hemorrhage which had extravasated into the vitreous, but after three years this cleared entirely and final acuity was recorded at 6/5.

The singular success which follows the use of miotics combined with paracentesis in controlling traumatic hyphema raises the question as to whether our usual treatment with atropine following initial hyphema is correct. Although atropine dilates the iris, thereby compressing the iris stroma and the blood vessels it contains, secondary hemorrhage from the injured iris vessels occurs frequently, on the other hand, physostigmine constricts the pupil and allows the iris vessels to become stretched. This factor may of itself inhibit secondary hemorrhage. Our records permit of no conclusions with regard to this theory. Of the thirteen patients treated surgically with satisfactory recovery, 11 were receiving atropine and 2 physostigmine after atropine originally, prior to the secondary hemorrhage and rise in pressure which required paracentesis. Many, many more patients must receive miotics immediately after injury before the relative merits of this form of treatment can be determined.

#### CONCLUSIONS

1 Traumatic hyphema may be controlled by simple paracentesis of the cornea and the instillation of miotics.

2 Surgery should be accomplished without delay whenever the intraocular pressure is increased or no clear aqueous is visible in the anterior chamber.

3 It is possible that the use of miotics rather than mydriatics immediately after injury will result in less secondary hemorrhages and less necessity for surgical procedures.

130 Madison Avenue

#### ABSTRACT OF DISCUSSION

DR. F. BRUCE FRALICK, Ann Arbor, Mich.: Partial filling of the anterior chamber (hyphema) is not an indication for paracentesis. These fillings usually absorb in a few days and seldom cause any elevation in tension. Complete filling of the anterior chamber with blood is definitely an indication for paracentesis whether the tension is elevated or not. One should not wait for tension elevation before doing paracentesis. Our primary problem should be to prevent secondary glaucoma rather than to correct it once it has developed, since it is the secondary glaucoma which is responsible for the corneal bloodstaining in the presence of anterior chamber hemorrhage. The blood will often absorb uneventfully without paracentesis, but since paracentesis is such a safe operative measure its utilization will prevent the serious complication of blood staining of the cornea. This measure is employed in our clinic when the anterior chamber becomes completely filled with blood in severe iritis after intraocular surgery or after trauma. By its judicious use the course of the absorption period has been shortened and the incidence of bloodstaining of the cornea has been lowered. My associates and I employ atropine in eyes displaying traumatic hyphema with the thought of combating the associated iridocyclitis. Dr. Rychener has suggested that miotics be used in place of atropine at this stage. There are no comparable statistics to support this, but from a pharmacologic point of view it would be more acceptable to use a miotic. An ocular trauma effecting sufficient damage to cause hyphema cannot but help produce engorgement and edema of the anterior uvea. If atropine was instilled at this stage it would only tend to increase the vascular stasis in the anterior uvea, producing greater tissue edema and an increased tendency to hemorrhage. The hyphema may act as a ball thrombus and, in combination with the highly protogenous aqueous, could easily give rise to secondary glau-

coma. On the other hand, the edema and engorgement of the anterior uvea produced by trauma could be lessened by the use of a miotic, since its combined action is to abolish engorgement. This would tend to lessen the production of a highly protogenous aqueous and would promote more adequate drainage of the anterior chamber. From a theoretical point of view, at least, the use of a miotic early in the post-traumatic period during the acutely hyperemic stage might have a much more favorable effect than atropine. I am of the opinion that, even after the initial period of hyperemia has disappeared, atropine would still be indicated should circumcorneal flush and ciliary tenderness develop, indicating the appearance of an iridocyclitis.

DR HUGO L. BAIR, Rochester, Minn. I prefer to perform the paracentesis with a keratome, since it provides a large enough opening to permit withdrawal of most of the blood clot and to permit satisfactory irrigation of the anterior chamber with isotonic solution of sodium chloride. The fact that the free blood in the anterior chamber has at least partly clotted suggests that the bleeding points in the eye have probably become thrombosed and that further hemorrhage, as a result of the sudden lowering of intraocular pressure, is unlikely. It is important to withdraw or wash out as much of the clot from the angle of the anterior chamber as is readily possible without causing trauma to the structures there. The mechanism of complete traumatic hyphema is not understood. Probably in most such cases the hemorrhage arises from traumatic cyclodialysis. One factor that permits such a gross hemorrhage from the ruptured vessels is the hypotony resulting from the contusion of the eye. Another factor must be invoked, however, to explain the failure of the bleeding to stop, as it usually does when a normal iris or ciliary body is cut surgically. This may be an overwhelming vasodilator reflex mediated through the trigeminal fibers and caused directly by the contusion. If such vasodilatation is a factor, it would be augmented by the capillary dilatation produced by either atropine or miotics and therefore such drugs would be contraindicated. Another possibility is that the vasoconstrictor mechanism is paralyzed by the trauma. This would explain the occurrence of repeated hemorrhages, especially those following the performance of iridectomy because of the glaucoma. An operation on the iris for the secondary glaucoma in cases in which hematogenous staining of the cornea follows complete traumatic hyphema is very likely to be followed by recurrence of complete hyphema.

DR WILLIAM B. CLARK, New Orleans. I want to thank Dr. Rychener for allowing me the privilege of tacking onto his excellent paper a preliminary report of a method of controlling traumatic hyphema. The method has been recommended by a member of the surgical staff of one of our general hospitals. This general surgeon has claimed for a number of years that he could control visceral bleeding of minor degree by this method. A white woman aged 58, on whom I performed an intracapsular cataract extraction with peripheral iridectomy, with corneal sutures, awoke on the morning of the seventh day complaining of severe pain in the operated eye. The patient had a hemorrhage into the anterior chamber. She was given sedation, and when I saw her at 8 o'clock the anterior chamber was filled with blood. The corneal wound had apparently not been opened, as the intraocular tension, as taken with fingers, seemed to be definitely increased. She was taken to the operating room and an effort was made to open the corneal wound with an iris spatula. It was impossible to do this, because the wound was so tightly healed, without exerting more pressure than I thought safe. For a period of four days I used intravenous injections of calcium gluconate, intramuscular injections of synthetic vitamin K and Neohemoplastin. After the second day, when there had been no improvement in the patient's condition, I used an injection of 10 cc of the patient's own blood taken from her vein and injected into her gluteal muscle. This was repeated on the following day without objective improvement. The symptoms of secondary glaucoma were increased. The patient was then taken off of all food and liquids and was given, every two hours, a mixture of 2 ounces of white Karo corn syrup to 6 ounces of fruit juice, either grapefruit, orange

or pineapple. This is all the patient received, except drugs for sedation, for a period of more than six days. At the end of the first twenty-four hours the iris could be seen, and there was a blood clot in the nasal quadrant of the anterior chamber, apparently where the corneal wound had ruptured internally and bled inside the eye. At the end of forty-eight hours the anterior chamber was entirely free from blood. At the end of seventy-two hours a good retinal reflex could be seen, and at the end of four days the vitreous was free from blood and the fundus could be clearly seen with an ophthalmoscope. The diet was continued for two days without recurrence of bleeding. Six weeks from the date of the patient's operation her corrected vision was 20/20. To date we have treated 3 cases of traumatic hyphema with equally good results. I am unable to explain the physical principle or biochemistry involved, but I expect to pursue the subject further.

DR PAUL A. CHANDLER, Boston. I have been accustomed to distinguishing two types of hyphema. In one, no portion of the iris is visible, and the color of the blood is almost black. In the other there is some portion of the iris visible and the color of the blood is red. The surface of the clot in the former case, where the blood is black, is homogeneous. In the second case one can see structure in the clot. In those in which the anterior chamber is black with blood and the pressure is elevated I have been accustomed to wash the clot out of the anterior chamber. In these cases the pupil is always dilated because of the high pressure and I have never seen a prolapse of the iris. To wash the clot out of the anterior chamber is a difficult procedure, but there is one method which is relatively safe and will succeed in washing out the entire blood clot in almost all cases. I use a middle ear irrigating bulb with a metal tip. After a keratome incision, just at the moment the tip enters the chamber, I make quite a little pressure on the bulb. This keeps the chamber formed all the time, and with the tip of the irrigator one can sweep around the anterior chamber and loosen the clots. In the other cases in which any portion of the iris is visible and the blood is red, I thoroughly agree with Dr. Rychener that irrigation of the anterior chamber is entirely too radical a procedure. A simple paracentesis can be done if necessary, but in all cases before paracentesis he is right in emphasizing the great importance of miotics rather than mydriatics. Mydriatics can be used later on after the blood is absorbed. Hot compresses should not be used in this type of hyphema or in any other type. I have had the experience of using hot compresses and having fresh blood in the chamber every day, and as soon as I discontinued the hot compresses the bleeding ceased.

DR RALPH O. RYCHENER, Memphis, Tenn. As Dr. Fraick has brought out and Dr. Chandler just mentioned, the necessity for atropine at a later period is evident. The time at which to use this atropine becomes one of somewhat technical decision, but as soon as all of the blood has been absorbed and the patient has gone for at least twenty-four hours without further hemorrhage it is probable that atropine can then be used safely. Dr. Chandler also mentioned the matter of sweeping around the anterior chamber with the irrigator tip, which is a method that we have used successfully too, but, as I brought out, it is not without its dangers, because we can't always tell where the lens and the iris are. Dr. Clark's method of treatment, of course, is one of experiment and in the conjectural stage. The eyes that I was talking about in this paper were those in which no lacerations of the sclera or cornea occurred but were simply following contusions of the eyeball. It seems that there is some difference in absorption of blood under those circumstances. The bloodstaining of the cornea after anterior chamber hemorrhage following cataract extraction is relatively rare. It occurs only when the hemorrhage has been present for a long time. However, anything which will accelerate the expedition of blood from the anterior chamber is worth while. We don't know whether the mechanics of treatment Dr. Clark uses are those of osmosis which accelerate the elimination of waste product from the anterior chamber or whether there is any actual effect on the prevention of bleeding.



## Clinical Notes, Suggestions and New Instruments

### STREPTOCOCCUS VIRIDANS SEPTICEMIA SUBACUTE BACTERIAL ENDARTERITIS OF AN ARTERIO- VENOUS ANEURYSM

MAJOR SIDNEY LIPTON AND CAPTAIN HAROLD MILLER  
MEDICAL CORPS ARMY OF THE UNITED STATES

That *Streptococcus viridans* septicemia associated with cardiovascular disease is a finding of grave prognosis need not be stressed. Its resistance to available therapy is notorious. These coexisting conditions may be divided into three groups:

1 Subacute bacterial endocarditis in which the vegetations are primarily on diseased valvular endocardium

2 Subacute bacterial endocarditis in which the vegetations occur on congenital cardiac anomalies

3 Subacute bacterial endarteritis in which the vegetations occur on (a) congenital—patent ductus arteriosus, (b) acquired—arteriovenous aneurysm

Surgery has offered dramatic results in cases which fall in the third category. The ligation or excision of the patent ductus arteriosus infected with *Streptococcus viridans* and resulting cure has received justified prominence recently. Less is known about the effectiveness of surgery in acquired arteriovenous aneurysm.

It is our purpose in this paper to report the surgical cure of a case of *Streptococcus viridans* septicemia engrafted on an arteriovenous aneurysm. Since this condition is curable,

wounds may increase its frequency. Thus far only 2 cases of surgical cure of *Streptococcus viridans* septicemia by means of excision of the infected arteriovenous aneurysm have been reported. Hamman and Rienhoff<sup>1</sup> reported the first cure in 1935 and Touroff, Lande, and Kroop<sup>2</sup> the second in 1942. The present case represents the third such cure.

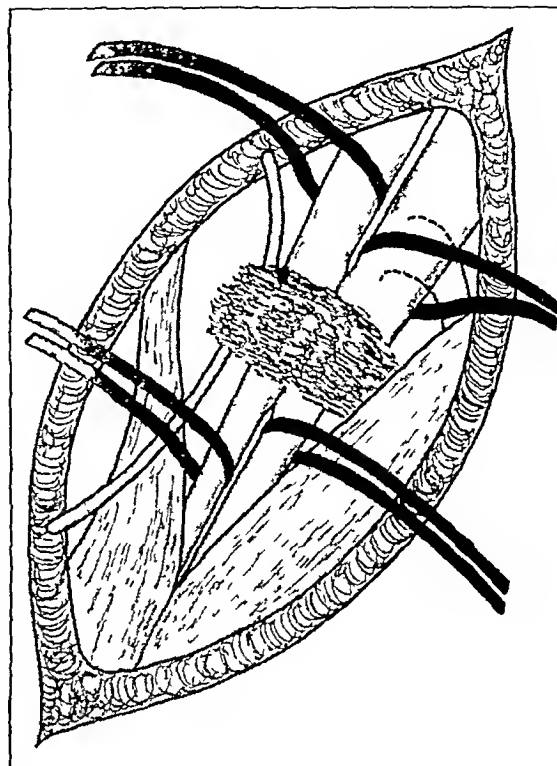


Fig. 2—The ligatures are in place. The ligature on the femoral artery is placed just distal to the point of origin of the profunda femoris artery.

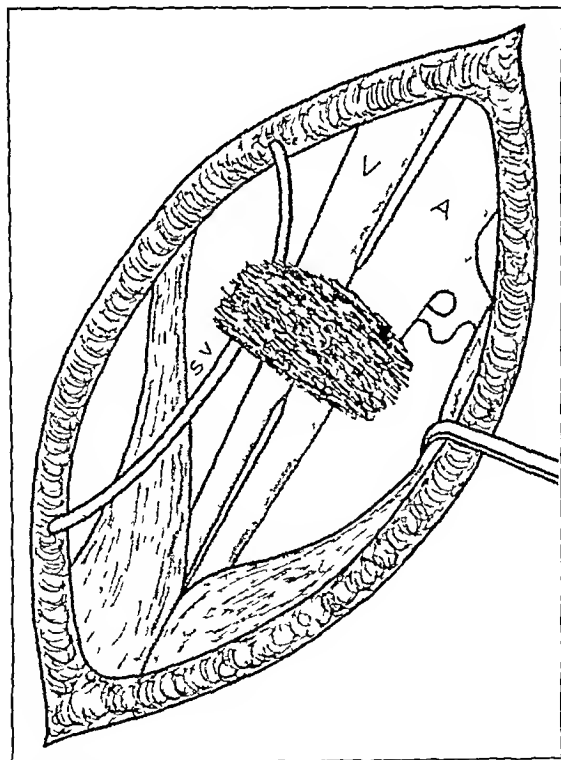


Fig. 1—Diagrammatic sketch of the operative field. A represents the femoral artery, V the femoral vein, SP the saphenous vein, S the scar tissue in which the arteriovenous aneurysm was embedded.

we wish to emphasize the importance of keeping it in mind in differential diagnosis. While the disease is rare, the prospective increase in arteriovenous aneurysms as a result of war

#### REPORT OF CASE

**History**—A Negro man aged 27 was admitted with the following history. At the age of 12 he accidentally shot himself through the upper left thigh with a .022 caliber rifle. The bullet entered anteriorly and passed through the thigh. There was some swelling at the point of entrance of the bullet for a few days but it healed uneventfully. From that time on the patient was occasionally aware of a pulling sensation in his thigh and noticed a 'buzzing' when he placed his hand over the site of the injury. At times the left leg felt cold, and if he walked excessively his entire left lower extremity would swell moderately. He was inducted into the Army in January 1942. He got along well and had no difficulty in keeping up with the stiff military training. In June a tooth was extracted and the site healed readily. At the beginning of 1943 the patient was admitted to the station hospital for an enlarged gland in the right inguinal region, which was incised and healed uneventfully. At this time the patient's aneurysm of the left thigh was discovered, and he was discharged in April 1943, feeling perfectly well. In October of that year he rather suddenly became ill with a shaking chill followed by a high fever and much sweating. The fever persisted and he thereafter had two more chills about a week apart. His doctor told him he had malaria and gave him quinine, but the fever persisted with chills occurring at irregular intervals. His appetite was poor and he lost 30 to 40 pounds (14 to 18 Kg) from October 1943 to the time of his admission to the Veterans Hospital in February 1944.

From the surgical service of Dr. H. D. Coffee and the medical service of Dr. J. F. Woods, Veterans Administration, Columbia, S. C. Published with the consent of the Medical Director of the Veterans Administration who assumes no responsibility for the opinions expressed or the conclusions drawn by the authors.

<sup>1</sup> Hamman, L. and Rienhoff, W. F. Bull. Johns Hopkins Hosp. 57: 219-234 (Oct.) 1935.  
<sup>2</sup> Touroff, A. S., W. Lande, H. and Kroop, I. Surg. Gynec. & Obst. 74: 974-982 (May) 1942.



**Physical Examination**—On admission he appeared well developed, poorly nourished and chronically ill. The heart was not enlarged on percussion. The sounds were of good quality and there were no murmurs. Blood pressure was 118/82. The only positive findings were present in the left lower extremity. In the upper left thigh there was a small healed gunshot wound. Beneath this scar was felt a small mass which was soft and easily compressible and which gave an easily palpable thrill. The thrill could be felt for several inches above and below the mass. The pulsation of the right popliteal artery was easily palpable, but the left popliteal pulsation was not found. The pulsations in the dorsalis pedis and posterior tibial arteries of each foot were easily palpable. The temperature of the two legs was grossly equal. No sensory changes were present. During the preoperative period of observation the temperature took a low grade septic course, the peak of the temperature ranging around 100 F daily. The pulse ranged between 80 and 130.

**Laboratory Studies**—The routine blood count and urinalysis were entirely normal. The sedimentation rate was 103 mm per hour (Westergren), agglutinations for the typhoid-dysentery group were negative, blood culture on two occasions was positive for *Streptococcus viridans* yielding 50 colonies per cubic centimeter. X-ray examination of the heart showed a moderate increase in size. An electrocardiogram showed a tendency to right axis deviation, abnormal P waves in leads 2 and 3, diphasic and slightly slurred QRS complexes in leads 1, 2 and 4, and notching of the T wave in lead 4. A diagnosis of infected arteriovenous aneurysm was made, and the patient was prepared for operation.

**Operation** (by Major Lipton)—With the patient under spinal anesthesia a longitudinal incision was made on the upper

medial surface of the left thigh following the course of the femoral artery. The superficial fascia was divided. At the lower angle of Scarpa's triangle the femoral artery and vein were fused the junction being bound down in scar tissue. There was a small aneurysmal dilatation of the femoral artery on its lateral aspect at this point. The saphenous vein and nerve were also bound in the scar. The proximal portions of the femoral vein and artery were dilated. The distal segments

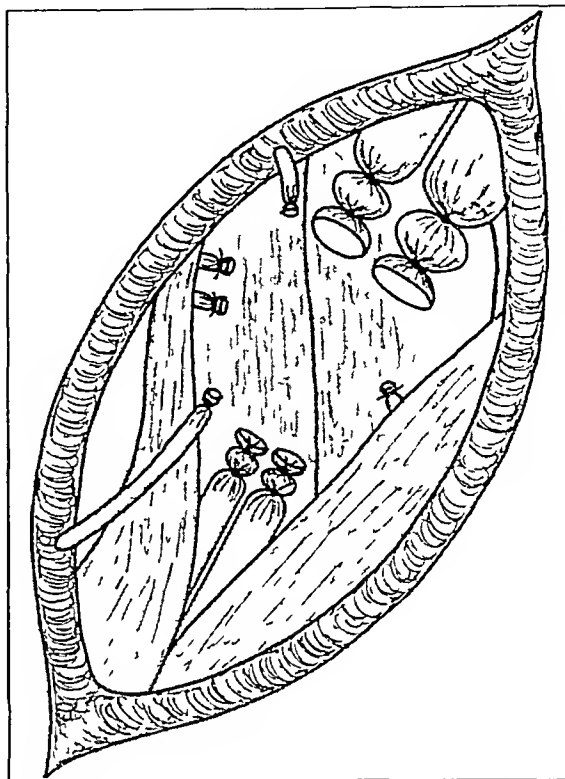


Fig 3—Quadruple ligation of the femoral artery and vein

did not appear appreciably enlarged. A distinct thrill was present in the region of the arteriovenous aneurysm. The proximal portions of the femoral artery and vein were dissected down to the cicatrix. The distal portions of the artery and vein were treated in like manner. Quadruple ligation of the proximal and distal portions of the artery and vein was per-

Fig 4—The scar and its contained arteriovenous aneurysm have been removed

formed, the proximal ligation being done just distal to the origin of the profunda femoris artery. The artery and vein were then severed. While this was being done the profunda femoris artery was accidentally wounded. The wound was repaired by over and over suture with cotton, and the hemorrhage was satisfactorily controlled. Transfixion sutures of No. 1 chrome were applied to the arterial and venous stumps. The arteriovenous aneurysm was then dissected out, numerous tributary branches on its posterior aspect being clamped and ligated. The branch of the saphenous nerve caught in the scar was sacrificed. A rubber tissue drain was inserted in the raw bed and the skin was closed with continuous locked dermal suture.

**Pathologic Examination** (by Major Roy Barnett, M. C. A. U. S.)—Grossly the specimen consisted of a portion of tissue 8 cm in length and approximately 4 cm in diameter. Basically it was composed of a portion of femoral artery, a portion of femoral vein, an abnormal communication between the two, small tributaries of vein and areolar and scar tissue. The abnormal fistula was located approximately in the mid portion of the large artery and vein. The walls of the two vessels were fused above and below the fistula so that there was formed a communicating orifice 2 mm in length and approximately 6 mm in diameter. The artery was somewhat dilated above the fistula, with an average circumference of 2 cm. Distal to the communication it was narrowed, being only 1 cm in width. The vein was approximately 1.5 cm in circumference distal to the lesion and 2.5 cm in circumference proximally. Opposite the communication was a small aneurysmal bulge in the arterial wall 1 cm in diameter and 1 cm in depth. There was a similar lesion in the vein opposite the fistulous opening. Particularly on the arterial side there were numerous small vegetations both within the artery and in the small true aneurysm. Most of these vegetations were smooth

# THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

535 NORTH DEARBORN STREET CHICAGO 10, ILL

Cable Address

Medic Chicago

Subscription price

Eight dollars per annum in advance

*Please send in promptly notice of change of address giving both old and new always state whether the change is temporary or permanent. Such notice should mention all journals received from this office. Important information regarding contributions will be found on second advertising page following reading matter.*

SATURDAY, NOVEMBER 18, 1944

## HOSPITAL PLANNING FOR POSTWAR EDUCATION

The desire of returning medical officers for additional hospital training after the war is being determined by the Committee on Postwar Medical Service. A preliminary report by Lueth<sup>1</sup> has made possible an estimate of the degree of expansion in house officerships required to meet these demands<sup>2</sup> in addition to providing for new medical graduates. Hospital residencies in general may have to be doubled in number temporarily, although the demands in the various specialties vary considerably.

Each hospital should now determine the extent to which it can increase its house staff in the immediate postwar period without sacrificing high educational standards. Every hospital approved for internships and residencies is now being asked this question by the Council on Medical Education and Hospitals. (See communication to hospitals, Postwar Planning, page 775.) Obviously, the degree of expansion can be determined in a given specialty only in relationship to other educational programs of the hospital. Many hospitals have appointed special committees to formulate an overall plan for the institution.

In evaluating available facilities for justifiable increases in the house staff hospitals should have the following possibilities in mind: (1) more effective and extensive use of existing teaching facilities, (2) the employment of house officers who will provide their own living quarters outside the hospital, (3) the greater use of outpatient teaching material and (4) the inclusion of more library, research and basic science work in the educational program.

Depending on the duration of service in the armed forces, all veterans taking residencies or internships, regardless of age, will be eligible for benefits under

the "G. I. Bill of Rights," providing \$50 per month for men or women without dependents, and \$75 for those with dependents. This may supplement such stipends as the hospital otherwise provides. The hospital itself may also receive aid under this bill which provides for the payment of tuition to an educational institution and states that the administrator is authorized to provide for the payment, not to exceed \$500 for an academic year, even if the institution does not have an established tuition fee.

The assembled information regarding numbers of house officerships will be published and made freely available to medical officers. Hospitals should report the total positions even though some of these are now filled by house officers, and some may be held for officers to whom the hospital may have made commitments for future appointments. In any case the hospitals themselves will continue to select and appoint their house officers, as in the past.

The medical profession is obligated not only to the officer desiring further training but also to a maintenance of the high quality of medical care in this country. The current house officer shortage is far more than a current difficulty; it represents an educational deficit which will be reflected in a poorer quality of medical care unless it is corrected. The heads of departments and services should collaborate closely with the hospital administration in any early formulation of postwar educational plans.

## THE PATHOGENIC ACTION OF BIOLOGIC COLLOIDS

Biologic research has been concentrated in recent decades on the study of the chemical character and reactivity of relatively small molecular substances and of their role in normal and abnormal vital processes. The physical and physicochemical phenomena of life have attracted much less attention, in spite of the fact that they are as important as the chemical ones for regulating and maintaining the function and structure of the organism. These physical aspects are closely related to the presence, the character, the status, the quantity and the quality of the macromolecular and colloidally dispersed substances (proteins, polysaccharides, lipoids) which represent the most important building material of living matter; they are responsible for its structure and organization and play a major role in the vital dynamics of intracellular and extracellular substances. These agents differ greatly not only in their chemical composition, spatial arrangement and configuration but also in their ability to form gels and sols, in their adsorptive properties, in their hydrophilic and hydrophobic properties, their water binding power,

<sup>1</sup> Lueth, Harold C. Future Educational Objectives of Medical Officers. J A M A 125: 1099 (Aug. 19) 1944.

<sup>2</sup> John, Victor and Arestad, F. H. Educational Facilities Required for Returning Medical Officers. J A M A 126: 233 (Sept. 23) 1944.

<sup>3</sup> Graduate Education of Physician Veterans. Report of the Subcommittee of the Committee on Postwar Medical Service. J A M A 126: 709 (Nov. 11) 1944.

their degree of dispersion their electric charge, their surface tension, their coagulability, their colloid osmotic pressure and then colloidal stability

Quantitative and qualitative disturbances of the macromolecular and colloidal status of the blood and tissues are associated with many diseases and account for some of the symptoms observed<sup>1</sup> Thus the edema which accompanies nephrosis, hepatic cirrhosis sprue and starvation is the result of the osmotic deviations caused by the hypoproteinemia found in these conditions The afibrinogenemia of the congenital or acquired types is responsible for the associated hemorrhagic diathesis Hyperfibrinogenemia and hypercholesteremia ensue from the organic effects of saponin poisoning, while hyperglobulinemia accompanies immunity reactions, myelomatosis and amyloidosis Hyperglycogenemia is found in von Gierke's glycogen storage disease, whereas hypercholesteremia is associated with diabetes mellitus, hypothyroidism, obstructive jaundice, pregnancy, starvation, nephrosis and essential xanthomatosis Retention of the colloiddally dispersed hematic material in the cells of parenchymatous organs characterizes both disturbances

Qualitatively abnormal and often pathogenic macromolecular substances are the virus proteins, the "milk factor" in mammary cancer of mice, the proteinic antibodies (involved in the production of serum disease, anaphylaxis and allergy), the megalomolecular plasma proteins occasionally observed in myelomatosis, the amyloid and hyaline proteins and possibly also the glycogen found in von Gierke's disease The biologic importance of abnormal macromolecular or colloidal substances as pathogenic agents is increased by considering the numerous agents of this type which are introduced parenterally into the body for diagnostic, therapeutic or experimental reasons, such as plasma, plasma globulin, plasma albumin, hemoglobin, antiserum, gelatin, isinglass, gum arabic, pectin, polyvinyl alcohol, polyvinyl pyrrolidone, methyl cellulose, glycogen, starch, mulin, congo red, Evans blue and metallic colloids

These exogenous colloids, like those normally or abnormally generated in the organism favor, when present in excessive amounts the conglomeration and sedimentation of the erythrocytes, elicit, after their introduction into the blood, a transitory colloidoclastic leukopenia and not infrequently may interfere with the clotting process of the blood The repeated and prolonged intravenous injection of these agents may result in the development of a severe anemia and may be associated in many of these substances with their storage in the reticuloendothelial cells of the liver, spleen and lymph nodes and in the histiocytic cells and parenchymatous cells of various organs, especially the liver and the kidney, where they cause functional

impairment The carbohydrate macromolecular colloids like the lipoidal ones, moreover give rise to the development of foam cellular atheromatous deposits in the arteries while the proteinic colloids may participate in the formation of hyaline and amyloidotic vascular lesions

Although great strides have been made in recent years in advancing the knowledge of industrially important macromolecular and colloidal agents, especially those employed in the manufacture of rubber, textiles and plastics, the progress made in connection with the biologically significant macromolecular substances has been less striking The industrial accomplishments, however, suggest that the application of information and investigative methods gained in the industrial field, combined with an equal amount of effort to the biologic macromolecules, may yield similar fruits and may open the way for an effective approach to a number of important medical problems, such as the genesis and prevention of cancer and degenerative vascular diseases, the nature of and defense against viruses, the production of artificial antibodies and the development of synthetic plasma substitutes

#### EYE EXERCISES FOR DEFECTIVE VISION

Revival of interest in the unorthodox methods of treating visual defects, the result of Mr Aldous Huxley's "The Art of Seeing," was discussed in THE JOURNAL June 31, 1943<sup>1</sup> In his youth Mr Huxley suffered an attack of keratitis punctata which left one eye just capable of light perception and the other with about 5 per cent of normal vision After about a quarter of a century of struggling with increasing visual difficulties he met a woman disciple of the late Dr Bates, and she initiated him into the regimen of "blinking," "winking," "nose reading," "palming" and "sunning" Within a couple of months, he reports, he had learned to read without the aid of artificial lenses and could also read without strain and fatigue, for he had learned to avoid the conditions making for strain and to get rid of fatigue as soon as it began to manifest itself Mr Huxley believes that all defects of vision can be cured by the induction of cerebral and ocular "dynamic relaxation"

Bates's hypothesis that visual derangements and refractive errors are due to a deformation of the eyeball, resulting from nervous and muscular strain of the superior and inferior oblique muscles, and that the ciliary muscle has nothing to do with the focusing of the eye, is contrary to well established scientific and clinical observations Huxley himself admits that his visual acuity has not improved His point is that he has learned how to use what he has to better advantage

<sup>1</sup> Hueper W C Macromolecular Substances as Pathogenic Agents Arch Path 53: 267 (Feb) 1942

<sup>1</sup> Aldous Huxley's Vision Current Comment J A M A 122: 951 (July 31) 1943

Lancaster,<sup>2</sup> in a recent contribution, advances the thought that "buried in a mass of what to ophthalmologists seem foolish gestures and performances, best defined as hocus pocus, there are sound and fruitful ideas." He would remind the ophthalmologists that seeing is only half ocular, the other half is cerebral. Since seeing is only partly a matter of the image on the retina and the sensation it reproduces and is in still larger part a matter of the cerebral process of synthesis, in which memories play a principal role, it follows that by repetition, practice and exercise one builds up a substratum of memories useful for the interpretation of sensations and facilitates syntheses which are the larger part of seeing.

This physiologic concept of the function of vision is not new. As Duke-Elder<sup>3</sup> points out in his review of Huxley's book, visual defects are sometimes muscular in origin, sometimes psychologic. The competent ophthalmologist treats the former with curative exercises, while the latter requires the psychologic approach. Lancaster feels, however, that ophthalmologists have largely neglected this field and have concentrated their attention on the primary source of sensation, the image on the retina, leaving to irregular half trained workers the cultivation of what he considers a fruitful field of therapy.

## Current Comment

### YELLOW FEVER CONTROL DURING THE WAR

C. L. Williams, medical director, U. S. Public Health Service, notes<sup>1</sup> that the United States Public Health Service became aware of the danger of the introduction of yellow fever into the southern United States with the onset of war. Infection may be brought by an infected mosquito that may be carried in the cabin of an airplane coming from infected areas, also by a passenger who has been infected and is still in the incubation period but without symptoms. The more real danger is introduction of infected passengers still in the incubation period. Two measures are in operation against this. The more positive is immunization against yellow fever of all military personnel sent to infected areas and most civilians going from this country to such localities. The U. S. Public Health Service placed the yellow fever program in the hands of the field office of Malaria Control in War Areas principally because it possessed the necessary organization, trained personnel and specialized material and supplies. That office, according to Williams, established in cooperation with the director of U. S. Public Health Service District No. 4 a definite plan of procedure which it is prepared to put into operation within twenty-four hours in any

locality in the usually accepted infectible area. The control program is based on four specific operations: control of cases and contacts, destruction of adult *Aedes aegypti*, immunization of possibly exposed persons and control of *Aedes aegypti* breeding. The first of these operations is the function of the local health department. It involves immediate isolation of cases and contacts in mosquito free and mosquito protected premises. To destroy adult *Aedes aegypti* the Malaria Field Office has two trucks equipped and ready to move to any place in the country. These trucks carry an adequate supply of pyrethrum solution and pressure and power sprayers of various types. The U. S. Public Health Service maintains at its laboratory in Hamilton, Mont., a stock of half a million or more doses of yellow fever vaccine available at any time for purposes of yellow fever control. A telegram or long distance telephone call would have this vaccine dispatched in adequate quantities by airplane within a few hours. This vaccine does not contain human serum, and its use has not been attended with the development of outbreaks of jaundice. The administrative details that offer difficulty are those required to set the program rapidly into operation. However, these for the most part have been already determined, and the personnel who will give the orders have been designated. The Public Health Service in this work expects to carry out the program in cooperation with the state health departments. It would proceed much as does malaria control in war areas through the state health organizations, which would impose the authority of the state utilizing the technical advice and guidance of the expert personnel supplied by the Public Health Service. Probably this emergency will not arise. Williams believes that we may go through this war without the occurrence of outbreaks of yellow fever. If it should occur, however, we shall be prepared to insure its immediate detection and rapid control.

### WHAT CAUSES MONGOLISM?

Certain factors which have been suggested as having a direct influence on the development of mongolism by affecting the pregnant uterus are ill health of the mother, exhaustion, increased amniotic pressure and defective nidation. The possible role of each of these in over 100 cases of mongolism has been recently reviewed by Engler.<sup>1</sup> As a result he believes that an unhealthy condition of the mucous membrane of the uterus at the time of implantation of the impregnated ovum, based on a morbid heredity, seems to be the chief cause of mongolism. A factor which contributes to this unhealthy condition, he says, is miscarriage, whether or not this is brought about by curettage or by the use of abortifacients. The evidence on which this opinion is based appears scanty and less convincing than other theories such as advanced maternal age, which have been previously discussed in these columns.<sup>2</sup>

<sup>2</sup> Lancaster, W. B. Present Status of Eye Exercises for Improvement of Visual Function. *Arch. Ophth.* 32: 167 (Sept.) 1944.

<sup>3</sup> Duke-Elder, Stewart. The Art of Seeing by Aldous Huxley. Book Review. *Arch. Ophth.* 30: 582 (Oct.) 1943.

<sup>1</sup> Williams, C. L. Yellow Fever Control During the War. *Am. J. Trop. Med.* 24: 245 (July) 1944.

<sup>1</sup> Engler, M. Causation of Mongolism. *J. Neurol. Neurosurgery and Psychiat.* 7: 27 (Jan. & April) 1944.

<sup>2</sup> Maternal Age and Mongolism. *Current Comment*. *J. A. M. A.* 111: 257 (July 16) 1938.

# MEDICINE AND THE WAR

## ARMY

### CONVALESCENT RECONDITIONING

Colonel Augustus Thorndike  
Chief of the Reconditioning Division  
Office of the Surgeon General U S Army

Reconditioning, which has been described as planned convalescent care, was inaugurated by the Surgeon General of the U S Army Medical Department in a War Department order dated Feb 11, 1943. Thus was begun a vast program designed to speed convalescence, to employ the patient's time profitably, both mentally and physically, and to decrease the incidence of complications. Over 100,000 patients are now participating in reconditioning daily in every Army hospital in the United States. More than three fourths of these are in Army Service Force hospitals and the remainder in Army Air Force hospitals. Over 13,000 patients are being reconditioned and returned to duty each week.

Convalescent reconditioning is now firmly established as an integral part of the treatment of the sick and wounded soldier. Continuity of operation has been achieved. Starting from the patient's initial hospitalization in an overseas theater, reconditioning is carried on in station and general hospitals in the theater. It is then continued on hospital ships and finally in the general hospitals in the continental United States. These objectives are primarily the return of the wounded or sick soldier, as rapidly as possible, to duty physically and mentally fit to perform his assigned duties and, secondarily, should individual disability preclude military service, to return the soldier to civilian life prepared to make a happy and useful adjustment mentally and physically.

Reconditioning is accomplished by the scientific scheduling of a program for mental and physical restoration according to the needs and abilities of each individual patient. It cannot be overemphasized that reconditioning is a form of therapy, that it is an important part of established medical or surgical procedures and that it must be prescribed individually in order to accomplish the maximum results.

The Surgeon General's Reconditioning Program is divided into four main phases: physical, educational, occupational and recreational. The physical portion of the program is designed to allay the deteriorating factors coincident with recumbency in bed by the use of special bed exercises designed to maintain body tone and vigor and, when indicated, is often focused to strengthen a particular portion of the body. As the patient's strength increases and he becomes ambulant, these exercises are gradually increased in tempo and dosage and are supplemented by various types of athletic games and recreational sports. Physical therapy, when indicated, is coordinated with this regimen.

The educational phase of the program is designed to effect orientation to personal problems incident to illness and disability, instill the will to fight in those who will return to duty and to aid the adjustment of the discharged soldier to resume his civilian status. The latent talents and interests of the patient are explored and he is given the opportunity to obtain instruction in the various arts and sciences as provided by United States Armed Forces Institute courses and by special classes organized in such subjects as radio, automobiles, motor mechanics and graphic arts and other such educational features. Vocational training is not undertaken in U S Army hospitals, as this is a function of the Veterans Administration. An important part of this educational program is provided in the release of information, the presentation of orientation subjects, discussion groups, music and the drama. As the war proceeds, the emphasis in educational reconditioning is being directed to returning the soldier to civilian life and therefore greater effort

is being made to explore the talents of the individual and to encourage him to pursue further these interests on discharge from the Army.

The orientation portion of the program is one of the most important, as the soldier returned from an overseas hospital generally finds the adjustment to life at home perplexing. If he is to become an integral part of our democracy again his relationship to the other groups and individuals who make up our body politic must be clearly demonstrated to him. Not only is the wounded soldier a man who has the ordinary difficult problem of adjustment on returning to the United States but also superimposed are the problems of recovering from a disability: the feeling of detachment from reality because of loss of identification with his Army unit and, of course, the uncertainty of his future. Every effort is being made by means of visual aids, lectures and discussion groups, to demonstrate to the wounded soldier that his performance of duty has been appreciated and that many others too have made sacrifices, but still opportunity is available for him to become a valuable member of the community.

Occupational therapy is an important part of the treatment of many patients. It is used both as a functional and as a diversional type of therapy. Efforts are made to integrate closely the educational activities with the occupational in order to double the effect of each. Coordination of occupational therapy with physical therapy is being effected with good results.

Recreation is recognized as a valuable part of a well organized program. This is presented in many and varied forms including library service, dances, horseback riding, trips to points of local interest, USO Camp Shows and recreational motion pictures arranged with the assistance of the American Red Cross. It is well recognized that for a reconditioning program to be of value it must be of interest to the patient, and all features should be organized in such a fashion as to develop the enthusiasm of all participants.

Recently a paper delivered at the District of Columbia Medical Society on the subject "Reconditioning in Civilian Hospitals" has brought to the fore the possibility of the adoption of such a program in civilian hospitals. The objective of convalescence in both civilian and military medicine is the same: the return of the patient to his normal activities as rapidly as possible. It would therefore seem logical that if this aim has been achieved by the United States Medical Department it would behoove civilian institutions to examine carefully the Army program in order to determine how it might best be adapted to the requirements of civilian medicine.

Various articles have recently been published by Dock-Menninger,<sup>3</sup> Homans,<sup>4</sup> Levine<sup>5</sup> Albright<sup>6</sup> Lueth<sup>7</sup> and others showing that complete bed rest is ill advised in a great many types of medical, surgical and mental conditions. It would surely seem that convalescence is a phase of illness which is poorly understood and, in the light of recent developments, needs reexamination and renewed appraisal by the medical profession.

1 Gwynn H B. Reconditioning in Civilian Hospitals talk delivered at 16th Annual Assembly of the Medical Society of the District of Columbia Oct 7 1944 to be published in the Medical Annals of the District of Columbia.

2 Dock W D. Evil Sequelae of Complete Bed Rest. J A M A 125 1083 1085 (Aug 19 1944).

3 Menninger Karl. Abuse of Rest in Psychiatry. J A M A 125 1087 1090 (Aug 19 1944).

4 Homans J. Thrombosis of the Deep Veins of the Lower Leg Causing Pulmonary Embolism. New England J Med 221 995 997 (Nov 29 1934).

5 Levine S A. Some Harmful Effects of Recumbency in the Treatment of Heart Disease. J A M A 125 80 84 (Sept 9 1944).

6 Albright F. Metabolic Problems Relating to Convalescence. Convalescence and Rehabilitation Report no 6 Aug 12 1944. Committee on Medical Research of the Office of Scientific Research and Development.

7 Lueth H C. A Reconditioning Program for Disabled Soldiers. Illinois M J 86 95 (Aug) 1944.

## ARMY AWARDS AND COMMENDATIONS

## Captain Ralph Schwartz

The Silver Star award has been presented to Capt Ralph Schwartz formerly of New York City, for gallantry in action in Normandy, France on July 29, 1944. The citation states that "Captain Schwartz with a group of enlisted personnel was rendering medical service on the 29th of July, 1944 in a surgical tent located one-half mile north of Notre Dame La Cennilly, France, Coordinates T-376513 Coutances Sheet 6F3, to two United States Army patients and three enemy (German) patients when at 22 20 hours of this date a terrific antiaircraft barrage opened up on a group of enemy planes which were over the area. Captain Schwartz advised his group to place patients under cover and then to find cover for themselves when a cluster of antipersonnel bombs struck surrounding areas, causing about thirty-five casualties in all. As soon as the first attack subsided, Captain Schwartz who was not injured, organized the uninjured portion of his group and the remainder of the uninjured personnel of this medical section into an active working team of first aid men, litter bearers and ambulance drivers. Captain Schwartz continued working and leading this team through two additional enemy air raids without regard for his personal safety in order that all the wounded might be gathered up and treated and immediately evacuated. He held his men together by words of encouragement, and the fact that he did most of the work himself greatly strengthened the morale and working efficiency of his group. Rapid first aid and evacuation of these casualties under such difficult circumstances could not have been accomplished without Captain Schwartz's gallant leadership and superb supervision." Dr Schwartz graduated from Long Island College of Medicine, Brooklyn, in 1940 and entered the service March 7, 1942.

## Captain Edward C Edlkraut

Capt Edward C Edlkraut formerly of Passaic, N. J., was recently awarded the Soldier's Medal. He was decorated by Brig Gen Walter J Reed, commanding general of the 7th AAF Service Command, and the ceremonies took place at a base in the Hawaiian Islands. The citation accompanying the award read in part, "For heroism displayed at the scene of an airplane crash on Dec 27, 1943. With complete disregard for personal safety engaged in work of rescuing trapped crew members and putting out fire a job made doubly dangerous by the presence of leaking gasoline and by the fact that much of the work had to be done in mud and filthy water, which at times reached as high as the waist. Courage and devotion to duty displayed reflected great credit on himself and the military service." Dr Edlkraut graduated from Georgetown University School of Medicine, Washington, D. C. in 1931 and entered the service in June 1942.

## Captain Sumner D Davis

Capt Sumner D Davis Talladega, Ala. has been awarded the Bronze Star for 'heroic achievement in connection with military operations against the enemy near Santa Rosa, Island of Guam, M. I., on Aug 12, 1944. His citation continues "While accompanying a patrol which encountered heavy enemy fire in a thick jungle area, Captain Davis administered medical aid to members of a patrol who were wounded. He carried them to the ambulance and risked his life to make possible their rapid evacuation under fire. He then aided in evacuating the dead. His conduct was an inspiration to the men of his battalion. Dr Davis graduated from the University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore in 1933 and entered the service Sept 16, 1942.

## Captain Albert H Braden Jr

Capt Albert H Braden Jr, formerly of Houston, Texas was recently awarded the Silver Star. According to the citation accompanying the award, "During the night of May 23-24, 1944, an undetermined number of Japanese attacked the perimeter of the unit to which he was attached in New Guinea. With complete disregard for his own personal safety he administered medical care to our wounded and checked the dead using a flashlight thereby endangering his own life by becoming a vis-

ible target for the enemy. His calmness and devotion to duty under hostile fire reflect great credit on himself and on the military service." Dr Braden graduated from the University of Texas Medical Branch, Galveston, in 1940 and entered the service Aug 15, 1941.

## Captain Kenneth F Stotz

The Legion of Merit award was recently presented to Capt Kenneth F Stotz formerly of Chicago. The citation accompanying the award read "For exceptionally meritorious conduct in the performance of outstanding services in the South Pacific Area from March 1942 to May 1944. At New Caledonia Capt Stotz's unit was assigned to a 100 mile sector and despite poor roads he administered efficiently at the aid stations throughout the sector. During the unit's participation in the Guadalcanal campaign he frequently operated aid stations within 25 yards of the front lines and at the cessation of hostilities on that island he set up two small hospitals. An outstanding evacuation system was instituted and maintained by his unit during the Bougainville campaign. Displaying courage and devotion to duty Captain Stotz performed a major operation under heavy enemy fire, thereby saving the life of a casualty. His foresight and executive and administrative ability contributed in a great measure to his unit's successful operation." Dr Stotz graduated from Northwestern University Medical School, Chicago, in 1934 and entered the service June 3, 1941.

## Major James P Harmon

Major James P Harmon, formerly of Clearwater, Fla. has been awarded the Purple Heart and Silver Star for his participation in the invasion of France. The citation for the Silver Star award said in part, "Major Harmon wounded by shrapnel and suffering a dislocated shoulder sustained while seeking cover on a beachhead of France in June 1944, assembled his medical section and led it to an inland location where necessary first aid could be administered to the wounded. With utter disregard for his personal injuries and with outstanding devotion to duty, he refused medical treatment until such time as the wounded who had been brought to his aid station had all been treated and made as comfortable as possible. Major Harmon conducted himself with such gallantry and with such skill, expediency and efficiency as to reflect the highest credit on the Medical Department of the Army." Dr Harmon graduated from the University of Tennessee College of Medicine, Memphis, in 1938 and entered the service in November 1940.

## Colonel Silas B Hays

The Legion of Merit was recently awarded to Col Silas B Hays formerly of Washington, D. C. The citation accompanying the award read "Services from August 1942 to February 1944. As director, distribution division later enlarged to distribution and requirements division, Office of the Surgeon General he developed plans and organized the storage and issue activities of the medical department supply operations, including the development of an inventory control system closely coordinated with issues. By use of his extensive knowledge of supply and administration and by close and energetic personal supervision, he effected an efficient supply service during a period of accelerated activation when supplies, trained personnel and facilities were most difficult to procure. Without his inspiring leadership and extraordinary devotion to duty the formation of an outstanding service would not have been accomplished with such success and efficiency." Dr Hays graduated from the State University of Iowa College of Medicine, Iowa City, in 1928 and entered the service Aug 1, 1929.

## Captain Edward I Lederman

The Silver Star was recently awarded to Capt Edward I Lederman formerly of Baltimore. The citation read "He was the assistant surgeon of an infantry battalion engaged in combat with a determined group of enemy located in advantageous positions on high ridges on Biak Island, New Guinea, May 28, 1944. Several casualties were incurred, putting a strain on the facilities of the battalion aid station. He therefore moved forward to advance units to render medical assistance with less delay. Under severe fire he gave medical assistance to the wounded and expedited their evacuation to



the rear. During withdrawal from the position across an open beach he stopped to aid a severely wounded man. His outstanding acts required a great deal of courage and initiative, and the results of his work saved the lives of many soldiers." Dr. Lederman graduated from the University of Cincinnati College of Medicine in 1941 and entered the service Aug. 16, 1942.

#### Major Orren B. Landrum

Major Orren B. Landrum, formerly of Dyersburg, Tenn., was recently awarded the Bronze Star Medal. The citation reads: "for meritorious service in action against the enemy in France. From the time his unit first engaged the enemy and all through the campaign of the Cotentin Peninsula, Major Landrum performed the duties of regimental surgeon in an exemplary and outstanding manner. He supervised the evacuation of casualties and the operation of medical stations in the field with a tireless devotion to duty which inspired all members of his command to greater efforts. On one occasion Major Landrum went through an enemy minefield to administer aid to a soldier who had been wounded by an exploding mine." Dr. Landrum graduated from Johns Hopkins University School of Medicine, Baltimore, in 1933 and entered the service in November 1942.

#### LIFE OF PHOTOROENTGEN FILMS

The principal subject of Technical Bulletin of Medicine No. 99 recently issued by the War Department is that of improvement in the present method of washing films. The United States Bureau of Standards has established 0.005 mg. per square inch as the maximum permissible concentration of residual hypo. Films with no more than this quantity of hypo, if stored properly, should have a useful life of fifty years. The washing of photoroentgen films is even more critical than the washing of ordinary films, as they require longer wash periods.

#### SURGICAL AND ORTHOPEDIC CONSULTANTS OF VARIOUS SERVICE COMMANDS

A meeting of the surgical and orthopedic consultants of the various service commands and the Surgical Consultants Division of the Office of the Surgeon General was held recently at the Surgeon General's Office, Washington, D. C., to promote discussion on various problems which arise in different hospitals and other installations throughout the zone of the interior. The representatives of the various service commands were each assigned a subject which represented one of the major problems in his own geographic area.

### POSTWAR PLANNING

*At the request of the Committee on Postwar Medical Service the following communication has been transmitted by the Council on Medical Education and Hospitals to all hospitals approved for internships, residencies and fellowships requesting their assistance in the expansion of educational facilities, primarily for returning medical officers (see editorial, page 770)*

Studies conducted by the Committee on Postwar Medical Service and the Council on Medical Education and Hospitals indicate that much expansion of educational facilities will be required temporarily to meet the needs of returning medical officers. As shown in the enclosed article on Postwar Planning, opportunities for graduate training in surgery, obstetrics, gynecology, otolaryngology and ophthalmology will probably need to be doubled in number while facilities in urology, internal medicine, orthopedics, pediatrics, pathology, radiology, psychiatry and neurology may require an increase of 30 to 70 per cent. Additional training courses are also needed in the other specialties listed below (see also tables 4, 5 and 7 in the enclosed pamphlet). Medical officers have requested the following types of training:

**A. Assistant residencies.** First year of general or specialized hospital training following the completion of an internship.

**B. Residencies.** Continued hospital training beyond the internship and assistant residency levels.

**C. Fellowships.** These may be similar to residencies but are usually university or medical school appointments offering greater opportunity for the study of basic sciences and research.

**D. Full time graduate externships.** Assignments to inpatient or outpatient departments or other educational activities without the requirement of hospital residence.

**E. Full time refresher courses.** Lectures, ward rounds, conferences, clinical demonstrations, practical training. Courses of two to six months' duration are in great demand.

**F. Instruction in basic medical sciences.** Review courses in anatomy, pathology, physiology, chemistry and other basic medical sciences in connection with hospital residencies or postgraduate studies.

Meeting the requirements of returning medical officers for additional training is a responsibility that rests with the medical profession, medical schools and the hospitals of the United States. We are confident that your hospital will wish to participate in this program in accordance with your ability to offer adequate clinical and teaching facilities. There has been published in THE JOURNAL A M A a statement of the applicability of benefits under the 'G. I. Bill of Rights' to house officers and hospitals participating. A reprint will be mailed to you.

Assuming that nearly all of your normal teaching staff will be available within the first year after the war, please indicate

the extent to which your hospital will be able to furnish training in any or all of the following divisions numbering your replies to correspond with each question.

- |  |   |  |
|--|---|--|
| Training requested by medical officers | 1 | What is the total number of individuals you can accommodate in residencies, assistant residencies and/or fellowships in each of such fields listed to the left as are now operating approved residencies or fellowships at your hospital? Specify types and total numbers. |
| Allergy                                |   |  |
| Cancer                                 |   |  |
| Cardiology                             |   |  |
| Comm Dis                               |   |  |
| Derm Syph                              | 2 | In what fields not yet approved for residency training can you develop residency programs? What is the total number of individuals you can accommodate in each?  |
| Gen training or mixed res              |   |  |
| Gastroent                              |   |  |
| Industrial Health                      |   |  |
| Int Medicine                           | 3 | If the hospital is in position to offer full time externship (see D above), please specify types, length of training and number of individuals that can be accommodated in each in addition to those under 1 and 2 (exclusive of undergraduate medical students).          |
| Psychiatry                             |   |  |
| Neurology                              |   |  |
| Neur Surg                              |   |  |
| Obstetrics                             |   |  |
| Gynecology                             |   |  |
| Ophthalm                               |   |  |
| Otolaryng                              | 4 | If short term refresher courses can be provided indicate types, length of training and number of physicians you can accommodate in each course.  |
| Orthopedics                            |   |  |
| Fractures                              |   |  |
| Pathology                              |   |  |
| Pediatrics                             |   |  |
| Public Health                          | 5 | Basic medical science instruction available in hospital, by affiliation. Indicate subjects, length of training and number of physicians that can be accommodated in each.  |
| Radiology                              |   |  |
| Gen Surg                               |   |  |
| Ped Surg                               |   |  |
| Plast Surg                             |   |  |
| Traum Surg                             |   |  |
| Thorac Surg                            | 6 | Maintenance. Please indicate in connection with each division listed above whether hospital will be in position to provide quarters, meals, laundry, Monthly stipend (amount).   |
| Tuberculosis                           |   |  |
| Urology                                |   |  |
| Hospital Administration                |   |  |

May we request that this matter receive your careful consideration and that it be reviewed by the hospital's educational and postwar planning committees, the physicians in charge of the various departments and medical schools with which the hospital may be directly affiliated. The cooperation of your office and the medical staff will be very greatly appreciated.

## NAVY

NAVY MEDICINE FEATURED IN SIXTH  
WAR LOAN DRIVE

Navy medicine will occupy an important place in the Navy Pacific Theater Exhibit at Navy Pier, Chicago November 18 to December 3, which will keynote the Sixth War Loan Drive. Vice Admiral Ross T. McIntire, surgeon general of the Navy, will visit the exhibit on November 24, "Bureau of Medicine and Surgery Day," and will make a radio address on the care of Navy wounded.

The exhibit will feature the Abbott collection of paintings on naval medicine, first shown during the 1944 convention of the American Medical Association, scale models of a 200 bed advance base hospital on a Pacific Island, the National Naval Medical Center at Bethesda Md., LSTs converted into casualty carriers and the newest type of hospital ship which illustrate medical facilities available to America's fighting men.

Outdoor demonstrations have been arranged by the Medical Field Research Unit, Camp Lejeune, North Carolina, under the direction of Comdr. W. N. New. A battalion aid station will be set up identical to those in the Pacific and a movie showing the training given hospital corpsmen on duty with Marine assault troops will be shown in a quonset hut. Jeeps, converted to field ambulances, will also be on display. In addition, Camp Lejeune hospital corpsmen will participate in landing operations on the shore of Lake Michigan.

An RD-4 airplane, the type widely used in the Pacific for casualty evacuation, will be on display at the Chicago Municipal Airport, completely equipped with litters and other equipment used in getting wounded men away from the front lines. Members of the Navy's medical, nurse and hospital corps, many of whom have come back recently from combat duty, will be in attendance during the exhibit.

## NAVY NEEDS MORE NURSES

A total of 4,000 more nurses are urgently needed by the Navy by June 30, 1945, to maintain the strength of the Navy Nurse Corps at the desired level. With a present strength of 8,700 women in the Nurse Corps, at least 2,000 new recruits are being sought before the end of December 1944 in order to keep pace with the nursing requirements of the still expanding Navy while taking into account separations from the corps.

The Nurse Corps is scheduled to provide three nurses for every thousand men and women in the naval services. This means that the net strength of the Nurse Corps should be approximately 11,500 by next June.

AIRLINE SERVICE TO DELIVER  
WAR WOUNDED

Capt. James E. Dyer, U. S. Navy, commander of the Naval Air Transport Service West Coast Wing, recently announced that regularly scheduled airline service was begun to deliver war wounded arriving at San Francisco, San Diego and Seattle from the Pacific area to naval hospitals throughout the country. Preparations have been made to carry approximately 700 patients per month on the new regular service, with special flights to be added as the needs of the service require.

Types of casualties to be transported by air include surgical patients who could not stand prolonged trips and otherwise could not be moved at all, blind patients traveling to the naval hospital at Philadelphia for specialized care, less severe types of tuberculosis to prevent unnecessary exposure of contacts and cases of mental shock. The Naval Air Transport Service will assist the Navy in its attempts to hospitalize long-time patients nearest their homes whenever possible.

Each insulated plane will carry approximately 17 web litters and will be provided with ground and plane heating equipment. Cabins will be preheated in winter operations to assure safety and comfort of even temperatures. Oxygen for use en route will be available. Liquids for comfort en route will be boarded, and the Naval Air Transport Service has made arrangements with Red Cross mobile units to provide hot food at stops where government facilities are not available. The planes will

exchange field litters with the naval hospitals so that patients will not have to be transferred on enplaning and deplaning. Should a Naval Air Transport Service plane be "weathered" in or encounter other operational difficulties en route across the length and breadth of the continent, arrangements have been made to care for patients at the nearest government hospital. Alternate airports with proper facilities have been selected.

Five naval hospitals in the bay area, plus other West Coast medical centers receiving casualties from the Pacific, will be served north east and south to the Atlantic seaboard by the new Naval Air Transport Service operation. The West Coast Naval Air Transport Service operations, with hospital officers appointed for each squadron, were set up at the direction of the chief of naval operations in coordination with the Navy's Bureau of Medicine and Surgery.

## NAVY AWARDS AND COMMENDATIONS

## Lieutenant Howard Arne Andersen

The Bronze Medal was recently awarded to Lieut. (jg) Howard Arne Andersen, formerly of Minneapolis. His citation reads: "For heroic service as Medical Officer attached to the U. S. S. *Corry* when that vessel sank as a result of enemy action during invasion operations in the bay of the Seine, coast of France, June 6, 1944. Courageous and selfless in the performance of duty, Lieutenant Junior Grade Andersen remained to the last aboard the sinking vessel, working desperately to save the wounded even though the word had been given to abandon ship. Despite the grueling strain of continuous shelling from hostile shore batteries during the subsequent prolonged period in the water and although suffering from exposure, he carried on valiantly for another thirty hours in his steadfast and tireless ministrations to the injured. His exceptionally gallant conduct and outstanding skill throughout this perilous engagement and during the disaster which followed reflect the highest credit on Lieutenant, Junior Grade, Andersen and on the United States Naval Service." Dr. Andersen graduated from the University of Minnesota Medical School, Minneapolis, in 1943 and received his commission after a Navy internship.

## Lieutenant William Deffinger

Lieut. William Deffinger, formerly of Cincinnati, was recently cited by the Secretary of the Navy for heroic performance of duty. The citation reads: "For heroic performance of duty while serving with the Second Marine Division in Tarawa on Nov. 23, 1943. When the battalion command post was heavily fired on by the enemy in a devastating night attack and one of the company officers was severely wounded, Lieutenant Deffinger, with utter disregard for his safety, crawled from his foxhole and made his way over terrain swept by enemy and friendly fire determined to administer first aid to the stricken officer but on reaching him found his comrade mortally wounded. Lieutenant Deffinger's professional integrity and valiant efforts to save the life of another at grave risk to his own were in keeping with the highest traditions of the United States Naval Reserve. Dr. Deffinger graduated from the University of Cincinnati College of Medicine in 1941 and entered the service July 14, 1942.

## Lieutenant Commander Francis R. Meyers

Lieut. Comdr. Francis R. Meyers was recently commended by the Secretary of the Navy for outstanding service as flight surgeon assigned to special duties in connection with the epochal mission of the Secretary of State to Moscow, Russia, in 1943. Throughout the hazardous flights and the period of the highly important tripartite conference, Lieutenant Commander Meyers rendered invaluable assistance and met his varied and essential responsibilities skilfully and with a thorough knowledge of the problems involved. By his superior professional ability and tireless effort he contributed materially to the successful achievements of the Secretary in this vital mission. Dr. Meyers graduated from Georgetown University School of Medicine, Washington, D. C. in 1930 and entered the service April 5, 1941.

**Lieutenant Edward D Curtin**

The Navy and Marine Corps Medal was posthumously awarded to Lieut (jg) Edward D Curtin San Bernardino, Calif, "for heroic conduct in the line of his profession as medical officer serving on board a motor torpedo boat while on patrol off the north coast of New Britain on the morning of March 27, 1944. Zealous and untiring in the performance of duty, Lieutenant, Junior Grade, Curtin voluntarily and repeatedly participated in hazardous patrols covering this area of intense combat activity in the hope of rendering service in case of casualties. Severely wounded when the motor torpedo boat was attacked and sunk, he displayed exceptional bravery throughout the action, disregarding his own serious condition and insisting that aid and care be administered to other injured men first. By his loyal spirit of self sacrifice and courageous devotion to duty, Lieutenant Junior Grade Curtin upheld the highest traditions of the United States Naval Service. He gallantly gave his life for his country." Dr Curtin graduated from Stanford University School of Medicine, San Francisco, in 1941.

**Commander Glenn G English**

Comdr Glenn G English, formerly of Los Angeles, was recently commended by Col James P Riselev, commanding the Sixth Marine Regiment, for his intrepidity and courage in establishing an aid station to care for and evacuate wounded Marines during the first bloody hours of the fight for Saipan. Dr English landed and established a sorely needed aid station despite terrific mortar, artillery and small arms fire that was falling on the beach strewn with dead and wounded men. While others were taking over, Colonel Riselev said "Commander English went about his work with cool efficiency, disregarding the heavy enemy fire that was causing many casualties about him. The gallant action of Commander English in caring for the wounded without regard for his personal safety, despite this heavy fire, saved the lives of many wounded Marines. His courage and bravery were an inspiration to the officers and men under his command and to wounded Marines arriving at the beach." Dr English graduated from Indiana University School of Medicine Indianapolis in 1922 and entered the service Nov 7 1940.

**MISCELLANEOUS****HOSPITALS NEEDING INTERNS  
AND RESIDENTS**

The following hospitals have indicated to the Council on Medical Education and Hospitals that they have not completed their house staff quota allotted by the Procurement and Assignment Service.

(Continuation of list in THE JOURNAL, November 4 page 645)

**CONNECTICUT**

St Vincent's Hospital Bridgeport Capacity 325 admissions 9 278  
Sister Louise Superintendent (2 interns July 1 1945)  
Danbury Hospital Danbury Capacity 220 admissions 3 907 Miss  
Anna M Griffin Administrator (4 interns Jan 1 1945)

**INDIANA**

Lafayette Home Hospital Lafayette Capacity 155 admissions 3 569  
Mr T E Berg General Manager (1 mixed resident March 1 or  
April 1 1945)

**MAINE**

St Mary's General Hospital Lewiston Capacity 175 admissions  
3 630 Sister Lachapelle Superintendent (intern Dec 15 1944)

**NEW YORK**

St John's Long Island City Hospital Long Island City Capacity 284  
admissions 5 418 Sister Thomas Frances Superintendent (interns)  
Mount Vernon Hospital Mount Vernon Capacity 251 admissions  
4 706 Mr A B Solon Superintendent (interns)

**OHIO**

Fairview Park Hospital Cleveland Capacity 201 admissions 6 281  
Mr Philip Vollmer Jr Superintendent (interns)

**WEST VIRGINIA**

Charleston General Hospital Charleston Capacity 380 admissions  
10 200 Dr Charles E Cannaday medical director (intern July 1  
1945)

**WARTIME GRADUATE MEDICAL MEETINGS**

The following subjects and speakers for Wartime Graduate Medical Meetings have just been announced.

Deshon General Hospital, Butler, Pa Compound Fractures  
as Art Seen in Battle Injuries, Dr Arthur G Davis, November  
21

ASF Regional Hospital Camp Crowder Missouri Gastro-  
intestinal Diseases, Dr Carl R Ferris, November 30

AAF Roscreans Field, St Joseph, Mo Clinical Psychiatry,  
Dr E T Gibson, December 14, Anesthesia, Dr P H Lorhan,  
December 14

ASF Regional Hospital, Fort Riley, Kansas Arthritis, Dr  
W Merritt Ketcham November 30

AAF Great Bend Kan Trauma of the Abdomen Dr E P  
Parsons December 7, Pathology, Dr M L Jones, December 7  
Waco General Hospital, Galesburg Ill Brain and Spinal  
Cord Injuries, Drs Loren W Avery and Ralph C Hamill,  
November 29

Camp Ellis, Camp Ellis Ill Burns and Plastic Surgery,  
Col William B Parsons and Dr Wayne B Slaughter, Novem-  
ber 29

Chanute Field, Rantoul Ill Chest Diseases and Diseases of  
the Larynx, Drs William E Adams and Robert G Block,  
November 29

**MILITARY SURGEONS INSTRUCT SERVICE  
HOSPITAL AND PATIENTS BY  
TELEVISION**

Television facilities of the National Broadcasting Company were recently used to describe to medical staffs and patients in seven service hospitals in and near New York how government agencies are functioning in the reconstruction of wounded servicemen. The telecast took place on the opening day of the three day conference of military surgeons at the Hotel Pennsylvania November 24. Vice Admiral Ross T McIntire, surgeon general of the Navy, Major Gen Norman T Kirk, surgeon general of the Army, Brig Gen Frank T Hines, administrator of veterans affairs and Dr Thomas Parran, surgeon general, U S Public Health Service, participated in the program. A film showing the steps taken in restoring the wounded to health and a normal life concluded the telecast.

The National Broadcasting Company planned this program in order that members of medical staffs whose duties prevented them from attending the conference and veterans confined to the hospitals would be able to see and hear the four officials who are directing the work of restoration. The television equipped institutions are the U S Convalescent Hospital, Harri-  
man, N Y, the U S Naval Hospital, Brooklyn, Hospital of the Rockefeller Institute for Medical Research, Halloran General Hospital, Staten Island, Tilton General Hospital, Fort Dix, New Jersey, U S Naval Hospital, St Albans, L I, and Sea Gate Naval Hospital, Coney Island, N Y.

**ARMY-NAVY E AWARDS**

The Kollmorgen Optical Corporation Brooklyn, was recently granted the fourth renewal of the Army-Navy E Award. Admiral C C Bloch, chairman of the Navy board for production awards, stated that in consideration of the excellent record of this firm it has been decided that the company may retain the flag for a year before being considered for the next renewal.

The Army-Navy E award was recently presented to the Lake-side Laboratories, Milwaukee manufacturers of pharmaceuticals. Brig Gen P J Carroll commanding officer of Vaughan Gen-  
eral Hospital, Hines Ill, made the presentation.

# ORGANIZATION SECTION

## Washington Letter

(From a Special Correspondent)

Nov 13, 1944

### Permanent Mobilization of Scientific Research

The contribution of American science and medicine to the present war has been so great that the Army and Navy have asked Congress for their permanent mobilization, and action on the request is expected to be taken at the reconvening session this week. Medical research has been of special value to the fighting services, and the work of American scientists, much of which has been kept entirely secret, is described by service leaders as a major factor in the success achieved by United States men at arms. The nation's scientists and laboratories were marshaled behind the armed forces to "assured maximum utilization of such personnel and resources in developing and applying the results of scientific research to defense purposes" when President Roosevelt in 1941 created by executive order the office of scientific research and development.

It is the desire of Army and Navy leaders that at least the nucleus of such an organization be retained after the war. The House Postwar Military Policy Committee headed by Representative Clifton A. Woodrum (Democrat, Virginia) will probably have the matter high on its agenda during this session of Congress. It is possible that hearings will be held at the Office of Scientific Research and Development and that other scientific and medical leaders will testify. Representative James W. Wadsworth (Republican, New York) today directed attention to the remarkable work done by United States scientists in the war and said that "in a very real sense modern war is a battle between the scientists. This scientific phase of modern combat is highlighted today when V-1 and V-2 rocket bomb attacks on England are putting allied scientific resources to another test. In addition to medical development, scientific work has been required in the field of bomb and airplane rocket propulsion, radio communications, electronics explosives and numerous other related subjects. Many of these developments are still on the secret list.

Dr. A. N. Richards is chairman of the Committee on Medical Research of the Office of Scientific Research and Development which, in addition to Dr. Bush and Dr. Richards has on its advisory council Dr. James Bryant Conant, president of Harvard University and chairman of the National Defense Research Committee and Dr. J. C. Hunsaker, chairman of the National Advisory Committee for Aeronautics.

The permanent organization, as visualized by some members of Congress, would be largely independent of the Army and Navy. Scientists would have complete freedom in their activities unconfined by the rigid operational restrictions of governmental bureaus. They would be expected to work in close cooperation with the armed forces.

The aim of the Office of Scientific Research and Development, as it has functioned during the war, has been to review and supplement the experimental and research activities of the War and Navy departments. Congressmen say that this office has been eminently successful and they are agreed that never again should the research and development activities of the Army and Navy be starved for funds. This is in line with current belief that the peacetime army must be strong that the Navy must continue at approximately its present strength and that the Air Force must be substantial in size. Modern war, it is pointed out, cannot be fought without radar, electrical gun aimers, bazookas and rocket guns, nor can fighting men be kept fit or restored to fighting condition after they have been wounded, without the best in knowledge and equipment that modern science can supply.

### Treatment of Addiction to Alcohol

Need of more medical rather than police attention by alcoholic addicts was stressed by Dr. Lawrence Kolb, former chief of the Mental Hygiene Division of the Bureau of Medical Services, U. S. Public Health Service, in his address sponsored here by Alcoholics Anonymous national voluntary organization for the cure of drunkenness. Dr. Kolb, who was one of several doctors and social workers who spoke, said that the alcohol problem was fourth in the list of reasons why people are sent to hospitals for mental diseases, it is one of the commonest causes of violent crime, and if all secondary causes of death, such as cirrhosis of the liver, are included, it is rapidly becoming one of the major causes of death in this country. "Alcohol is really too much of a police matter in this country," he said. "Actually it should be more of a medical responsibility, with more helpful measures available, such as hospitalization, clinics, and more organizations doing such work as Alcoholics Anonymous." He advocated more research to find better methods of cure and prevention of addiction to alcohol, and more educational work to acquaint people with various aspects of the alcohol problem.

### Capital Industry Gives Attention to Employee Health

A new venture in industrial health of the capital was the mass chest x-ray examination for symptoms of tuberculosis of employees of International Business Machines, conducted here with members of the Public Health Commission of the Washington Board of Trade as witnesses. Dr. Roy Lyman Sexton, chairman of the commission, commenting on the fact that this event was the first of its kind in Washington industry, said "The mass x-raying of these employees is a definite step forward in industrial medicine in the District of Columbia and marks the start of a new era in which industrial management is giving special consideration to the health of workers. It is to be hoped that other Washington concerns will realize the importance of this added health measure for the detection of tuberculosis and will arrange similar mass x-ray examinations.

### Five Hospitals Given FWA Grants of \$382,732

Presidential approval has been given to grants totaling \$382,732 to five hospitals, including St. Elizabeths in Washington, toward the cost of constructing and equipping nurses homes and training facilities. Major Gen. Philip B. Fleming, federal works administrator, announced. Expansion of the hospitals, all participating in the U. S. Cadet Nurse Corps training program, will provide for an additional 348 student nurses. They are St. Vincent's Sanitarium, St. Louis County, Mo.; Montana State Hospital, Warm Springs; the State Hospital at Raleigh, N. C.; and Fort Steilacoom Nurses Home, state of Washington.

## Society Proceedings

### COMING MEETINGS

- American Society of Anesthetists New York Dec 14 Dr. McKinnie L. Phelps 745 Fifth Ave. New York 22 Secretary
- Puerto Rico Medical Association of Santurce Dec 15 17 Dr. E. Martinez Rivera P. O. Box 3866 Santurce Secretary
- Southern Surgical Association Hot Springs Va. Dec 5 7 Dr. Alfred Blalock Johns Hopkins Hospital Baltimore 5 Secretary
- Western Surgical Association Chicago Dec 12 Dr. Arthur R. Metz 220 East Superior St. Chicago Secretary

## Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES NEW HOSPITALS EDUCATION AND PUBLIC HEALTH)

### ARKANSAS

**District Meetings**—The Third Councilor Medical Society of Arkansas was addressed at its meeting in Brinkley October 27, by

Dr Pat Murphy, Little Rock, The Spastic Child  
Dr Joseph I Shuffield, Little Rock, Penicillin in Treatment of Osteomyelitis  
Dr James O Rush, Forrest City, Hemorrhage in the Newborn  
Dr Frederick W Haines, Pine Bluff, Radiation in Nonmalignant Conditions  
Dr Austin T Barr, Cherry Valley, A Plea for Conservatism in the Management of Acute Cardiac Crises

The First Councilor District Medical Society of Northeast Arkansas held its eighty-fourth semiannual meeting in Jonesboro October 19. Among the speakers were Drs Joseph I Shuffield, Little Rock, on Penicillin in Treatment of Osteomyelitis; Newton S Stern, Memphis, Tenn., "Cardiac Neurosis"; and John L Jelks, Memphis, "Cancer of the Large Bowel."

### CONNECTICUT

**Grant for Work in Cancer**—A grant of \$1500 for use in the field of cancer prevention in Connecticut has been voted by the trustees of the Anna Fuller Fund for a year beginning November 1. The grant which is to be expended under the direction of Dr Hugh M Wilson, New Haven, chairman of the committee on tumor study of the Connecticut State Medical Society, marks the first instance of the allotment of funds by such a foundation to a committee of the state society. The trustees of the fund, a trust created under the will of the late Egbert C Fuller, New Haven and Branford, for the advancement of cancer research are assisted in its administration by a board of scientific advisers the members of which are Dr George M Smith, New Haven, chairman; Brig Gen Stanhope Bayne-Jones, M C; Dr Milton C Winternitz, New Haven; and Dr Ernest L Kennaway, London, England.

**Horace Wells Centenary**—The *Connecticut State Medical Journal* for November was designated the Horace Wells Centenary Number in honor of the Hartford dentist who on Dec 11 1884 submitted to the first operation performed under nitrous oxide. On Sept 21 1944 the United States Senate adopted a resolution commemorating this event. The Connecticut State Medical Society and the American Dental Association will cooperate at a special meeting in Hartford December 11, to celebrate the centenary of the discovery of the anesthetic properties of nitrous oxide by Dr Wells and a plaque will be unveiled marking the site of the former home of the dentist. Among the speakers at the special meeting will be

Howard R Raper DDS, Albuquerque, N M, Glances of the Man Horace Wells  
Dr Theodor Blum, New York, History and Use of Local Anesthesia in Surgery  
Dr Emory A Kovenstine, New York, Nitrous Oxide: High Lights and Side Lights  
Dr Charles J Wells, Syracuse, N Y, Horace Wells the Discoverer of Anesthesia  
Dr Arno B Luckhardt, Chicago  
Gov Raymond E Baldwin, Hartford  
Senator Francis Maloney, Meriden  
Dr H Gildersleeve Jarvis, Hartford, president, Connecticut State Medical Society  
Walter H Scherer DDS, Houston, Texas, president elect, American Dental Association  
Arthur H Merritt DDS, New York, past president of the American Dental Association

The principal afternoon address will be delivered by Thomas Parran, surgeon general of the U S Public Health Service.

### GEORGIA

**Executive Secretary Retires**—Mr H L Rowe, Social Circle, retired on October 1 as executive secretary of the Medical Association of Georgia a position he held for nineteen years. He has been succeeded by Miss Viola Berry, Atlanta, who has been associated with the Druid Hills Baptist Church for eighteen years.

**Steiner Clinic Ruled Part of Grady Hospital**—The Atlanta City Council has ruled that the Albert Steiner Clinic for Cancer and Allied Diseases is a part of Grady Hospital and that the provisions of the city charter, as validated by

the state legislature, prevent its release from the authority of the hospital board of trustees. The clinic was established by a trust fund created by the late Albert Steiner and the Steiner estate and the city together have operated it since 1923. The ruling was in answer to an attempt to create a separate board of trustees to operate the clinic it was reported.

**Proposed Department of Psychiatry**—Plans are under way at Emory University, Atlanta, to establish a department of psychiatry at Grady Hospital to function in connection with the school of medicine. In a statement to the press Dr Russell H Oppenheimer, dean of the medical school, is reported to have said that some of the funds to finance the new department are now available but that work was being held up pending completion of the matter of financing improvement of facilities at the hospital for clinics and beds for certain types of patients and a shortage of physicians.

**Pediatric Meeting**—The twelfth annual scientific meeting of the Georgia Pediatric Society will be held December 14 in Atlanta. The afternoon session will be at the Biltmore Hotel and the evening meeting at the Academy of Medicine. Among the speakers will be

Dr Robert L Bennett Jr, Warm Springs, Care of Emergencies Arising During the Acute Stage of Infantile Paralysis  
Dr Herbert C Miller Jr, New Haven, Conn, Effect of Maternal Diabetes Mellitus on Viability of the Fetus and Newborn Infant  
Dr Bret Ratner, New York, Sulfonamide Allergy in Children

The same speakers will be included among those who address the evening session.

**Dr Sydenstricker Joins UNRRA**—Dr Virgil P W Sydenstricker, professor of medicine, University of Georgia School of Medicine, Augusta, and physician in chief at the University Hospital, has accepted a commission with the United Nations Relief and Rehabilitation Administration as chief counsel in nutrition of western Europe. His rank will be that of colonel. The *Augusta Herald* October 30 reports that Dr Sydenstricker has been granted a six months leave from the medical school and that he will have charge of organizing the health service of all the nations west of the Balkans which have been freed from the dominance of Germany. Dr Sydenstricker spent 1942 in England as nutritional adviser under the auspices of the Rockefeller Foundation.

### ILLINOIS

**Personal**—Dr Joseph T Maher, formerly medical director of the Madison County Sanatorium, Edwardsville, has been appointed medical superintendent of the Vermilion County Tuberculosis Dispensary and Hospital, Danville, succeeding Dr Lemuel R Broome who resigned to go to Beckley, W Va.

### Chicago

**Electrocardiographic Interpretation**—A course in electrocardiographic interpretation for graduate physicians will be given at Michael Reese Hospital by Dr Louis N Katz, director of cardiovascular research. The class will meet each week starting Wednesday, February 14, for twelve weeks from 7 to 9 p m. Further information and a copy of the program may be obtained on application to the cardiovascular department, Michael Reese Hospital, Twenty-Ninth Street and Ellis Avenue, Chicago 16.

**Research Fellowships**—Applications for research fellowships in medicine, dentistry and pharmacy in the University of Illinois are now being considered for the year beginning Sept 1 1945. Appointments to these fellowships will be announced on or before April 1. Candidates for these fellowships must have completed a training of not less than eight years beyond high school graduation. The fellowship carries a stipend of \$1200 per calendar year, with one month's vacation. Application blanks and further information may be secured from the secretary of the committee on graduate work in medicine, dentistry and pharmacy, William H Welker, Ph D, 1853 West Polk Street, Chicago 12.

**Scholarship Awards at Northwestern**—Announcement is made of the creation of the Phi Rho Sigma scholarship awards at Northwestern University Medical School to stimulate scholarship in the school among organized groups as well as among the individual students. One award will be in the form of a suitable trophy which shall remain the property of the medical school and which shall be placed and maintained in the Archibald Church Library. The trophy will be awarded annually to the national fraternity in the medical school having thirty or more active members enrolled as regular students which has maintained the highest scholastic average during the preceding year. There will also be two individual cash awards: one for the student who has maintained the highest scholastic average during three years in the medical school

and the other to the student in the winning fraternity who, in the opinion of the fraternity, has contributed most to their success in winning the trophy. The awards shall be made annually as a part of the founders day convocation. These awards which were announced by Dr Howard B Carroll, president of the medical division of the Northwestern University Alumni Association, were made possible by an alumnus of Phi Rho Sigma who wishes to remain anonymous.

## INDIANA

**Personal**—Dr Theodore Makovsky, Valparaiso who graduated in the Indiana University School of Medicine, Indianapolis, in 1944, has been given a fellowship in pathology for research in cancer by the Indiana Field Army, the fellowship provides \$1,400 a year for three years.

**Orthoptic Clinic at Riley Hospital**—An orthoptic clinic has been created at the James Whitcomb Riley Hospital for Children, Indianapolis, to provide special training for children having difficulty in eye focusing and to supplement surgery for correction of crossed eyes. The new unit will add to the Indiana University Medical Center's facilities, of which the Riley Hospital is a part.

**District Meeting**—The seventy-second semiannual meeting of the Eleventh Indiana Council District Medical Association was held in Kokomo October 25. Among the speakers were Drs Merlino H Draper Fort Wayne on 'Modern Concepts of Tuberculosis' Capt Archie E Brown M C "Tropical Medicine as It May Affect Future Civilian Life" and Gerald F Kempf, Indianapolis, "Uses and Limitations of Penicillin."

## MICHIGAN

**Edgar Norris Given New Position**—Dr Edgar H Norris since 1939 dean of Wayne University College of Medicine Detroit, has been appointed director of medical sciences a newly created position in the development of the Medical Science Center. The action was taken on the recommendation of Warren E Bow, LL.D., Detroit, president of the board of education. The new dean of the medical school has not been appointed according to Detroit *Medical News*. At a meeting of the board October 10 it was decided that the schools involved in the Medical Science Center would be managed by the present administration of the university. The head of each of the respective schools will be a member of the council of deans of the university and will report to the executive vice president who in turn will report to the president. The university administration will be assisted by Dr Norris in his capacity as director of medical sciences who will be liaison official in the development of the center and who will also be a member of the council of deans. In addition he will be a liaison official with the board of directors of the Medical Science Center and the trustees of the Wayne University County Hospital. Units having facilities in the Medical Science Center will include the college of medicine, college of pharmacy school of industrial health, the nursing program the mortuary science program and any other programs schools and colleges that may be developed.

## MISSOURI

**State Trudeau Chapter Created**—Dr Elmer E Glenn Springfield was chosen president-elect of the Missouri chapter of the American Trudeau Society, which was formed at a meeting October 4 in Kansas City. Other officers include Dr George D Kettelkamp, Koch president and Dr Mathew I Noon Kansas City secretary-treasurer.

**Memorial to Physician**—On October 31 the Northeast Community Center dedicated a clinic room as a memorial to Dr Minford A Hanna. He died Aug 24 1943. The memorial is a tribute to the work done by Dr Hanna during his lifetime in caring for the patients of the Italian Institute and Central Chapel, of which the Northeast Community Center is a branch.

## NEW YORK

**Simon Henry Gage Dies**—Simon Henry Gage research scientist in biology and for many years a teacher of physiology anatomy histology and embryology, Cornell University died at Interlaken aged 93.

**Industrial Health Seminar**—The Medical Society of the County of Queens Forest Hills opened an industrial health seminar November 2 with a lecture by Dr Martin I Hall Bristol Conn on 'Organization and Administration of an Industrial Medical Department'. Dr Kingsley Roberts, New York spoke November 6 on 'Welfare Insurance with Regard to Industrial Health' and Mr Leilan W Hill assistant director depart-

ment of labor, on "Industrial Health from the Viewpoint of the Industrial Commission". J J Bloomfield, senior sanitary engineer, U S Public Health Service, gave an address, November 9, on "Environmental Control of Occupational Diseases". Others in the series are:

Dr Nathan Millman Brooklyn Method of Plant Survey November 13  
Louis Schwartz medical director U S Public Health Service Occupational Dermatoses November 16  
Dr Paul Reznikoff Toxic Effects of Heavy Metals and Dr Adelaide H. Ross Smith New York, Toxic Effects of Gases Fumes and Vapors November 20  
Mr Graham Cole safety engineer Metropolitan Life Insurance Company Safety in Industrial Medicine November 23  
Industrial health from the viewpoint of the following specialties:  
Dr Lydia G Giberson New York psychiatry Dr Alfred Angrist Jamaica pathology and Dr George Treiman Brooklyn ophthalmology November 27  
Mr A. Hendrix personnel director of the Eastern Aircraft Division General Motors Corporation Linden N J Personnel Miss F. Ruth Kahl public health nursing consultant, U S Public Health Service Industrial Health from the Nurses' viewpoint and Lyman D. Hancock senior dental surgeon U S Public Health Service Industrial Health from the Dental Viewpoint December 4  
Dr Dean A. Clark Washington D C Physical Restoration in the Federal State Vocational Rehabilitation Program for Disabled Civilians William M. Grafer statistician U S Public Health Service Abolitionism and Dr Robert S. Goodhart Forest Hills Nutrition December 7  
Col. Anthony J. Lanza M C Occupational Diseases—Pneumococcoses December 11

## New York City

**New Professor of Otorhinolaryngology**—Dr Joseph D Kelly of the Manhattan Eye, Ear and Throat Hospital has been appointed professor and chairman of the department of otorhinolaryngology at the New York University College of Medicine. Dr Kelly graduated at Georgetown University School of Medicine Washington, D C, in 1912.

**Community Service Society of New York Issues Pamphlet on Child Care**—A new pamphlet on "Child Care and Development" has been issued by the Community Service Society of New York. It sets up for each age, beginning at birth and carrying on to 5 years, certain developmental signs for the child, such as height weight, diet, sleep physical development and recommended practices. The pamphlet is one of the most useful documents that a physician can make available to a nurse or to members of the family. As a public service the pamphlet is sold at 10 cents plus postage on orders for one to one hundred and 8 cents plus postage on orders over one hundred.

**Abraham Brill Honored**—On October 12 a dinner was given at the Waldorf-Astoria in honor of Dr Abraham A Brill lectures in psychoanalysis and psychosexuality, Columbia University to celebrate his seventieth birthday. Dr Louis Casanov was toastmaster and speakers included Dr Clarence P. Oberndorf Dr Leonard Blumgart Dr Leo H. Bartemeier Harry Woodburn Chase LL.D. and Dr Brill. It was announced at the dinner that a fund in honor of Dr Brill had been raised amounting to about \$6,000 with which he intends to endow a library. It was also announced that a library in the new building of the New York Psychoanalytic Institute will be named in honor of Dr Brill.

**Memorial Meeting in Honor of Madame Curie**—A memorial meeting was held at Columbia University by the Polish Institute of Arts and Sciences in America October 20 to mark the tenth anniversary of the death of Marie Sklodowska Curie. Six departments of the university including chemistry chemical engineering East European languages medicine physics and radiology participated. Among the speakers were Wojciech A Swietoslowski E.E. Mellon Institute Pittsburgh and vice president of the International Union of Chemistry who spoke on "The Legend of Madame Curie" and Kasimir Fajans Ph.D. University of Michigan Ann Arbor a member of the Polish Academy who gave an illustrated lecture on 'The Discovery of Radium and the Modern Development of Chemistry and Physics'.

## OHIO

**Dr Kretschmer to Give Lower Lecture**—Dr Herman L. Kretschmer Chicago President of the American Medical Association will deliver the annual Lower Lecture before the Academy of Medicine of Cleveland November 24. His subject will be "Present Status of the Prostatic Problem."

**Appointments to Cleveland Clinic**—Drs Arthur C. Corcoran and Robert D. Taylor formerly members of the staff of the Lilly Laboratory for Clinical Research, Indianapolis have been appointed to the staff of the research division of the Cleveland Clinic. Dr Corcoran's interest is in renal function and that of Dr Taylor in the clinical aspects of hypertension.



**First Prentiss Award in Health Education**—On November 14 the Elisabeth S. Prentiss National Award in Health Education for 1944 was presented to Mary Swain Routzahn and her husband, the late Evert G. Routzahn, for their prominent work in health education. The selection was made by a nominating committee for the Cleveland Health Museum. Evert G. Routzahn was director of the first traveling exhibit campaign on tuberculosis which helped to establish the National Tuberculosis Association. From 1912 to his death in 1939, he was associated with the department of surveys and exhibits of the Russell Sage Foundation, New York. Mrs. Routzahn organized the Children's Council in Washington, D. C. and conducted a study of the board of children's guardians, children in the street trades and children under 14 receiving permits to work from the Juvenile Court. She also joined the Russell Sage Foundation in 1912 serving as director of department social work interpretation since 1935. According to the Cleveland Health Museum, one of the major achievements for which the Routzahns were largely responsible is the organization now bearing the name of the National Publicity Council for Health and Welfare Services. They also founded the health education section of the American Public Health Association. The Elisabeth S. Prentiss Award was established this year by the Cleveland Health Museum in honor of Mrs. Prentiss, who in 1940 gave her childhood home to house the museum. Mrs. Prentiss died January 4 (THE JOURNAL, January 15, page 181).

#### OKLAHOMA

**Student Receives First Perry Scholarship**—Clyde Goodnight, senior student at the University of Tulsa, has received the first award of the Dr. Marcus L. Perry Scholarship, established this year by the physician's son, Dr. John C. Perry, Tulsa (THE JOURNAL, August 5, p. 982). The \$250 scholarship is awarded to a premedical student; the selection to be determined on the basis of past scholastic record, medical aptitude, character and financial need.

**Faculty Changes**—Louis Alvin Turley, Ph.D., who has been professor of pathology at the University of Oklahoma School of Medicine, Oklahoma City, since 1908, has been made professor emeritus, effective September 1. He will continue his association with the school doing research. Dr. Howard C. Hopps, formerly assistant professor of pathology at the University of Chicago School of Medicine, has been appointed professor and chairman of the department of pathology at Oklahoma.

**Combined Health Department Proposed**—The Tulsa County Medical Society recently approved in principle a series of recommendations by the Tulsa Chamber of Commerce to unite into a single unit the public health agencies in the Tulsa area. The new unit would be known as the Metropolitan Tulsa Health Department and would represent a consolidation of the city and county health departments, the Tulsa Public Schools health department and the Tulsa Cooperative Clinic. If adopted, the working plan will provide that the control of the proposed department will be directed by a governing board of nine members including the mayor, the chairman of the board of county commissioners, the president of the board of education and six appointive members, three of whom are to be members of the Tulsa County Medical Society, one a member of the county dental association, one a member of the governing board of the Tulsa Public Health Association and one to be nominated by the president of the chamber of commerce. Each member of the board must be at least 30 years of age and a resident of the county at least two years prior to appointment. Administration will be directed by a qualified doctor of medicine with at least one year of study in a recognized school of public health who shall be appointed by the board.

#### RHODE ISLAND

**John E. Donley Named Director of State Curative Center**—With the recent appointment of Dr. John E. Donley, Providence, as director of the State Curative Center, the project which was set up in a bill enacted by the last general assembly is now being developed. The bill provided for the establishment in the treasury department of the state of a special fund to be known as the Curative Center Fund which would be used for a suitable structure to house the center to finance the necessary equipment for the rendering of physical therapy, psychotherapy and occupational therapy and to provide for the payment of salaries of personnel required to operate the center. The bill stipulated that the selection of the medical director was to be done with the approval of the Rhode Island Medical Society. His term to run for five years.

An advisory board has been set up consisting of three physicians appointed by the director of labor with the approval of the council of the society, the director of labor and the chief of the division of workmen's compensation. The provisions of the bill make available to injured workers coming within its purview all possible modern curative treatment and methods under the supervision of medical experts and after consultation with the employees' own physicians. In a report to the house of delegates of the Rhode Island Medical Society at its meeting September 28, Dr. Donley stated that the advisory board was now working on plans of operation.

#### TENNESSEE

**Dr. Gass Enters Military Service**—Dr. Rowdon S. Gass, Franklin, for twelve years director of tuberculosis control for the Tennessee Department of Public Health, has been commissioned senior surgeon in the U. S. Public Health Service Reserve with the rank of lieutenant colonel. Newspapers report that he has been assigned for overseas duty with the United Nations Relief and Rehabilitation Administration as consultant on tuberculosis. Dr. Elliott F. Harrison, Franklin, assistant director of tuberculosis control, will serve as acting director during Dr. Gass's leave.

#### VIRGINIA

**Frederick Shaw Devotes Full Time to Research**—Dr. Frederick W. Shaw, professor of bacteriology and parasitology at the Medical College of Virginia, Richmond, was recently made research professor of bacteriology in order that he may devote his entire time to research. J. Douglas Reid, Sc.D., associate professor of bacteriology and parasitology, became acting head of the department effective October 1, which he relieved Dr. Shaw, who had been serving as head of the department up until that time.

**Proposed Medical Service Plan**—Dr. John M. Emmett, Clinton Forge, was named president of the Associated Doctors of Virginia at a meeting October 4 in Richmond. Other officers include Drs. Ray A. Moore, Farmville, vice president, and Morgan B. Raiford, Franklin, secretary-treasurer. The group will be an association of physicians participating in a voluntary plan to provide medical service. The Richmond Hospital Service Association will act as agent for the plan, which proposes to offer surgical, x-ray and obstetric coverage for the public.

#### WEST VIRGINIA

**Tumor Clinic**—A tumor clinic has been organized at Morgantown under the sponsorship of the Monongalia County Medical Society. Members of the society will serve at the clinic which will be held at least once a month and patients will be advised to return to their own doctors with recommendations for treatment if necessary. The usual treatment recommended will be surgery, radium and high voltage x-ray therapy. The first clinic was held at Morgantown October 27.

**Health Center Dedicated**—The first building in the state to be constructed for the sole purpose of housing the various health units of the community was officially dedicated October 16 as the Monongalia County Health Center. Located on the grounds of the Monongalia General Hospital, just outside the city limits of Morgantown, the center is equipped to provide for the needs of the health program in the county. It was financed by members of the county court, public health officers, physicians and private citizens. It will be under the supervision of Dr. Ward L. Oliver.

#### WISCONSIN

**Personal**—Dr. Florence E. MacInnis recently resigned as medical director of the tuberculosis division of the Milwaukee Health Department to enter private practice in Kansas City, Mo.—Dr. Francis P. Dolan recently joined the staff of the Wisconsin Anti-Tuberculosis Association.

**Dr. Stovall Named Regional Director of Cancer Society**—Dr. William D. Stovall, Madison, Wis., has been appointed regional director of the American Cancer Society. Under a new program set up by the American Cancer Society, regional directors will collaborate with Field Army regional commanders.

**Dr. Gavin Receives Council Award**—The Council Award of the State Medical Society of Wisconsin was presented to Dr. Stephen C. Gavin, Fond du Lac, chairman of the council, during the recent annual meeting of the society. This is the highest award the society bestows on its members and is granted only on occasion through unanimous vote of the council. Dr. Raymond G. Arveson, Frederic, councilor from the tenth

district in making the presentation stated that Dr Gavin had been a member of the society for forty-four years, serving as past president of both his county and his state medical society.

**Cancer Program**—"Current Research Problems in Cancer" was the theme of a symposium sponsored by the University of Wisconsin Medical Society, November 7. The speakers were Dr Harold P. Rusch, Madison, on "Development of Cancer as a Three Stage Process," Van R. Potter, Ph.D., Madison, "Biochemical Changes Involved in Cancer Formation," and James A. Miller, Ph.D., Madison, "Fate of a Carcinogenic Azo Dye in the Body." The society will be addressed on December 5 by Dr Charles J. Thill of the university on the "Present Status of Penicillin Therapy."

**Dearholt Day**—A joint meeting of the Wisconsin Anti-Tuberculosis Association, the Wisconsin Trudeau Society and the Milwaukee Academy of Medicine will constitute the observance of Dearholt Day at the University Club of Milwaukee, November 21. Dr Mary Broadbent of the Wisconsin Anti-Tuberculosis Association will open the meeting and present Drs Edgar M. Medlar, New York, who will discuss "Problem of Demonstrating and Interpreting the Significance of Acid-Fast Bacilli," and H. McLeod Riggins, New York, "Clinical Value of Studies of Lung Function in Chronic Pulmonary Disease."

### GENERAL

**Appointment to National Research Council**—Dr Henry E. Meleney, professor of preventive medicine, New York University College of Medicine, has been appointed representative from the American Society of Tropical Medicine to the division of medical sciences of the National Research Council (*THE JOURNAL*, September 16 p 183). According to *Tropical Medicine News*, Dr Meleney's appointment was as of July 1, 1944 and he will serve for three years.

**Special Society Election**—Dr Peter D. Ward, St. Paul, was chosen president-elect of the American Hospital Association at its annual meeting in Cleveland in October, and Dr Donald C. Smelzer, Philadelphia, was inducted into the presidency. Vice presidents are Harold A. Grimm, Millard Fillmore Hospital, Buffalo; Rev. George Lewis Smith, Diocese of Charleston, Aiken, S. C., and A. J. MacMaster, R.N., Moncton Hospital, Moncton, New Brunswick, Canada. Other officers include Dr Harley A. Haynes, Ann Arbor, Michigan, treasurer, and Mr. George Bugbee, Chicago, executive secretary.

**Maternal and Child Health Directors Organized**—Dr Edwin R. Watson of the Georgia Department of Public Health, Atlanta, was elected president of the Association of Maternal and Child Health Directors at its recent organization meeting in New York. The association includes the directors of maternal and child health services in the forty-eight states and possessions as well as other medical personnel who are associate members. Dr Jesse M. Bierman, San Francisco, was elected vice president and Dr Dean W. Roberts, Baltimore, secretary-treasurer. According to *Georgia's Health*, the new association has the approval of the Association of State and Territorial Health Officers and is to work in close cooperation with it.

**Conferences on Psychosomatic Problems**—The American Society for Research in Psychosomatic Problems through its research committees has scheduled the following conferences in New York:

Drs Eugene A. Stead, Jr., Atlanta, Ga., Herbert Chasis and Jacob A. Arlow, New York. Psychosomatic Aspects of Heart Failure, November 30, under the auspices of the committee on cardio-vascular disease.

Major Harold Abramson, M. C., Dr Edward Weiss, Philadelphia and Dr Milton B. Cohen, Cleveland. Allergy, December 13, under auspices of committee on cutaneous and allied diseases.

Drs John Romano and George L. Engel, Cincinnati. Delirium, December 14, under the auspices of the committee on physiologic mechanisms and animal experimentation.

The address of the American Society for Research in Psychosomatic Problems is 714 Madison Avenue, New York 21.

**Meeting of Menninger Foundation**—At the third annual meeting of the board of trustees of the Menninger Foundation, October 24, in Topeka, Dr Karl A. Menninger was elected president. Other officers include Dr William C. Menninger, Mr. John R. Stone, Topeka, and Mr. P. E. Burton, St. Louis, vice presidents. Dr Kurt T. Toeplitz, secretary, and Dr Robert P. Knight, Topeka, treasurer. It was voted to permit any person interested in the objectives of the foundation, which are the development and furtherance of psychiatric research, education and treatment to apply for membership in the organization. It was also announced at the meeting that the officers of the foundation had been visiting certain medical schools to

inform students concerning the need for specialization in psychiatry. A report submitted at the meeting indicated that less than 2 per cent of medical students are interested in becoming psychiatrists.

**Cancer Award Goes to Roscoe Spencer**—The Clement Cleveland Award presented by the American Cancer Society was given to Dr Roscoe R. Spencer, chief of the National Cancer Institute, Bethesda, Md., at the eighteenth annual dinner of the New York City Cancer Committee, October 31. Dr Spencer received the 1944 medal because of his noteworthy services in the movement for cancer control. The award was established in 1937. Dr Spencer has been chief of the National Cancer Institute since 1943, having served as assistant chief since 1937. In 1930 he was awarded the gold medal of the American Medical Association for his discovery of a preventive vaccine against Rocky Mountain spotted fever. The citation accompanying the recent award read:

The committee has by unanimous vote elected you as the recipient of the medal for 1944 because of the outstanding services you have rendered to the movement for cancer control. By virtue of the very office that you hold as chief of the National Cancer Institute your influence is far-reaching and your contribution during the past year in articles written for the layman has without doubt greatly aided in the educational work of cancer control for which this award is given. Your most recent effort to aid the work of the newly formed organization, the National Foundation for the Care of Advanced Cancer Patients, all seem to make you worthy in some measure of our recognition.

**Appeal to Retain Diathermy Waves**—Continued availability in the radio spectrum within which short wave diathermy machines may be operated by physicians and surgeons was urged October 31 at a Federal Communications Commission hearing by representatives of the medical profession and manufacturers of equipment, according to the *New York Times*. An estimated 50,000 short wave diathermy machines are now operated by civilian hospitals in the vicinity of those parts of the spectrum referred to in a general way as the 40, 27 and 13 megacycle bands. Allocation of the small portion of the spectrum desired for this service of benefit to hundreds of thousands of ill and injured persons was presented as "a not unreasonable request" by the applicants. Dr Warren P. Morrill, Chicago, for the American Hospital Association, A. W. Mathes of the H. G. Fisher Company and Lee de Forest, Sr., of the de Forest Laboratories, Los Angeles, on behalf of the physical therapy group of the American Surgical Trade Association, supported the joint request. They opposed changes or limitations, which they said would involve the scrapping of much needed equipment and replacement at double the cost by machines less desirable for general medical purposes.

### FOREIGN

**Personal**—*Science* reports that Dr Gaston Ramon, director of the Pasteur Institute of Paris and his family are reported to be safe and in good health. Dr Ramon is the discoverer of the diphtheria toxin and tetanus toxin immunization and the flocculation test of diphtheria toxin.—Dr Frank Goldby, Elder, professor of anatomy in the University of Adelaide, South Australia, has been appointed professor of anatomy at St. Mary's Hospital Medical School, London.

### Deaths in Other Countries

Dr Leopoldo Ramirez Mairena, Managua, Nicaragua. Central America, Jefferson Medical College of Philadelphia 1893, served as a member of the Chamber of Deputies and minister of public works. editor of *La Verdad* represented Nicaragua on many missions abroad. died July 17, aged 78.

—Dr Thomas Hancock Arnold Chaplin, formerly president of the Section for History of Medicine of the Royal Society of Medicine and author of 'A St. Helena Who's Who' and two works on the illness of Napoleon, died at Bedford, London, October 18, aged 80.—Dr Jean Louis Faure, formerly secretary general of the French Society of Surgery, died in St. Emilion, near Bordeaux, on the eve of his eighty-second birthday.

### CORRECTIONS

**Infectious Hepatitis**—In the legend for chart 5 in the article by Havens in *THE JOURNAL*, September 2, page 21, the statement concerning bromsulphalein dye "after intravenous injection of 15.15 mg. per 55 pounds" should read "after intravenous injection of 50 mg. per 55 pounds."

**Typhus Fever**—In the article by Yeomans et al (*THE JOURNAL*, October 7), page 351, right hand column, line 4, chart 3 should read chart 4 and in line 5, chart 2 should read chart 4. In the same article on page 352, left hand column, line 6, chart 4 should read chart 3.

## Foreign Letters

### LONDON

(From Our Regular Correspondent)

Oct 18, 1944

#### A London Center for Postgraduate Students from Overseas

London House was founded in 1930 to provide a home where students from the overseas empire may reside while pursuing their studies. It has been used predominantly by men engaged in postgraduate research, chiefly medical or scientific, in the University of London, the teaching hospitals and other learned institutions of the capital. An appeal is being made now for \$3,600,000 to complete the buildings and provide an endowment. It was announced that, although the major part of the foundation's activities is likely to be related to the needs of Great Britain, the trustees are conscious of their responsibilities to aid medical and scientific teaching and research in other parts of the British commonwealth. Provision will be made for men and women from this country to receive abroad the training and experience they need. Bringing men and women from other parts of the commonwealth to this country and giving them the best possible opportunities for study is also contemplated. After the war a common policy for medical and scientific research may be adopted by the various parts of the commonwealth. The chairman, Sir William Goodenough, said that the appeal had the support of the king, Mr. Churchill and the prime ministers of the dominions. The position of London as a center of education both for the commonwealth and beyond was a matter of vital importance, the chairman stated. It had long been a center of education, but much remained to be done. In particular the background in which educational work is carried on, especially for those who come from overseas, has an importance which has not been realized, he added. A great advantage is that the home of the Nuffield Foundation (a vast system of benefactions to science and particularly to medicine due to the munificence of Lord Nuffield) will be in London House. There it is hoped that the foundation will draw together eminent leaders in medicine and science who will provide a stimulating background for young postgraduate students.

#### Horrors of the German Occupation of Greece

An appalling account of the population of Greece under the German occupation has been given by Mr. Theodore Caralli, a delegate of the International Red Cross, who has made several visits to Athens and other towns. Famine caused the death of 1,600,000 Greeks during the first sixteen months of the occupation. Every day, he said, 300 people were dying in the streets of Athens with nothing but a glass of water to relieve their agony. Every morning bodies were found in cemeteries of people who had gone there to die rather than be picked up by the municipal death carts. But for the unceasing efforts of the International Red Cross and of the Red Cross organizations of Sweden, France and Belgium, the situation would have been even worse, he reported. They could do, however, no more than touch the surface in ministering to the immediate needs of the children who are pitifully thin and go about barefoot and in rags.

Under an agreement made by the Greek government in exile a ship from Canada brings 16,000 tons of flour every month but the situation was aggravated by the garrison of 200,000 Germans and 120,000 Italians who remained in Greece as workers cut off from their own supplies. There is no rail or road transport and no coal. The few supplies of food and wood reach Athens by pack mules. The Germans seized the whole output of olive oil of which Greece is the principal

producer in Europe, as they did the plentiful supplies of fruit from the Greek islands. The liberation of Athens was followed by the dropping of food and medical supplies by American planes almost immediately.

#### Wounded Flown to Britain from the Continent

To deal with the casualties during the advance from the Seme, the British second and the Canadian first armies were given sixty medical lorries each in addition to their ambulances. With these lorries the Army Medical Corps moved their field hospitals of 600 beds each by road all the way up to the Brussels-Antwerp area. The evacuation of the wounded to Britain by air went on all the time. The total number flown out since D day is 23,687. The casualties in the latter phases of the advance were lighter than had been expected.

### PALESTINE

(From Our Regular Correspondent)

TEL AVIV, Oct 8 1944

#### Epidemics in the Agricultural Districts

There has recently been an outbreak of typhoid in a communal settlement in the Beisan Valley. Of 293 adults and 9 older children who customarily dine in the communal dining room (the latter only in the evenings) 31 persons (10 per cent) contracted the disease between January 14 and February 16. There was one fatality. All indications pointed to the fact that the epidemic was due to the consumption on one particular occasion of tainted white cheese produced in the settlement. The sanitary conditions in this settlement (particularly in the kitchen) are most unsatisfactory.

There was a similar outbreak of typhoid in a communal settlement in the Jordan Valley. Between the 10th and the 16th of March 4 new cases of typhoid were reported. An unusual feature of this outbreak was that it affected 3 young children of the settlement, 8 months, 13 months and 3 years old respectively. An investigation of the causes of the epidemic revealed that on Dec 11, 1943 the mother of a child aged 13 months had contracted typhoid. On the 17th of the same month she was admitted to the hospital. On the 24th a perforation of her intestine happened and an operation was performed. On Feb 11, 1944 the patient was discharged from the hospital and sent home with an abscess which had not healed and no instructions were given to her in regard to precautions against coming into contact with others, particularly children. Between the 11th and the 26th of February she visited the children's home regularly and tended to her own child and no doubt also handled other children. On February 26 she was sent away for convalescence.

A further investigation of the typhoid bacilli of the mother, carried out by Dr. L. Ulitzki of Hebrew University, showed that these were identical with those of 2 of the children who had contracted the disease. This provides proof that the infection had been introduced into the children's house by the mother and that the disease had been passed on by direct contact. The fact that the serologic examination of the woman's blood which was made after she was suspected of being a carrier of typhoid bacilli gave negative results cannot be accepted as evidence to the contrary, since over two months had elapsed between her handling of the child and the date of her examination.

#### Palestine Medical Congress

In September the fourth annual meeting of the Palestine Medical Congress took place in Jerusalem, thirty years after the Trachoma Conference held in 1914.

The first part of the congress was devoted to a study of problems connected with trachoma. Among the subjects discussed were Fifty Years of Ophthalmology in Palestine. Etiol-

ogy of Trachoma Early Phases of Trachoma Research, Anti-trachoma Services, Chemotherapy of Endemic Diseases of the Eye and Chemotherapy of Eye Diseases A visiting lecturer, Rear Admiral Charles S. Stephenson (MC), U.S.N., addressed the congress. The subject of his lecture was Modern Trends in Public Health.

The second part of the Congress was devoted to problems of public health, the principal subjects being Medical Problems of Future Immigration, Mental Care of the New Immigrant, The Modern Hospital as a Center of Preventive Medicine, Organization of Preventive Medicine in Palestine, Antepartum Care of Pregnant Women in Health Welfare Centers, Preventive Medical Care of Infants and Children up to School Age in the Health Welfare Centers, Preventive Medical Care in Schools, Preventive Medical Activities of the Workers Sick Fund, Activities of the Committee for the Study of the Natality Problem, The Demographic Situation of the Jewish People and the Jewish Population in Palestine, Causes of Declining Natality and The Physician's Task in Improving the Natality.

## Buenos Aires

(From Our Regular Correspondent)

Sept. 29, 1944

### Inter-American Association of Postgraduate Physicians

The Inter-American Association of Postgraduate Physicians was recently established in Buenos Aires. The following doctors were appointed to the committee of directors: Napoleon Arnaud of Bolivia, president; Carlos Caldas Cortez of Brazil, vice president; and Lorenzo H. Martiarena and Ricardo Castro O'Connor, both of Argentina, secretaries. The aim of the association is to intensify the exchange of physicians who may take postgraduate courses in the various Pan American countries, to increase the number of scholarships and to carry on similar work. The office of the association is at Calle Vicente Lopez 1831, Buenos Aires.

### Care of the Insane

Dr. Gonzalo Bosch, professor of psychiatry of the Faculty of Medicine of the University of Buenos Aires and head of the Hospital de las Mercedes of Buenos Aires, recently lectured before the Sociedad Científica Argentina. In 1782 the insane in Argentina were cared for by groups of friars in Cordoba, Dr. Bosch related. In 1813 and 1819 the violently insane were taken to secret places and kept there by means of irons and chains. In 1870 the insane were sent to an asylum in Buenos Aires. The census in 1869 listed 4,003 insane persons and 4,223 idiots. At the present time there are 58,500 persons in Argentina with mental diseases and several thousands of defective mental children. The speaker described several institutions, such as the League of Mental Hygiene of Buenos Aires, offices for consultation, dispensaries, preventoriums, psychiatric hospitals and colonies for patients with chronic mental diseases with possibilities for occupational therapy. He also advised the establishment of psychiatric departments in general hospitals. The National Department of Public Health is increasing the work carried on for the assistance of the insane, having in mind the economic, scientific and social aspects of the problem. The number of beds in the Argentine asylums for the insane is insufficient, he said. New asylums are under construction in various provinces, and some have already been opened. The large hospital for insane women was recently reopened. Patients with mental diseases who are violent and dangerous as well as those who need emergency medical care are given immediate admission to the hospitals. Idiots, imbeciles and patients with mental insufficiency will be received in special departments which are to be organized. Patients in hospitals will be discharged if the family or the local authorities who asked for the admission ask later on for the return of the patient. Other-

wise the patients will be discharged after a cure of the mental disease is accomplished or when improvement enables the patient to live safely with his family. The amount of money allocated for expenses in asylums and assistance for the insane is \$2,500,000.

### Socialization of Medicine

Colonel Juan D. Peron, vice president of Argentina, introduced a bill through the National Secretariat of Work and Social Provision for the establishment of a special committee to study the advisability of socializing medicine. Members of the committee will prepare professional statutes for regulating the work of physicians, ascertain the number of physicians necessary to give medical care to the public, establish regulations governing physicians in hospitals, set up the basis for promotion of physicians and decide such matters as the competence of physicians for various positions, salaries, vacations and retirement pensions. The statutes will include physicians who actually are working in municipal and provincial national hospitals and other health centers as well as in state hospitals and charitable hospitals. The work of mutual medical insurance, sanatoriums and private clinics will also be regulated. The field of medical social insurance will be covered by the secretariat which will also protect physicians against the hazards of invalidism, old age, involuntary lack of work, disease and death. Another aspect to be studied is that concerning the proper distribution of physicians in the various territories of the country. Members of the committee will organize a medical association of all physicians to supervise professional ethics and prepare laws governing the practice of medicine and the sciences related to medicine.

### International Patronage for the Leprous

An International Patronage for the Leprous was recently formed. It aims to organize international congresses and active crusades against leprosy. The Argentine Patronage for the Leprous has functioned for the last twelve years, during which it has spent \$222,000 on persons with leprosy in addition to \$250,000 for social aid given to normal children of leprosy patients.

### Control of Narcotics in Sanatoriums

A formulary similar to the dispensatory used by physicians was recently sent by the National Department of Public Health to the heads of sanatoriums, clinics and similar centers. It will be used only for the prescription of narcotics in the various clinical centers. The aim is to supervise the use of narcotics to prevent abuse.

## Marriages

JOSEF JAY GOLDSTEIN, Macon, Ga., to Miss Helen Diane Schneider of Los Angeles in Wilmington, N. C., August 1.

JAMES MAYHEW INGRAM JR., Tampa, Fla., to Miss Frances Leighton Alderman of Bradenton, September 17.

WALTER J. GERSTLE, Lansdowne, Pa., to Gertrud M. Gunz D.D.S., Sault Sainte Marie, Mich., November 4.

ALEXANDER PERSHING JONES, Fort Moultrie, S. C., to Miss Mary Louise Sims of Charleston, September 18.

CARL LEWIS GAMBA, Williamsport, Pa., to Miss Nina Lucille Eatman of Tuscaloosa, Ala., September 17.

RICHARD CROSMAN FOWLER to Miss Mavis Helen Dunlop, both of Rochester, N. Y., September 23.

WILLIAM EDMONDS WEEMS Shubuta, Miss to Miss Evelyn Sillers Pearson of Rosedale, August 19.

ARTHUR KAZIMIER CIESLAK to DR. MARGARET ATWATER OLDS, both of Brooklyn, September 16.

ALEXANDER WEBB JR. to Miss Mary Louise Hall, both of Raleigh, N. C., September 6.

LADIA L. VERBARG, San Jose, Calif., to Mr. John W. Shaughnessy of San Mateo recently.

## Deaths

**Graeme Monroe Hammond**, New York, University of the City of New York Medical Department New York 1889 emeritus professor of neurology and psychiatry at the New York Post Graduate Medical School and Hospital, Columbia University member of the Medical Society of the State of New York, American Psychiatric Association New York Psychiatric Society and the New York Neurological Society, member for many years secretary-treasurer and past president of the American Neurological Association, vice president in 1922 and president from 1930 to 1932 of the American Olympic Association, past president of the New York Athletic Club, a major, M R C, U S Army, during World War I and later lieutenant colonel, medical reserve corps, not on active duty, received the LL B degree from the New York Law School in 1900 died in the New York Post-Graduate Medical School and Hospital October 30, aged 86

**James Thorington**, Philadelphia Jefferson Medical College of Philadelphia 1881, member of the Medical Society of the State of Pennsylvania, specialist certified by the American Board of Ophthalmology, an emeritus professor of diseases of the eye at the Philadelphia Polyclinic and College for Graduates in Medicine, later known as the Medico Chirurgical College Graduate School of Medicine, University of Pennsylvania consulting ophthalmologist emeritus at the Presbyterian Hospital at one time surgeon for the Panama Railroad Company in Colon Isthmus of Panama, author of "Retinoscopy," "Refraction and How to Refract," the "Ophthalmoscope and How to Use It," "Prisms Their Use and Equivalents," "Refraction of the Human Eye and Methods of Estimating the Refraction" and "Methods of Refraction" which was translated into Chinese died October 27 aged 86, of generalized arteriosclerosis and bronchopneumonia

**Edward Randall**, Galveston Texas University of Pennsylvania Department of Medicine, Philadelphia, 1883, professor of therapeutics emeritus at the University of Texas Medical Branch, where he had been for more than thirty-seven years professor of therapeutics and materia medica member of the State Medical Association of Texas, served as president of the Galveston County Medical Society formerly chairman of the board of regents of the University of Texas, of the board of the John Sealy Hospital and at the time of his death of the board of directors of the Sealy and Smith Foundation president of the Rosenberg Library and of the Texas Philosophical Society, recently the amphitheater in the outpatient clinic building of the University of Texas Medical Branch had been named Randall Hall in his honor, died August 12, aged 83

**John Harper Blaisdell** Boston, Harvard Medical School, Boston, 1911, member of the American Dermatological Society and the American Academy of Dermatology and Syphilology member and past president of the New England Dermatological Society, served as president of the New England Historical and Genealogical Society specialist certified by the American Board of Dermatology and Syphilology, formerly chairman of the board of health of Winchester and a member of the board of selectmen consultant to the Hale Hospital, Haverhill Malden Hospital Malden Melrose Hospital Melrose and the Winchester Hospital, Winchester, all in Massachusetts, and to the Exeter Hospital, Exeter, N H, killed October 25, aged 58 when his automobile swerved over a curb

**Edmund Arthur Weeks** Akron, Ohio Western Reserve University Medical Department, Cleveland 1900 past president and vice president of the Summit County Medical Society member of the American Heart Association, on the medical examining staff of the armed forces induction station during World War II formerly a member of the city board of health and of the board of trustees of the Summer Home for Aged member of the staff of the Akron City Hospital, formerly chief of staff of the Children's Hospital and the Peoples Hospital died August 2 aged 69, of hypertension heart disease and uremia

**John Wilson Adams** Carrollton, Ill University of Nashville Medical Department, Nashville Tenn, 1898 a captain in the medical corps U S Army, during World War I died in St Francis Hospital Litchfield, October 18 aged 74, of coronary thrombosis

**William Elijah Adams**, Sinai, Ky University of Louisville Medical Department, Louisville, Ky 1889, died September 14, aged 78

**Reuben Appleberry** Farmington Mo Barnes Medical College St Louis 1903 president of St Francois-Iron-Madison Washington-Reynolds Counties Medical Society for many

years local health officer served during World War I on the staff of the Bonne Terre Hospital, Bonne Terre died September 10, aged 63, of coronary thrombosis

**Joseph Theodore Auwers**, Grand Rapids Mich the Hahnemann Medical College and Hospital, Chicago 1915 died in the Blodgett Memorial Hospital September 12, aged 59

**Francis William Barton** Danville, Ill Columbia University College of Physicians and Surgeons, New York, 1901 member of the Clinical Orthopaedic Society fellow of the American College of Surgeons, served during World War I district surgeon for the Chicago and Eastern Illinois Railroad on the staffs of the Lakeview and St Elizabeth's hospitals died September 14, aged 69, of heart disease

**William James Basler** West Leesport, Pa, University of Pennsylvania School of Medicine, Philadelphia 1917 president of the board of health served during World War I died in the Reading Hospital Reading, September 13 aged 51, of typhoid

**George Willis Bass** Minneapolis University of Vermont College of Medicine, Burlington, 1881 served as secretary 1889 1892, and as vice president 1892 1893 Hennepin County Medical Society died September 14 aged 85 of arteriosclerosis and hypertension

**Albert Turner Beckett**, Salem N J, Hahnemann Medical College of Philadelphia 1873 served for one term as county physician died in the Salem County Memorial Hospital September 17, aged 93

**George Laterra Bellina**, North Bergen N J Regia Università degli Studi di Catania Facoltà di Medicina e Chirurgia Italy 1938 member of the Medical Society of New Jersey, a member of the urology and venereal clinic North Hudson Hospital, Weehawken, on the courtesy staff of the Margaret Hague and St Francis hospitals in Jersey City on the courtesy staff in surgery at St Clare's Hospital New York where he died September 18 aged 31, of chronic glomerular nephritis

**Ray Anderson Bohl** Stow, Ohio, Ohio State University College of Medicine Columbus 1931 served during World War I captain in the medical reserve corps of the U S Army not on active duty died in St Thomas Hospital, Akron September 19, aged 44

**Wilbert White Bond** Des Moines Iowa State University of Iowa College of Medicine Iowa City, 1923 on the staffs of the Iowa Lutheran and Iowa Methodist hospitals died September 21 aged 46 of cerebral hemorrhage

**William B Brobst**, Bellevue Wash College of Physicians and Surgeons Baltimore 1898, died September 11 aged 73, of carcinoma of the stomach

**Charles Henry Brown** Waterbury Conn University of the City of New York Medical Department New York 1893 fellow of the American College of Surgeons served on the staffs of the Waterbury and St Mary's hospitals died in Millinocket Maine September 7 aged 78 of cerebellopontine tumor

**James Alonzo Burke**, Kansas City Mo St Louis College of Physicians and Surgeons 1893 died September 10 aged 79, of coronary arteriosclerosis

**John Franklin Cameron**, Hamilton Ind Rush Medical College, Chicago 1880 member of the Indiana State Medical Association died September 20 aged 89

**Robert Newton Canaday** Dupon III Marion Sims Beaumont Medical College, St Louis 1902 physician for the Missouri Pacific Railroad served as vice president of the Missouri Pacific Medical Association died in the Missouri Pacific Hospital, St Louis, September 18, aged 64 of coronary occlusion

**Nathaniel Austin Cary**, Oakland Calif Indiana Medical College School of Medicine of Purdue University, Indianapolis 1906 served as a lieutenant colonel in the medical corps of the U S Army during World War I member of the American Academy of Orthopaedic Surgeons fellow of the American College of Surgeons died September 12 aged 62 of coronary occlusion and chronic bronchial asthma

**Lloyd Hart Childs** Flint Mich, University of Michigan Department of Medicine and Surgery Ann Arbor 1910 since 1916 medical director of the Chevrolet Motor Company, died September 18 aged 58 of coronary thrombosis

**John Aloysius Connelly**, Trenton, N J, Jefferson Medical College of Philadelphia 1915 member of the Medical Society of New Jersey health officer of Trenton served overseas during World War I medical director and visiting surgeon to the New Jersey State Prison Hospital member of the staff of St Francis Hospital died October 26 aged 51



**Samuel Denton**, Buffalo Valley, Tenn., Vanderbilt University School of Medicine, Nashville, 1890, formerly president of the Bank of Buffalo Valley, died August 31, aged 90, of heart disease.

**Alfred Kennon Duckett**, Blue Ridge Ga., Emory University School of Medicine, Atlanta, 1935, member of the Medical Association of Georgia, served an internship at the Spartanburg General Hospital, Spartanburg, S. C., died August 18, aged 32.

**Fayette Clinton Eshelman**, Hazleton Pa., Jefferson Medical College of Philadelphia, 1917, on the staff of the Hazleton State Hospital, local chief medical officer, emergency medical service, office of civilian defense in Hazleton, active member of the Rotary Club, died September 19, aged 54, of coronary occlusion.

**Olive Winona Brown Hale**, Glen Olden Pa., Ohio Medical University, Columbus, 1895, died October 18, aged 82, of myocarditis.

**Charles Carleton Harbaugh**, Sedro Woolley, Wash., Kansas City Medical College, Kansas City, Mo., 1895, served during World War I, formerly member of the city council and president of the chamber of commerce, died in the Memorial Hospital August 18, aged 75, of pneumonia.

**William Patterson Clark Hazen**, Washington D. C., Georgetown University School of Medicine, Washington, 1877, died October 29, aged 91, of generalized arteriosclerosis.

**Emilio Leopold Hergert**, Brooklyn Long Island College Hospital, Brooklyn, 1896, served as a lieutenant in the medical corps of the U. S. Army during World War I, for many years physician for the health department, died in the Bushwick Hospital September 13, aged 71.

**Henry Arch Herzer**, Louisville, Ky., University of Louisville School of Medicine, 1923, member of the Kentucky State Medical Association, served during World War I on the staff of St. Anthony's Hospital where he died August 26, aged 48, of coronary occlusion.

**James Rembert Hopkins**, Hopkins S. C., Louisville Medical College, Louisville, Ky., 1888, at one time auditor of Richland County and member of the house of representatives, served as a trustee of the school of Hopkins, died in the Lowman Home, White Rock, in August, aged 80, of coronary thrombosis.

**Harry H. Hough**, Albany Ore., Kansas City Homeopathic Medical College, Kansas City, Mo., 1893, died August 23, aged 75.

**Meredith Woodson Hyatt**, Willisburg Ky., Kentucky School of Medicine, Louisville, 1894, member of the Kentucky State Medical Association, formerly health officer of Washington County, served as examiner for the induction board and as a captain in the medical corps of the U. S. Army during World War I, formerly tuberculosis specialist for the Veterans Administration facilities in Outwood Ky., and Johnson City, died suddenly August 9, aged 77, of heart disease.

**Dwight Lacey Jennings**, St. Louis, St. Louis University School of Medicine, 1929, died in St. Anthony's Hospital August 23, aged 42.

**Cleon Denton Johnson**, Columbus, Ga., Baylor University College of Medicine, Dallas, Texas, 1919, member of the Medical Association of Georgia, served during World War I, died August 21, aged 50.

**Lombard Carter Jones**, Falmouth, Mass., Harvard Medical School, Boston, 1892, member of the Massachusetts Medical Society, member of the board of overseers at Harvard University for many years, died August 17, aged 78, of carcinoma of the prostate.

**Claude Hamilton Kinnear**, Tacoma, Wash., Jefferson Medical College of Philadelphia, 1889, formerly associated with the Indian Service, died August 10, aged 76, of coronary thrombosis.

**Robert Laird**, Detroit, Detroit College of Medicine and Surgery, 1928, member of the Michigan State Medical Society, served an internship at the Highland Park General Hospital, served during World War I, died August 13, aged 50, of bronchopneumonia and fibrosarcoma of the lung.

**Boote Octave Le Blanc**, St. Gabriel, La., Medical Department of Tulane University of Louisiana, New Orleans, 1903, also a pharmacist, member of the Louisiana State Medical Society, for many years president of the Sixth District Medical Society, died October 2, aged 66, of coronary thrombosis.

**Archibald Cary Lewis**, Memphis, Tenn., George Washington University School of Medicine, Washington, D. C., 1905, professor of ophthalmology at the University of Tennessee College of Medicine, member of the American Academy of Ophthalmology and Otolaryngology, fellow of the American College of Surgeons, specialist certified by the American Board of Ophthalmology, ophthalmologist, Memphis General Baptist Memorial and St. Joseph's hospitals, died in the Methodist Hospital September 18, aged 67, of coronary occlusion.

**Charles Lieber**, Waukegan, Ill., University of Nebraska College of Medicine, Omaha, 1908, formerly county physician, served during World War I, formerly superintendent of the Lake County General Hospital on the staffs of St. Therese's and Victory Memorial hospitals, died in Sidney, Neb., August 16, aged 57, of carcinoma of the liver and colon.

**Treau Parvine Lynch**, Iowa Park, Texas, Fort Worth School of Medicine, Medical Department of Fort Worth University, 1900, died in Como August 21, aged 66, of heart disease.

**Jacelyn Van Vliet Manning**, Pasadena, Calif., Northwestern University Woman's Medical School, Chicago, 1899, died October 17, aged 77.

**Francis Xavier Matera**, Brooklyn, Regia Università di Napoli, Facoltà di Medicina e Chirurgia, Italy, 1905, served as a lieutenant in the medical corps, Italian Royal Navy, during World War I, at one time on the staff serving in the pediatric



RICHARD G. HENDERSON  
P. A. SURG., U. S. P. H. S. 1913-1944

## DIED IN SPECIAL WAR SERVICE

**Richard Gray Henderson**, Passed Assistant Surgeon, U. S. Public Health Service, Bethesda, Md., St. Louis University School of Medicine, 1938, served an internship and residency in pathology at St. Mary's Group of Hospitals in St. Louis and a residency in surgery at the Henry Ford Hospital in Detroit, formerly assistant in pathology and graduate fellow in pathology at his alma mater, commissioned in the reserve corps of the United States Public Health Service in March 1942, detailed to the National Institute of Health in Bethesda where he entered the division of infectious diseases for work on rickettsial infections, promoted to passed assistant surgeon April 1, 1944, during his two years with the public health service helped

in the development and standardization of a neutralization test for typhus fever for which in recognition of his ability in this field he was given direct supervision of the experimental work and full responsibility for it, also in charge of testing potency of all lots of typhus vaccine submitted by various laboratories where the vaccine is manufactured, had also worked with other members of the typhus unit on an extensive study of human reaction to primary and booster vaccination with various types of typhus fever vaccines, died in the Naval Hospital October 20, aged 31, of tsutsugamushi fever which he contracted while attempting to develop a vaccine for the disease.



department, Kings County Hospital, died October 23, aged 64, of heart disease

**George Grant McConnell**, Mooresville, Ind Rush Medical College, Chicago, 1892 died August 11, aged 78, of hypertensive heart disease and diabetes mellitus

**John M McCuan**, Farwell Texas (licensed in Texas by years of practice) past president of the Kaufman County Medical Society, for many years health officer of Parmer County, died July 2, aged 79 of heart disease

**John Joseph McDonald**, Washington, D C Medical College of Virginia Richmond, 1926, died in the Glenn Dale Sanatorium, Glenn Dale, Md, August 30, aged 43 of pulmonary tuberculosis

**Edward Joseph Meyer**, Louisville, Ky, University of Louisville School of Medicine 1909 member of the Kentucky State Medical Association, died in the SS Mary and Elizabeth Hospital August 1 aged 58, of coronary thrombosis

**Connor Joshua Miller**, Inman, S C Medical College of the State of South Carolina, Charleston, 1915, member of the South Carolina Medical Association, served during World War I on the staff of the Spartanburg General Hospital Spartanburg died August 21, aged 55, of coronary occlusion

**Arthur Venton Murtha**, Pontiac, Mich, University of Michigan Department of Medicine and Surgery, Ann Arbor 1914, U S Army Medical School, 1918 member of the Michigan State Medical Society served during World War I

**George W Nesbitt**, Sycamore Ill Northwestern University Medical School Chicago, 1892 member of the Illinois State Medical Society received a fifty year certificate and gold emblem from the DeKalb County Medical Society in March 1943, died August 22 aged 75, of cerebral hemorrhage

**Saul D Nevard** Peekskill N Y New York Homeopathic Medical College and Flower Hospital, New York 1922, also a dentist died in Yonkers August 1, aged 51 of coronary thrombosis

**Evald Olson & Lovell Wio**, Kansas Medical College Medical Department of Washburn College Topeka, 1907, killed in an automobile accident August 2 aged 72

**Ira Frederick Richardson**, Fremont, Neb Kansas City Hahnemann Medical College Kansas City Mo 1903 member of the Nebraska State Medical Association died August 6 aged 71 of virus pneumonia and myocarditis

**Frank Remington Sheppard**, Millville N J Medico-Chirurgical College of Philadelphia 1903 member of the Medical Society of New Jersey served during World War I on the staffs of the Newcomb Hospital Vineland and the Millville Hospital died August 15, aged 63 of coronary thrombosis

**Raymond Victor Shroba**, Joliet Ill Loyola University School of Medicine Chicago, 1928, member of the Illinois State Medical Society, on the staff of St Joseph's Hospital accidentally drowned in Plano August 14 aged 41



LIEUT (JG) VITO V STABILE  
(MC), USNR 1917-1944



LIEUT (JG) JOHN J GIBBONS JR  
(MC) USNR 1912-1943



LIEUT WARREN G PARISH  
(MC) USNR 1907-1944

member and past president of the medical staff of Pontiac General Hospital, on the staff of St. Joseph Mercy Hospital, since 1921 medical director of the Wilson Foundry and Machine Company, died in the University Hospital, Ann Arbor, August 19 aged 54, of heart disease

**Louie Leo Steiner & Danville Ill** College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois 1908, on the staffs of the Lake View and St Elizabeth hospitals, died in Petoskey Mich August 19, aged 65, of coronary occlusion

## KILLED IN ACTION

**Vito Victor Stabile**, Detroit, Wayne University College of Medicine Detroit 1943 served an internship at the Grace Hospital commissioned a lieutenant (jg), medical corps, U S Naval Reserve on May 17, 1943 killed in action in the European area June 19, aged 27

**John Joseph Gibbons Jr**, Avoca Pa, Georgetown University School of Medicine Washington, D C, 1936 served an internship at the Scranton State Hospital, Scranton, Pa, commissioned a lieutenant (jg) in the medical corps of the U S Naval Reserve on April 8 1942 killed in action at sea in the Pacific area aged 31 presumptive date of death Nov 14 1943 according to the Navy Department

**Warren Griffith Parish**, Cleveland Heights, Ohio, University of Pennsylvania School of Medicine Philadelphia 1933 member of the Ohio State Medical Association, Cleveland Academy of Medicine and the Cleveland Clinical Society, served an internship at the Philadelphia General Hospital, Philadelphia and a residency in medicine at the University Hospitals Cleveland commissioned a lieutenant in the medical corps of the U S Naval Reserve on Aug 6, 1942, served in the South Pacific since February 1943 had been assigned to a marine division which served in New Zealand and Guadalcanal died on a hospital ship in the Pacific area July 29 of wounds received during the invasion of Guam aged 36

## Bureau of Investigation

### DANGEROUS TO HEALTH

#### When Used as Directed

[Editorial Note—These abstracts concern preparations which were specifically declared by the Food and Drug Administration of the Federal Security Agency to be dangerous when used in accordance with the directions given on the label by the manufacturer. The abstracts that follow are given in the briefest possible form (1) the name of the product (2) the name of the manufacturer, shipper or consigner (3) the date of shipment (4) the composition (5) the type of nostrum, (6) the reason for the charge of misbranding and (7) the date of issuance of the Notice of Judgment.]

**A M Solution**—Kenton Pharmacy Company, Covington, Ky., Shipped Nov. 13, 1941 and Jan. 14, 1942. Composition essentially a solution of chrysarobin (approximately 0.66 grain per fluid ounce), salicylic acid, benzoic acid, alcohol and a volatile oil. Misbranded because dangerous to health when used in dosage or with frequency or duration recommended in labeling. Also misbranded because of false and misleading label statements. For the relief of itching and discomfort of Athlete's Foot (Dermatophytosis), Ringworm, Insect Bites, Impetigo, externally caused Eczema, Rashes and Pimples and other forms of local skin irritations. —[D D N J F D C 705 April 1943]

**Dependon Products Intrauterine Paste**—Anne M. Jenks trading as Dependon Products and Jenks Physicians Supplies, White Bear Lake, Minn. Many shipments reported from 1930 on. Composition a viscous, yellowish liquid containing a watery solution of potassium soap, alcohol, glycerin and compounds of iodine. Misbranded because among other things dangerous to health when used in dosage or with frequency that label suggested for terminating pregnancy, inducing labor and removing retained parts of the products of conception, also misbranded because name on package and statements in accompanying circular suggested that the paste was safe for the aforementioned purposes whereas it might produce even fatal consequences further misbranded because falsely represented as effective in treating dysmenorrhea, endometritis and cervical and uterine discharges. On Jan. 19, 1943, a district federal court in Minnesota issued a permanent injunction against Anne M. Jenks forbidding her further shipping her Intrauterine Paste as such or as Dependon Products Paste or under any other name or in any similar mixture in interstate commerce. The injunction also applied to all persons assisting her in the business. —[D D N J F D C 751 September 1943] D D N J F D C 752 was also issued against Anne M. and W. S. Jenks when they pleaded guilty to illegal (under the preliminary injunction) interstate sale of product in question and were fined respectively \$250 and \$500. A third case involving a shipment of the Paste by Anne M. Jenks trading as Dependon Products and Jenks Physicians Supplies was not defended by her and the court confiscated the shipment. —[D D N J F D C 755 September 1943]

**Dr. Hand's Worm Elixir**—Smith, Kline & French Laboratories, Philadelphia. Shipped Feb. 17, 1942. Composition essentially extracts of plant drugs including santonin and a laxative in a vehicle of syrup, a small amount of alcohol and flavoring. Misbranded because dangerous to health when used in the dosage and with the frequency or duration prescribed in labeling since each recommended dose of santonin was sufficient to produce serious poisoning. —[D D N J F D C 804 December 1943]

**Gilmore's Headache Powders**—Don Gilmore Laboratories, Inc., Cleveland. Shipped Nov. 11 and Dec. 9, 1941. Composition in each powder 693 grains of acetanilid, 2.61 grains of caffeine citrate and 2.5 grains of sodium bicarbonate. Adulterated because strength differed from that which product was represented to possess. Misbranded because dangerous to health when used in dosage or with frequency or duration recommended in labeling since latter would provide for administration of almost 14 grains of acetanilid in 20 minutes, also misbranded because labeling failed to warn adequately against use by children or in those pathologic conditions wherein it might be dangerous to health or against unsafe dosage or method or duration of administration since the powders contained acetanilid frequent or continued use of which might cause serious blood disturbances, anemia, collapse or dependence on the drug misbranded finally because label declarations as to proportions of ingredients were false and misleading. —[D D N J F D C 755 September 1943]

**Luebert's Ka No Mor Capsules**—A. G. Luebert, Wilmington, Del. Shipped May 17 and June 27, 1941. Composition acetanilid (3 grains per capsule), caffeine and aspirin. Misbranded because dangerous to health when used with the frequency or duration recommended in labeling, also misbranded because label failed to warn against giving to children and against unsafe dosage or duration of administration since labels failed to restrict number of doses and though circular limited their use to 5 capsules a day, such use constituted an excessive dosage of acetanilid. Further misbranded because directions provided for giving excessive amount of acetanilid. Again misbranded because label did not conspicuously warn against use in those pathologic conditions wherein use might be dangerous to health. Likewise misbranded because certain label statements which represented that the capsules when used as directed were a safe and appropriate treatment for relieving pain and discomfort of simple headache, neuralgia and muscular aches and pains and some

other conditions were false and misleading. Misbranded finally because label did not warn that use of product according to directions might cause serious blood disturbances, anemia, collapse or a dependence on the drug. —[D D N J F D C 754 September 1943]

**Luebert's Noxem Brand Tablets and Capsules**—A. G. Luebert, Wilmington, Del. Shipped May 17 and June 27, 1941. Composition (tablets) essentially sodium salicylate, caffeine, strychnine sulfate and a laxative plant drug (capsules) essentially acetanilid (3 grains per capsule), aspirin and caffeine. Misbranded because dangerous to health when used with frequency or duration recommended on label further misbranded because label failed to warn against giving to children because of acetanilid and strychnine content and to elderly persons because of strychnine content. Also misbranded because administration over a long period of time would be unsafe on account of the strychnine present and because the acetanilid when given in frequent or continued dosage might result in serious disturbances, anemia, collapse or dependence on the drug, again misbranded because of false label representation that product was an adequate treatment for rheumatic fever and an appropriate one for aches and pains of neuralgia, gout and muscles misbranded finally because label did not list one ingredient, aspirin, under its common or usual name or declare quantity or proportion of the strychnine sulfate present. —[D D N J F D C 754 September 1943]

### MISBRANDED PRODUCTS

#### Abstracts of Notices of Judgment Issued by the Food and Drug Administration of the Federal Security Agency

[Editorial Note—These Notices of Judgment are issued under the Food Drug and Cosmetic Act and in cases in which they refer to drugs and devices they are designated D D N J and foods F N J. The abstracts that follow are given in the briefest possible form (1) the name of the product (2) the name of the manufacturer, shipper or consigner (3) the date of shipment (4) the composition (5) the type of nostrum (6) the reason for the charge of misbranding and (7) the date of issuance of the Notice of Judgment.]

**Blue Cross First Aid Kits**—Sol Levy, Philadelphia and Hampton Manufacturing Company, Carlstadt, N. J. Shipped Feb. 16, 1942. Adulterated because the absorbent cotton that they contained was not sterile but was contaminated with viable aerobic and anaerobic or facultative anaerobic microorganisms and hence fell below the standard of the United States Pharmacopoeia. Misbranded for the same reason and because outside container did not bear an accurate statement of the quantity of contents or of the quantity or proportion of mercurochrome. —[D D N J F D C 796 September 1943]

**Blue Cross Gauze Bandage Sterilized**—Hampton Manufacturing Company, Carlstadt, N. J. Shipped Feb. 16 and 18, 1942. Adulterated because its purity or quality fell below that which it was represented to possess since approximately one half of the bandages were contaminated with viable cocci or spore-forming microorganisms. Misbranded because falsely claimed to be Sterilized whereas it was not. —[D D N J F D C 798 September 1943]

**Bu U Diuretic**—Standard Drug Company, Inc., Spartanburg, S. C. Shipped Feb. 28 and March 13, 1941. Composition essentially water extracts of plant drugs (not named) and small amounts of potassium acetate and alcohol preserved with sodium benzoate and colored with caramel. Misbranded because label falsely represented that product was a diuretic would strengthen the kidneys and assist in eliminating poisons and wastes from the system. —[D D N J F D C 805 December 1943]

**Cherry Balsam**—Standard Drug Company, Inc., Spartanburg, S. C. Shipped Feb. 28 and March 13, 1941. Composition essentially extracts of plant drugs (not named), chloroform (0.76 minims per fluid ounce), sugar and water. Adulterated because strength differed from and quality fell below that represented. Misbranded because of false label representations as to efficacy in preventing curing or treating chronic coughs. —[D D N J F D C 805 December 1943]

**Dr. Ray Wheat Embryo**—Freshman Vitamin Company, Detroit. Shipped Feb. 27, 1941. Composition not reported. Misbranded because of false label representation that product was indicated and of significant value in treatment of all types of gastrointestinal disturbances whereas it was not. —[D D N J F D C 788 September 1943] Also misbranded under provisions of law applicable to foods as reported in F N J 3842.

**Howell's Blue Label Cough Syrup**—Howell Company, Inc., New Orleans. Shipped between Feb. 21, 1940 and Jan. 6, 1941. Composition a brown syrupy liquid containing 0.35 minims of chloroform per fluid ounce. Adulterated because not of the strength claimed, namely 3 minims of chloroform per fluid ounce. Also misbranded because this claim was false and misleading. —[D D N J F D C 807 December 1943]

**Howell's Hi Qual Balm**—Howell Company, Inc., New Orleans. Shipped between Feb. 21, 1940 and Jan. 6, 1941. Composition a mixture of oils of peppermint and eucalyptus with camphor, menthol and ephedrine in a petrolatum base. Misbranded because of false and misleading label representation that it would be efficacious in treatment of head colds, croup and hemorrhoids whereas it would not. —[D D N J F D C 807 December 1943]

## Correspondence

### PHYSIOLOGIC ACTION OF IN VIVO ANTICOAGULANTS

*To the Editor*—The editorial "Physiologic Action of In Vivo Anticoagulants," published in the September 30 issue of THE JOURNAL, is most timely and serves an excellent purpose in reviewing some of the effects of heparin and dicumarol.

The statement that Davidson and MacDonald reported in their communication published in the *American Journal of the Medical Sciences* (205:24 [Jan.] 1943) that they observed a reversal of dicumarol effect by large doses of vitamin K<sub>1</sub> oxide is an error. Their conclusion in this particular paper was "Vitamin K (synthetic) was found not to act in any way as an antidote to the effect of administration of the drug." The fact is, on the contrary, that after Link showed in animals that vitamin K at high levels neutralized dicumarol induced prothrombinopenia, Shapiro and his co-workers were the first to confirm this in man (*Proc Soc Exper Biol & Med* 52:12 [Jan.] 1943). In August 1943 Davidson and MacDonald (*New England J Med* 229:353) and in May 1944 (*Proc Staff Meet, Mayo Clin* 19:218) Cromer and Barker reported success in accomplishing the same result in man.

The editorial gives the impression that the prothrombinopenia inducing action of salicylates was discovered independently by Rapaport and his co-workers. An examination of their paper discloses the contrary fact that their investigation was undertaken after the report by Link and his students appeared in the *Journal of Biological Chemistry*. Apropos of this, certain interesting facts deserve mention. Link announced in his paper that his observations in animals had been confirmed in man by Dr. O. O. Meyer of the University of Wisconsin and Dr. Shepard Shapiro of New York University, to whom he had communicated his findings. This seems to have escaped the attention of Rapaport and his associates, as apparently did the fact that vitamin K had been found by the agricultural chemists of Wisconsin to counteract the prothrombinopenic inducing action of salicylic acid. Curiously enough the suggestion is made in Rapaport's paper that the action of vitamin K on the salicylic acid effect should be studied.

Anticoagulant therapy is a relatively new form of treatment. A rather extensive contact with physicians in the different branches of medicine and surgery has revealed to me the fact that the potentialities of heparin and dicumarol are in general little appreciated; that the modes of application are often not understood and that misconceptions concerning the possible hazards involved in the use of these therapeutic agents are very widespread. Because it serves to stimulate interest in these subjects, the editorial is highly commended.

SHEPARD SHAPIRO, M.D., New York.

*COMMENT*—The letter of Dr. Shapiro adds some interesting bibliographic data. THE JOURNAL is glad to have pointed out the error in the quotation of the article of Davidson and MacDonald in the *American Journal of the Medical Sciences*. It was in the article which appeared in the *New England Journal of Medicine* that these same authors reported a reversal of dicumarol with the use of large doses of vitamin K<sub>1</sub> oxide.

The report of Rapaport and his co-workers in the *Proceedings of the Society for Experimental Biology and Medicine* indicates that the finding of a bleeding tendency following the use of large doses of salicylates was made without regard to the findings of Link and his associates, although their work is mentioned in this article. It is believed that this observation was not made in the nature of a confirmation of Link's work but was observed independently.—Ed

### HEALTH ASSOCIATION DECLARATION

*To the Editor*—I have noted with regret the leading editorial in your issue of October 14 entitled "American Public Health Association Health Insurance Declaration." As one of those who voted for the proposed amendment and against the final adoption of the report, I wish to correct certain prejudicial impressions which I believe will be given to a body of your readers relative to the representative character of the Governing Council.

I am willing to accept the figures given in the editorial as to the number of members and Fellows, respectively, in the American Public Health Association. I would call attention, however, to the fact that the only members of the Governing Council whose election is restricted to a vote of the Fellows are the 30 out of something over 100 mentioned in your editorial. The 41 members of the council representing the sections are elected by the membership and fellowship of each section.

Likewise, representatives of the affiliated societies and branches are elected by their fellowship and membership in accordance with their respective constitutions and by-laws.

The Council is, therefore, a representative body as is the House of Delegates of the American Medical Association. Membership in the Council and the right to hold office in the Association are restricted to Fellows as they are in the American Medical Association.

The adoption of the subcommittee's report by a large majority of the quorum present is therefore quite as proper and as much in order as any action taken by the House of Delegates of the American Medical Association and, in my opinion, equally representative of the opinion of the entire membership.

I voted for the amendment proposed by Dr. Biering because I feel that the cooperation of the medical and dental professions is essential to the successful operation of any plan designed to extend medical care and to improve its quality.

On the other hand I think that the attitude of the American Medical Association has been such that a majority of the Council felt that a conference on the subject would prove futile and would merely delay an expression of opinion from the American Public Health Association on a subject on which their minds were made up. The tone of your editorial would tend to confirm that opinion.

My vote against the resolution to adopt was based on my not having taken time, personally, to examine the report and study its content.

EDWARD S. GODFREY, JR., M.D., Albany, N. Y.  
Commissioner of Health

### ILEITIS

*To the Editor*—I am rather astonished at your editorial in THE JOURNAL, October 21. Apparently the underlying pathology of these lesions is not understood. Ileitis is just one of the manifestations of chronic nonspecific granulomatous lesions of the alimentary tract and unfortunately this has been lost sight of in the communications which have appeared in the literature.

As I stated in my paper in *Surgery* for August 1939 the available facts indicate that hypertrophic granulomatous lesions are encountered in infections with amebas in infections by various strains of the dysentery group in the group of so called nonspecific ulcerative colitis associated with previously existing conditions such as diverticulitis, or as a chronic development unassociated apparently with any preceding condition. In the gastrointestinal tract the characteristic part of the lesion consists in a spread of a surface lesion to an intramural position in the wall of the alimentary canal. Essentially the lesion seems to be a form of chronic infection of the lymphatic apparatus of the deeper layers of the bowel wall which implicates the solitary and aggregated collections of lymphadenoid follicles the lym-

phatic channels and the associated lymph nodes in the appropriate part of the mesentery. During the development of the lesion, the original agent of infection commonly disappears and secondary infection takes place. As a consequence of this, intramural abscesses form. During the healing or attempted healing of the latter cicatrization is accompanied by the excessive production of scar tissue, and the latter causes a hypertrophic thickening of the bowel wall with subsequent stenosis.

The nonspecific granulomatous lesion represents the end result of a diversely initiated lesion of the bowel wall marked by intramural lymphatic infection and subsequent evidences of an attempted overproductive but unsuccessful healing.

These forms of lymphatic infection in the bowel either localize themselves to a restricted part of the bowel wall or they characteristically involve extensive continuous or interrupted segments, as in all infections of the lymphatic apparatus. It is incorrect to consider the latter as independent localizations. Sometimes the latter are due to irregularities in healing power, which result in complete healing in some parts and no healing in others. The relative frequency with which this pathologic condition affects the terminal ileum is due directly to the relative frequency with which this disease begins in the appendix, its most frequent seat of origin. Both the localized and the diffuse forms exhibit the tendency to exacerbations of infection, during which there is the same possibility of spreading of the lesion along further lymphatic channels.

If one understands that this disease is in reality a "lymphangitis" of the intestinal wall, one should not expect any single specific cause any more than one expects that in lymphangitis of the skin.

A. O. WILENSKY, M.D., New York

## Bureau of Legal Medicine and Legislation

### MEDICOLEGAL ABSTRACTS

**Malpractice Pilonidal Cyst Diagnosed as Furunculosis and Treated with X-Rays**—The patient consulted the physician defendant, 'a specialist in the use of x-ray,' regarding a sore at the base of the spine. According to the patient, the physician told him that the sore was a pilonidal cyst and recommended x-ray treatments. The physician, however, claimed that he diagnosed the trouble as furunculosis. In any event a course of roentgen therapy was instituted and apparently in the process 'large areas of rectal tissue' were destroyed, burned or permanently maimed. Other physicians then undertook the care of the patient, diagnosing his ailment as a pilonidal cyst and removing the cyst surgically. Subsequently the patient sued the physician for malpractice based on alleged improper diagnosis and treatment. At the trial the weight of the testimony of expert witnesses called was to the effect that the use of the roentgen ray is not a proper treatment for pilonidal cyst. As to the propriety of its use for furunculosis the expert witnesses called differed. From a judgment for the patient the physician appealed eventually to the Court of Errors and Appeals of New Jersey.

At the trial the patient called several physicians who did not hold themselves out as specialists in the use of the roentgen ray but who were permitted to answer questions [that] had to do with x-ray and the like. The physician contended that since these physician witnesses did not hold themselves out as specialists in the use of the roentgen ray they were not competent to testify thereon. It is well established, answered the court, that having qualified as "medical doctors" the physician witnesses referred to are competent to testify on all medical subjects in which they claim sufficient ability to express an opinion. The qualification of an expert is for the determination

of the trial court, and such determination will not be disturbed where the ruling is supported by evidence. If the witnesses do not possess sufficient knowledge, that deficiency may be disclosed on cross examination. The objection made by the defendant in this case goes to the weight to be accorded the opinion evidence rendered by those witnesses rather than to the competence of their evidence.

The defendant physician next contended that the trial court erred in refusing to grant a nonsuit on the ground that the patient had produced no evidence of a wilful or wanton injury and in refusing to instruct the jury that it must to justify a finding in favor of the patient, find that the defendant had wilfully and wantonly inflicted injury on his patient. But, said the court, the complaint filed in this case charged negligence, carelessness and lack of skill in some paragraphs. In one paragraph it charged that the physician had carelessly, unskillfully, recklessly, negligently and wantonly inflicted stated injuries on the patient and in another paragraph it charged that the physician had 'failed to exercise reasonable skill, proper care and diligence' and 'failed to properly avail [himself] of remedies, cures, treatments required through the use of ordinary and reasonable skill.' Thus it will be noted, continued the court, that the complaint charges the defendant with wilful and wanton conduct, but it also charges him with negligence in the performance of his services. Therefore, the cause of action submitted to the jury was within the outline of the complaint and the patient was not required to allege or prove wanton injury.

At the trial, hypothetical questions were propounded to expert witnesses and, when objections were made thereto, further facts were added to the questions and the witnesses were permitted to answer the questions thus supplemented or amended. The entire questions in completed form were not repeated to the witnesses at the time they were finally permitted to answer. The defendant physician contended that this was error. But, answered the court, there is no doubt that the witnesses understood the questions and made answers directly thereto. *Shockmaker v. Elmer*, 70 N. J. Law 710, 58 A. 940, relied on by the physician as authority for his contention in the opinion of the court presented an entirely different situation. There a question was held to be improper when it was based in part on what the witnesses had heard other witnesses say in the course of the trial and on questions asked other witnesses. Here the questions were propounded directly to the witnesses concerned, and the mere fact that the earlier part of the question was not repeated was not error, as the witness understood them and, the questions being usually rather lengthy, nothing would have been gained and much time would have been lost. In any event, the court concluded, the defendant physician was not injured.

The next claim of error urged by the defendant physician concerned a question asked at the trial of an expert witness called by the patient. Apparently this witness had examined the patient merely for the purpose of testifying and was not an attending physician. The rule that such a witness may not use information given to him as a basis for his testimony concerning the condition of the patient but must rely on his own observation was relied on by the defendant physician as a basis for indicating that the trial court had erroneously permitted this witness to testify. In answer to the question objected to, this witness stated:

I have to say that by ocular proof by touch and by the remains of the material that has been destroyed or altered in form that the dosage of x-ray given is many times the safety dosage which would produce only an erythema.

It is apparent therefore, said the court, that the witness as declared in his answer was relying solely on his own examination of the plaintiff and his knowledge of the subject as an expert.

The physician next contended that the trial court erred in submitting "to the jury the question of improper diagnosis." As pointed out above, said the court, the complaint alleged that the services were 'carelessly, negligently, improperly and unskill-

fully' performed and that the defendant failed to 'exercise reasonable skill, proper care and diligence' and "failed to properly avail [himself] of remedies cures, treatments required through the use of ordinary and reasonable skill" The trial judge merely recited the contentions of the plaintiff in this connection and charged the jury as follows

So out of those pleadings then come these questions Was the doctor guilty of being unskilful and careless in the treatment of Mr Young? Was Mr Young damaged as a result of this unskilful or careless treatment by the doctor?

However, continued the court, the complaint was clearly broad enough to cover such an allegation There was no error therein

The trial court refused to give certain instructions tendered by the defendant physician, stating in varying ways the law relating to the measure of duty assumed by the physician, and the refusal of the trial court to give the instructions so tendered was relied on as error by the physician The skill and care required of a physician, said the court, is stated in *Ely v Wilbur*, 49 N J Law 685, 10 A 358, 60 Am Rep 668 as follows

the skill and care required in doing the work in order to deserve compensation is that ordinarily possessed and exercised by others in like callings

The physician like the attorney undertakes in the practice of his profession that he is possessed of that degree of knowledge and skill which usually pertains to the other members of his profession And the physician in attending his patients engages that he will use due care to discover the nature of the disease which gives occasion for his services and in applying the usual remedies but beyond this measure of skill and diligence the law makes no exaction If he is to be held for results or as a guarantor of success it can be only in virtue of his express agreement Ordonaux in his Jurisprudence of Medicine states the rule in question clearly The physician he says is not a guarantor without express contract of the good effects of his treatment and he only undertakes to do what can ordinarily be done under similar circumstances If the good effect of his treatment and the consequent value of his services he disputed he must be prepared to show that his labor was performed with the ordinary skill and in the ordinary way of his profession

The trial judge, continued the court, charged at considerable length as to the duties of a physician One of the instructions tendered by the physician that was refused by the trial court would have told the jury that

A doctor in the practice of his profession without express contract is never an insurer of the good effects of his treatment so that the mere fact that treatment given in any case does not result satisfactorily or beneficially to the patient is not evidence of negligence

The trial court instructed the jury that the implied engagement of the physician with his patient does not guarantee a good result That instruction covered the essence of the tendered instruction just quoted and it covered all of the tendered instruction that was sound because the statement in the tendered instruction that because the treatment given does not 'result satisfactorily or beneficially to the patient is not evidence of negligence' is too broad The fact of nonbeneficial result may or may not be evidence of negligence If despite proper diagnosis and treatment no benefit resulted no negligence could be charged but if the treatment failed because of failure to exercise reasonable diligence knowledge or skill the result may be evidence of negligence

Another instruction tendered by the defendant that was refused by the trial court would have told the jury that mere mistake or error is not sufficient to decide the case against the physician and that if the jury found that there was mere mistake or error, and nothing more, then its verdict must be for the defendant physician This tendered instruction said the court, was properly rejected as submitted because it excluded all responsibility for mistake or error based on lack of reasonable care diligence and skill If the mistake or error had been duly limited to mistake in judgment only after due consideration of the patient's ailment it would have been sound, but to exclude every possible ground of improper conduct that might induce the mistake or error was in effect to say that the defendant physician could not be held accountable for error although that

error was induced by failure to exercise that degree of care and knowledge that might be expected of a physician similarly situated

Another tendered instruction rejected by the judge the appellate court held to be rejected properly because it, in substance, relieved the defendant physician of any duty to exercise reasonable care to diagnose the patient's condition That tendered instruction would have told the jury that if the defendant applied the treatment he thought proper for "the condition as [he, the defendant] diagnosed the case your verdict must be for the defendant" But, said the appellate court, the duty of the physician was not limited to proper treatment of what he considered to be the plaintiff's ailment but also extended to the exercise of reasonable care to ascertain the ailment to which proper and appropriate treatment should be applied

The judgment in favor of the patient was accordingly affirmed  
—*Young v Stevens* 39 A (2d) 115 (N J, 1944)

## Medical Examinations and Licensure

### COMING EXAMINATIONS AND MEETINGS

#### NATIONAL BOARD OF MEDICAL EXAMINERS EXAMINING BOARDS IN SPECIALTIES

Examinations of the National Board of Medical Examiners and of Examining Boards in Specialties were published in THE JOURNAL November 11 page 726

#### BOARDS OF MEDICAL EXAMINERS

ALASKA Juneau March Sec Dr W M Whitehead Box 561 Juneau  
CONNECTICUT \* Endorsement Hartford Nov 28 Sec to the Board  
Dr Creighton Barker 258 Church St New Haven

DISTRICT OF COLUMBIA \* Washington November Sec Commission  
on Licensure Dr G C Ruhland 6150 E Municipal Bldg Washington

FLORIDA \* Jacksonville Nov 20 21 Sec Dr Harold D Van Schaick  
2736 S W Seventh Ave Miami 36

IDAHO Boise Jan 8 11 Dir Bureau of Occupational Licenses  
Mrs Lela D Painter 355 State Capitol Bldg Boise

INDIANA Indianapolis Jan 35 Exec Sec Board of Medical  
Registration and Examination Miss Ruth V Kirk 301 State House  
Indianapolis 4

MARYLAND *Homeopathic* Baltimore Dec 13 Sec Dr John A  
Evans 612 W 40th St Baltimore

NEW HAMPSHIRE Concord March 8 9 Sec Board of Registration in  
Medicine Dr D G Smith 77 Main St Nashua

NORTH DAKOTA Grand Forks Jan 25 Sec Dr G M Williamson  
4½ S 3rd St Grand Forks

SOUTH CAROLINA Columbia June 25 27 Sec Dr N B Heyward  
1329 Blandina St Columbia

SOUTH DAKOTA \* Pierre Jan 16 17 Sec Medical Licensure State  
Board of Health Dr G Collins Pierre

TEXAS Dallas Dec 19 21 Sec Dr T J Crowe 918 20 Texas  
Bank Bldg Dallas 2

VERMONT Burlington June Sec Dr F J Iawiss Richford

VIRGINIA \* Richmond June 20 23 Sec Dr J W Preston 30½  
Franklin Rd Roanoke

WASHINGTON \* Seattle Jan 15 17 Dir Department of Licenses  
Mr Thomas A Swayze Olympia

\* Basic Science Certificate required

#### BOARDS OF EXAMINERS IN THE BASIC SCIENCES

COLORADO Denver Dec 6 7 Sec Dr Esther B Starks 1459 Ogden  
St Denver

IOWA Des Moines Jan 9 Dir Division of Licensure and Registra-  
tion Mr H W Grefe Capitol Bldg Des Moines

NEW MEXICO Santa Fe Feb 12 Sec Miss Marion M Rhea  
State Capitol Santa Fe

SOUTH DAKOTA Aberdeen Dec 12 Sec Dr G M Evans Yankton

TENNESSEE Memphis and Nashville Dec 18 19 Sec Dr O W  
Hyman 874 Union Ave Memphis

WISCONSIN Milwaukee Dec 2 Sec Prof R A Bauer 152 W  
Wisconsin Ave Milwaukee 3



## Current Medical Literature

### AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1934 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (\*) are abstracted below.

#### Alabama State Medical Assn Journal, Montgomery

14 25-60 (Aug.) 1944

- Schemm Treatment of Chronic Heart Failure with Edema Report of Illustrative Case R. Lyons—p. 25  
Management of Ureteral Calculi A. A. Stabler—p. 28  
Appendicitis and Complications J. L. Hardwick—p. 39

14 61-84 (Sept.) 1944

- Prognosis and Treatment of Carcinoma of Larynx F. E. LeJeune—p. 61  
Herniation of Intervertebral Disk C. H. Moore—p. 64  
\*Treatment of Chronic Intestinal Indigestion with Vitamin B Complex and Liver Extract J. H. Baumhauer—p. 66

**Treatment of Chronic Intestinal Indigestion**—Baumhauer thinks that many cases of chronic intestinal indigestion may be treated along the same lines as celiac disease, which has long been recognized as a kind of chronic intestinal indigestion affecting infants and children. It has now become accepted that the primary fault is a defective absorption from the intestine particularly of fats and carbohydrates. These children exhibit loss of appetite, failure to gain in weight, late sitting, standing and walking, fretfulness, aversion to normal play, diarrhea, poor sleeping habits and repeated respiratory infections. The nervous symptoms are many and varied. The child is irritable, languid and easily fatigued. The hands and feet are cold. Sleep is usually restless, with frequent grinding of the teeth, outcries, dreaming and not infrequently night terrors. Tetany or convulsions may develop. Thirty cases are included in this study. The injections were given weekly. 0.25 cc. of B complex in one buttock and 0.5 cc. of liver extract in the other. The treatment was augmented by the use of liver extract and vitamin B complex, and all the essential vitamins by mouth, as well as a liberal diet. In cases of iron deficiency anemia, iron too was given. Improvement was evidenced by the improved disposition of the child. Instead of a whiny, fretful infant the baby became more easily handled, more active and more alert to his surroundings. Nearly all of these children gained weight and in doing this the tissue turgor improved. If they exhibited anemia this condition improved also. Failure resulted when the children had an acute, chronic or intercurrent infection.

#### American Journal of Clinical Pathology, Baltimore

14 365-424 (July) 1944

- \*Blood Alcohol and Intoxication: Its Value in Borderline Cases A. O. Gettler, A. W. Freireich and H. Schwartz—p. 365  
\*Volumetric Pattern of Aspirated Normal Human Sternal Marrow of Males 18 to 40 Years E. M. Schleicher—p. 370  
Colloidal Copper Reaction in Cerebrospinal Fluid in Uremia G. C. Linder—p. 380  
Unreliability of Ordinary Cultures in Chronic Infections M. Solis Cohen—p. 386  
Fatal Bismuth Poisoning in Course of Antisyphilitic Treatment M. Wachstein—p. 392  
Acute Isolated Myocarditis Case Report W. W. Coulter and P. Marquardt—p. 399  
Aneurysm of Abdominal Aorta with Rupture into Duodenum Report of 3 Cases H. R. Pratt Thomas—p. 405  
Studies on Dog with Severe Asthmatic Attacks W. H. Olson, M. Appel and H. Necheles—p. 413  
Seminoma in Testis of Dog W. C. Hueper—p. 418

**Blood Alcohol and Intoxication**—The purpose of the experiments presented by Gettler and his associates in this paper was to get additional data concerning the relation between the alcohol content of the brain and that of the blood. Twenty-eight dogs weighing between 6 and 10 Kg. were used. These investigations corroborate previous observations on human sub-

jects namely that the alcohol content of the blood differs appreciably from the alcohol content of the brain, the blood:brain ratio ranging from 0.77 to 2.09. It is fallacious to take an average of a number of blood:brain ratios and, because this average ratio approaches unity, conclude that the alcohol content of the brain and of the blood is the same in any person at any given time. The blood:brain alcohol ratio may vary widely from any accepted average. In borderline cases (0.15 per cent blood alcohol) it is impossible to state definitely from the alcoholic content of the blood whether the subject was intoxicated or not. Since the alcohol content of urine, saliva and expired air depends in part on the alcohol content of the blood, it is equally fallacious to use them as an index of intoxication in the borderline cases.

**Volumetric Pattern of Aspirated Human Sternal Marrow**—Schleicher shows that the variance of the range of the normal myeloid erythroid volume obtained by different investigators suggests that the samples probably were not representative of the cellularity of the sternal part of the normal marrow organ, because the data were derived from subjects not only selected at random but also irrespective of their age, sex and health status. The author demonstrates that the myeloid-erythroid volumes including the fat, plasma and erythrocyte volume obtained from 1 cc. of aspirated, heparinized and centrifuged normal human sternal marrow of 12 healthy and carefully selected men between 18 and 40 years of age differ from the figures recorded in the literature. The four gross components (sharply separated in the hematocrit tube) show a remarkable uniformity of their respective volume range. The range and mean were as follows: fat 0.5 to 3.0, mean 1 volume per cent; plasma 39 to 48.5, mean 44 volumes per cent; myeloid-erythroid 4 to 6, mean 5 volumes per cent; erythrocytes 45 to 54, mean 50 volumes per cent. A method is described for obtaining "gross marrow units" suitable for histologic work and for determining the pattern of the normal "microscopic marrow unit." The combined volumetric-histologic method may be used as a means of elucidation of the functional state of the sternal part of the marrow organ and the normality of the organ as a whole. The statistically analyzed volumetric data presented here are sufficiently constant to justify the belief that the obtained volumes are normal, i.e., within the biologic variable error of chance and represent a "standard of comparison" permitting evaluation of the volumetric pattern of the sternal marrow of women, children and the aged.

#### American J. Digestive Diseases, Fort Wayne, Ind.

11 271-304 (Sept.) 1944

- Review of Role of Biliary System in Atrophic Arthritis H. Gauss—p. 271  
\*Enzyme Treated Milk in Dietary Management of Patients with Peptic Ulcer I. Steigmann and M. L. Blatt—p. 276  
Influence of Phenolphthalein Ingestion on Red Blood Cell Resistance to Hemolysis I. Steigmann and Josephine M. Dyniewicz—p. 279  
Secretion and Excretion of Bile in Relation to Constipation H. A. McGuigan—p. 282  
Evaluation of Laxative Effect of Some Commonly Used Laxative Substances with Particular Reference to Dosage H. A. McGuigan, I. Steigmann and Josephine M. Dyniewicz—p. 284  
Problems of Differential Diagnosis in Diseases of Gastrointestinal and Centourinary Organs C. Muehsam—p. 290  
Role of Fat Soluble Vitamins A and D in Nutrition J. Buckstein—p. 292  
Long Standing Fever Due to Regional Ileocolitis P. H. Sprague, W. S. Anderson and T. H. Aaron—p. 295

**Enzyme Treated Milk in Peptic Ulcer**—According to Steigmann and Blatt, milk fulfils the requirements of an ideal food for the ulcer patient. In many instances, however, ordinary pasteurized milk is not well tolerated and modified milks must be substituted. A recently introduced enzyme treated milk possesses the same nutritive value and mineral content as ordinary pasteurized milk; it has the advantage that it causes a higher combined and a lower free acidity and that softer, smaller and more friable curds result from its ingestion. The friable curds of this milk are expelled more easily from the stomach than the tougher curds of ordinary milk. Enzyme treated milk is well tolerated by some patients who have an intolerance to ordinary milk. Because of its chemical and physical properties, enzyme treated milk appears superior to ordinary milk in the dietary regimen of peptic ulcer patients.



## American Journal of Medical Sciences, Philadelphia

208 281-420 (Sept.) 1944

- Studies on Mechanism of Hypotensive Effect of Substances Eliciting Leukocytosis and Fever R D Taylor and I H Page—p 281
- Further Studies on Leukocytosis Promoting Factor and on Necrosis in Inflammatory Exudates V Menkin—p 290
- Studies on Palmar Sweating J J Silverman and V E Powell—p 297
- Value and Limitations of Congo Red Test for Amyloidosis Marguerite G Stemmerman and O Auerbach—p 305
- \*Creatinuria in Hyperthyroidism and in Essential Hypertension J V Treusch E J Kepler Marschelle H Power and S F Humes—p 310
- Effect of Calcium Pantothenate and Para Aminobenzoic Acid on Gray Hair in Man Study on Group of Young and Older Individuals H Brandealeone Elizabeth Main and J Murray Steele—p 315
- \*Time-Activity Curves of Globin Insulin with Clinical Applications Helen Eastman Martin D G Simonsen and Noradeane H Homann—p 321
- Eosinophil Leukemia with Report of Case M Friedman I J Wolman and H H Tyner—p 333
- Plasma Lipids in Patients with Rheumatoid Arthritis Receiving Gold Salt Therapy and During Pregnancy T B Bayles and Charlotte B Riddell—p 343
- Sicklemia in Black Carib Indian T H McGavack and W McKee German—p 350
- Arteriosclerotic and Hypertensive Heart Disease with Right Axis Deviation A H Traum—p 355
- Influence of Pituitrin and Epinephrine on Action of Insulin on Blood Sugar M Wishnofsky A P Kane and C S Byron—p 361
- Effects of Acetyl Beta Methylcholine in Human Subjects with Localized Lesions of Central Nervous System S M Fisher and G W Stravinsky—p 371
- Spontaneous Splenic Rupture in Infectious Mononucleosis Case and Pathologic Report W Darley W C Black C Smith and F A Good—p 381

## Creatinuria in Hyperthyroidism and Hypertension—

The studies reported by Treusch and his collaborators were undertaken for a double purpose (1) to reevaluate creatinuria as a sign of hyperthyroidism, especially as it may help in ruling in or out hyperthyroidism in cases of hypertension with elevated basal metabolic rates, and (2) to ascertain whether any difference occurs in these two groups of cases, which, even if not helpful in clinical differentiation, might serve as supportive evidence to that already accumulated that the elevated basal metabolic rate in some cases of hypertension is on a different basis from that in hyperthyroidism. The cases studied included 29 cases of exophthalmic goiter before compound solution of iodine had been given, 10 cases of adenomatous goiter with hyperthyroidism, 6 cases of adenomatous goiter without hyperthyroidism and 35 cases of essential hypertension in 18 of which the basal metabolic rate was elevated to +15 per cent or more. The majority of patients who had hyperthyroidism excreted more than 135 mg of creatine in twenty-four hours, whereas the majority of patients who had essential hypertension even with an elevated basal metabolism excreted less than 90 mg of creatine in twenty-four hours. The wide scattering of the results limited the value of spontaneous creatinuria as a clinical sign for ruling hyperthyroidism in or out in cases of essential hypertension with elevated basal metabolism. The results in general tended to substantiate the opinion that the elevated basal metabolism in essential hypertension rested on a different physiologic basis than that in hyperthyroidism.

## Time-Activity Curves with Globin Insulin—Eastman

Martin and her associates point out that in the study of a new insulin preparation it is important to determine the total duration of action and the activity per hour. The time activity curve has proved a useful method for such study. After the injection of the dose of insulin to be studied, glucose is given by mouth at variable intervals in the amount required to keep the blood sugar within the physiologic range (80 to 120 mg per hundred cubic centimeters) as determined by repeated blood sugar determinations. The authors made studies with globin insulin on 36 patients. Eight time activity curves with doses of from 10 to 80 units showed that the duration varied with the dose and the severity of the diabetes but in general was fourteen to more than twenty-four hours, the average being eighteen to nineteen hours. The peak of activity occurred between the sixth and tenth hours. Onset of activity started within one hour of injection but was slow for the first three to five hours. Comparison of the time-activity function of the same dose of regular, protamine zinc and globin insulin in 2 patients showed that globin insulin was intermediary between regular and protamine zinc insulins as to duration and total carbohydrate handling

ability. Studies with diet were made on 14 patients. The blood sugar curves with diet indicated the necessity for a light breakfast mid-afternoon feeding and in some instances a bedtime feeding. Progress records of 16 outpatients receiving 10 to 80 units revealed that the majority of these patients were in fair to good control except for occasional upsets. On the basis of the reported studies the authors stress that globin insulin is of advantage (1) for patients controlled with protamine zinc insulin who had severe nocturnal reactions and (2) for patients controlled on a combined dose of regular and protamine zinc insulin before breakfast injected singly or combined. Other advantages are that it has more carbohydrate handling ability than protamine with an earlier peak of action and that it is a clear solution which obviates mixing. Its disadvantages are (1) a too low carbohydrate handling capacity to cover the diet of most patients with severe diabetes, that is, those requiring over 50 units, (2) too short a duration of effect to cover nocturnal insulin requirement of patients with severe diabetes and (3) burning on injection in some patients.

## American Journal of Ophthalmology, Cincinnati

27 933-1062 (Sept.) 1944

- Choline Esters with Mydriatic and Cycloplegic Action K C Swan and N G White—p 933
- Quantitative Tests for Measuring Degree of Red Green Color Deficiency Louise L Sloan—p 941
- Dissociation of Form Vision and Light Perception in Strabismic Amblyopia G Wald and H M Burian—p 950
- History and Development of Iris Inclusion Operations T D Allen—p 964
- Clinical Application of Screen (Cover) Test Described in Detail J W White—p 977
- Phenomenon Associated with Eccentric Fixation Case Report G Gubor—p 986
- Bistigmatism Evaluation and Criticism of Refractive Technique Advocated by Marquez A Linksz and W Triller—p 992
- Endocrine Treatment of Keratoconjunctivitis Sicca J J Fried and M A Goldzieher—p 1003
- Seeing Defects in Nonreaders Myrtle Mann Gillett—p 1007

## Annals of Surgery, Philadelphia

120 129-256 (Aug.) 1944

- Continuous Spinal Anesthesia Observations on 2000 Cases W T Lemmon and H G Hager Jr—p 129
- Continuous Spinal Anesthesia for Labor and Delivery Preliminary Report M C Hinebaugh Jr and W R Jang—p 143
- \*Use of Thiouracil in Preparation of Patients with Hyperthyroidism for Thyroidectomy F D Moore D N Swency Jr O Cope R W Rawson and J H Means—p 152
- Subtotal Gastrectomy for Duodenal Ulcer R Colp P Klingenstein S Mage and L J Drucker—p 170
- Hemostasis with Absorbable Gauze (Oxidized Cellulose) Virginia Kneeland Frantz H T Clarke and R Jattes—p 181
- Leiomyoma of Jejunum Intermittent Melior of Fourteen Years Duration and Fatal Hemorrhage H A Hanno and M Mensb—p 199
- Retrograde Jejunogastric Intussusception Through Subtotal Gastrectomy Stoma W L McNamara—p 207
- Influence of Ether Morphine and Nembutal on Mortality in Experimental Burns P Elman with technical assistance of H Riedel—p 211
- Closure of Defects of Lips with Composite Vermilion Border Lined Flaps H May—p 214
- Dupuytren's Contracture Fibroma of Palmar Fascia R C Clay—p 224
- Omental Circulation in Morphinized Dogs Subjected to Craded Hemorrhage B W Zweifach R E Lee C Hyman and R Chambers—p 252
- Condylomata Acuminata 200 Cases Treated with Podophyllin O S Culp and I W Kaplan—p 251

**Thiouracil in Preparation for Thyroidectomy—Moore** and his collaborators report that 26 thyrotoxic patients were prepared for operation by thiouracil. They believe that thiouracil is superior to iodine as a preparation for thyroidectomy because it will bring the metabolic rate to normal regardless of the degree of elevation. The histologic change accompanying the lowering of the basal metabolic rate is an intensification of the hyperplasia seen in thyrotoxicosis. Thiouracil produces a hyperplastic but nonfunctioning goiter. An occasional disadvantage of thiouracil is the fact that this hyperplasia is accompanied by an increased vascularity and friability which makes the gland more difficult to handle and renders hemostasis arduous. The increased vascularity is especially troublesome if the patient has had a previous thyroidectomy. Preliminary or concomitant iodine administration delays the thiouracil response; it is possible but not yet proved that iodine therapy subsequent to thiouracil treatment may play a useful role in

reducing hyperplasia and vascularity. Toxicity not unlike that of the sulfonamides may be expected to occur when treating patients with thiouracil. While an improvement over iodine as a means of preparing patients for surgery, the drug is not ideal because it increases the histologic abnormality of the disease, because it affects only the production of hormone and not the underlying cause of hyperthyroidism, because surgery may be rendered more difficult by it and because disturbing evidences of toxicity may become manifest.

### Archives of Pathology, Chicago

38 63-122 (Aug.) 1944

- Structural Changes Following Administration of Quinacrine Hydrochloride H. Siegel and C. W. Musbett—p. 63  
Absorption of Vitamin A in Rat H. Popper and B. W. Volk—p. 71  
Formation of Hemosiderin in Lungs: Experimental Study G. Strassmann—p. 76  
Secondary Carcinoma of Esophagus as Cause of Dysphagia W. E. Toreson—p. 82  
Nephrotic Effect of Poisons Active on Convoluted Tubules in Presence of Hydronephrosis of One Kidney: Poisons Studies Uranium Nitrate Mercury Bichloride Racemic Tartaric Acid and Diethylene Glycol H. A. Wilmer—p. 85  
Factors Influencing Persistence of Vitamin A Fluorescence in Tissue Sections B. W. Volk and H. Popper—p. 90  
Experimental Studies on Therapy and Prevention of Degenerative Vascular Diseases I. Effect of Medication with Potassium Thiocyanate on Experimental Cholesterol Atherosclerosis W. C. Hueper—p. 93  
Correlation of Alterations in Mammary Glands Pituitary Body and Ovaries of Parahybric Rats I. T. Zeckwer—p. 99

### Bulletin New York Academy of Medicine, New York

20 471-514 (Sept.) 1944

- Recent Advances in Knowledge Relating to Formation Recognition and Treatment of Kidney Calculi A. Pandall—p. 473  
Experience with Electric Convulsive Therapy in Various Types of Psychiatric Patients L. B. Kalinowski—p. 485  
Problem of Specialization in Medical Services of Regular Army and Navy Prior to Present Emergency L. S. Kubic—p. 495  
\*Importance of Rh Factor in Mental Deficiency: Preliminary Report H. Yarnet—p. 512

**Rh Factor and Mental Deficiency**—Yarnet discovered the pathologic condition known as kernicterus in the brain of infants who had died of icterus gravis. It was observed that children who had recovered from icterus gravis subsequently exhibited evidence of central nervous system injury, including severe mental deficiency, extrapyramidal spasticity and athetosis. Necropsy on one of these children confirmed the relationship of the cerebral changes originally described as kernicterus and the aforementioned clinical picture. Since Rh isoimmunization is important in the etiology of erythroblastosis fetalis, and since kernicterus is found primarily in children with erythroblastosis, it would appear that the pathogenesis of the cerebral changes in this condition was in some way related to the Rh factor. The author suggests that there exists the possibility that certain of the imbecile and idiot defectives now classified as undifferentiated may be etiologically explained as probable results of Rh isoimmunization. The incidence of Rh negative mothers of an unselected group of undifferentiated mental defectives was found to be approximately 25 per cent. Among an equal number of mothers of mongolian, diplegic and microcephalic children and others of the sort the incidence of Rh negative blood was in the normally expected range of about 12 per cent. While the total number examined to date (approximately 100) is not enough from which to draw definite conclusions, the results are of sufficient interest to warrant further study.

### Gastroenterology, Baltimore

3 73-140 (Aug.) 1944

- Presidential Address: Postwar Rehabilitation of Digestive Tract Sara M. Jordan—p. 73  
Infective Hepatitis II: Clinical Study of Patients with Hepatitis Not Related to Yellow Fever Vaccination or Infectious Jaundice (Weils Disease) Z. T. Bercovitz and H. R. Knoch—p. 79  
Esophagus: Review of Literature 1942 and 1943 E. B. Benedict—p. 90  
Giardiasis with Unusual Findings P. B. Welch—p. 98  
Visualization of Rubber Tip of Gastroscope: Differentiation from Gastric Ulcer F. R. Whitehouse and J. M. MacMillan—p. 103  
Studies on Ulcerative Colitis and on Some Biologic Effects of Detergents S. A. Fortis, C. L. Block and H. Nichols—p. 106  
Intestinointestinal Inhibitory Reflex W. B. Youmans—p. 114

### Iowa State Medical Society Journal, Des Moines

34 341-386 (Aug.) 1944

- Postwar Planning W. H. Judd—p. 341  
Comments on Rheumatic Heart Disease Y. W. Swanson—p. 351  
Dermatofibromyxosarcoma E. D. McClean and P. F. H. Pugh—p. 352  
Pneumodiagraphy of Knee Joint F. Blonck and J. Wolf—p. 354

34 387-424 (Sept.) 1944

- Developments in Military Neuropsychiatry M. J. Farrell—p. 387  
Primary Atypical Pneumonia: Report of 47 Cases D. W. Chapman—p. 391  
Roentgen Aspect of Atypical or Virus Pneumonia R. W. Bernbard—p. 395

### Journal of Experimental Medicine, New York

80 77-164 (Aug.) 1944

- Peritoneal Absorption: Red Cells Labeled by Radio Iron Hemoglobin Move Promptly from Peritoneal Cavity into Circulation P. F. Hahn, I. L. Miller, Frieda S. Robschtein, Robbins W. F. Byle and G. H. Whipple—p. 77  
Sedimentable Component of Allantoic Fluid and Its Relationship to Influenza Viruses C. A. Knight—p. 83  
Initiating and Promoting Elements in Tumor Production: Analysis of Effects of Tar Benzopyrene and Methylcholanthrene on Rabbit Skin W. F. Friedewald and P. Rous—p. 101  
Determining Influence of Tar Benzopyrene and Methylcholanthrene on Character of Benign Tumors Induced Therewith in Rabbit Skin W. F. Friedewald and P. Rous—p. 127  
Cellulose—Its Usefulness and Toxicity: Blood Protein Production Impaired by Continued Gelatin by Vein Frieda S. Robschtein, Robbins L. L. Miller and G. H. Whipple—p. 145

80 165-256 (Sept.) 1944

- \*Experimental Transmission of Colorado Tick Fever L. Florio, Mabel O. Stewart and E. R. Murgue—p. 165  
Hemittologic Findings in Golden Hamster (*Cricetus auratus*) Mabel O. Stewart, L. Florio and E. R. Murgue—p. 189  
Induced Resistance of Central Nervous System to Experimental Infection with Equine Encephalomyelitis Virus III: Abortive Infection with Western Virus and Subsequent Interference with Action of Heterologous Viruses R. W. Schlesinger, P. K. Olitsky and Isabel M. Morgan—p. 197  
Relationship of New Growth Factor Required by Certain Hemolytic Streptococci to Growth Phenomena in Other Bacteria H. Sprince and D. W. Woolley—p. 213  
Influence of Diet on Production of Tumors of Liver by Butter Yellow E. L. Opie—p. 219  
Pathogenesis of Tumors of Liver Produced by Butter Yellow E. L. Opie—p. 231  
Specificity in Effects on Brain Metabolism of Two Differing Neurotropic Viruses Margaret Nickle and H. Kabat—p. 247

**Experimental Transmission of Colorado Tick Fever**—According to Florio and his associates a number of unknown fevers were encountered in the Rocky Mountain region beginning about 1850 when this part of the country was first being explored and settled. Late in the nineteenth century Rocky Mountain spotted fever emerged from this welter of confusing fevers as a distinct clinical entity. Many physicians soon came to recognize a mild, nonexanthemic disease of short duration which they called tick fever, mountain fever and mountain tick fever. Becker in 1930 first recognized the condition as a separate clinical entity and gave it the name Colorado tick fever. The name is misleading, since it is known to occur in the same Western area as Rocky Mountain spotted fever. Colorado tick fever is a mild nonfatal infection of unknown etiology closely resembling dengue fever except for the absence of a skin eruption. The evidence for transmission of Colorado tick fever by the wood tick *Dermacentor andersoni* is circumstantial. Since several investigators were unsuccessful in transmitting the disease to the common laboratory animals, the authors tried transmission experiments with human volunteers also vector experiments with *Dermacentor andersoni* and transmission to the golden hamster. The symptoms, history of tick bite, characteristic fever curve and white blood cell picture should make possible diagnosis of Colorado tick fever in nearly every case. The typical white blood cell picture is a depression of the total leukocytes, with a shift to the left of the granulocytes. Basophilic cytoplasmic bodies appear occasionally in lymphocytes three to four days after clinical recovery. The disease can be transmitted serially in human beings by parenteral injection of blood or serum. Such transfers have not resulted in decreased or increased virulence. The naturally acquired and experimental cases are identical in their manifestations. An attack of Colo-

rado tick fever confers a degree of immunity to the disease. It is not a mild form of Rocky Mountain spotted fever, since individuals immunized with ground tick vaccine against Rocky Mountain spotted fever are still susceptible to Colorado tick fever. Adult *Dermacentor andersoni* ticks allowed to feed on typical cases and then carried through a new generation and fed on susceptible adults failed to transmit the disease. Colorado tick fever has been successfully transmitted to the golden hamster.

### Journal of Nat. Cancer Inst., Washington, D. C.

51:76 (Aug.) 1944 Partial Index

- Radioactivity and Lung Cancer. Critical Review of Lung Cancer in Miners of Schneeberg and Joachimsthal. E. Lorenz—p. 1.  
Relationship of Amyloid Infiltration and Renal Disease in Mice. Thelma B. Dunn—p. 17.  
Esterase (Butyric Esterase) Activity of Normal and Neoplastic Tissues of Mouse. J. P. Greenstein—p. 31.  
Comparative Oxidase Activity of Melanotic and Amelanotic Melanomas. J. P. Greenstein and G. H. Algire—p. 35.  
Note on Cytine Oxidase Activity in Normal and Neoplastic Tissues of Mouse. J. P. Greenstein and Florence M. Leuthardt—p. 39.  
Effect of Low Lysine Diet on Mammary Tumor Formation in Strain C3H Mice. Florence R. White and J. White—p. 41.  
Chemical Studies on Human Cancer. I. Cytochrome Oxidase, Cytochrome C and Copper in Normal and Neoplastic Tissues. J. P. Greenstein, J. Werne, A. B. Eschenbrenner and Florence M. Leuthardt—p. 55.

### Journal of Urology, Baltimore

52:99-176 (Aug.) 1944

- Nephrolithotomy for Recurrent Branching Calculi. H. Bugbee—p. 99.  
Case Report Illustrating Brief Period of Time Necessary to Formation of Large Staghorn Renal Calculus. A. de la Peña and E. de la Peña—p. 108.  
Renal Malignancy and Prostatic Patient. M. R. Keen—p. 109.  
Aneurysm of Abdominal Aorta Associated with Urinary Symptoms. J. A. Lazarus and M. S. Marks—p. 115.  
Supernumerary Ureter with Extravesical Orifice. Report of 4 Cases. W. W. Scott—p. 126.  
Extensive Glandular Proliferation of Urinary Bladder Resembling Malignant Neoplasm. E. C. Lowry, F. C. Hamm and D. E. Beard—p. 113.  
Effect of Testosterone Propionate on Tonus of Urinary Bladder. S. R. Mueller and J. B. Hamilton—p. 139.  
Actinomycosis of Urinary Bladder Complicating a Case of Madura Foot. W. E. Hatch and A. H. Wells—p. 149.  
Amyloidosis of Urinary Bladder. R. W. Corbitt, A. C. Broders and T. L. Pool—p. 153.  
Analysis of Prostatic Operations Reported by Candidates for Membership in American Urological Association. W. T. Briggs—p. 158.  
Traumatic Avulsion of Skin of Penis and Scrotum. R. B. Roth and K. W. Warren—p. 162.  
Unusual Tumors and Secondary Carcinomas of Penis. Review of Literature and Report of Case. C. A. Wattenberg—p. 169.

### Military Surgeon, Washington, D. C.

95:179-256 (Sept.) 1944

- Advance of Medical Science in War. C. H. Best—p. 179.  
Jungle and Desert Emergencies. J. L. Moore—p. 183.  
Determination of Alcoholic Intoxication in Military Personnel. A. G. Hulett—p. 191.  
How to Obtain Good Results with Brachial Plexus Block Anesthesia. R. B. Phillips—p. 197.  
Fractured Carpal Scaphoid in Industry and in Military Service. M. G. Henry—p. 199.  
Rehabilitation Problems. L. J. Numainville and E. Kohn—p. 205.  
Studies on Tablets for Individual Disinfection of Small Water Supplies for Field Use by Troops. H. B. Webb—p. 209.  
Parietal Pain in Lower Right Abdominal Wall. J. R. Shepler and C. L. Young—p. 216.  
Horner's Syndrome Associated with Goiter. Case Report. C. C. Blackwell—p. 219.  
Diagnostic Tests for Atopic Sensitivity. W. M. Edwards—p. 222.  
Observations in Obstetrics in Army Air Force. I. Siegel—p. 225.  
Splint for Treatment of Fractured Fingers Requiring Traction. G. M. Saypol—p. 226.  
Diagnosis of Minor Back Disabilities. R. V. Fuldner—p. 228.  
Use of Saturated Iodoform-Benzoin Solution to Counteract Odor of Plaster Encased War Wounds. C. M. Silver and H. W. Rusbridge—p. 233.  
Care of Dental Angle Handpieces. W. I. Hammersley—p. 234.  
Sand Sterilization Method for Loeffler's Serum Slants, Egg Media for Mycobacterium Tuberculosis and Protozoa. J. H. Allen—p. 235.

**Parietal Pain in Lower Right Abdominal Wall.**—Shepler and Young define parietal pain as hypersensitivity of the skin, fascia, muscle, or parietal peritoneum of a sufficient degree to cause pain or tenderness. The etiology of parietal neuralgia is basically the same as that of neuralgia of other

nerves. Mechanical conditions may act as predisposing factors for acute exacerbations. Carnett, Bates and Golwartz point out that some form of spinal abnormality causing inflammation or pressure on the spinal nerve root is the most common cause of parietal neuralgia. Structural changes such as scoliosis, lordosis, injuries, diseases and tumors may be considered as possible causes. A high percentage of patients complaining of parietal pain show scoliosis. The scoliosis is frequently accounted for by the fact that the pelvis is not level. Often this can be corrected by simple elevation of the sole and heel of the shoe on the low side. This alone or with exercise of the back muscles will frequently cause improvement. The acute neuralgias are usually secondary to some type of acute upper respiratory infection. Acute infection or endocrine disturbances may be causative factors as well as various toxemias. This is true in a certain percentage of all neuralgias. Pain in the abdominal wall should be considered in the differential diagnosis of visceral disease, especially in the diagnosis of appendicitis.

### New Jersey Medical Society Journal, Trenton

41:329-360 (Sept.) 1944

- Eye Injuries in Industry and Determination of Their Disability. A. R. Sherman—p. 332.  
\*Thiouracil Medication in Hyperthyroidism, Hypertension and Neuroses. E. A. Cannon—p. 339.  
Report of 17 Cases of Posterior Bone Block for Dropfoot Seen and Treated at New Jersey Orthopaedic Hospital. Orange. N. J. from 1933 to 1943. P. C. Wiesenfeld—p. 344.  
Secondary Postoperative Megacolon After Multiple Resections of Large Intestine. A. O. Wilensky—p. 351.

**Thiouracil Medication in Hyperthyroidism, Hypertension and Neuroses.**—Cannon found that 2 cases of hyperthyroidism unassociated with serious arteriosclerosis showed noticeable improvement and disappearance of all symptoms of hyperthyroidism on thiouracil. Another patient had toxic diffuse goiter of many years duration and severe arteriosclerotic heart disease with hypertension. As regards the thyroid condition and the blood pressure, this patient showed great improvement. Two patients with hysteria, hypertension and increased metabolism regained normal basal metabolic rates under thiouracil treatment and there was subjective nervous improvement but no change in blood pressure. One longstanding severe case of hypertension with hysteria showed moderate blood pressure and nervous improvement under thiouracil medication. One patient with moderate hypertension and hysteria of short duration showed good subjective nervous improvement with good blood pressure reduction. Four patients with severe hypertension and arteriosclerosis showed no change in blood pressure under thiouracil medication.

### Pennsylvania Medical Journal, Harrisburg

47:1057-1184 (Aug.) 1944

- Investigation of Transfusion Reactions. O. E. Turner—p. 1071.  
Thiocyanate Therapy in Hypertension. T. M. Durant—p. 1077.  
Role of Gynecologic Lesions in Ureteral Obstruction. J. B. Montgomery—p. 1080.  
Management of Allergic Dermatoses. L. H. Criepp—p. 1084.  
Anilum with Report of Case from Pennsylvania. W. O. Goehring—p. 1089.

47:1185-1312 (Sept.) 1944

- \*Conservative Management of Acute Pancreatitis. T. A. Shallow, S. A. Eger and F. B. Wagner, Jr.—p. 1199.  
\*Masked Hypoglycemia. W. W. Dyer—p. 1210.  
Prostatic Carcinoma. Endocrine, Roentgenologic and Surgical Treatment. H. K. Sangree—p. 1213.  
Glaucoma. Early Signs and Symptoms. G. A. Hunt—p. 1216.

**Conservative Management of Acute Pancreatitis.**—Shallow and his collaborators report 12 cases collected over a two year period (1941-1943) of middle and late life. Recent trends have been more and more toward conservative therapy, especially during the very acute phase of the disease. In the rare fulminating type the mortality is high regardless of therapy, and surgical intervention in these cases may only contribute further to the circulatory shock already present. Such cases should be treated by supportive measures such as Wangenstein suction fluids parenterally, plasma, blood oxygen and in selected cases chemotherapy. If surgery is still necessary, it should then be performed during the less severe phase of the disease.

In pancreatic edema the acute phase usually subsides after several hours of supportive measures. In the edematous type only medical treatment should be instituted and elective surgery on the biliary tract performed at a later date if subsequent studies reveal an underlying pathologic condition in this system.

**Masked Hypoglycemia**—Dyer thinks that there are probably many cases of spontaneous hypoglycemia masquerading as epilepsy, psychoneurosis, neurasthenia, menopausal neurosis and the like. The symptomatology is varied and often bizarre. Patients mildly affected may simply have a feeling of weakness, slight dizziness, perhaps a sense of hunger or some excessive perspiration. Patients more severely affected will often complain of diplopia, headache, occasionally nausea, extreme weakness, ataxia and loss of mental equilibrium. Severely affected patients suddenly become unconscious, have convulsions, break out into cold, clammy perspiration and are revived best by the use of glucose intravenously. The diagnosis in these cases can be established by a sugar tolerance test if care is taken to insist on a normal diet preceding the tolerance test and a five hour examination rather than the conventional three hour test. Important factors in the evaluation of spontaneous hypoglycemia are (1) the level of blood sugar at the time of the reaction, (2) the rapidity of fall of the blood sugar and (3) the previous level of blood sugar. It is just as possible to have hypoglycemic reactions when in the course of one to three hours the blood sugar is brought from a level of 300 to 100 as when the blood sugar is brought from a level of 150 to 50. In addition to the sugar tolerance test the patient must be given a complete medical examination. Many of these patients respond to a low carbohydrate, moderately high fat and high protein diet divided into the three usual meals with interval and bedtime feedings. In the presence of other complicating disease this treatment should be carried out in conjunction with recognized forms of therapy for the attendant disease. One of the author's patients had hypothyroidism and in addition to the prescribed diet was given thyroid. Failure to respond to the dietetic treatment calls for further diagnostic study.

### Rhode Island Medical Journal, Providence

27 373-440 (Aug.) 1944

Contribution of Psychiatry to Democratic Morale E. A. Strecker —p. 383

Psychiatric Problems in Wake of War G. Zilboorg —p. 385

War Against Fear and Hate R. A. Menninger —p. 387

Future of Voluntary Hospital A. Gregg —p. 389

27 441-500 (Sept.) 1944

Virus Infections P. C. Cook —p. 449

Sick Headaches W. C. Alvarez —p. 451

Anesthesia in Tropics E. Damarytin —p. 453

**Sick Headaches**—According to Alvarez migraine causes much disability and suffering but is little understood, poorly diagnosed and poorly treated. These women go to the gastroenterologist because they are nauseated or vomit. Because they vomit bile they think the liver must be affected but it isn't. There is rarely anything organically wrong with the digestive tract, and what the woman needs is not a diet or an operation but rather information on how to live so calmly that her brain will not get so on edge that the little explosion will take place. The cause of migraine is a hereditary peculiarity of the brain. The stomach is upset secondarily, just as in the case of seasickness or in Meniere's syndrome. It is essential that the physician recognize the peculiar temperament because it is helpful in making the diagnosis. These women are tense and quick. They like to get things done fast and done just so. They are perfectionists. Most are hypersensitive to sounds and lights and smells. They fatigue and wilt quickly under any strain or excitement. In the worst and most prostrating cases there is often a combination of migrainous inheritance derived from one ancestor, with a psychopathic inheritance derived from another. The typical attack of migraine begins with a scintillating scotoma which is present for about twenty minutes. This is followed by a throbbing unilateral, usually frontal headache with nausea, utter misery and perhaps vomiting. This attack may last for from hours to several days. There are many atypical forms of the disease. The scintillating scotoma is usually lack-

ing. The headache may be on both sides of the head, it may be nuchal or it may be so mild that the patient does not complain about it. Similarly there may be but little nausea and no vomiting. There may be only abdominal pain with vomiting. In these cases of atypical migraine the essential thing is to recognize a typically migrainous person who falls ill in a typically migrainous way after getting tense or tired or nervously upset. The best way in which to avoid migraine is to live quietly and peacefully and sanely. To relieve attacks the best drug is ergotamine tartrate, or gynergen. It should be given intramuscularly—not orally or intravenously. The best time in which to abort an attack is when it starts. After nausea sets in medicines are not well absorbed from the stomach. They can then be given by rectum.

### Southern Medical Journal, Birmingham, Ala.

37 471-532 (Sept.) 1944

George Colmer and Epidemiology of Polymyositis A. E. Casey and L. E. H. Hadden —p. 471

\*Sarcoidosis Report of Case J. A. Boone and R. R. Coleman —p. 477

Fractures of Femur in Children W. P. Blount, A. A. Schaefer and C. W. Cox —p. 481

Potential Danger of Topical Use of Sulfathiazole Report of 16 Cases of Sensitization to Sulfathiazole F. A. Ellis —p. 493

Penicillin in Surgery W. A. Altmeier —p. 494

Gastroenterology in Large Naval Hospital W. T. Gibb —p. 507

\*Use of Diethylstilbestrol to Control Uterine Bleeding K. J. Karnaky —p. 510

Modification of Gellhorn Pessary To Allow Closer Approach to Normal Vaginal Physiology L. C. Blair —p. 523

Puerperal Sepsis Treated with Penicillin Case Report R. A. White —p. 524

Meningococcal Meningitis Death Following Withdrawal of Spinal Fluid R. Buxton —p. 525

**Sarcoidosis**—Boone and Coleman report the case of a Negro aged 40, whose symptom complex resembled the lupus pernio of Besnier. Aside from the typical lesions of nose, ears, fingers, toes and lymph nodes this patient showed two other features of sarcoidosis: elevated plasma protein and eosinophilia. In view of the tuberculous etiology that has been suspected by some authors the extensive exposure of this patient to an active case of tuberculosis is intriguing. It seems almost impossible that any one who had such intimate and prolonged exposure could have a negative tuberculin reaction but this patient did. And extensive search of the lesions for tubercle bacilli was completely fruitless. Particular attention is called to the painless, rubbery, spindle shaped swellings of the finger bones. These occur in few other diseases especially as multiple lesions.

**Use of Diethylstilbestrol to Control Uterine Bleeding**—Karnaky and his co-workers state that the drug may be administered directly into the anterior wall of the cervix to arrest severe uterine bleeding. For dysfunctional uterine bleeding 5 mg. of diethylstilbestrol is given at 9 o'clock every night for thirty nights. If bleeding starts during the time the patient is taking 5 mg. every night she is to take 5 mg. every fifteen minutes until the bleeding stops, but she is to continue the night tablet. The authors think that there are too many hysterectomies being done because of dysfunctional uterine bleeding with or without myomas. Since they have used diethylstilbestrol uterine bleeding has been a rare indication with them for hysterectomy. Diethylstilbestrol is a nontoxic drug. It can be safely given in large doses for three to six months. Its use obviates the need for many hospital curettements in women or girls below the carcinoma age. Diethylstilbestrol is to uterine bleeding what the sulfonamide drugs are to infections.

### Texas State Journal of Medicine, Fort Worth

40 217-268 (Aug.) 1944

Intensive Arsenotherapy of Early Syphilis A. G. Schoch and L. J. Alexander —p. 224

Clinical Use of Penicillin Report of 115 Cases Treated in Army Hospital C. F. Wollgast —p. 225

Successful Treatment of Diabetes A. Marble —p. 231

Evaluation of Eye Tests Used in Examination of Army Aviators V. A. Byrnes —p. 235

Newer Knowledge of Viruses and Virus Diseases S. E. Sulkin —p. 240

Control of Food Poisoning P. L. Werner —p. 249

Rapid Treatment Center Program of Texas M. S. Dickerson and C. M. Sidell —p. 251

## FOREIGN

An asterisk (\*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

## British Journal of Dermatology and Syphilis, London

56 151-194 (July-Aug.) 1944

Reticular Tissue and Skin A. H. T. Robb-Smith—p. 151

\*Contact Dermatitis in a Morphine Factory S. E. Dore and E. W. P. Thomas—p. 177

\*Occurrence of Morphia Rash in Manufacture of Morphine Salts from Opium C. C. Green—p. 182

**Contact Dermatitis in a Morphine Factory**—Dore and Thomas report 9 cases of dermatitis which occurred in a morphine factory near London between December 1941 and March 1943. There were 7 men out of a total of 16 men employed and 2 women (all of the women employed). The average period between commencing employment and the first symptoms was fourteen and one half weeks. In the evaporation, crystallization and purification of Gregory salt 1 case of dermatitis developed, in the separation of alkaloids and the purification of the separated morphine salt 3 cases developed and in the drying, milling and packing of morphine salts 5 cases. The eruption began in practically all cases as an irritable erythematous dermatitis of the eyelids and surrounding area and was sometimes accompanied by quite severe local edema. The regions next oftenest affected were the nape of the neck and below the chin in women, and the collar area in men. The arms and hands tended to be involved later. In 1 man the scrotum became involved and in another the dermatitis eventually generalized. Otherwise the eruption remained limited to the exposed parts (face, neck, arms and hands). Its clinical appearance varied considerably in different cases: on the face and neck it was generally diffuse and of typical contact type, on the hands it was sometimes cheiropompholyx-like. In 1 case it resembled erythema multiforme. Secondary infection occurred in several cases and in 1 at least lichenification of the skin from scratching. It has not been possible to determine the specific sensitizer. The almost constant first appearance of the rash around the eyelids and the edematous and erythematous type of reaction there seem strong evidence in favor of the irritant being air borne as fine dust or spray. In support of this would be the upper respiratory catarrh which was typical of most cases.

**Morphia Rash and the Manufacture of Morphine Salts**—Green discusses the problem of morphia rash from the manufacturing standpoint. To satisfy the rigid checks required by the Dangerous Drugs Acts and on account of the high cost of raw material extreme precautions are taken to avoid loss through leakage and spilling during manufacture. For these reasons mechanical handling is avoided. The operatives are subjected to a higher degree of exposure to the material by contact than they might be in a more mechanized operation. At the factory with which the author is connected no detailed case records have been kept in the past as the problem of the availability of labor for replacement has never been acute until the present war. Skin and respiratory troubles were ever present during the nineteenth century. It has always been the practice at this factory to place a man who has developed 'rash' on workmen's compensation until recovery when he is transferred elsewhere in the works where there are no dermatitis hazards. It has been found by trial and error during more than a century that immunity is not acquired. Some workers contract the disease very soon after introduction to the opiate process. Others may appear to be immune only to develop the rash after ten to thirty years of work. It is possible for the rash to occur in a mild form, and the worker may continue on the process without serious worsening of his condition but the rash does not clear up. Risks are best controlled by insistence on personal cleanliness, clean workrooms, a clean habit of working and adequate ventilation. Great stress has been laid on a plentiful supply of water for washing. Rubber gloves were introduced wherever practicable in 1937, and protective cream has been provided since 1940. It cannot yet be claimed that there is evidence that the two latter precautions have reduced the incidence. The greatly increased incidence of industrial dermatitis since the war started has been placed on the absence of a built up resistance in new employees.

## British Journal of Ophthalmology, London

28 373-428 (Aug.) 1944

- \*Value of Penicillin in Treatment of Superficial Infections of Eyes and Lid Margins T. Crawford and E. F. King—p. 373  
Incidence of Eye Disease in Australian Imperial Forces Middle East I. B. Hamilton—p. 383  
Ocular Neurosis A. M. G. Campbell and A. G. Cross—p. 394  
Operations in 100 Cases of Convergent Concomitant Squint S. H. Faulkner, E. Scully and E. E. Carter—p. 403  
Simplified External Dacryocystorhinostomy I. L. D. Williams and B. G. Hill—p. 407  
Case of Corpora Nigra with Anterior Synechia R. Crawford—p. 410  
Unilateral Membranous Conjunctivitis with Complete Cast J. F. Galpin and Dorothy R. Campbell—p. 412

**Penicillin in Superficial Infections of Eyes and Lid Margins**—Crawford and King treated four groups of patients. The first group had severe conjunctivitis with injection and discharge but without secondary involvement of the cornea. The second group had additional secondary corneal infiltrations either superficial and diffuse or marginal. The third group had conjunctivitis with a single large secondary corneal ulcer of infiltration. The clinical picture was here dominated by the localized corneal infection. The fourth group had blepharitis chronic in type and severe in character. The sodium salt of penicillin was supplied in sterile tablets of 7500 units each. From these tablets drops and an ointment were made which contained 250 units per gram. Drops were used in group 1 as in these cases the discharge tended to be profuse. In groups 2, 3 and 4 ointment was used. About one half of the patients complained of smarting pain for some ten to twenty minutes after instillation of the drops or ointment but no case of damage to the corneal epithelium was noted. As a routine the penicillin was instilled for seven days after the bacteriologic cultures from the conjunctival sac had become negative. If by this time the eye had not made a full clinical recovery the treatment was continued for a further seven days. Conjunctival swabs were examined before commencement of treatment daily during treatment until repeated negative results were obtained seven days after cessation of treatment and at various later dates. Twenty-eight cases were treated and it was found that for superficial infections of the conjunctiva, cornea and lid margins penicillin far exceeds any therapeutic agent heretofore employed. It is highly effective in stubborn cases which prove resistant to the usual methods of treatment. From the bacteriologic point of view penicillin as employed in this investigation eradicates sensitive organisms from the conjunctiva in a few days. It cannot, however, prevent reinfection after the cessation of treatment and there was no evidence that therapy with penicillin established immunity to recurrent infection. In the cases which showed bacteriologic relapse the organisms causing the relapse were as sensitive to penicillin as were those causing the original infection.

## British Journal of Radiology, London

17 197-228 (July) 1944

- Diverticulitis and Diverticulosis N. P. Henderson—p. 197  
Consideration of Dose Distributions in Treatment of Intrinsic Carcinoma of Larynx by Radium Implantation J. Morton, L. H. Gray and G. J. Neary—p. 204  
Tomography of Temporomandibular Joint and Ramus of Mandible C. W. C. Gough—p. 213  
German Radiotherapy in 1942-1943 H. C. Simchowicz—p. 216  
Observations on Radiolucency as Significant Physical Property of Acrylic Dental Materials G. L. Roberts—p. 218  
Review of Scandinavian Literature on Gastrointestinal Diseases 1939-1943 E. Samuel—p. 221

17 229-260 (Aug.) 1944

- Team Work in Treatment of Cancer H. S. Souttar—p. 229  
Volume Localization of Deep Seated Tumors by Means of Tomography E. M. Ungar, G. Spiegel and D. W. Smithers—p. 235  
Radiographic Abnormalities of Stomach and Colon in Mental Defectives W. E. Snell—p. 239  
Future of Radiology in Obstetrics J. B. Hartley—p. 241  
Some Observations on Dental Changes in Possible Riboflavin Deficiency I. A. Ross—p. 247  
Calculation of Dosage Rate in Rectangular Field F. Bush—p. 248  
Radiologic Observations and Description of Cardiac Pouch in Carcinoma of Cardiac End of Stomach A. Elkeles—p. 251  
Further Notes on Structure and Function of Interventricular Diaphragm G. Doel—p. 255  
Stress Fracture of Bone D. R. Bertram—p. 257  
Precise Pelvimetry W. H. Hastings—p. 259



**Schweizerische medizinische Wochenschrift, Basel****73 1245-1268 (Oct 9) 1943 Partial Index**

- Foundations and Results of Immunization Against Diphtheria A Hottinger —p 1245  
 Irradiation of Angiomas G Miescher —p 1247  
 Serial Roentgen Examinations Critical Remarks and Casuistic Contributions H H Weber —p 1252  
 Toxic Polyneuritis Caused by Allyl Isopropyl Acetyl Carbamide (Sedormid) H Wespi —p 1257

**73 1269-1292 (Oct 16) 1943 Partial Index**

- The Basis for and the Results of Immunization Against Diphtheria A Hottinger —p 1269  
 Reaction of Digital Arteries to Temperature and Vasodilators L Dalla Torre —p 1274  
 \*N-Dimethylacetyl Sulfanilamide in Pneumonia A Thurnherr —p 1277  
 Alcohol as Disinfectant G Sobernheim —p 1280

**N-Dimethylacetyl Sulfanilamide in Pneumonia**—Thurnherr finds that the secondary effects of n-dimethylacetyl sulfanilamide are comparatively mild and harmless. He has used n-dimethylacetyl sulfanilamide in 66 cases of which 15 were pneumonia. Mild forms of cyanosis were rather frequent, but they were not dependent on the dose. The only really serious secondary effect is the appearance of Heinz bodies, particularly if they appear in numbers of over 200 per thousand. Small numbers of Heinz bodies were detected in 68 per cent of the author's cases but numbers in excess of 100 per thousand were never encountered. The author also observed repeatedly a decrease in the hemoglobin content, but it averaged only 4 per cent and never exceeded 15 per cent. A high blood concentration should be established as soon as possible. To effect this he administers the n-dimethylacetyl sulfanilamide during the first twenty-four hours intravenously, intramuscularly and by mouth. After that the dosage is continued by mouth. Medication must be continued for several days after the temperature has subsided.

**Deutsche medizinische Wochenschrift, Leipzig****69 193-216 (March 5) 1943 Partial Index**

- Dynamics of Heart W Weitz —p 193  
 Case of So-Called Reticulosis E F von Huebner and R Velasco —p 199  
 Undesirable and Unusually Intensified Untoward Reactions on Administration of Cobra Venom to Relieve Pains from Cancer O Gessner —p 203  
 Experiences Gained from Administration of Agnus Castus Oligoplex for Producing Increase in Lactation Margot Noack —p 204  
 \*Etiology of Spontaneous Hypoglycemia J Ufer —p 206

**Etiology of Spontaneous Hypoglycemia**—Ufer reports a case of severe spontaneous hypoglycemia. During the last few months prior to admission to the hospital the patient, a woman aged 19, had suffered from fatigability, while her weight increased by 15 pounds (7 Kg). Menstruation had occurred regularly every twenty-eight to thirty days for the last two years. Within the first three days after admission the patient had three attacks of hypoglycemia with loss of consciousness. The blood sugar was reduced to 20 mg per hundred cubic centimeters. She regained consciousness immediately after administration of 20 cc of 40 per cent glucose. She was given small amounts of a diet rich in carbohydrates every two hours during the following days and nights. The attacks became less frequent, but the blood sugar values varied from 50 to 110 mg per hundred cubic centimeters. Her condition was still unchanged six months after admission to the hospital. A gynecologic examination revealed an enlarged uterus of irregular knotty consistency. Laparotomy disclosed a smooth tumor of the uterus the size of a fist. This was removed and was proved to be a myosarcoma. Following the operation the patient's general condition and the hypoglycemia were completely controlled. Repeated examinations for the next three and one-half years revealed normal blood sugar values. The increase in body weight and the relatively small size of the tumor opposed the concept that the tumor may have had a specific metabolism drawing enormous amounts of sugar from the blood. It is suggested that an increased hormonal activity of the tumor was responsible for the autoproduct of insulin or of an insulin-like substance which stimulated the secretion of the islands of Langerhans with resulting hypoglycemia.

Observations of minor importance should be carefully investigated in cases of hypoglycemia with uncertain etiology, and tumors should be removed even in the presence of a severe hypoglycemia.

**Psychiatrisch-Neurologische Wochenschrift, Halle****45 137-148 (May 22) 1943**

- Report of 2 Cases of Cerebral Infantile Paralysis with Suggestion of New Term for This Syndrome F Lucksch —p 137  
 \*Methods for Combating Complications of Insulin Shock and Electric Shock Therapy E Bauer —p 140  
 Treatment of Unconscious Psyche by Suggestion J Haupt —p 142  
 Otto III Psychiatric Study W H Becker —p 143

**Combating Complications of Insulin Shock and Electric Shock Therapy**—Bauer states that complications of insulin shock treatment for psychoses are frequent, since shock may be protracted or prolonged and that in spite of repeated glucose feeding with the stomach tube. An alarming condition results because of the increased lability of the carbohydrate metabolism and the occurrence of bronchopneumonia or aspiration pneumonia favored by prolonged unconsciousness. The following treatment was effective. Blood sugar levels were determined within half an hour after the unsuccessful feeding with a stomach tube. Combined intravenous administration of glucose of d-desoxyephedrine and of vitamins B<sub>1</sub> and C was practiced in cases with increased blood sugar levels. Cardiac stimulants are given when circulatory disturbances are predominant. Prophylactic treatment for prolonged insulin shock with d-desoxyephedrine and glucose feeding with a stomach tube was practiced with good results in cases in which a prolonged insulin shock was experienced in a previous course of insulin shock treatment. D-desoxyephedrine administration is not contraindicated in patients of advanced age, since the rise in blood pressure due to the drug is slow. Rapid awakening prevents lung complications. Respiration is improved and the blood sugar level is not affected. It is safe to use d-desoxyephedrine in cases in which the blood sugar level is lowered as well as in those with an increased blood sugar level. Oral administration of two tablets of d-desoxyephedrine previous to combined insulin shock and electric shock treatment prevented vomiting, headache, fatigue and weakness after the treatment. The same good results were obtained from an injection of 1 cc of d-desoxyephedrine immediately after the electric shock treatment. Addiction to the drug is prevented by the administration of small doses given to patients who are unaware of its administration.

**Wiener medizinische Wochenschrift, Vienna****93 523-548 (Sept 25) 1943 Partial Index**

- \*Problem of Nephritis with Special Reference to War Nephritis W Pilgerstorfer —p 523  
 Clinical Experiences with Chemotherapy of Gonorrhea W Volavsek —p 533  
 Importance of Quantitative and Qualitative Examination of Semen in Diagnosis of Sterility K Pali —p 535

**War Nephritis**—Pilgerstorfer's experience during the winter campaign in Russia proved that the occurrence of war nephritis depends on a severe and prolonged exposure of the trunk to cold. The term "traumatic cold" is suggested to contrast common mild colds with severe colds which play a decisive part in the etiology of war nephritis different from that of "common" nephritis following acute tonsillitis. According to Eppinger's concept, war nephritis may be considered as a serous inflammation rather than a severe toxic infection. It may be due to pathologic permeability of the capillaries, which may be responsible for extravasation of plasma through the capillary walls into the interstitial tissues and for the effusion in the serous cavities of the body. Vollhard's concept of vasoconstriction due to severe cold should not be considered to be opposed to Eppinger's theory, since the susceptibility of the organism to serous inflammation may be due to the primary vascular spasm. Reports from the literature are quoted which prove that the term war nephritis is not fully appropriate since the same clinical picture with the predominant symptom of severe edema and with the occasional absence of kidney involvement may occur in civil life as well. A new term "cold dropsy" is therefore suggested.



## Book Notices

**Medical Education in the United States Before the Civil War** By William Frederick Norwood Associate Professor of the History of Medicine and Associate Dean in the School of Medicine College of Medical Evangelists Los Angeles Foreword by Henry E Sigerist Cloth Price \$6 Pp 487 Philadelphia University of Pennsylvania Press London Oxford University Press 1944

Here is a true historical survey of medical education as it was in the United States before the Civil War. It is in no sense of the word a story of early American achievement but rather a well documented account of what happened in the pioneer period. The approach to the subject is geographic, the medical schools of each section being given consideration individually. The final section of the book is entitled "Evolution of the American System of Medical Education." This too concerns only the early period. The account emphasizes the evils done by proprietorship in medical education and the early tendency toward recognizing the necessity for university affiliation. It is fine to have a historian conclude this approach with the following paragraph:

The most significant event in the latter part of the period was the establishment of the American Medical Association in 1847. Conceived by its founders as an instrument of reform the Association charted a course for the elevation of medical education. Although the immediate response was limited the movement so instituted eventually gathered sufficient inspiration and momentum to bring about several decades later a fulfillment of the idealism conceived by its founders.

**Health Instruction Yearbook 1944** Compiled by Oliver E. Byrd Ed D. Associate Professor of Hygiene and Director Division of Health Education School of Health Stanford University Foreword by C. Morley Sellery MD President American School Health Association Cloth Price \$3 Pp 354 Stanford University California Stanford University Press London Oxford University Press 1944

This second Health Instruction Yearbook follows the same lines as its predecessor. The two books are announced as the beginning of a continuing project by which it is hoped to gather between two covers each year the most important public health events for that year. The second edition as might be expected, shows a better selection and gives a more comprehensive picture than did the first edition. Confusion still exists, as pointed out by this reviewer in his review of the 1943 Yearbook a year ago, in the dating of these yearbooks. The 1943 Yearbook was to all intents and purposes a 1942 summary, since it appeared before the end of 1943 and was, in fact, received for review on October 29 of that year. The 1944 edition was received late in September. Allowing necessary time for compilation and manufacture, the so-called 1944 Yearbook can hardly cover more than a half of the current year. In fact, the latest reference in the bibliography is July 1944. This in no sense of the word makes it a 1944 yearbook. This is a defect which will always be confusing and which will be more difficult to correct as subsequent editions increase the number of erroneously dated books.

The idea of such a reference book is valuable. It is being edited with good judgment. Already the two volumes constitute valuable reference books. It is too bad if the editor and the publishers persist in illogical dating when it has twice been called to their attention.

**Case Studies in the Psychopathology of Crime. A Reference Source for Research in Criminal Material** By Ben Karpman MD Senior Medical Officer and Psychotherapist St. Elizabeths Hospital Washington D C Volume Two Cases 69 Fabricoid Price \$16 Pp 738 Washington D C Medical Science Press 1944

This is the second volume in the series of "Case Studies in the Psychopathology of Crime" developed by Dr. Ben Karpman from St. Elizabeths Hospital in Washington. Here are pictures of juvenile delinquents who became criminals. The volume deals with the psychologic aspects of social maladjustment. Four cases are carefully analyzed. One a habitual criminal, last confined for robbery of the mails but whose life included sex crimes, drug addiction and many periods in prison. The second was a "white slaver" who forced his wife into prostitution. The third a man twice faced with punishment in the electric chair for rape of minors, and the last, a desperado who robbed mail trains and escaped three times after convictions. The analysis of these cases leads to much important knowledge for the prevention of crime.

**Facio Maxillary Injuries** By Kenneth W. Starr OBF MB MS Lieutenant Colonel AACMC and A. J. Arnott BDS DDSc F.A.C.D. Major AADC No 1 Plastic Unit attached 113th Aust. Gen. Hosp. [Reprinted from The Dental Journal of Australia November 1943-March 1944.] Fabricoid Pp 68 with 80 illustrations Glebe Sydney

This book comprises a joint report of the authors to the Australian Dental Association on a cross section of some 500 cases admitted to their service as a plastic unit attached to the 113th Australian General Hospital. It is reprinted from five issues of the *Dental Journal of Australia* appearing during 1943-1944. The authors stress the fact that results in the difficult problems of facio-maxillary work may only be obtained by a highly specialized team working in unity and discharging complementary functions' and that no single individual can hope to obtain the results which accrue from the management of these cases by a specialized organization. This is an obvious fact to the experienced plastic surgeon and is completely substantiated by case illustrations. The text is clear and concise and is presented in a somewhat telegraphic style. It is profusely illustrated with excellent photographs and drawings. Fifty-three of the sixty-nine pages are devoted to reconstructive surgery and the remainder to x-ray technic, anesthesia and relevant statistics.

The plastic section is divided into three parts dealing with fractures of the mandible, fractures of other facial bones and miscellaneous conditions. These sections present methods of management which have been frequently described and generally practiced, with a few notable exceptions. The authors' application of Mowlem's chip bone graft technic to ununited fractures, to large bone losses following the removal of tumors and cysts and, particularly to losses of the mandible is a distinct contribution. The chipped cancellous bone, in the latter case has been implanted with repeated success at the time of repair of the soft lining and covering tissues. The several advantages of this conception of replacement and its technical application are immediately apparent. The third section dealing with miscellaneous problems, presents some interesting and helpful ideas in the management of injuries to the eye socket.

One cannot agree with the authors' attitude toward the management of section or trauma to the facial nerve resulting in loss of function. "A long period of months" should not elapse before deciding on direct suture grafting or neuroanastomosis in any case in which the reaction of degeneration is complete and a sufficient portion of the distal end of the nerve remains for repair. The art of plastic surgery is largely an individual matter. This small manual contributes definitely to the development of this art.

**Civilization and Disease** By Henry E. Sigerist MD D Litt LL D William H. Welch Professor of the History of Medicine in the Johns Hopkins University Baltimore Cloth Price \$3.75 Pp 205 with 52 illustrations Ithaca New York Cornell University Press 1943

This book is based on a series of six lectures delivered by its author at Cornell University in November and December 1940. It is essentially an introduction to social medicine beginning with civilization as a factor in the genesis of disease, tracing the various technics by which society has fought disease and concluding with chapters on disease in literature, art and music. Dr. Sigerist's approach to the accomplishments of medicine is one which constantly urges more and more improvement. "We must never say that health conditions are good," he says, "but must rather ask ourselves constantly whether they are as good as they could be." He points out that every society still carries an enormous burden of unnecessary illness. He recognizes that poverty remains the chief cause of disease and that it is a factor which is beyond the immediate control of medicine. He urges finally, a system of health services that reaches everybody, healthy and sick, rich and poor. "We must break down the artificial barriers between preventive and curative medicine," he says. Medicine, he feels, should be considered a social science and merely as one link in a chain of social welfare institutions that every civilized country must develop. He feels that the civilized society of tomorrow will have for every family a family doctor and also a family health center. "The physician will become a public servant—scientist, social worker and educator—and medicine will increasingly shift the emphasis from disease to health."

## Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

### FALLING HAIR

*To the Editor*—What are the possible causes of falling hair in women in the early forties aside from syphilis? Could hypodermic administration of vitamin B<sub>1</sub> for the treatment of neuritis cause this? M. D. Missouri

**ANSWER**—The causes of the commoner forms of diffuse alopecia affecting large portions of the scalp are toxic alopecia, hereditary alopecia and seborrheic conditions. Toxic alopecia, defluvium capillorum may follow the ingestion or injection of thallium acetate, the hair loss appearing in from nine to fourteen days. It may occur secondary to pregnancy or to febrile disease such as typhoid, scarlatina and influenza, the loss of hair beginning only a month or more after the termination of the cause. Hereditary alopecia is nearly always combined with seborrheic conditions, so that a differential diagnosis is difficult in cases in which alopecia is known to be familial.

The toxic effects of thiamine hydrochloride have been reviewed by Eisenstadt (Hypersensitivity to Thiamine Hydrochloride *Minnesota Med* 25:861 [Nov.] 1942) and by Leitner (Untoward Effects of Vitamin B<sub>1</sub>; *Lancet* 2:474 [Oct. 16] 1943). Except for 3 cases of herpes zoster reported by Sternberg in 1938, all have been allergic effects. Reports of alopecia due to thiamine have not been found.

### FOUNDRY WORK DOES NOT AFFECT EYES

*To the Editor*—What effect does the pouring of hot iron or any hot metal in a foundry have on the eyes over a period of years? Is there any time limit that one should stay on such a job?

Stephen Fairbanks M.D. Albion Mich

**ANSWER**—There is no effect on the eyes from the heat of pouring hot iron or any hot metal in a foundry, even over a period of years. Foundry work is intermittent through the day, and in a recent court case in Chicago in which the amounts of infra-red and ultraviolet light were actually measured in a foundry they were found to be so infinitesimal and of such short duration that no pathologic effect could be attributed to them at all. The only clearcut pathologic effect on human beings that has ever been reported is that of glass blowers' cataract on the continent. Such injuries have never been reported in this country and in Europe they implied constant exposure through long hours daily over a matter of eighteen to twenty years. There is no comparable industrial operation to this in this country and no risk is taken by an employee working with hot metal in a foundry.

### RICKETS OF YOUNG CHILD AND CORRECTIVE SURGERY

*To the Editor*—A girl aged 18 months is suffering from moderate rickets. A few months ago a diagnosis of rickets was made elsewhere and therapy was started with doses of vitamin D only twice the minimum daily requirement. X-ray examination shows that the rickets has improved but not healed. She has now all the characteristics of active rickets of considerable duration. The chief complaint of the parents relates to the fact that the child is considerably bow-legged. It is obvious that the child will need much larger doses of vitamin D to arrest her rickets. Adequate therapy has been started. The parents have been seeking advice from several physicians regarding the best care of the deformity of the child's legs and they have received as many opinions as they have consulted physicians. An orthopedic surgeon suggested surgical intervention, a second orthopedic specialist advised the application of casts, a third physician, a pediatrician felt that both surgery and application of casts would be unsatisfactory and felt that nothing could be done to correct the condition. I should appreciate advice. Would complete control of the active rickets in a child of 18 months result in the straightening of the legs to the point where a satisfactory cosmetic result may be obtained? M. D. California

**ANSWER**—Orthopedic surgeons would undoubtedly not all agree with regard to the treatment of bowing of the legs of a child 18 months of age. Orthopedic treatment planned for correction of this deformity should not be undertaken until the rickets is definitely healed. Plaster casts are not advised. Correction by means of plaster casts can rarely be achieved. While wearing the casts all muscular activity is greatly retarded in the extremities and atrophy of bones, muscles and other tissues,

which have already been seriously affected by the nutritional deficiency will be greatly accelerated. The pediatrician referred to in the query was perhaps unnecessarily pessimistic. Bowing of the legs can definitely be corrected by a surgeon who is adequately trained in orthopedic principles. When the rickets has been definitely arrested and bone density is again approximately normal, bilateral osteotomies at a level which would have to be determined by study of the individual patient will make it possible to restore alignment even though the bowing may be severe. In addition to the improvement obtained by surgery, some spontaneous correction may be anticipated through the growth of the child after the rickets has healed.

### VARIATIONS IN RESPONSE TO SEROLOGIC TESTS FOR SYPHILIS

*To the Editor*—In December 1942 a patient had a spontaneous abortion at two and a half months. Her blood Wassermann and Kahn reactions were negative. When her mother six months later was diagnosed as having dementia paralytica, the patient again had a negative blood Wassermann reaction and her spinal fluid Wassermann reaction also was negative. She became pregnant in June 1943 and had a negative blood Wassermann reaction. Blood was taken from the cord at delivery and was negative. Her husband was drafted and was not sent to a syphilis treatment center. In July 1944 she appeared asking for another blood test. The laboratory reported a doubtful positive Wassermann reaction so more blood was taken and sent to several laboratories. The results were first test Kolmer 1 plus, Eagle 3 plus, Hinton 4 plus, second test Kahn negative, Wassermann negative, third test Wassermann negative, Kline exclusion and Kline diagnostic each 4 plus, and the fourth test Wassermann doubtful 1 plus, Eagle 3 plus, Hinton 4 plus, and Kahn 2 plus. Does this patient have syphilis? If not, what do these various reports mean? If she does, should or should she not be treated? M. D. Ohio

**ANSWER**—No conclusion whatever can be drawn from these serologic results other than that the patient has a small quantity of reagin or reagin-like substance in her blood. The evidence presented all suggests that the patient did not have syphilis prior to July 1944. It is perhaps important to know why the patient wanted her blood retested at that time. Did she think she had been exposed to syphilis meanwhile?

Has she recently had any of the common conditions known to produce biologic false positive serologic tests? A method of study of such cases as this is outlined in Moore, J. E., Eagle, Harry and Mohr, C. F., *Biologic False Positive Serologic Tests for Syphilis*, THE JOURNAL, Nov. 9, 1940, page 1602.

Certainly on the basis of this evidence a diagnosis of syphilis cannot be made and treatment should not now be administered. Prolonged serologic follow-up by a quantitative technique is indicated.

### WOOD DUSTS

*To the Editor*—Are there any industrial diseases from inhaling fine wood dust? If so, is there any mask or filter that may be worn over the nose or mouth?

L. Edward Giovine M.D. Woodside N.Y.

**ANSWER**—It is doubtful whether significant quantities of wood dust can be inhaled into the depths of the lungs because the particle size is too great and because being easily wetted they are retained in the nose and throat. However, certain kinds of wood dust are highly irritating to the skin and upper respiratory tract and some persons may become sensitized so that they react violently to contact with such dusts.

The U. S. Bureau of Mines approves respirators for various kinds of atmospheric contaminants. Among those listed for protection against wood dusts are the Mine Safety Appliance Company's Comfo Respirator number 8393, Willson Respirators numbers 300, 400 and 400F and Pulmorsan Respirator number M-15. For more specific information the Bureau of Mines in Washington should be consulted.

### GLYCERIN IN OPHTHALMOLOGY

*To the Editor*—In the Grand Rapids Herald I noticed that Dr. H. N. Bundesen in his health column advises that a solution of tincture of iodine in glycerin be used in the eye in some cases following removal of a foreign body. Is the use of glycerin in the eye generally accepted as a sound procedure? My own opinion has been otherwise.

H. V. Hendricks M.D. Kalkaska Mich

**ANSWER**—The use of glycerin in ophthalmology had quite a vogue among the ophthalmologists of the preceding generation but today glycerin is scarcely ever used. Iodides in glycerin have been advocated by Weeks to retard the progress of neoplastic cataract. Harmon used 15 per cent glycerin as a solvent to prevent excessive burning when 1 per cent silver nitrate was applied to the conjunctiva. But as a routine measure glycerin is no longer in use in ophthalmology except as a solvent in McNally's formula for use in tear gas burns.

# The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL 126, No 13

CHICAGO, ILLINOIS  
COPYRIGHT 1944 BY AMERICAN MEDICAL ASSOCIATION

NOVEMBER 25, 1944

## A SUBACUTE GENERALIZED NEUROMUSCULAR EXHAUSTION SYNDROME

CHAIRMAN'S ADDRESS

J M NIELSEN, MD  
LOS ANGELES

A syndrome of extreme weakness with muscular atrophy and fascicular twitching as the direct result of overwork forms the subject of this communication. In view of the extreme stresses to which men are subjected in war it seems impossible that the syndrome here described can be new in the literature, but no record of any case prior to the one reported in 1940 has been found.

Muscular atrophy with fascicular twitching occurs under many conditions. It is the most prominent sign of progressive spinal muscular atrophy, but, as Oppenheim<sup>1</sup> warned over thirty years ago, it is not pathognomonic of that disease. He stated that fibrillation could occur in normal persons "after excesses." Russell Bram<sup>2</sup> lists in addition to the progressive spinal muscular atrophies of adults and of children such entities as the Charcot-Tooth-Marie disease and progressive hypertrophic neuritis as conditions in which atrophy and fibrillation occur. In focal areas the syndrome is commonly seen as the result of irritation of the motor spinal roots by neoplasm or exostoses.

Bram and Turnbull<sup>3</sup> have given special attention to atrophy and fasciculation as symptoms of thyrotoxicosis. They consider the weakness of the muscles in exophthalmic ophthalmoplegia a result of the thyrotropic hormone of the anterior pituitary gland. McEachern and Ross<sup>4</sup> collected 10 cases of generalized muscular atrophy and fasciculation due to thyrotoxicosis and added a few of their own. In that condition the girdles are more involved than are the small muscles of the hands. By far the most striking fact about such cases, however, is that recovery follows thyroidectomy.

It is common knowledge that an arm may show extreme weakness and fascicular twitching as the result of overwork with such tools as compressed air drills or hammers in a person unaccustomed to such work. I do not refer to compression neuritis of the small nerves of the palm but to atrophy of the muscles of the forearm and even of the arm from strain and vibration.

Massen and Buttner<sup>5</sup> have observed muscular atrophy in the arm with small foci of degeneration in the cervical cord from work with a compressed air hammer. Whether the spinal cord changes are primary, secondary or coincidental is difficult to determine. The authors ascribe them to the vibration, which affects not only the arms but the entire spine and therefore the spinal cord.

In a thorough analysis of the subject of fibrillation and fasciculation, Denny-Brown and Pennybacker<sup>6</sup> have shown the anatomic differences between fibrillation and fasciculation. Using concurrent mechanical and electrical recording they verified an old observation that true fibrillation follows complete denervation and appears five days after nerve section in the human subject. They observed true fibrillation after poliomyelitis and polyn neuritis and in a case of syringomyelia. Fibrillae are supplied by single nerve fibers and hence are "nerve units," while fasciculi are supplied by many fibers and are not units in the same sense but on the other hand they are supplied by a single vessel and are "vascular units." Fascicular twitchings may thus result from toxins circulating in the blood.

The same authors consider idiomuscular contractions probably the result of stimulation of the sarcoplasm rather than of the sarcolemma (which receives the nerve impulse). In circumstances of fatigue or excessive loss of sodium chloride involuntary muscular contractions appear. "Those due to fatigue are small bursts of contraction in a fasciculus and are of a type such as would be caused by irregular discharge spreading to and through all the nerve bundles in the fasciculus." The involuntary contractions of myokymia associated with hyperhidrosis are of a similar nature.

The cases which form the clinical material of the present paper are instances of widespread muscular atrophy with fascicular twitching resulting from exhaustion. Clinical examination of a patient at the height of the disease, in the absence of history, would lead the examiner to suspect progressive spinal muscular atrophy. But with an adequate history one can soon determine that an entirely different syndrome is at hand. The onset is sudden, the recovery slow and usually incomplete but the prognosis as to life is good.

Four cases are included in this report. The first is quoted with minor editorial corrections from an article of mine<sup>7</sup> published in 1940. The second and third are new ones and the fourth is abstracted from a paper by Marsh<sup>8</sup>.

Read before the Section on Nervous and Mental Diseases at the Ninety-Fourth Annual Session of the American Medical Association, Chicago, June 14, 1944.

1 Oppenheim H. Lehrbuch der Nervenkrankheiten. Berlin: S. Karger, 1913; p. 307.

2 Bram W R. Diseases of the Nervous System. London: Oxford University Press, 1933.

3 Bram W R and Turnbull H M. Exophthalmic Ophthalmoplegia. Quart J Med 7: 293, 1938.

4 McEachern D and Ross W D. Chronic Thyrotoxic Myopathy. Brain 65: 181, 1942.

5 Massen R and Buttner H E. Halsmarkdegeneration mit sekundärer Muskelatrophie durch Arbeit am Presslufthammer. Arch f Gewerbepath u Gewerbehyg 10: 19 (April) 1940.

6 Denny Brown D and Pennybacker J B. Fibrillation and Fasciculation in Voluntary Muscle. Brain 61: 311, 1938.

7 Nielsen J M. Subacute Generalized Neuromuscular Exhaustion Syndrome. Bull Los Angeles Neurol Soc 5: 128 (June) 1940.

8 Marsh C. Subacute Generalized Neuromuscular Exhaustion Syndrome. Bull Los Angeles Neurol Soc 8: 65 (June) 1943.

## REPORT OF CASES

*CASE 1—Severe overexertion followed by extreme muscular asthenia and atony, loss of body weight and generalized tenderness. Only partial recovery in a year.*

G. D. H., a blond business executive aged 42, was referred by Dr. G. H. Beck of Glendale, Calif., because of severe asthma still persisting seven weeks after acute overexertion. The patient was an only child of healthy parents still living and well. In the personal history there was record of measles, mumps, pertussis, chickenpox, tonsillitis, and one accident at the age of 23 years in which he sustained fracture of an ankle.

The patient was an almost complete extrovert. He held a political position but had a reputation for highly efficient management and great accomplishment. His spare time was devoted entirely to lodge organization and he held not only local but district offices, so that his evenings were taken almost exclusively with meetings which he usually addressed with stimulating talks. He was considered not only by himself but by his associates as indefatigable; he usually retired some time between midnight and 2 a. m. To all this his wife did not object; she regarded it as her job to be collaborator in helping her husband "reach the top," and consequently there was no associated emotional strain.

His policy was to take part in every phase of social life, to drink a little when necessary, never to excess, and to eat at odd hours with casual acquaintances, all of which gave him a very irregular life so far as rest and nutrition were concerned. He obtained from five to seven hours of sleep a night, never having required more to feel rested in the morning.

He considered himself entirely well up to Sept. 4, 1938, when he attended a lodge picnic. He acted as catcher for his baseball team organized at the site, through the first five innings. He remarked, "And when I say I played, I mean I played." He seemed to have unbounded energy until the end of his period as catcher, but in the sixth inning he could hardly support himself in a squatting position and, "for a change," he took the job of pitching through the sixth and seventh innings. By that time he simply could not stand and was forced to admit physical defeat. He sat down for nearly an hour too exhausted to take a bath. He then changed clothes, drove home, took a hot and cold shower (energizing after exhaustion) and fell into a sleep.

Awakened by his wife he ate a little supper and retired for the night. But he could not sleep; instead he rolled and tossed incessantly. In the morning he arose at 6 expecting to be sore and stiff all over. To his surprise he was not stiff at all but he was "practically paralyzed." His muscles were exquisitely tender so that it was painful to lie or sit. Still he did not consider the condition serious and went to his office where he found it possible to sit in his chair and write.

The second night was as bad as the first, and the second day found him "sore in every joint in the body." The pain increased, and during the third night he slept only three hours. On the third day he was unable to tie his shoelaces and could not hold up his arms long enough to tie his necktie. After his wife had dressed him he could not cross one knee over the other. On a scheduled business trip he found it impossible for the first time in his life to drive his car but went with a driver and drove part of the way.

On his return his nights continued very bad. When he could not sleep he got up and paced the floor in a frenzied restlessness. He then consulted Dr. Beck, who gave him salicylates for his pain and vitamin B<sub>1</sub> and ordered continued rest. He obtained considerable relief from pain but immediately tried to do more work. He lost 15 pounds (6.8 Kg.) in spite of a good appetite and in the seventh week developed a series of fever blisters on his buttocks. These disappeared spontaneously.

When I examined him on October 26 he appeared pale and thin. His entire demeanor was that of a person utterly exhausted. He spoke slowly and without force. He sank into a chair as though hardly able to stand. His body weight was 147 pounds (67 Kg.) normal for him 165 pounds (75 Kg.)

His blood pressure was 112 systolic and 80 diastolic, the pulse rate 80 per minute. His arteries were palpable but not sclerosed. The heart, lungs and abdominal viscera were normal. The temperature was 98 F.

His musculature was as flabby as that seen in acute anterior poliomyelitis during the stage of paralysis, but the atony was generalized. The muscles were too tender to make determination of nerve trunk tenderness definite. Fibrillary and coarse fascicular twitchings were noted only in the right serratus anterior muscle. The infraspinatus muscles were concave instead of convex but no specific atrophy could be discovered. In spite of all this the deep and superficial reflexes were entirely normal. Pathologic reflexes were not found. There were no sensory changes.

In order to get for the patient the rest so urgently required I told him forcefully that he would go on to paralysis and death if he did not obtain ten hours of sleep each night by the use of sedatives if necessary. Vitamins were recommended in large doses, and the patient was referred back to his family physician. Dr. Beck carried out the treatment.

The patient was referred for another examination Dec. 15, 1938. He had gained 6½ pounds (3 Kg.), the tone had returned in his muscles, he talked with more energy, and he was able to stand for a few minutes without undue fatigue. He was sleeping well and the muscular soreness had disappeared but there was definite tenderness of the nerve trunks. His grip had improved from 28 to 35 on the right and from 18 to 30 on the left.

A new complaint had developed: muscular spasms in the calves, thighs and arms which the patient and his wife "massaged out." He was, however, able to rise from a squatting posture without use of his arms, but in walking over irregularities he stumbled and fell especially over pebbles and irregularities in carpets. His recovery seemed to be only a matter of time. Report one year later showed that he had far less endurance than he had before the episode described.

This case seems to present a severe exhaustion of the striated neuromuscular apparatus, with a condition of the muscles which might be termed myositis except that it was not inflammatory. The nerves also were affected but not in a way to prevent conduction of impulses. The residual tenderness of the nerve trunks shows that the process was neural as well as muscular and the localized muscular spasms point in the same direction. It is for these reasons that I call the condition a subacute generalized neuromuscular exhaustion syndrome.

*CASE 2—Excessive physical exertion followed by gradual paralysis of all four limbs and diaphragm. Evidence of central involvement of the cervical cord but extreme atrophy of both shoulder and pelvic girdles.*

Roy K., a white man aged 37, who normally weighed about 149 pounds (67.6 Kg.), always a physical rather than an intellectual worker, considered himself well up to the last week of May 1943. His history of past illnesses included the usual childhood diseases but not any of the severe illnesses and he had had no surgical operations.

His habits are of prime importance in the illness to be discussed. He was born in Minnesota on a farm and was accustomed to farm labor. His education had been meager, but his handicap was overcome by an unusual industriousness. He had a wife and two children, 10 and 14 years of age respectively, for whom he was gradually buying a home. His type of work varied somewhat with the season of the year. For some months prior to his present illness he had held two jobs. One of these consisted in driving a school bus, gathering the children from a large area before school hours and redistributing them afterward. His accessory duties extended the time of this employment to six hours daily. His other job was that of warehouse worker, particularly that of stacking bags of sugar weighing 100 pounds (45 Kg.) each. He was proud of the fact that

though of moderate build he could stack 1000 bags in eight hours. He thus picked up and stacked by means of a lift and a thrust of his body, 100 000 pounds (45,450 Kg), or 50 tons, a day. It is of importance to note that in this work the pelvic and shoulder girdles and the spine were utilized much more than the smaller muscles of the extremities.

During the working day of May 27 as a large consignment of sugar had been stacked his foreman announced that they would now go to another warehouse to stack another load. For the first time in his life the patient announced that he would have to go home to rest. He felt too weak to continue and pointed out that he had been obtaining only four and a half to five and a half hours of sleep a night for a long time. He was allowed to go to his home.

On arriving at his home he lay down to rest but found that he was restless and was more inclined to keep moving. He was extremely tired and "sore," and his arms particularly were painful but he could not relax. There were generalized painful muscle "cramps." He took a mild barbiturate and went to sleep. When he awoke the following morning he was not any better, he thought he was even more tired. He could barely walk about. He therefore remained at home for another twenty-four hours and spent his time taking sun baths. There were fewer muscle spasms. On the morning of the third day he was paralyzed in all four limbs.

The first physician called took some tests but could not make a diagnosis. For that reason the family called a cultist who gave strict dietary instructions and limited the patient's intake to 485 calories a day. As the patient became weaker and had difficulty with breathing a second physician was called, who had more laboratory work done and had the patient hospitalized. This work was done from June 11 to July 2 and the results were as follows:

Blood counts: Red cells 4.2, 3.8, 4.4, 3.6 and 3.3 millions per cubic millimeter, hemoglobin content 10.2 to 12.5 Gm per hundred cubic centimeters of blood, white cells 7 200, 5,800, 5,100, 6,600 and 9,300 per cubic millimeter, total neutrophils 64 per cent to 76 per cent, segmented cells constituted 57 per cent, later 44 per cent.

The nonprotein nitrogen was 31.5, sugar 86 and calcium 86 mg per hundred cubic centimeters of blood. The blood culture was sterile. The agglutination test for *Brucella abortus* and the Wassermann reaction were both negative. Blood culture was sterile, and a sputum examination was negative. The spinal fluid was clear and contained 3 cells per cubic millimeter. The globulin was negative and the sugar content was reported as normal. It was negative for bacteria.

Two urine specimens had a specific gravity of 1.007 and 1.028. The pH was 4 and 4.5. There were no abnormal constituents in either specimen but creatine was not tested for.

The patient had already been treated with all sorts of vitamins in large quantities and was on an excellent diet. His appetite was good.

I saw the patient for the first time on July 12, about six weeks after the onset of the acute illness and observed a striking physical condition. The patient was 5 feet 10 inches (178 cm) tall but in a poor state of nutrition. The shoulder and pelvic girdles were almost without musculature. The supraspinatus were nearly absent, the deltoids very small, the infraspinatus better preserved. The arms were small, the forearms and hands essentially normal. The patient could not raise either upper limb from the bed but could manipulate his fingers to crawl up the clothes to his face. The pelvic girdle was almost denuded of muscles, the condition resembling that of a long wasting disease. The buttocks were hollow and the anus was an opening on a flat surface. The thighs were somewhat atrophic, but the legs and feet were normal. He was able to flex and extend his lower limbs in bed when there was no weight on them. In harmony with this state the deep reflexes were all absent in the upper limbs, and the knee jerks were absent. The achilles reflexes were present. No pathologic reflexes were found anywhere. His weight was estimated at about 75 pounds (34 Kg). The blood pressure was 126/86, the pulse rate 90 per minute.

The heart and lungs were normal. The thyroid gland and lymph glands were not palpable.

Most striking was the patient's breathing during the taking of his history. He was extremely dyspneic, and with each inspiration the abdominal wall was retracted; there was almost complete paralysis of the diaphragm. Fibrillary twitchings were seen on the thorax. The umbilicus moved cephalad one half inch when he attempted to raise his head off the pillow.

The cranial nerves were entirely normal except for hoarseness which had developed with the onset of his illness. The tongue was not atrophic.

Sensory examination gave the examiner another surprise. Sensory perception was normal except for loss of pain and temperature perception from the third cervical to the fourth dorsal segments inclusive, the hands partly escaping.

I recommended treatment with a high caloric, high vitamin diet: 4000 calories per day supplemented with injections of thiamine hydrochloride 50 mg per day for six weeks. He was also to take wheat germ oil 1 drachm (4 cc) three times

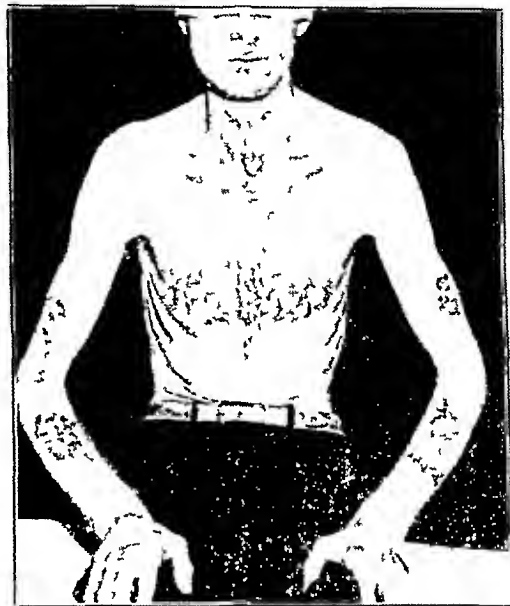


Fig. 1 (case 2) — Appearance of patient after he had gained 9 pound (4.0 Kg). Weight at time of photography 105 pound (47.6 Kg).

daily and aminoacetic acid 1 ounce (30 Gm) twice daily. As soon as his strength should permit he was to have exercises in a pool.

The patient was not seen again until December 23 when he was referred by his new physician after the sudden death of his former one. This time he came to my office and I was able to obtain photographs and to do electrical tests on his muscles (figs 1, 2 and 3).

The follow up history was to the effect that he had made rapid improvement on the regimen advised. On July 14 he was removed to his home. By the first week of August he was able to feel pin prick again where its perception had been absent. By the middle of August he was able to walk around and soon after that time he was able to raise his arms above his head. However, atrophy of the interossei had set in after my first visit. By the 1st of November he was able to drive his automobile. Next he resumed light duty on his ranch, feeding calves and looking after a pig. He ceased taking aminoacetic acid October 1, having decided that he did not need it any longer.

December 5 he drove his car 50 miles in one stretch and when he reached his destination he felt weak. He ate a big meal and went to bed, but on the following day he had severe muscular pains which felt like cramps all over his body and he was unable to obtain any relief. For that reason he took a warm immersion bath, relaxed and fell asleep in the water where



his wife found him later so soundly asleep that she could hardly rouse him. He was then too weak to be up, and from that time until December 23, when I saw him, he was in bed about half of the time.

Examination December 23 showed that he had had an exacerbation of his acute illness. He had lost 20 (9 Kg) of the 50



Fig. 2—Atrophy of shoulder girdle.

pounds (23 Kg) which he had regained after the first episode (weight on examination 105 pounds, or 47.6 Kg). There was pronounced atrophy of the shoulder girdle and of the arms (as shown in the illustrations). There was also some atrophy of the interosseus muscles but not of the thenar or hypothenar eminences. His buttocks were much better than at the time of my first examination but they were still very small. His temperature was 97.8 F, blood pressure 138/80, pulse rate 90 per minute.

All deep reflexes were present and about normal. All superficial reflexes were present, and pathologic reflexes were not obtained. He was barely able to walk around, and standing for a few minutes fatigued him. His hoarseness had disappeared and his breathing was normal.

He was unable to extend the middle and ring fingers of the right hand completely. While no myotonia could be demonstrated, he was able to open and close his fists only slowly, and exercise of the hands brought on rapid weakness. There was no sensory loss anywhere.

The affected muscles were tested for reaction of degeneration. Faradic irritability was demonstrated in all muscle groups with the exception of the finger extensors in both forearms. Those muscles responded slightly to the galvanic current better to the cathodal than to the anodal pole. There was therefore a partial reaction of degeneration.

On Jan. 3, 1944, his wife telephoned to say that the downward course was still in progress; the patient was at the time unable to open his hands, though he could make a weak fist.

On February 6 the patient's wife reported by mail. She was giving him all treatment recommended and he had a good appetite for the first time since the onset of his illness. After having lost completely the use of his hands early in January, he had in four weeks regained ability to open and close his hands and to use the thumb and first fingers fairly well. However, he had a wrist drop on both sides. He was gaining in weight as shown by the body in general "filling out nicely," but his arms remained atrophic.

On March 23 another communication was received to the effect that the patient had regained lost weight and weighed

135 pounds (61 Kg). He was feeling well and had a good appetite. He was up and had resumed care of his garden, calves, and chickens. He was again able to straighten his fingers, and the muscles of his hands were "filling out." He wanted to know whether he could stop his medicine and start driving his car.

It is evident that he cannot learn his limitations; when he gathers a little strength he immediately proceeds to expend it.

With this course of the illness besides the findings as a background I feel that there is little doubt that the entire syndrome was the result of neuromuscular exhaustion. As the area most severely affected—that supplied by the lower cervical cord—at the first instance showed loss of perception of pain and after many months still showed a partial reaction of degeneration in certain muscle groups, it seems clear that the exhaustion may leave permanent residuals due to cord changes. However, the pyramidal tract apparently did not suffer, as there were no pathologic reflexes and there was no increase in the deep ones. It is barely possible that the loss of perception of pain in the arms was hysterical in nature, especially since the hands partly escaped, and that the spinal cord involvement was confined to the lower motor neurons.

*CASE 3—Long continued starvation simultaneously with excessive exercise prescribed by physical education teacher in school. Loss of weight from 145 to 115 pounds (66 to 52 Kg) in three months. Gradual continuation of exercise and starvation for two years with complete asthenia.*

I G, a white girl aged 17 years, was seen privately because of chronic exhaustion which had been diagnosed myasthenia gravis. Up to the age of 14 years she was a "fat girl" but became sensitive about her state of nutrition at that time.



Fig. 3—Appearance of back and arms.

When she was 14 years of age and in the eighth grade in school, an athletic director instituted Danish gymnastics for the classes. The patient took all of the prescribed work faithfully and at the same time decided to reduce her weight. She ate "practically nothing" for three months and reduced her weight from 145 to 115 pounds. Her sister added that before the reduc-



tion the patient was a glutton, eating all of the time,' but after the reduction in weight she had lost her appetite and could not eat when she had decided to resume her normal diet. She developed muscular twitchings in various parts of her body, which continued for a number of months, and her muscles shrank visibly. She became "terribly nervous" and was unable to remain quiet in the daytime but tended to sleep if she could ever relax. She continued the heavy Danish gymnastic exercises after her loss of weight.

In the fifteenth year of her life she began to gain a little in weight, but she watched her weight strictly and would again starve whenever she showed any gain. She continued her strenuous exercises and became so weak that she could hardly walk about.

She started her junior year (sixteenth year) but had to quit school and was taught by a home teacher. She was in bed most of the time, but at times when she had invitations to perform on the stage in gymnastics she could not refrain and thus used all of her strength for performances and went to bed afterward. At this stage her mother became aware that the girl was losing her health and had her see a doctor. The latter, however, said that there was nothing wrong with her. He considered the condition functional and stated that her psychology was bad. Her eyes were sensitive to light and she stayed indoors and wore dark glasses.

She then consulted doctors at a clinic and had many tests, all of which were said to be normal. An "old doctor" took over the case and after making another examination made a diagnosis of myasthenia gravis. He also considered thyroid trouble and treated her for one period of time for one thing, then for the other.

She made no progress on neostigmine methylsulfate. She was then treated with large doses of various vitamins. On thiamine hydrochloride she was said to become "wild." She then consulted a chiropractor, who made a diagnosis of *Streptococcus viridans* infection of the ovaries and treated her with adjustments. He also prescribed alfalfa and calcium.

When I saw her a history was obtained of tonsillectomy early in life and of a streptococcal sore throat. Her periods were regular but painful, and she complained of hot flashes. Her basal metabolic rate had been reported as "normal."

The patient was tall. She weighed 110 pounds (50 Kg) and lay quietly in bed. She wore dark glasses, with all window shades drawn. She answered all questions relevantly but with an air of fatigue. The blood pressure, which had been reported as 90 systolic, was found to be 110 systolic and 90 diastolic. Her pulse rate was 90 per minute and it varied with respirations. There was no evidence of organic disease of the heart, and an electrocardiogram was reported as normal. The lungs were normal and the abdomen was soft. All muscles were flabby, yet all deep reflexes were entirely normal. There were no pathologic reflexes. All cranial nerves were functionally normal. The fields of vision and fundi were normal.

She was treated with 5 units of insulin before meals for her appetite, gelatin, 2 ounces (60 Gm) of aminoacetic acid with meals, and rest in bed except for a ten minute sun bath daily. She was to eat everything available without restrictions, as she had been placed on a restricted diet by other doctors of medicine and cultists. She was also to have a trial with thiamine hydrochloride 50 mg daily. Sodium amytal was to be used as a sedative if she became too much stimulated by the thiamine, as had been reported.

After two months of this treatment without appreciable benefit the parents again turned to a chiropractor.

CASE 4 (Marsh)—Dr. Clemson Marsh has reported the case of a restaurant proprietor aged 55 who had been a professional baseball player in his youth and who wore himself out in the course of two weeks of day and night work. He looked after his business in the daytime and, because of labor shortage, redecorated his place of business at night. He slept only three or four hours a night during the period of overwork but did not feel the lack of sleep. He rather reveled in his accomplishment. On the last night he worked with a linoleum

polisher moving furniture about, bending, pushing, lifting from 8 a.m. one day to 4 a.m. the next with one-half hour for each meal and no time for rest. When he was through he remarked, "If there were fifteen minutes' more work to do it would be impossible for me to do it."

After a few hours of rest he attempted to resume his regular work but was extremely weak. The weakness progressed during the following week until his arms and legs were practically useless. During this week soreness of all muscles developed. In a few more days the weakness and soreness increased until he was unable to get in and out of bed alone. His arms hung limp at his sides, and even with utmost effort he could not raise them to the shoulder level. He walked when he was helped to his feet, with a shuffling gait.

In a month he made a trip to a spa and took baths, and the soreness subsided but he was still unable to dress himself or to shave.

He was studied by Dr. Marsh four months after the onset. There was a moderate residual tenderness of the arm and shoulder regions on palpation or on active movement. He was still unable to tie his necktie or to button his collar. There was atrophy of the deltoids and generalized loss of muscle tone. All reflexes were normal, and no fibrillary twitching was found. A biopsy of the left deltoid muscle showed normal structure. There was nothing to suggest muscular dystrophy.

He was reexamined seven months from the onset and definite improvement was noted. He had gained 5 pounds (2.3 Kg) but his gait was slow and faltering. He was able to raise his arms above his head. Dr. Marsh examined him again one year from the onset and found a complete recovery except for a little weakness of the arms. Note is especially made of the fact that this patient never remained in bed all day after the episode. He looked after his business in a supervisory way. Recently the patient relapsed after exertion.

Dr. Marsh also reported an observation in a medical student unused to physical exercise who climbed a mountain for four hours with experienced mountain climbers. He had fibrillary twitching in his lower limbs for six weeks afterward.

#### COMMENT

The syndrome is clearly due to neuromuscular exhaustion. After a prolonged period of overwork, usually over a period of months, a final spurt of severe expenditure of energy results in exhaustion approaching paralysis. During the period of overwork the mental state is one of euphoria with apparent insensitivity to fatigue until a sudden realization of exhaustion supervenes. Extreme weakness appears while a psychomotor restlessness continues, making much needed relaxation difficult. The patient attempts to keep on his feet complaining of generalized muscular cramps and pains which condition passes into one of flaccidity of muscles with fascicular twitching. Insomnia followed by sleep of exhaustion supervenes, from which the patient awakens with partial relief from the pain and restlessness but with paralysis. In a few weeks atrophy supervenes, while fasciculation is prominent and a loss of weight of 25 pounds (11 Kg) or more occurs. Under rest and good food a gradual recovery is made, but the patient's former level of efficiency is not reached and focal atrophy of the muscles most severely affected remains. The atrophy is most severe (and tends to remain) in the girdle musculature rather than in the small muscles of the limbs. Temporary and possibly residual neuronal changes may occur.

The pathogenesis has not been demonstrated in terms of physiology. Each patient so far observed has not been seen until weeks had elapsed and the stage of muscular atrophy with fasciculation had developed. We

must assume that in a state of severe exhaustion a point is reached in which metabolic products accumulate in the muscles until the anabolic chemical mechanism fails. A line is crossed as it were beyond which muscular or neuromuscular recovery is impossible until prolonged rest and nutritional aid are given. When the line is once crossed atrophy ensues in spite of treatment, and months of relative rest are required for reestablishment of muscle physiologic function approaching the normal. Apparently the normal is never attained; the line is again reached in the future with far less expenditure of energy than was required to start the cascade the first time. The patient remains "sensitive" to overwork very much as a victim of heat stroke remains sensitive to heat.

One might speculate extensively about the chemical breakdown which results from severe muscular overwork, but it seems to me that unless experimental work is done the answer must be uncertain. In the physiology of muscular contraction it is known that the greater part of the lactic acid is produced after the contraction is over, i. e. in the recovery phase. It seems quite possible that when one contraction follows another in rapid succession and without sufficient rest to overcome the oxygen debt such accumulation may poison the muscle by upsetting the anabolic process. At any rate the cases show that once a certain point is reached a large part of each poisoned muscle does not recover. The muscle atrophies and disappears during a long period of fascicular twitching. When recovery does occur the muscle fibers regenerate.

I feel that the facts here presented cannot possibly be new. In times of war and in famine as well as in times of great disaster there must be large numbers of persons who succumb to neuromuscular exhaustion. It is probable that the condition fails to be widely discussed because exhaustion seems a natural cause of death under such circumstances. Soldiers who fall exhausted on a march and victims of torpedoed vessels who die of exhaustion probably present the syndrome but fail to be studied over a period of recovery lasting many months.

The cases here reported were not studied during the first weeks of the disability when creatine must have been present in the urine. The presentation is inherently weak in this regard but it is hoped that interest in the subject will be stimulated so that the chemist can be worked out and rapid remedial measures developed.

#### SUMMARY

A syndrome not found described in the literature has been observed—neuromuscular exhaustion followed by atrophy and fascicular twitching requiring months for recovery. During a period of euphoria with oblivion of fatigue a person continues to work until he suddenly realizes complete neuromuscular exhaustion approaching paralysis. Psychomotor restlessness continues; pains and tenderness are prominent; the muscles become flabby while they twitch and atrophy; paralysis supervenes with great loss of body weight. Months are required for recovery. In most severe cases residuals remain; exacerbation may appear after relatively slight exertion. The patients are not neurasthenic; they rather ignore their disability and herein lurks danger.

727 West Seventh Street

## HEMORRHAGIC COMPLICATIONS WITH DEATH PROBABLY FROM SALICYLATE THERAPY

REPORT OF TWO CASES

C. T. ASHWORTH, M.D.

AND

J. F. McKEMIE, M.D.

DALLAS, TEXAS

The salicylates are usually considered to be relatively safe drugs, and reports of fatalities from their use have been rare. In the treatment of rheumatic fever, however, large doses are employed, approaching the toxic or even lethal dosage as listed in some pharmacology textbooks.<sup>1</sup> Minor toxic reactions, such as tinnitus, are therefore expected to occur. Coburn<sup>2</sup> has recently advocated the intravenous administration of large doses of sodium salicylate in the treatment of rheumatic fever. In 1 adult in whom this form of therapy was used and in an infant given relatively large doses of acetylsalicylic acid we have recently encountered death which seems to have been due to salicylate therapy.

#### REPORT OF CASES

**CASE 1—History.**—A white woman aged 20, unmarried, was first admitted to Parkland Hospital on May 5, 1944, because of small ulcerations on the bottoms of her feet. Numerous small pustules were found on the feet and ankles and a few on the thighs. These had been present for three days and on the morning of admission there were some swelling and pain in the left ankle. Except for these findings physical examination at this time was negative. Hot packs and local application of sulfathiazole ointment were used and the pustular lesions cleared. The swelling and pain in the ankle disappeared in three days at which time she was discharged from the hospital.

The morning after discharge, however, she awakened to find swelling and pain in the left ankle and also in the left elbow and wrist. She was readmitted to the hospital. She had no other complaints at this time.

She had had whooping cough and measles. Otherwise the past history was negative.

Physical examination revealed that the patient was well nourished and well developed and was not acutely ill. Her temperature was 99.2 F., pulse rate 85, respiratory rate 25. The head, eyes, ears, nose and throat were normal. Examination of the heart revealed no murmurs. The apex beat was in the midclavicular line in the fifth interspace. The lungs were clear. There was no abdominal pain or mass. There was moderate diffuse swelling of the left wrist and slight swelling of the left ankle.

Admission laboratory studies revealed a negative Kline test. The urine had a specific gravity of 1.027, 10 mg. of albumin per hundred cubic centimeters and 4 to 6 pus cells per high power field. The red blood cell count was 4,850,000, hemoglobin 14 Gm. and the total white blood cell count 7,300. The differential count revealed 1 band, 62 segmented cells and 37 lymphocytes. The sedimentation rate was 16 mm. in one hour. Throat culture yielded *Staphylococcus albus* and the alpha streptococcus. An electrocardiogram taken on the day of admission showed no deviation from the normal.

It was thought that the patient had acute rheumatic fever and 10 Gm. of sodium salicylate was given intravenously on the day following admission. It was given in 1,000 cc. of isotonic solution of sodium chloride, 30 drops per minute. This was repeated on the next day, May 10. On this day the joint pain was much improved. On May 11 sodium salicylate

<sup>1</sup> From the Department of Pathology, Southwestern Medical College and the Children's Medical Center.

<sup>2</sup> Sollmann, T. A. *Manual of Pharmacology*. Philadelphia: W. B. Saunders Company, 1942.

<sup>3</sup> Coburn, A. O. *Salicylate Therapy in Rheumatic Fever: A Rational Technique*. *Bull. Johns Hopkins Hosp.* 73: 435 (Dec.) 1943.

was given by mouth, a total of 10 Gm was administered and this regimen was followed for the succeeding four days. On May 12 she had had complete clearing of joint swelling and pain. On this day she had some tinnitus.

On May 15, seven days after admission, she became irrational and manifested paranoid ideas. She had several outbursts of crying and exhibited periods of tachypnea and hyperpnea. These periods were followed by profuse perspiration and cyanosis. Her temperature had been normal until May 15, when it gradually rose to 102° F. The next day her temperature was 106.4° F at 8 a. m. The pulse rate rose to 120, and respirations varied from 25 to 45 per minute. She continued irrational. The blood pressure fell on several occasions to as low as 80/40. She was given a transfusion of 500 cc of blood and also 35 Gm of plasma in four times concentrated form. Her blood pressure rose to 100/40. The temperature dropped to 102° F during May 16.

A blood culture taken on May 10 was negative. Urinalysis on May 16 revealed 1.023 specific gravity, acid reaction, 325 mg of albumin per hundred cubic centimeters, negative sugar, 4 plus acetone, 5 pus cells and 300 red cells per high power field, with many finely and coarsely granular casts in the centrifuged sediment. On May 16 the red blood cell count was 3,650,000, hemoglobin 9.5 Gm and total white blood cell count 11,050. The differential white blood cell count revealed 9 band cells, 77 segmented cells, 6 lymphocytes and 8 monocytes. Blood urea nitrogen was 45 mg and sugar 128 mg per hundred cubic centimeters. The carbon dioxide combining power was 46 volumes per cent. She continued to be irrational, with hysterical outbursts and periods of hyperpnea, cyanosis and perspiration. On May 16 a consultant's note read "This patient presents a bizarre picture with flaccid paralysis and absent reflexes but none of the usual signs of meningeal irritation. The sudden hyperthermia last night is difficult to explain except on the assumption of a lesion of the nervous system. From the clinical findings, encephalitis of some peculiar type is the most likely diagnosis." A lumbar puncture was done and spinal fluid described as turbid obtained. However there were no white

hemorrhages in the cubital fossae at the sites of venipuncture marks and petechiae over the arms and back. There were reddish blue areas of hemorrhage scattered throughout the parietal and visceral peritoneum and mesentery of the small intestine.

There were a few petechiae in the pericardium; otherwise the heart was normal. The right lung weighed 730 Gm and



Fig. 2.—The cerebellum in case 1: numerous petechiae scattered throughout.

there were large bluish red hemorrhagic areas scattered throughout all lobes. The same was true of the left lung which weighed 645 Gm. There was moderate edema in the remaining lung tissue. The liver weighed 930 Gm and had a yellow gray mottled appearance. A few petechiae were noted in the pancreas. The kidneys were hyperemic. The gallbladder, spleen, adrenals, urinary bladder, uterus, cervix, fallopian tubes and ovaries were essentially normal. Many large bluish hemorrhagic foci were found scattered throughout the retroperitoneal tissues. The gastrointestinal tract was normal.

There was a small subdural hemorrhage about 15 cc in volume located over the anteromedial portion of the right cerebral hemisphere. The entire brain externally and on section was pinker than normal. Multiple coronal sections through the brain revealed many petechiae less than 1 mm in size for the most part, in the cerebrum (fig. 1), basal ganglia, thalamus, hypothalamus, pons, medulla, substantia nigra, red nucleus, cerebral peduncles and the cerebellum (fig. 2). The brain weighed 1,250 Gm.

The spinal cord was found to have a few scattered petechiae throughout its entire length.

**Microscopic Examination.**—Sections from all the brain areas mentioned revealed intense capillary dilatation. There were many recent interstitial and perivascular small hemorrhages in these sections (fig. 3). In some of the larger areas of hemorrhage, focal encephalomalacia was noted. There was no evidence of any inflammatory reaction.

Petechial hemorrhages were found also in sections of heart (epicardium), large and small intestine, skin of the back and mesenteric adipose tissue.

Acute hyperemia was noted in the liver, spleen, pancreas and kidneys.

The liver showed hydropic and parenchymatous degeneration. Sections of lungs revealed extensive acute hyperemia and diffuse recent alveolar hemorrhage (fig. 4). There was excessive accumulation of polymorphonuclears in some areas of hemorrhage.

Sections of synovial tissue of the left ankle showed no abnormalities.

**Bacteriology.**—Culture of the splenic pulp was negative.

**Summary.**—The principal pathologic diagnoses were pronounced petechial hemorrhages throughout brain, many diffuse hemorrhages in the lungs, petechial hemorrhages in the peritoneum, mesentery, retroperitoneal tissues, pericardium, spinal cord, pancreas, large intestine, small intestine and skin, small



Fig. 1 (case 1).—Section through the brain at the level of the thalamus and the hypothalamus showing petechiae in gray and white substance.

cells or red cells in the fluid. The protein content was 35 mg per hundred cubic centimeters, the Wassermann reaction negative, the colloidal gold curve negative and smear and culture negative.

She became comatose and died at 3:35 a. m., May 17.

**Autopsy.**—This was performed five hours after death. The body weight was 105 pounds (48 Kg.), the height 5 feet 2 inches (157.5 cm.). The only significant external observations were

subdural hemorrhage over the right cerebrum much generalized acute passive hyperemia, early bronchopneumonia of both lungs, and hydropic and parenchymatous degeneration of the liver

The close correlation between the administration of sodium salicylate and the onset of mental symptoms, hyperpyrexia and hyperpneic attacks suggest that the clinical findings might be explained on the basis of toxic salicylate effects. The absence of any inflammatory lesions in the central nervous system at autopsy and the finding of generalized acute hyperemia and focal hemorrhages are further indications that this was the case

**CASE 2—History**—A Negro boy aged 4 months was admitted to Parkland Hospital on June 11, 1944 because of fever and deepened respirations. The child was well until about three days before admission when he developed a mild cold. One day before admission the mother thought the child had fever and she gave it half of an acetylsalicylic acid tablet (0.17 Gm) every four hours for four doses and also gave mild protein silver in castor oil as nose drops. The child seemed to be about the same until approximately twelve hours before admission when the respirations were noted to be very deep and rapid. This continued until admission at 5:30 a. m. The baby had had no diarrhea, cough or other symptoms.

The child was a full term delivery, with uncomplicated labor and had had no previous illnesses or immunizations.

Physical examination showed that he was well developed and well nourished. His respirations were very deep and rapid and he was apparently unconscious. The temperature was 102 F, pulse rate 120, respiratory rate 45. The head was normal in size but there was pronounced craniotabes. The anterior fontanel was soft. The ear drums were mildly injected. The mouth was negative but the throat was slightly generally reddened. No membrane was present. Respiration was heaving in type

A catheterized urine specimen showed acetone 4 plus, sugar negative. An x-ray examination of the chest revealed patchy areas of increased density throughout both lung fields.

With air hunger type of respirations and 4 plus acetone, the child was thought to be in a state of acidosis, 220 cc of lactate-isotonic solution of three chlorides was given intravenously and 250 cc subcutaneously. The temperature rose to 106 F, and half of an acetylsalicylic acid tablet (0.17 Gm) was given on

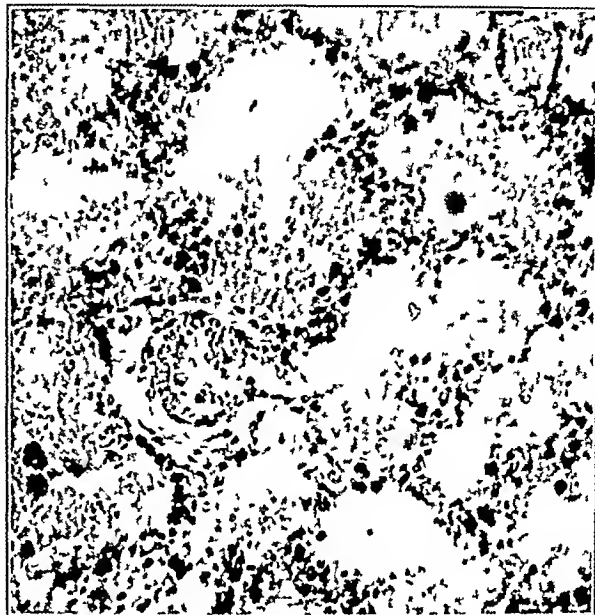


Fig. 4—Microscopic appearance of lung in case 1. There are pronounced recent hemorrhage and edema in the alveoli and acute hyperemia in the alveolar capillaries. Magnification 200 diameters.

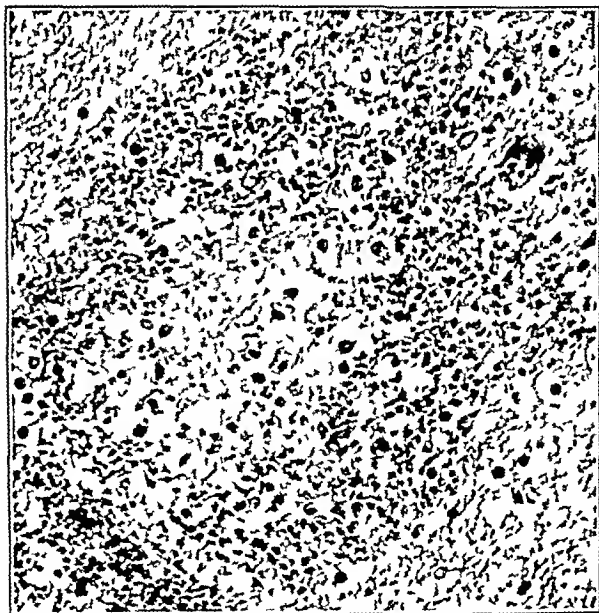


Fig. 3 (case 1)—Microscopic appearance of a hemorrhagic lesion in the white substance of the cerebellum. Early encephalomalacia is present. Magnification 200 diameters.

but there was no chest retraction. The breath sounds were harsh, but no rales were present. The heart was normal in size to percussion. No murmurs were heard. There were beaded prominences along all the costochondral junctions. The abdomen was normal and the genitalia were normal. The skin was hot to touch around the head and trunk, while the extremities were cold. The extremities were relaxed and the reflexes depressed.

two occasions and also cool sponges. Sulfathiazole was administered, 0.5 Gm as the initial dose and 0.25 Gm every four hours. At 11 a. m., five and one-half hours after admission the child began having severe generalized convulsions, with which respirations became very poor. A lumbar puncture revealed, at this time, clear fluid, with no increase of pressure. Sodium phenobarbital 0.23 Gm was given slowly, intravenously, until the convulsions were quieted. Oxygen was given by inhalation. The respirations became very slow, 6 to 10 per minute in spite of nikethamide, caffeine and epinephrine. Six hours later however, the child seemed to be improved, with regular respirations and only slight cyanosis. However, a few minutes later respirations dropped to 4 to 6 per minute and about one hour later the child died from respiratory failure twelve hours after admission.

**Autopsy**—This was performed two hours after death. The body weighed 14 pounds 10 ounces (6.6 Kg). Pronounced craniotabes and beading of the costochondral junctions of the ribs were noted to be present.

The trachea and main bronchi contained a small quantity of a thick greenish fluid resembling stomach contents. The right lung weighed 35 Gm and the upper lobe was dark purple, firm and airless. It exuded bloody fluid on pressure. The middle lobe was air containing and the lower lobe was mottled by collapsed blue, dry, airless areas. The left lung weighed 25 Gm and on section revealed diffusely red but air containing parenchyma. The bronchi of this lung contained a small amount of greenish mucoid fluid apparently stomach contents.

The liver weighed 250 Gm and appeared normal. The heart, thymus, gallbladder, spleen, pancreas, adrenals, kidneys, urinary bladder, prostate, testicles and epididymides, gastrointestinal tract and neck organs were normal.

The mesenteric lymph nodes seemed to be enlarged, varying from 0.5 to 1.5 cm in size.

The meninges were clear. Externally and on section throughout the brain many dilated small vessels were seen. Only in

the hypothalamus could additional changes be seen with the naked eye. Here there were numerous very tiny pinpoint hemorrhages in the brain substance.

**Microscopic Examination**—Sections of the brain revealed very pronounced acute hyperemia everywhere in the brain substance and in the leptomeninges. There were noted numerous small recent, perivascular and interstitial hemorrhages in a section of the hypothalamus (fig 5) a few were also noted in the medulla just underlying the floor of the fourth ventricle and one such small hemorrhage was present in the medulla of the cerebellum. In the brain tissue adjacent to some of these hemorrhages there was slight myelin degeneration.

A section of the upper lobe of the right lung revealed pronounced acute hyperemia, edema fluid of high protein content and extensive diffuse, recent, intra-alveolar hemorrhage (fig 6). There was no inflammatory reaction. Elsewhere in the lung sections showed hyperemia, slight edema, small alveolar hemorrhages and focal atelectasis. The alveoli of most sections contained a greenish granular precipitated material.

In a section of heart a small epicardial petechial hemorrhage was found.

The liver was found to be the seat of fatty degeneration of advanced degree. There were hyperplasia of the splenic pulp and also slight lymphoid hyperplasia of a mesenteric lymph node.

There was acute hyperemia in the adrenal medulla, in the kidneys and in the large and small intestines.

Sections of the stomach, thymus larynx, tongue, tonsil, thyroid, parathyroid, esophagus, gallbladder, testicle, epididymis and prostate were all essentially normal.

**Bacteriologic Examination**—Cultures of the upper lobe of the right lung and of splenic pulp were negative.

The main pathologic diagnoses were petechial hemorrhages in the hypothalamus, medulla and cerebellum, extensive hemorrhage in the right lung, petechial hemorrhage of the epicardium.

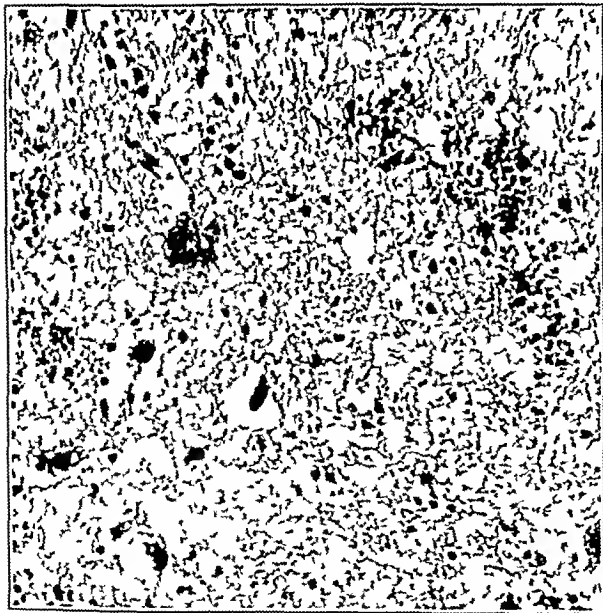


Fig 5 (case 2)—Microscopic section of region of hypothalamus showing recent petechiae. Magnification 200 diameters.

edema of the lungs, pronounced acute hyperemia of the brain, lungs, kidneys, adrenal medulla and large and small intestines, focal atelectasis of the lungs, aspiration of stomach contents and rickets.

The hyperpnea, hyperpyrexia and convulsions seemed to follow the comparatively large doses of acetylsalicylic acid, and the failure to demonstrate an inflammatory disease at autopsy makes it likely that these

toxic effects of salicylates were the cause of death. The dosage given is well above the toxic dose according to Barnett, Powers, Benward and Hartman.<sup>3</sup>

#### COMMENT

Previous reports of deaths due to salicylates have not emphasized hemorrhagic complications. Rapoport, Wing and Guest<sup>4</sup> suggested that the hemorrhagic

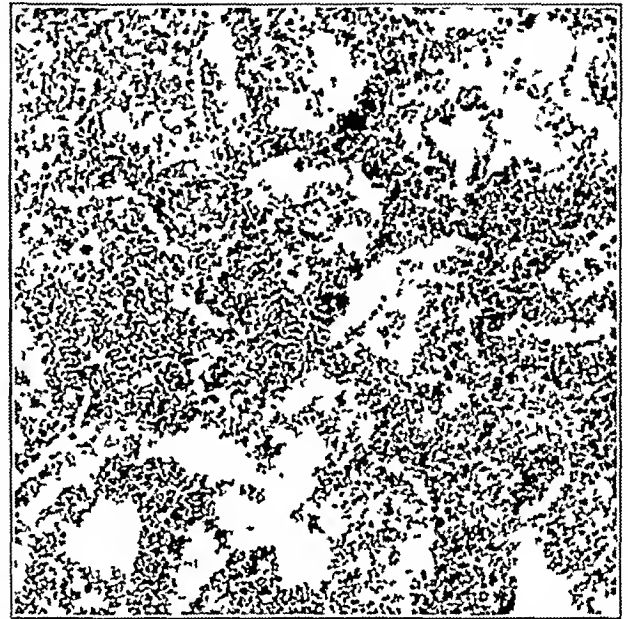


Fig 6—Microscopic section of the lung in case 2. There is very evident hyperemia. The alveoli are filled with red blood cells and some edema fluid. Magnification 200 diameters.

tendency of some cases of rheumatic fever might be explained on the basis of the salicylate therapy. Stevenson<sup>5</sup> reviewed the cases of poisoning from methyl salicylate and reported 3 cases of his own. There were 43 such cases. About half of the 13 cases in which autopsy was performed showed petechiae in the epicardium, and almost one third hemorrhages in pleura and lung. In none was a generalized hemorrhagic disease present, however.

Hypoprothrombinemia has been shown by Link and others<sup>6</sup> to occur in rats which have received salicylates. These authors pointed out the similarity that exists between the salicylate radical and dicumarol, a strong hypoprothrombinemic agent (Meyer and Howard<sup>7</sup> and Rapoport, Wing and Guest<sup>4</sup> also produced hypoprothrombinemia in animals and in human beings with therapeutic doses of salicylates. It was shown that vitamin K prevented this hypoprothrombinemia so that it is likely that the hypoprothrombinemia is not due to the liver damage. However, Lutwak-Mann<sup>8</sup> showed that the liver glycogen disappeared following salicylate

<sup>3</sup> Barnett H. L., Powers J. R., Benward J. H. and Hartman A. F. Salicylate Intoxication in Infants and Children. *J. Pediat.* **21**: 214 (Aug.) 1942.

<sup>4</sup> Rapoport S., Wing M. and Guest G. M. Hypoprothrombinemia After Salicylate Administration in Man and Rabbits. *Proc. Soc. Exper. Biol. & Med.* **53**: 40 (May) 1943.

<sup>5</sup> Stevenson C. S. Oil of Wintergreen (Methyl Salicylate) Poisoning. Report of 3 Cases, One with Autopsy, and a Review of the Literature. *Am. J. M. Sc.* **193**: 772 (June) 1937.

<sup>6</sup> Link J. P., Overman R. S., Sullivan W. R., Huebner C. I. and Scheel L. D. Studies on the Hemorrhagic Sweet Clover Disease. VI. Hypoprothrombinemia in the Rat Induced by Salicylic Acid. *J. Biol. Chem.* **147**: 463 (Feb.) 1943.

<sup>7</sup> Meyer O. O. and Howard B. Production of Hypoprothrombinemia and Hypocoagulability of the Blood with Salicylates. *Proc. Soc. Exper. Biol. & Med.* **53**: 234 (June) 1943.

<sup>8</sup> Lutwak-Mann C. The Effect of Salicylate and Cinchophen on Enzymes and Metabolic Processes. *Biochem. J.* **36**: 706 (Dec.) 1942.



therapy. It is of some interest that in the 2 cases reported here degenerative changes were noted in the liver.

The severe generalized hyperemia in our 2 cases suggests the possibility of some capillary damage by the salicylates. The petechial hemorrhages can readily be explained on the basis of severe hyperemia with accompanying hypoprothrombinemia.

Tachypnea and hyperpnea in salicylate poisoning have been explained on the basis of fixed acid acidosis.<sup>9</sup>

In addition to the 2 cases reported here, Fashena and Walker have recently observed another case of nonfatal acute salicylate poisoning occurring in the course of treatment of rheumatic fever. This case was studied from the clinical and chemical standpoint.<sup>10</sup>

#### SUMMARY

Although severe toxic reactions following salicylate therapy are uncommon, the recent interest in more intensive forms of salicylate therapy renders the report of 2 cases of probable fatal salicylate poisoning of interest.

The outstanding findings at autopsy were hemorrhagic changes widespread over the body but particularly involving the brain, and severe widespread hyperemia. The explanation of these findings is probably a combination of capillary damage and hypoprothrombinemia produced by the salicylates.

It would seem that vitamin K is strongly indicated in all cases in which large doses of salicylates are administered.

### THE USE OF THE SULFONAMIDES IN PYELONEPHRITIS IN PREGNANCY

E. GRANVILLE CRABTREE, M.D.

BOSTON

Introduction of the sulfonamide drugs into general use produced a radical alteration in the management of infections in pregnancy. The test of their effectiveness will rest on a survey of the condition of patients so treated after the lapse of five or more years after the illness with which the injury began. No adequate surveys have been made to date. A yardstick for comparison with similar cases treated by previous methods already exists. Such surveys are apt to follow soon after cessation of hostilities when sufficient man power becomes available for their prosecution. Meanwhile those in whose hands the care of such infections rests have attempted to determine essential requirements for maximum efficiency in the use of these drugs. This communication is limited to a statement of policy of the Boston Lying-in Hospital with some observations on the already obvious deficiencies of present practices and inadequacies of the drugs employed.

Optimism based on apparent cures of urinary infections in pregnancy following delivery which permitted uncured infections to persist and result in major degrees of damage to renal tissue and efferent channels in subsequent years has a corollary in the sulfonamide era when

prompt subsidence of symptoms and the production of a high percentage of cures tends to be accepted by those in charge as indicative of cure in all. This concept is still further magnified since bladder symptoms often remain mild or absent until retrogression of pregnancy changes has taken place at the end of weeks or a few months, at which time obstetric care has often ended. This leaves a certain number of uncared for women in whom infection persists for years. Surveys of pyelonephritis in all types of patients indicates that recurrent and persistent infections appear to be more potent in production of major degrees of remote damage than can be ascribed to the acute stages of infection with which the illnesses begin. That concept remains tenable in the sulfonamide era. It is not to be construed as indicating that minimizing the severity of the initial infection and limiting its duration do not soften the blow. This has been made possible by the sulfonamides.

#### REPORT OF CASES

**CASE 1—History**—Mrs. E. C. aged 30, mother of two children had a short attack of pyelonephritis involving the right kidney eight years ago during her first pregnancy. It was severe while it lasted. It is presumed from the subsequent history that cure was not produced. Two years later she was given sulfanilamide for bladder symptoms. Six years ago she had paralysis, involving her bladder, due to encephalitis from which she appeared to recover entirely within a few months. Two years ago she had a second pregnancy in which severe pyelonephritis symptoms confined to the right kidney developed early in the gestation. In spite of repeated courses of sulfadiazine and sulfathiazole there were frequent recurrences of fever and pain in the right kidney. The urine was never clear. All symptoms seemed to subside after delivery. About three months after delivery both the renal pain and bladder frequency returned and have been troublesome since that time.

**Examination**—There was no remnant of paralysis. There was tenderness over the right kidney but no mass. The urine showed pus and many bacilli.

**Cystoscopy**—There was no bladder residual. The mucosa was chronically inflamed. Both ureteral orifices appeared normal except for edema. There was a residual urine of 15 cc in the right pelvis. The urine was cloudy as was that in the bladder. The urine from the left kidney was clear. Phenol-sulfonphthalein excretion from both kidneys was prompt and of good concentration and approximately equal from the two kidneys.

**Pyelography**—The use of the retrograde method showed a normal pelvis and ureter on the left. On the right there was considerable dilatation of the pelvis and the whole of the upper third of the ureter. The lesion was not characteristic of a congenital defect and was of ureteritis.

**Treatment**—A series of ureteral dilations were done. These produced neither diminution in the residual urine nor improvement in the appearance of the pelvis and ureter. These were followed by two courses of six days each of sulfadiazine. One of these appeared to produce normal urine but infection was present two weeks later. The other made no improvement in the urine at all.

It is almost certain that nephrectomy will eventually be required. While there is no pyelography available previous to child bearing there is no urinary history either relating to childhood or early adult life up to the time of conception.

**CASE 2—History**—Mrs. P. S. aged 28 was examined by intravenous pyelography two years before marriage because of symptoms which were finally diagnosed appendicitis. The report from that examination (the films were not seen by me) described the kidneys as normal in appearance and function. Five years

<sup>9</sup> Johnson, C. C. The Salicylates. *N. A. The Question of Acidosis Following Administration of Salicylates*. J. A. M. A. 94:784 (March 15) 1930.

<sup>10</sup> Fashena, Gladys J. and Walker, J. N. *A Child to be Published*.

From the Urological Clinic of the Boston Lying-in Hospital. Read before the joint meeting of the Section on Obstetrics and Gynecology and the Section on Urology at the Ninety-Fourth Annual Session of the American Medical Association, Chicago, June 16, 1944.



ago the patient had pyelonephritis in the fifth month of her first pregnancy. Labor was induced after sulfamidamide therapy had failed to produce subsidence of symptoms. Intravenous pyelography, also from the report of the x-ray department in a neighboring hospital, showed only a minor degree of renal dilatation. All symptoms subsided promptly after abortion. There was no evidence as to whether she then became free of infection. At any rate she remained free from symptoms of any kind for two years. At that time right sided pain developed for which her appendix was removed without relief. There was no frequency of urination, although reference to the record of the hospital in which the operation was done showed her to have had infected urine at the time of appendectomy.

Two years ago she again became pregnant. The right sided pain became worse during the first months of pregnancy but ceased about the fifth month. Fever never of severe degree, appeared between the fifth and sixth months of gestation, for which she had repeated courses of sulfathiazole. These treatments produced afebrile periods but did not clear the urine of bacteria. They ceased after delivery.

The right renal pain was absent for about one year after delivery of the second child. After that date it returned with greater severity than at any time previously. There were no fevers with these attacks.

*Examination*—This elicited some tenderness in the right renal region, but there was no mass. The urine showed a few pus cells and many bacteria.

*Cystoscopy*—There was no bladder residual, although the supports of the bladder were weakened on the left side and there was pouching. There were chronic inflammatory changes throughout the bladder mucosa. There was a residual urine of 8 cc in the right pelvis but none in the left. The urine from the right pelvis was cloudy and from the left clear. Cultures from the right showed bacilli and from the bladder also, but that from the left showed no growth.

*Pyelography*—The intravenous method showed dye appearing in both pelves at five minutes, with the greatest concentration of the dye at fifteen minutes on the left but at forty-five minutes on the right. There was residual urine in the right pelvis at the end of one hour. A film of the bladder after voiding showed no bladder residual.

*Treatment*—After a series of five ureteral dilations with number 9, 10 and 11 bulbs the residual urine in the pelvis was 2 to 3 cc in amount. Sulfadiazine therapy for six days produced negative cultures. During three months while the patient was under observation there was neither further renal pain nor a return of the infection. She will be observed at six month intervals.

#### PRESENT POLICY OF SULFONAMIDE THERAPY

Treatment of urinary infections during pregnancy are carried out in both outpatient and house cases. There seem to be no contraindications to treating some patients in the outpatient department. Those so treated are patients without fever in whom evidence, through catheter urines, is found of either pus or bacteria or both. Since most of our patients are a controlled group, are on increased fluid intake during pregnancy as a part of hospital policy and are seen regularly in antepartum clinics and at home if in trouble, the majority of admissions of infected patients are through the outpatient department. Some of these have had no symptoms of any kind and the finding of infection has been through routine examination of urine. In others, after a day or two of mild urinary symptoms at home, the patient has been seen by the district nurse and the house officer and sent to the outpatient department as soon as temperature is normal. Increased fluid intake is thought to be responsible for

the mildness of symptoms in these cases. As outpatient cases they receive sulfathiazole or sulfadiazine in 2 gram doses daily for six days with 60 grains (4 Gm) of sodium bicarbonate three times daily. The fluid intake is kept at 2,500 to 3,000 cc of water in addition to other fluids. If they become febrile while under outpatient treatment they are referred as house cases. A few febrile patients are admitted through reference by physicians and our own house staff directly to the hospital.

Febrile patients in the hospital are treated less routinely and more in accord with their condition at admission. Emphasis is placed on alkalization of the urine and obtaining adequate fluid intake as the first measure of treatment even though it means delay in instituting antiseptics. A fluid intake even in a desiccated patient of 3,500 to 4,000 cc and sufficient alkali to meet the demands for alkalinity of the urine is usually obtained within six to twelve hours after admission. As soon as this is accomplished, sulfadiazine or sulfathiazole is started. The initial dose is commonly 4 Gm for the first day and 2 Gm daily for the next five or six days. Seldom is drug therapy continued beyond that period at one time even if cure is not accomplished. If the acute symptoms do not subside we prefer to keep the patient on high fluid intake and resume treatment at a later time after some degree of tolerance for infection has been acquired. Complications from the drug appear to be commonest in protracted therapy and, in addition, further treatment adds little to the chance of clearing the infection. There is also virtue in awaiting development of antibodies by the patient. Under this regimen we find little use for intravenous administration of the drugs.

The degree of dilatation of pelves and ureters which patients develop appears to bear little relation to efficacy of therapy except in extreme instances of atony and distention of the pelves and ureters. The following histories are illustrative.

**CASE 3**—Mrs. A. J., a quintipara aged 33 had previous pregnancies in 1935 and 1936 in another hospital and in 1938 under her own physician's care which were all uncomplicated. A miscarriage occurred at two months in 1941. This miscarriage was followed by dilation and curettage. She was now in the sixth month of gestation.

Urinary findings and not symptoms indicated her condition. The blood pressure ranged from 120/70 to 132/80. Albumin was 2 plus, and there were some red blood cells and a few casts in addition to many bacilli and 5 to 10 pus cells noted in the urine. She was considered to have both preeclampsia and urinary infection and was referred to the hospital for medication.

Intravenous pyelography showed a moderate degree of dilatation of the right ureter and pelvis but only a small degree of change in the left ureter and pelvis.

Treatment was for but five days with sulfadiazine 2 Gm daily with sodium bicarbonate but with a fluid intake limited to 1,000 cc in deference to her preeclamptic state. The urine cleared of pus, bacilli and blood, but there remained albumin and a few casts.

**CASE 4**—Mrs. W. C., a tertipara aged 27, had her first pregnancy without complications in 1939. She had retention of urine post partum. The resulting cystitis was cleared in seven days with 80 grains (5 Gm) daily of sulfamidamide. The second pregnancy was uncomplicated. The urine remained normal throughout the whole of gestation and the puerperium.

Gross hematuria marked the onset of pyelonephritis in the fifth month of the fourth pregnancy. The organism was a

bacillus. There was no fever by the third day of bleeding when treatment was instituted.

Intravenous pyelography showed pronounced dilatation of the right pelvis and upper ureter. There were but small degrees of change in the left pelvis and ureter. Both the bleeding and the infection cleared on six days of treatment with 2 Gm daily of sulfadiazine with sodium bicarbonate on an intake of 2,500 cc of fluid daily.

She finished her pregnancy without further infection or bleeding.

Patients who fail to clear under routine therapy receive further investigation except when they are near to term and free from symptoms. In the latter cases intravenous pyelography is usually done to exclude renal conditions which might complicate delivery. Such patients occur in both the outpatient and the house groups.

Debility, of which anemia is the commonest cause but which may also be the result of overwork, undernourishment or poor toleration of pregnancy, is a common cause for failure of treatment. Such patients under appropriate treatment for anemia, dietary care and social service may readily clear of infection when treated at a later time.

Acquired tolerance for infection may account for some patients who are easily cured as outpatients after having failed to become clear of infection when treated during their febrile stages as house patients. The intervals between courses of therapy is commonly two to three weeks. A few patients have been noted who were discharged from the hospital after antiseptics with both bacteria and pus still present in their urines who appeared to clear spontaneously in the interval.

Sulfonamide resistant bacteria are usually assigned a role in certain patients who resist cure. It is not easy to assess this factor. In some patients it is not possible to diminish symptoms or cure infection. These cases account in part for the rare instances of interruption of pregnancy for therapeutic reasons. We have made use of succinylsulfathiazole in 18 gram doses daily over periods of two to three weeks with but limited success.

Gross pathologic changes are responsible in the majority of patients who fail to clear under treatment. Not all degrees of abnormality defeat therapy.

**CASE 5**—A primipara aged 19 was admitted to the hospital because of rise in blood pressure to 180/138. Urinary infection was discovered on admission. Diagnosis was preeclampsia grade 1. The patient was kept in bed, fluids were limited to 1,500 cc daily and 2 Gm of sulfadiazine was administered with sodium bicarbonate 60 grains (4 Gm) daily for six days. The infection cleared and the blood pressure fell to 120/74 in the eleven days of her stay in the hospital. An intravenous pyelogram showed the left kidney to be unrotated and moderately hydronephrotic. She continues in the outpatient department with a clear urine and a reasonable blood pressure.

**CASE 6**—A tertipara aged 25 had no history of urinary infection preceding her first pregnancy in 1939. She had had pyelonephritis in pregnancy at home in the care of her own physician from May to August. Her urine was very purulent, but she was then afebrile. She was admitted directly to the hospital because due. No pyelography was done before delivery, which was made immediately on admission. Delivery was followed by retention of urine and postpartum pyelonephritis. She was given 60 grains (4 Gm) daily of sulfanilamide for twenty-four hours, then 40 grains (2.6 Gm) daily for six days. In the meantime she was kept on constant drainage. The urine was still clear of infection when last seen after that pregnancy and puerperium in the sixth month after delivery. Her second

pregnancy was in 1942. The urine remained normal throughout the whole of this pregnancy and puerperium. In her third pregnancy, while under supervision in the outpatient department infection appeared in the sixth month. The urine became very purulent but she remained afebrile. The urine did not clear on 2 Gm of sulfadiazine daily for six days. Retrograde pyelography showed her to have a double right kidney, the upper half of which was hydronephrotic. She remains infected but afebrile. She is due for corrective surgery after delivery.

**CASE 7**—A primipara aged 18 without urinary symptoms at any time in her life previous to pregnancy, was discovered to have bacilluria during the third month of gestation. The urine did not clear under 2 Gm of sulfadiazine with sodium bicarbonate daily for six days administered in the outpatient department. This course was repeated in two weeks. Intravenous pyelography showed extensive dilatation of both pelves and ureters throughout their upper two thirds and large dilations of the lower portions near to the bladder. There is no evidence of renal insufficiency, she remains afebrile and there is little pus in the urine, although bacilli are abundant. She continues in pregnancy under careful observation especially for evidences of renal insufficiency. It is possible that interruption may become necessary before her pregnancy is finished. She is to have urologic treatment after delivery.

In the latter cases important urologic findings may be missed to the detriment of the patient in later life. Intractable infections are apt to occur in them in subsequent pregnancies and the gross lesion he discovered at that time. In instances in which there are extensive alterations from the normal which are brought to notice for the first time through the onset of infection interruption of the pregnancy may be necessary. Interruptions of pregnancy for urinary causes alone, eliminating those patients who have both urinary infection and another condition such as preeclampsia, now result in an average of but one abortion per year in a clinic in which from 4,000 to 5,000 deliveries are cared for.

Intravenous or retrograde pyelography is not employed for all patients who have urinary infection. It is routine for all lone kidney patients, those with histories of renal stone and hydronephrosis, those with infections already present at the beginning of pregnancy, cases of renal tuberculosis and all who have had renal surgery. Beyond these routine cases it is employed for all patients who do not clear their infections under treatment, who show gross hematuria or who present unusual initial symptoms.

Urinary infections are frequent complications of other conditions the nature of which necessarily modifies therapy for the infectious process. These are heart disease, diabetes and preeclampsia. Because of the undesirability of forcing fluids in preeclampsia and cardiac decompensation, antiseptics with limited fluids is sometimes necessary. In spite of strict limitation of fluids during treatment in these cases and large doses of the sulfonamide drugs, which are administered in pneumonia and uterine sepsis, there has not been to date any case of blockage of the urinary channels with crystals such as has become common in the nonpregnant. The patients treated in obstetric hospitals are either pregnant or recently pregnant patients whose urinary channels still exhibit some degree of modification due to the pregnant state.

Progress in management of diabetes in pregnancy has made possible treatment of these patients by almost the same routine as that for nondiabetic patients with equally good results. Preeclampsia is the most com-

monly encountered complication of infections in the urinary tract. The combination of these two diseases accounts for interruption or abortion in about 4 cases to 1 for uncomplicated urinary infection. Sulfonamide therapy appears to do no harm to patients with toxemia who do not have nitrogen retention.

Since the introduction of the sulfonamide drugs, renal inadequacy from severe pyelonephritis appears to have been eliminated. If the infection cannot be cured in these cases, it can almost always be rendered asymptomatic and the acute involvement of the renal parenchyma greatly reduced in severity. When renal inadequacy is encountered nowadays one should suspect gross pathologic change in the kidneys.

Cystoscopy for pyelonephritis in pregnancy is now much less frequently employed than before the sulfonamides. There are a few patients in whom lavage of the pelvis to remove massive purulent material is beneficial either before or during treatment with the sulfonamides, but this procedure is now essentially diagnostic. Most kidneys in pregnant women have sufficient renal substance to permit self clearance if adequate fluid intake is provided, without resorting to artificial means.

Except in obstructive ureteral calculus, renal and ureteral stones are reasonably well tolerated when the severity of the attending pyelonephritis is minimized by the sulfonamides. In obstructing calculi it is sometimes possible to manipulate the calculus cystoscopically and provide drainage. Stone is now most commonly treated surgically after delivery.

#### SUMMARY

The sulfonamide drugs have greatly modified the management of pyelonephritis in pregnancy for the better. Determination of the exact degree of benefit which these drugs have made possible cannot be made until surveys of patients at from five or more years from the time of infection have been compiled.

Sufficient experience has been accumulated to indicate that the beneficial effects of these drugs in ameliorating symptoms can be expected to take place in almost all patients whether or not cure of the infection is accomplished. A high percentage of patients have their urines rendered sterile both in uncomplicated cases and in those with complicating diseases and with safety to the patient.

Among the uncured cases are some in which persisting infections are producing extensive damage to the efferent channels and can be expected to do so eventually to the renal cortex similar to those shown in surveys of patients from the previous regimens. These are preventable.

There are two major defects in obstetric practice as I see the problem in relation to pyelonephritis. One is failure to investigate urologically those patients who do not obtain cure through sulfonamide therapy for detection of gross pathologic conditions. The other is that many women leave obstetric care with urines still infected from which, in subsequent years, through long continued or repeated acute injuries, preventable gross damage to the urinary tract results.

Optimism based on apparent cures of pyelonephritis in pregnancy following delivery which was responsible for the high percentage of abnormal urinary tracts found after five or more years in the presulfonamide era has its corollary in the sulfonamide era when prompt

subsidence of symptoms appears to be mistaken for cure. Similar cases to those already described in previous reports are occurring in sulfonamide treated patients. Let us hope that surveys will show that the number of such cases is greatly reduced in comparison with published end results.

99 Commonwealth Avenue

#### ABSTRACT OF DISCUSSION

DR J P GREENHILL, Chicago. The word pyelitis is commonly used for the subject under consideration, but, as indicated in Dr Crabtree's title, there is damage to the kidney in most cases, hence the correct term is pyelonephritis. Likewise the ureter is generally involved, so there is really a pyelonephritis and ureteritis. There is a tendency for so-called cured or relieved pyelonephritis to flare up during the puerperium in at least half the cases. If the urinary infection is present longer than three months after delivery it is almost certain that there is a gross pathologic condition present and a complete study of the urinary tract must be made. Even if the infection is cleared up, a complete study of the urinary apparatus should be made before a new pregnancy is planned, because a woman who has had pyelonephritis in one pregnancy has about one chance in four of developing this complication in a subsequent pregnancy. Contrast this with the usual incidence of pyelonephritis in pregnancy of 1 in 50 cases. If a new pregnancy begins before the urinary infection is cleared up, the chances of recurrence are one in two. Many women have permanent defects such as hydronephrosis and hydroureter following a single attack of pyelonephritis. The treatment of pyelonephritis by means of the sulfonamides is now relatively simple, but, as Dr Crabtree points out, we must be extremely careful in evaluating our results. In addition to the sulfonamides we must overcome anemia which is fairly common, we must avoid constipation, use the Fowler position for proper drainage, force fluids and give sedatives, we must treat the patient as we did before we had the sulfonamides. The sulfonamide treatment has no bad effect on the babies, and by means of this therapy nearly all patients can be carried to term. As emphasized by Dr Crabtree, there is apparently no danger that pregnant women will develop a urinary block by crystals if the amount of fluids is not greatly increased. There is now rarely any necessity to employ ureteral catheterization or to empty the uterus because of pyelonephritis, but we must remember that the sulfonamides will not cure all patients who have pyelonephritis, hence in an occasional case the pregnancy may have to be terminated. It is difficult to prevent the first attack of pyelonephritis except by removing foci of infection. Much can be done in a prophylactic way by routine microscopic examination of every pregnant woman's urine at every office visit (or oftener when indicated). Once a woman has had pyelonephritis, not only must she be carefully checked for a long time following the first attack but also her urinary tract must be studied before each new pregnancy. Prophylactic therapy with the sulfonamide drugs in successive pregnancies will certainly reduce the incidence of severe recurrences and produce rapid cures, because the patients can be treated early.

DR BUDD C CORBUS, Chicago. In November 1927 W C Danforth, head of the department of obstetrics at the Evanston Hospital, and I reported our findings in the so-called pyelitis of pregnancy. Our conclusions at that time were as follows: The termination of pregnancy does not cure the urinary infection. These cases should be studied and treated after the pregnancy ends in order to restore adequate urinary drainage if possible. As a pathologic condition of the urinary tract was shown to exist after termination of pregnancy, in all cases studied it seemed reasonable to assume that obstructive pathologic changes may have been present before the pregnancy began. There is no doubt that the pressure of the fetal head and the hormonal influence on the ureter causing dilatation, with lessened

peristaltic action accompanied by urinary stasis, may be a contributing factor in pyelitis; however, if this was a significant factor more pregnant women would have complicating pyelitis. To me it is the question of the straw breaking the camel's back. I think we can truly consider that pyelitis of pregnancy is a clinical exacerbation of a previous latent chronic urinary tract infection, and in demonstrating this we should not forget the modern conception of the possible pathology of the female bladder neck. We are all aware in urology of the value of the sulfonamide drugs for the nonpregnant woman; we know, however, that they are dangerous and that their administration should be well supervised. The use of drug therapy during an attack of pyelitis of pregnancy by no means replaces complete urologic study after the pregnancy has terminated.

DR A. J. KOBAK, Chicago: All cases of pyelitis occurring in the obstetric services of Cook County Hospital were studied during a period of twenty-one months and our findings were published. Our material consisted of 143 cases, an incidence of 1.63 per cent. Ninety-five patients had pyelitis ante partum and 48 during the puerperium. It was necessary to interrupt the pregnancy of only 1 patient, and there were no mortalities in the series of cases studied. However, this good fortune was short lived, because subsequent to this report we had three deaths. These patients had more than a simple pyelitis—a pyelonephritis. One woman pregnant for six and one-half months, who had a clinically mild pyelitis, developed pyelonephritis and then eclamptogenic convulsions. The autopsy revealed typical toxemia changes in the liver. The second patient developed pyelonephritis following the birth of a premature baby. The temperature reached a 106 F level, and the postmortem findings indicated changes in the kidney parenchyma and those of a generalized sepsis, although we never obtained a positive blood culture. The remaining patient four and one-half months pregnant aborted spontaneously, shortly after her admission. She bled sufficiently to warrant a uterine packing. She died after a period of complete urinary suppression and with postmortem evidences of a severe ascending pyelonephritis. All 3 patients had retention of nitrogenous products by blood chemistry analysis. More than one third of the puerperal pyelitis in our reported group had etiologic factors that one frequently observes in patients who develop puerperal sepsis. Thus prolonged labors, difficult forceps deliveries and cesarean sections that were not elective were in this group. Also many of our pyelitis patients had concomitant puerperal sepsis. In view of the anatomic proximity of the urologic and genital systems this is not surprising. I wonder if the author can shed any light on this thought that puerperal sepsis and pyelitis may bear a direct mutual relationship.

DR E. GRANVILLE CRABTREE, Boston: Dr Kobak, in the reporting of three deaths, brings into prominence the reasons for intensive study that have existed all along and underlie these publications, which is that the handling of these cases in all their complications is not yet simple enough so that perfection can be acquired without the obstetrician becoming an industrious student of this subject.

Aristotle—Aristotle (384-322 B. C.), the most comprehensive mind of classical antiquity, may be said to have applied to general science the objective method of observation used by Hippocrates in clinical medicine. The other Greek scientists or natural philosophers, such, for instance as Heraclitus and Parmenides, indulged in vague speculation about the nature of the universe, without bothering to verify their fundamental data. Aristotle obviously made direct observations. He covered an immense field—physics, astronomy, meteorology, psychology, natural history. In biology his work on embryology (*De generatione animalium*) is full of acute observation. *Historia animalium* and *De partibus animalium* furnish a rough, fairly good idea of animal and human anatomy.—Clendenning, Logan. *Source Book of Medical History*, New York, Paul B. Hoeber, Inc., 1942.

## CAFFEINE AND "PEPTIC" ULCER

RELATION OF CAFFEINE AND CAFFEINE-CONTAINING BEVERAGES TO THE PATHOGENESIS, DIAGNOSIS AND MANAGEMENT OF "PEPTIC" ULCER

J. A. ROTH, M.D., Ph.D.

A. C. IVY, Ph.D., M.D.

AND

A. J. ATKINSON, M.D.

CHICAGO

In this paper evidence will be presented which strongly indicates that the excessive use of caffeine-containing beverages may contribute to the pathogenesis of "peptic" ulcer in the ulcer-susceptible individual, may aggravate an ulcer already existing and may render the therapeutic management of the condition more difficult. Preliminary studies on ulcer patients suggest the use of a caffeine test meal in the diagnosis of peptic ulcer based on the prolonged secretory curve when the response to caffeine is expressed as the total output of free acid. Additional evidence suggests that a prolonged gastric secretory response to caffeine may provide a method for the detection of those persons who are predisposed to the development of "peptic" ulcer.

### LITERATURE

Smoking and the consumption of alcoholic beverages have been interdicted in the management of "peptic" ulcer patients by internists for many years. The consumption of caffeine-containing beverages has not, as a rule, been restricted, except in some instances during the early phase of the management of the active ulcer.

There are several reasons why the relation of caffeine to ulcer and gastric secretion has been a neglected field of investigation. One reason is that caffeine does not stimulate gastric secretion in all species of animals. It does not stimulate gastric secretion in the dog.<sup>1</sup> And it has been shown only recently that caffeine stimulates gastric secretion in the cat.<sup>2</sup> Considerable disagreement is found in the literature concerning the effect of caffeine in man. Various authors<sup>3</sup> have concluded that caffeine does not stimulate gastric secretion in man, whereas others<sup>4</sup> have observed an increased output of acid gastric juice after caffeine administered orally or parenterally. The most recent reviewer of the subject<sup>5</sup> erroneously concluded that caffeine does not stimulate gastric secretion.

Aided in part by a grant from the Clara L. Abbott Fund. From the Department of Physiology, Northwestern University Medical School.

Read before the Section on Pathology and Physiology at the Ninety-Fourth Annual Session of the American Medical Association, Chicago, June 14, 1944.

<sup>1</sup> Pincussohn, L. Ueber das Sekretionsforende Prinzip des Kaffees. *Ztschr. f. phys. u. diätet. Therap.* **11**: 261, 1907. Bickel, A. Ein Dietschema für die Behandlung der Sekretionsstörungen des Magens. *Internat. Beitr. z. Path. u. Therap. d. Ernährungsstor.* **1**: 365, 1910. Kestner, O. and Warburg, B. Die Wirkung der Frühstücksgetränke auf die Verdauungsorgane. *Klin. Wchnschr.* **2**: 1791 (Sept.) 1923. Rotb. and Ivy, A. C. <sup>2</sup> Wicbels, Brink and Lauber.<sup>20</sup>

<sup>3</sup> Roth, J. A. and Ivy, A. C. The Effect of Caffeine on Gastric Secretion in the Dog, Cat and Man. *Am. J. Physiol.* **141**: 454 (June) 1944.

<sup>4</sup> Goldbloom, A. Experimentelle und klinische Untersuchungen über den Einfluss des Koffeins auf die sekretorische Tätigkeit des Magens. *Arch. f. Verdauungskr.* **42**: 13 (Feb.) 1928. Ehrman, R. and Dinkin, L. Magen-Untersuchungsmethoden. *Neue Deutsche Klin.* **6**: 574, 1930. Oehnell, H. and Berg, H. Zur Frage über die Ventrikelfunktion nach Verabreichung verschiedenen Örtigen von Kaffee. *Acta med. Scandinav.* **76**: 491, 1931. Eichler.<sup>4</sup>

<sup>5</sup> Holler, G. and Bloch, J. Chlorine Metabolism in Disturbances of Stomach Secretion. *Arch. f. Verdauungskr.* **28**: 351 (Aug.) 1926. Cade, A. and Milhaud, M. Chimisme gastrique. 1<sup>re</sup> preuve de la cafeine. *J. de med. de Lyon* **10**: 523 (Aug.) 1929. Wicbels, P. Caffein als Magensaftflocker. *Ztschr. f. klin. Med.* **123**: 336, 1933. Katsch and Kalk.<sup>11</sup>

<sup>6</sup> Eichler, O. Kaffee und Caffein—Pharmakologische Wirkungen. *Arch. f. exper. Path. u. Pharmacol.* **190**: 123, 1938.

The experimental design and technic used in some of the investigations on human subjects were poor in the light of current knowledge. That earlier investigators failed to show conclusively that caffeine has a definite stimulating effect on gastric secretion in man can in part be attributed to (a) insufficient exposure of the gastric mucosa to caffeine, (b) failure to wait long enough for intramuscular caffeine to produce its effect and (c) the fact that the stimulation of secretion by secretagogues in coffee, natural or produced by the roasting process, was not distinguished from the secretion due to caffeine<sup>6</sup>. The peak of the response to the intramuscular administration of caffeine usually does not occur until sixty to seventy minutes after the injection, whereas, when caffeine is given as a test meal, the peak response occurs in from thirty to forty minutes<sup>7</sup>. The prolonged increase in total output of hydrochloric acid in patients with "peptic" ulcer was missed by previous investigators. In order to demonstrate this prolonged response it is necessary to collect gastric secretion for a longer period than one hour and to determine the total output of free acid by multiplying the concentration of acid in the juice by the total volume of gastric contents aspirated (every ten minutes).

#### PRODUCTION OF GASTRIC ULCER IN CATS

Interest in the possible deleterious effects of excessive amounts of caffeine on the stomach was provoked by a recent report by Judd<sup>7</sup>. Judd observed acute and subacute gastric ulcers in 40 to 50 per cent of cats when they were given caffeine in a beeswax-petrolatum mixture to insure the slow and more prolonged absorption of the drug. We<sup>8</sup> have confirmed the work of Judd and have reported additional observations which may explain in part the pathogenesis of caffeine-induced ulcer<sup>9</sup>.

Direct observation of a mucosal stoma in the cat shows a persistent blushing (hyperemia) after the intravenous administration of caffeine, followed by cyanosis. Microscopic sections, made at the time when the mucosa grossly appeared more reddened thicker and succulent, showed apparent dilatation and engorgement of veins and venules of the submucosa. However, when the mucosa appeared cyanotic there was pronounced dilatation and engorgement of the mucosal venules. Continuous or repeated stimulation of gastric secretion in the anesthetized cat with histamine for ten to twelve hours produces no apparent change in the gastric mucosa. But, if caffeine (125 mg intravenously or by direct lavage of the stomach for thirty minutes) is alternated with the histamine (0.3 mg), large diffuse areas of epithelial desquamation and multiple bleeding erosions and ulcerations of the gastric mucosa are observed in as short a time as five hours. This alteration in the susceptibility of the gastric mucosa to the proteolytic action of gastric juice has been arbitrarily designated and attributed to "cellular toxicity". The latter may involve alteration in cell permeability or the concept of caffeine-histamine synergism. Thus the vascular changes and factor of "cellular

toxicity" are implicated in the pathogenesis of caffeine-induced ulcers in cats by increasing the susceptibility of the mucosa to the digestive action of gastric juice.

*Comment*—It is realized that these observations on the cat may not be applied directly to man. It is reasonable however to estimate how much caffeine might be required in man to produce similar changes in the gastric mucosa. Since 2 grains (125 mg) of caffeine in combination with "histaminergic" stimulation of gastric secretion (0.3 mg of histamine dihydrochloride alternately) was capable of producing acute ulcers in a 5 pound (2.3 Kg) cat, 60 grains (7.8 Gm) of caffeine would be required in a 150 pound (68 Kg) man on the basis of body weight. However, body weight comparisons are not always reliable. For example a dose of 0.5 or 1.0 mg of histamine stimulates gastric secretion in man and dog, a dose of 62.5 to 125 mg of caffeine stimulates gastric secretion in the cat, and 80 to 250 mg in man. It is reasonable to hypothesize that the daily consumption of 20 or 30 grains of caffeine over a long time (equivalent to ten to fifteen cups of coffee) may contribute to the development of "peptic" ulcers in ulcer-susceptible individuals. We have not had an opportunity to make observations on a patient with a gastric fistula or during gastroscopy.

#### THE GASTRIC SECRETORY RESPONSE TO CAFFEINE IN MAN: NORMAL SUBJECTS AND "PEPTIC" ULCER PATIENTS

The gastric secretory response to a "caffeine test meal" has been determined in 50 asymptomatic medical students and nurses and in 36 patients under management for "peptic" ulcer.

The ordinary gastric analysis is designed to answer one or two questions: (a) Does the stomach secrete free acid in response to a meal (Ewald or some modification)? (b) If not, is the stomach capable of secreting free acid in response to a more potent stimulus (histamine)? Since the "caffeine test meal" as used by us consists of more than the ordinary gastric analysis, and since it may prove to be of diagnostic or prognostic value, we shall briefly describe it.

*The Caffeine Test Meal*—After an overnight fast, the usual precautions regarding expectoration of saliva, the avoidance of retching by placing the tube between the teeth and the cheek, and completeness of evacuation of the stomach at each period are followed. After removal of the residuum, a baseline from which stimulation can be measured is obtained by emptying the stomach every ten minutes for a control period of thirty minutes. The total volume recovered at each ten minute aspiration is measured and a sample (10 cc) titrated for free and total acid, expressing the latter in terms of the total volume aspirated (volume times concentration).

Then, 200 cc of warm water containing 0.5 Gm (7½ grains) of caffeine with sodium benzoate is introduced into the stomach through the tube. The resulting solution is slightly alkaline, having a  $pH$  of about 8.0. A "block" procedure was then followed for the analysis: for the next two ten minute intervals 10 cc samples were removed for analysis. The purpose in removing these samples was to detect the first rise in acid concentration and thus the latent period of stimulation. To simplify the procedure for clinical use, the aspiration of these two samples may be omitted. Thirty minutes after introducing the test meal, the residuum of the latter and whatever gastric secretion has accumulated is removed completely. The stomach is emptied at ten minute intervals thereafter for an additional ninety minutes or until the secretory response has subsided and the "basal" level once again is obtained. The duration of the test is thus two hours and thirty-five minutes divided as follows: removal of residuum thirty minute "basal" control period five minute period required to introduce the test meal

<sup>6</sup> Bickel A. and Van Eweyk C. Zur Kenntnis der die Magen- und die Magen-Darmbewegung anregenden Substanzen im Kaffee-Infus. *Ztschr f d ges exper Med* 54:75 1927. Oehnell and Berg.

<sup>7</sup> Judd E. S. Experimental Production of Peptic Ulcers with Caffeine. *Bull Am Coll Surg* 28:46 (Aug.) 1943.

<sup>8</sup> Roth J. A. and Ivy A. C. The Experimental Production of Acute and Subacute Gastric Ulcers in Cats by the Intramuscular Injection of Caffeine in Beeswax. *Gastroenterology* 2:274 (April) 1944.

<sup>9</sup> Roth J. A. and Ivy A. C. The Pathogenesis of Caffeine Induced Ulcer. *Gastroenterology* to be published.



thirty minute period of exposure of the gastric mucosa, and a ninety minute period of aspirations every ten minutes after removal of the test meal

**Titrations and Calculations**—Titrate the 10 cc samples of gastric juice with thirty-sixth normal sodium hydroxide (may be made by the addition of 20 Gm of sodium hydroxide to 18 liters of water), using Toepfer's reagent and phenolphthalein as the indicators for free and total acid respectively. As 1 cc of thirty-sixth normal sodium hydroxide is equivalent to 1 mg of hydrochloric acid, the buret readings can be converted directly into milligrams of hydrochloric acid. To obtain the total output of free and total acid, the buret readings are divided by 10 to give the number of milligrams of hydrochloric acid per cubic centimeter of gastric juice and multiplied by the volume aspirated. The accuracy of the test thus depends on the ability of the technician to empty the stomach of its contents completely which is relatively easy.

Buret reading = mg HCl/10 cc gastric juice (sample)

Total output of acid =  $\frac{\text{buret reading}}{10} \times \text{total volume aspirated}$

TABLE 1—The Effect of Caffeine on Gastric Secretion in Normal Subjects and Ulcer Patients

| Subject | Control Basal <sup>1</sup> Secretion |                           |                            | Caffeine Test Meal<br>200 Mg Caffeine in 200 Cc Water |                           |                            |                                    |                           |                            | Comment  |
|---------|--------------------------------------|---------------------------|----------------------------|---|---------------------------|----------------------------|------------------------------------|---------------------------|----------------------------|--|
|         | Total Juice Secreted<br>in ½ Hour    |                           |                            | Total Juice Secreted<br>in 1st Hour                   |                           |                            | Total Juice Secreted<br>in 2d Hour |                           |                            |  |
|         | Vol<br>ume<br>Cc                     | Free<br>Acid<br>Mg<br>HCl | Total<br>Acid<br>Mg<br>HCl | Vol<br>ume<br>Cc                                      | Free<br>Acid<br>Mg<br>HCl | Total<br>Acid<br>Mg<br>HCl | Vol<br>ume,<br>Cc                  | Free<br>Acid<br>Mg<br>HCl | Total<br>Acid<br>Mg<br>HCl |  |
|         |                                      |                           |                            |   |                           |                            |                                    |                           |                            |  |
| J R *   | 92                                   | 0                         | 6                          | 69  | 185                       | 214                        |                                    |                           |                            | Normal subject abrupt transient response   |
| G D *   | 16                                   | 0                         | 6                          | 93  | 162                       | 193                        |                                    |                           |                            | Normal subject abrupt transient response   |
| P W *   | 58                                   | 5                         | 35                         | 128   | 57                        | 90                         |                                    |                           |                            | Normal subject abrupt transient response   |
| J W *   | 25                                   | 0                         | 14                         | 62  | 54                        | 74                         |                                    |                           |                            | Normal subject low flat curve  |
| J K *   | 28                                   | 0                         | 11                         | 94  | 50                        | 143                        |                                    |                           |                            | Normal subject low flat curve  |
| J I     | 90                                   | 69                        | 111                        | 200   | 420                       | 507                        | 122                                | 361                       | 419                        | Normal subject developed symptoms 6 months later   |
| A U     | 35                                   | 59                        | 69                         | 130   | 265                       | 300                        | 93                                 | 339                       | 376                        | Normal subject developed symptoms and x-ray evidence 3 months later  |
| G J     | 64                                   | 21                        | 30                         | 115   | 219                       | 308                        | 80                                 | 104                       | 177                        | Prepyloric ulcer symptoms 19 years pyloroplasty  |
| H P     | 36                                   | 0                         | 27                         | 287   | 86                        | 166                        | 164                                | 72                        | 127                        | Prepyloric ulcer symptoms 9 years obstructed   |
| L F     | 6                                    | 87                        | 115                        | 180   | 393                       | 401                        | 120                                | 207                       | 311                        | Prepyloric ulcer symptoms 6 years, severe hematemesis coffee distress  |
| W M     | 61                                   | 195                       | 227                        | 282   | 923                       | 1 045                      | 310                                | 1 279                     | 1 410                      | Duodenal ulcer symptoms 9 months severe hematemesis perforation 3 weeks after test coffee distress                       |
| J J     | 73                                   | 0                         | 76                         | 102   | 193                       | 230                        | 220                                | 240                       | 41                         | Duodenal ulcer suspected from caffeine test meal no symptoms x-ray negative severe hematemesis red blood cells 2,000 000 |
| C T     | 21                                   | 6                         | 56                         | 79  | 150                       | 181                        | 88                                 | 236                       | 263                        | Duodenal ulcer symptoms 9 years hematemesis four times rapid emptying concentration remains elevated, coffee distress    |

\* No figures appear for the second hour since the response had returned to the basal level within sixty minutes

**Response of Normal or Asymptomatic Subjects**—Three types of response were obtained in the normal or asymptomatic subjects when the data were plotted as a "total output of acid curve." Thirty-seven, or 75 per cent showed an abrupt, transient stimulation with a peak followed by a return to the control level within sixty to seventy minutes (chart 1). In 15 per cent a low flat curve was obtained which returned to the control level in seventy to eighty minutes (chart 2).

The remaining 5 subjects, or 10 per cent, showed a prolonged secretory response (chart 3). It is noteworthy that 3 of these 5 subjects have since developed epigastric distress simulating ulcer, and in one a prepyloric ulcer has been found by x-ray (table 1).

**The Response of Ulcer Patients**—Of the 36 patients studied 30 had proved duodenal ulcer and 6 gastric ulcer.<sup>10</sup>

All of these patients, with the exception of 1, have consistently shown a prolonged response to the caffeine test meal (charts 4 and 5). Though the cases are relatively few, there is a greater tendency for the gastric ulcer patient to return to the control level toward the end of two hours than the duodenal ulcer patient.

**The Response of Special Cases**—The data in table 1 are presented to illustrate the individual variations and range in response to a caffeine test meal in the various groups of normal subjects and ulcer patients. It is to be noted that where the acid output for the second hour remains high this reflects the prolonged secretory curve in which a high level of acid is maintained (charts 3, 4 and 5). Certain of the cases have been selected to point out particular features in the use of the caffeine test meal for the diagnosis of ulcer. Patient H P, partially obstructed at the time the test was performed, showed an absence of free acid in the "basal" control period but maintained a stimulation of gastric secretion at a relatively low level throughout the test. Not all patients with a prepyloric ulcer show a tendency for the secretory response to return to the basal level toward the end of the two hours as demonstrated in the case of L F. The highest magnitude of stimulation in this series of ulcer patients was obtained in W M, three weeks after the test was performed the patient developed an acute perforation. Patient J J, with the diagnosis of catatonic schizophrenia, was admitted to the hospital after a

severe attack of hematemesis with a red blood cell count of 2 000 000. The anamnesis and x-ray examination of the stomach and duodenum gave no indication of peptic ulcer, but the prolonged secretory curve in response to caffeine confirms the most probable cause of such severe hemorrhage in a man aged 24 in whom no cause could otherwise be demonstrated. This instance illustrates the most useful application of the caffeine test meal in cases where other laboratory aids fail to confirm the history or where a silent ulcer is revealed. The low volume of gastric juice recovered during the test on patient C T indicates rapid emptying through the pylorus, but the concentration of acid (milligrams of hydrochloric acid per cubic centimeter) remained elevated throughout the test. This has been interpreted as consistent with the ulcer response since normal subjects show a return to the "basal" concentration as well as to the "basal" total output of acid, although the differences between normal and ulcer concentration curves (clinical units) are not as great as in total output curves (chart 6). Only 1 of the group of 36 ulcer patients studied showed such rapid emptying of the stomach as to present the foregoing picture.

**Comparison of Responses of Ulcer Patients to Alcohol and to Caffeine**—Relifuss, according to Bockus,<sup>11</sup> was the first to observe the tendency for patients with duodenal ulcer to manifest a prolonged or "terminal" response to a test meal. This has been reported by

10. The majority of the ulcer patients used in this study were provided by Drs. Kipnis, Baker, Carroll and Fruba at the Hines Veterans Hospital.

11. Bockus, H. L. Gastroenterology, Philadelphia: W. B. Saunders Company, 1944, vol. 1, p. 407.



others<sup>12</sup> In their studies the concentration of acid in clinical units was followed. In our work as in laboratory animals, we have calculated and used the total output of acid secreted. We believe this to be preferable because the total output of acid is a truer index of the secretory response than the concentration of acid. To

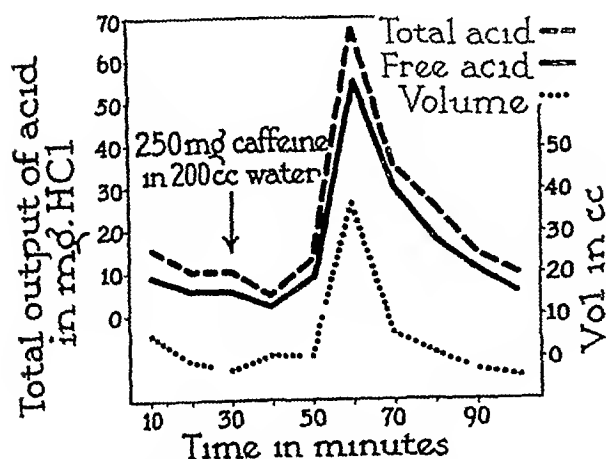


Chart 1—Composite curves on 37 normal subjects (75 per cent) showing abrupt transient stimulation of gastric secretion in response to caffeine test meal.

do this with the intact stomach a 'block' procedure (vide supra) is required since it cannot be done by the 'sampling' technique.

Because the alcohol test meal is frequently used and because alcohol is frequently interdicted in patients with 'peptic' ulcer, we have compared alcohol with caffeine as gastric stimulants. Ten of the peptic ulcer patients were given the alcohol (200 cc 5 per cent) and caffeine test meals. Twenty-five normal asymptomatic subjects were similarly studied. In each case the 'block' procedure as described was used. The composite 'total output of acid' curves of normal subjects and 'peptic' ulcer patients are shown in chart 7.

In both groups an abrupt transient stimulation with a peak and return to the control level within sixty to seventy minutes occurred in response to alcohol.

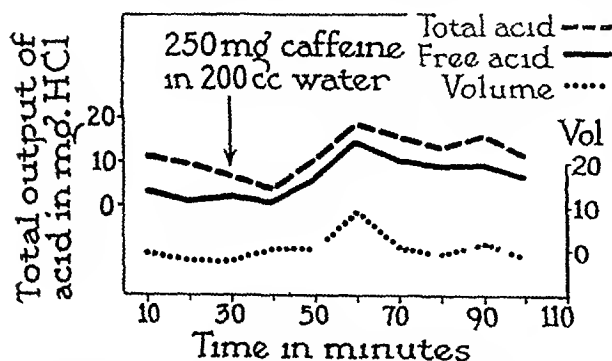


Chart 2—Composite curves on 5 normal subjects (15 per cent) showing low flat secretory curve in response to caffeine test meal.

Although the average magnitude of the response to alcohol is higher in the duodenal ulcer patients the shape of the curves and the duration of the responses are the same. Since the magnitude of the response to alcohol in normal subjects and 'peptic' ulcer patients

overlap so decidedly in the two groups the differences are not statistically significant and are of little differential value. This was not true of the caffeine test meal except in 10 per cent of asymptomatic subjects who apparently have a predisposition to 'peptic' ulcer.

**Comment**—Although sufficient evidence has been presented to show that the stomach of the 'peptic' ulcer patient especially the duodenal ulcer patient manifests a more prolonged response to caffeine than that of the 'normal' subject certain questions are still open. A sufficient number of duodenal ulcer patients have not been studied to ascertain if all will show a prolonged response. A sufficient number of gastric ulcer patients have not been studied to ascertain if they as a rule respond differently from duodenal ulcer patients. Whether the response of duodenal ulcer patients to the caffeine test meal returns to the normal type during a remission has not been determined.

Our results suggest that it would be valuable to determine with what degree of accuracy predisposition to 'peptic' ulcer may be predicted by the response to the caffeine test meal. In this connection one should recall the observations of Todd<sup>13</sup> on medical students.

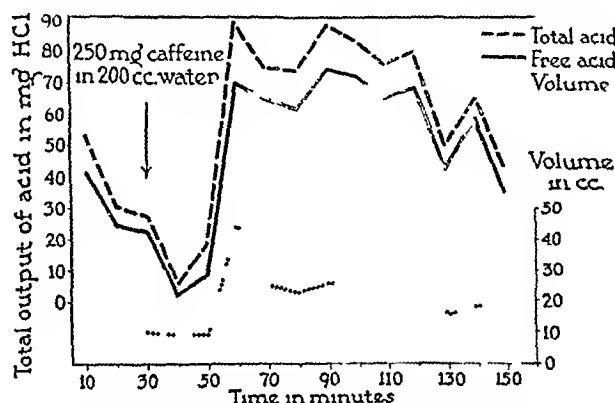


Chart 3—Composite curves on 5 normal subjects (10 per cent) showing prolonged response at a high level of acidity like the ulcer patient.

He found (a) that a small group of students responded to anxiety by manifesting a hypermotile and hypertonic stomach and (b) that it was only in this group that duodenal ulcer developed sometime during the medical course.

The practical points which we believe our data establish are that caffeine causes a prolonged response in duodenal ulcer patients, and it would seem to be indicated that this fact should be considered in the management of such patients.

#### CAFFEINE ACTS SYNERGISTICALLY WITH HISTAMINE OR ALCOHOL

It has been reported elsewhere that caffeine acts synergistically with histamine or alcohol.<sup>14</sup> This matter was studied for practical as well as for academic reasons.

First, why does caffeine cause a prolonged gastric secretory response in patients with 'peptic' ulcer? There is strong presumptive evidence showing that the phase of gastric secretion which cannot be inhibited by atropine is due to the production of histamine.<sup>1</sup> If

<sup>13</sup> Todd T W. Behavior Patterns of the Alimentary Tract. *Tr Am Gastroenterol A* 32: 487, 1930. Schiffrin M J, and Ivy, A C. Physiology of Gastric Secretion. Particularly as Related to the Peptic Ulcer Problem. *Arch Surg* 44: 399 (March) 1942.

<sup>14</sup> Roth J A and Ivy A C. The Synergistic Effect of Caffeine on Histamine in Relation to Gastric Secretion. *Am J Physiol* to be published.

<sup>15</sup> Ivy A C. The Mechanism of Gastric Secretion. *Surgery* 10: 511 (Dec.) 1941.

<sup>12</sup> Blockus H L, Glassmire C and Bank J. Fractional Gastric Analysis in 200 Cases of Duodenal Ulcer. *Am J Surg* 12: 6 (April) 1951.

the ulcer patient produces histamine and since histamine and caffeine act synergistically, this would explain the prolonged response of the ulcer patient to caffeine. It has been shown<sup>14</sup> that when the two drugs are given together to a nonulcer subject the magnitude of the

beverages selected for study included coffee, coffee with sugar (10 Gm) and cream (30 cc, 18 per cent), "Sanka," "Postum," "Coca Cola" and tea. An attempt was made to make the preparations of the beverages uniform by using a constant weight of the dry product per unit volume and by being consistent in the time of extraction. Each beverage was prepared according to the directions on the label of the product. The volume of the beverages used for test meals in the studies was

TABLE 2—Average Caffeine Content of Various Beverages

| Beverage <sup>1</sup> | Approximate Caffeine Content |                      |
|-----------------------|------------------------------|----------------------|
|                       | Mg /Cup or Bottle            | Grains/Cup or Bottle |
| Coffee                | 100-120                      | 1½-2                 |
| 1 cup Coca Cola       | 77                           | 1¼                   |
| Spur                  | 57                           | ¾                    |
| Coca Cola             | 33                           | ¾                    |
| Tea                   | 17-30                        | ¼-½                  |
| Sanka                 | 8-17                         | ¼-½                  |

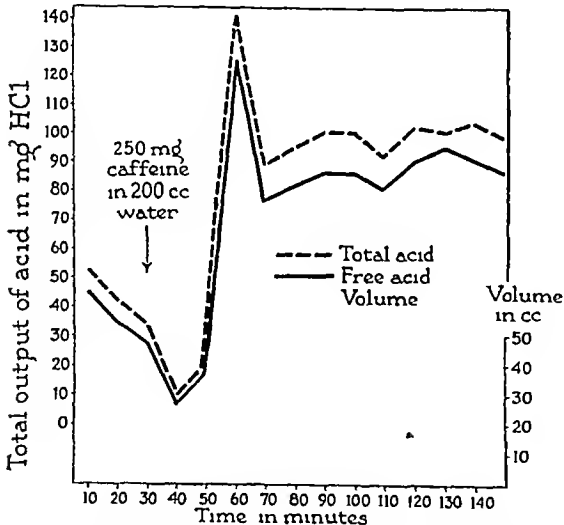


Chart 4—Composite curves on 30 duodenal ulcer patients showing a prolonged stimulation at a high level of acidity in response to caffeine

combined response is greater than the sum of the responses to the drugs given separately and the response is definitely prolonged.

Since alcohol, according to strong evidence stimulates gastric secretion by causing the release of histamine,<sup>15</sup> it is not surprising that alcohol and caffeine act synergistically on gastric secretion. This observation would caution against the mixing of caffeine-containing and alcohol-containing beverages by persons with a predisposition to "peptic" ulcer.

RESPONSE TO CAFFEINE-CONTAINING AND SUBSTITUTE BEVERAGES

After studying the gastric secretory response to pure caffeine in normal subjects and ulcer patients, our attention was directed to the practical problem of the

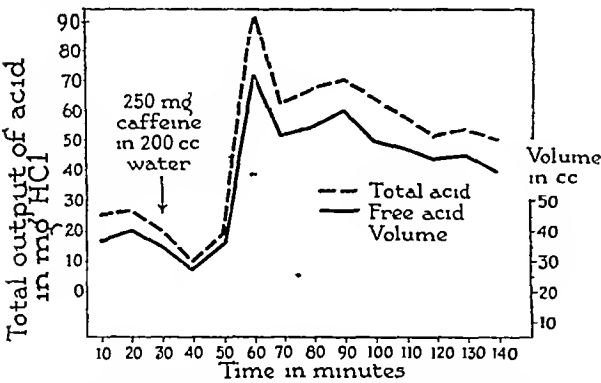


Chart 5—Composite curves on 6 gastric ulcer patients showing a tendency to return to basal level during the second hour period

response to various caffeine-containing beverages and substitute beverages.

**Method**—The same procedure as outlined for the caffeine test meal was used in these studies. The

300 cc, which is approximately the volume of two average cups. The average caffeine content of various beverages appears in table 2.<sup>17</sup> It is apparent from this table that 2 cups of coffee contain approximately the same amount of caffeine as used in the caffeine test meal (250 mg caffeine base). As the color of the beverage interfered with colorimetric titrations, it was necessary to do electrometric titrations, using as an end point

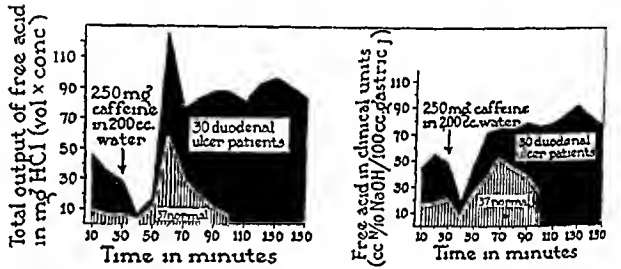


Chart 6—Comparison of free acid response to caffeine test meal in normal (75 per cent) and duodenal ulcer patients. The same data are plotted both as total output and as concentration (clinical units). The sustained total output of free acid suggests the ulcer diagnosis; the concentration curves are less reliable for diagnosis because of greater tendency for overlap.

for free acid and total acid a  $pH$  of 3.5 and 8.5 respectively.

**Results**—The average free acid response to these various beverages in the same 10 normal individuals is presented in graphic form in chart 8. It is apparent that all of the beverages stimulated gastric secretion less than an equal volume of coffee. Comparing the total output of free acid from each of the beverages with that from coffee for a period of seventy minutes, the average response to tea was 60 per cent, to "Postum" 59.3 per cent, to coffee with sugar and cream 59.7 per cent, to "Sanka" 75.3 per cent and to "Coca Cola" 89.5 per cent of the response to coffee. Although "Sanka" contains relatively little caffeine, it provokes

17 References cited in table 2

Coffee  
Soliman, T. A Manual of Pharmacology Philadelphia W. B. Saunders Company, 1926, p. 282.  
Bethel, O. W. Caffeine Beverages Internat. M. Digest 27: 46 (July) 1935.  
Pepsi Cola, Spur and Coca Cola  
New Hampshire Health News July 1941, vol. 19.  
Tea  
Aubert, H. Ueber den Caffeingehalt des Kaffeegetrancks und über die Wirkungen des Caffeins Arch. f. d. ges. Physiol. 5: 589, 1872.  
Sanka  
Examination of Three Caffeine Reduced (So-Called Decaffeinated) Coffees report of the Chemical Laboratory, J. A. M. A. 91: 940 (Sept. 22) 1928.

16 Dragstedt, C. A., Gray, J. S., Lawton, A. H. and Ramirez de Arellano, M. Does Alcohol Stimulate Gastric Secretion by Liberating Histamine? Proc. Soc. Exper. Biol. & Med. 43: 26 (Jan.) 1940.

considerable stimulation of gastric secretion presumably because of its content of other secretagogues ("Sanka" because of its secretagogue rather than caffeine content stimulates gastric secretion in the dog caffeine does not). We have confirmed the report that a so-called decaffeinated coffee preparation stimulated gastric secretion in patients with hyperchlorhydria and "peptic" ulcer about the same as coffee.<sup>18</sup>

In chart 9 appears the total output curves for free acid in response to coffee (300 cc) in both normal subjects<sup>19</sup> and duodenal ulcer patients.<sup>20</sup> The ulcer patients have consistently shown a prolonged secretory response to the coffee test meal maintaining a high level of acidity at the termination of the test. However, in the few instances in which it was tried a coffee substitute which contains no caffeine did not provoke a hypercontinuous secretion of gastric juice.

**Comment**—It is believed that the foregoing observations warrant the following recommendations in the management of the "peptic" ulcer patient. The consumption of caffeine-containing beverages

apparently render the mucosa susceptible to erosion such beverages should be avoided by the ulcer patient. This is particularly true of their excessive use. It is realized that the psychologic hardship of total abstinence is sometimes more aggravating to the ulcer patient than

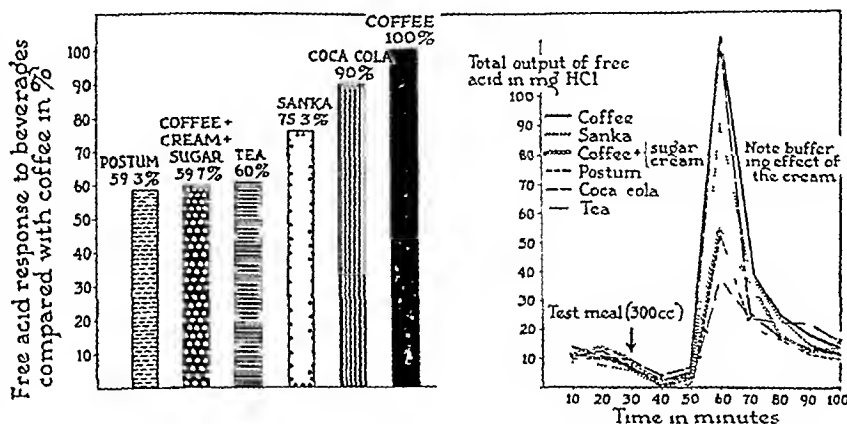


Chart 8—Composite free acid curves in response to related beverages in 10 normal subjects. The column shows the free acid response to the beverages when compared to the coffee response in percentage.

the pharmacodynamic effects of a contraindicated substance. In such instances a single cup of coffee with sugar and milk or cream with the meal could be allowed. Or one might substitute a beverage of lower caffeine content such as tea or some coffee substitute some roasted cereal product low in those secretagogues produced by roasting.

#### CONCLUSIONS

- 1 Caffeine in relatively large doses causes acute and subacute ulceration of the gastric mucosa in cats.
- 2 Caffeine (80 to 250 mg) stimulates gastric secretion in man and the cat but not in the dog.
- 3 Caffeine acts synergistically with histamine or alcohol in stimulation of gastric secretion in man and the cat.
- 4 Caffeine-containing beverages stimulate gastric secretion in man. Coffee substitutes produced by roasting cereal contain secretagogues which stimulate gastric secretion in man. Coffee stimulates gastric

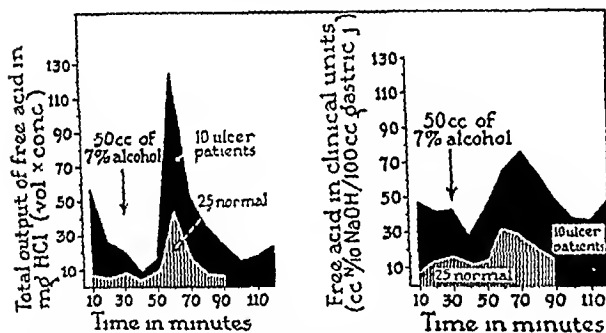


Chart 7—Comparison of free acid response to alcohol test meal in normal and ulcer patients. The similarity in the shape of the curves and the overlap in magnitude of response limits the use of the alcohol test meal in diagnosis.

ages should be restricted to a minimum in view of the magnitude and duration of the gastric secretory response. If small amounts are allowed, they should be taken with cream and sugar. In our series of 36 ulcer patients 70 per cent reported that they had observed that coffee aggravated their symptomatic distress.

It is well known that much sound clinical judgment and persuasion must be exercised in the management of the patient with "peptic" ulcer. It should be clear that because a substance stimulates gastric secretion this in itself is not a sound reason for its interdiction. Otherwise we should interdict protein food which serves an important role in the therapeutic rationale of frequent feedings with milk and cream.

Since caffeine and caffeine-containing beverages do not provide a "buffering effect" but provoke a prolonged secretion of acid in ulcer patients and since caffeine produces vascular and "cellular" changes which

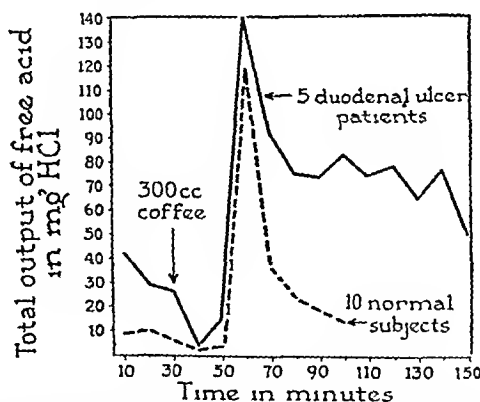


Chart 9—Comparison of the free acid response to a coffee test meal in normal subjects and duodenal ulcer patients. Note the sustained stimulation in the ulcer patients in contrast to the abrupt transient response in normal subjects.

secretion because of its caffeine content and because of other secretagogues (natural roast products or irritant volatile oils).

5 Caffeine and caffeine-containing beverages provoke a prolonged increase in the total output of acid by the stomach in patients with "peptic" ulcer.

18 Berni P and Faure G. Cafe decaffeine et tabac denicotinise en dietetique gastrique. Arch d mal de l'app digestif 27: 862 (Oct) 1925.

19 Katsch G and Kalk H. Zum Ausbau der kinetischen Methode fur die Untersuchung des Magenchenismus. Klin Wochenschr 4: 2190 (Nov) 1925.

20 Wichels P, Brink J and Lauber H. Beitrage zur Pathogenese der Gastritis. Leberschaden und Magenkrankheit. Zeitschr f Klin Med 123: 325 (Oct) 1933.

6 Five of a group of 50 'normal' or asymptomatic human subjects responded to the caffeine test meal like an ulcer patient. Three of the 5 have subsequently developed the ulcer type of distress, and 1 of these has developed an ulcer as demonstrated by x-ray.

7 The evidence indicates that the excessive use of caffeine-containing beverages may contribute to the pathogenesis of "peptic" ulcer in the ulcer susceptible person and will render the therapeutic management of the condition more difficult.

#### ABSTRACT OF DISCUSSION

DR A F R ANDRESEN, Brooklyn After experimenting with coffee in ulcer patients, I began thirty years ago to forbid its use in ulcer diets and have continued to do so ever since. This in contradistinction to smoking, which I have found is rarely harmful and then probably explainable on an allergic basis. The demonstration that caffeine given to human beings will produce an acid curve of continued secretion in a series of fractional removals of gastric contents thereafter is an indication of irritation. The similar curve, a continued or rising secretion for a period of two hours or more following injection of histamine instead of the normal, physiologic rise and fall after one hour, has been demonstrated in most ulcer cases and we have always explained it on the basis of gastric irritation produced by the presence of the ulcer. Histamine appears to be a physiologic stimulant to gastric secretion, Ivy having demonstrated its identity with gastric hormone, and is therefore the best stimulant to secretion that can be used in gastric analysis. The combination of an irritant such as caffeine with the histamine would not seem advisable as a routine procedure, as the response would not be a good test of the patient's usual secretory habits. The suggestion that human peptic ulcers may be caused by the taking of caffeine does not seem to be justified, although sudden excessive consumption of caffeine by patients subject to the development of ulcers might conceivably be the irritant which started an attack. The diffuse areas of superficial erosion or sloughing seen in the experiments on the cats evidences of a poisoning, do not at all resemble discrete human peptic ulcers. Prevention of ulcers by abstinence from caffeine is not borne out clinically. If other factors tending to produce an ulcer have not been eliminated, abstinence from caffeine has not prevented their recurrence and I have found that patients whose focal infections have been thoroughly eradicated can drink coffee with impunity.

DR THEODORE J CLRPHEY, Garden City, N Y I should like to ask Dr Ivy whether he has used this test in the equivocal case, roentgenologically speaking, whether it has been possible to establish the presence of ulcer or rule out the presence of ulcer on the basis of an evasive or equivocal x-ray finding.

DR HEINRICH NECHELES, Chicago Caffeine has been used for stomach tests a long time in Europe. I wonder why it has not found wider application. Starkenstein has shown why ulcer patients should drink their coffee with cream or milk, because with the latter substances the toxicity of caffeine is actually lowered. Apparently a slower absorbed and less toxic compound is formed between lipid and caffeine. Rats injected with a minimal toxic dose of caffeine or black coffee died in a short time. They lived when the same amount of caffeine or of black coffee was mixed with milk or with cream.

DR A C ILL, Chicago In regard to the equivocal case so far we have had experience with only 1 patient who had hematemesis for some obscure reason. No niche or disturbance could be found on x-ray examination. The patient gave the typical caffeine curve of duodenal ulcer. I have forgotten whether or not an operation was done, but we thought that the hemorrhage was due to bleeding from superficial lesions of the gastric mucosa. In regard to the literature cited by Dr Necheles, that literature is covered in our complete manuscript and could not be reviewed in the time allowed.

## THE EFFECT OF PENICILLIN ON RHEUMATOID ARTHRITIS

MAJOR EDWARD W BOLAND

CAPTAIN NATHAN E HEADLEY

AND

LIEUTENANT COLONEL PHILIP S HENCH

MEDICAL CORPS, ARMY OF THE UNITED STATES

The cause of rheumatoid (atrophic) arthritis is unknown. Of the many impressions regarding its cause the microbial hypothesis is still the most widely accepted and, of the many different bacteria which have been incriminated, hemolytic streptococci have been since 1929, most under suspicion.<sup>1</sup>

Hemolytic streptococci from time to time have been recovered from the synovial fluid and blood, from foci of infection and occasionally from synovial membrane, bone and lymph nodes of patients with rheumatoid arthritis. The blood of the majority of patients who have this disease contains antibodies against hemolytic streptococci, that is, agglutinins, generally in high titer and precipitins for the C substance of hemolytic streptococci. Although the concentration of antistreptolysins and antifibrinolysins in the blood is not increased except in some early or acute cases, the skin of patients with rheumatoid arthritis often is found to be hypersensitive to extracts of hemolytic streptococci.

Such is the direct and indirect evidence on which the argument against hemolytic streptococci has been based. But since many patients with unmistakable rheumatoid arthritis do not present such evidence, the hypothesis has remained presumptive only.

Ever since it was announced that penicillin was extremely effective against a variety of infectious agents including hemolytic streptococci many physicians and a host of rheumatic patients have been hopefully awaiting news that penicillin might prove effective against rheumatoid arthritis. True, the sulfonamides, also effective against hemolytic streptococci, have proved useless against this disease.<sup>2</sup> But it was hoped that penicillin might somehow prove to have power superior to sulfonamides against hemolytic streptococci or, if hemolytic streptococci were not the cause of rheumatoid arthritis, perhaps penicillin might kill the 'undiscovered germ' of the disease. Hence even though we never had accepted hemolytic streptococci as the cause,<sup>1</sup> we were pleased when the War Department and the Surgeon General's Office authorized the staff of the Rheumatism Center of the Army, at the Army and Navy General Hospital,<sup>3</sup> to give penicillin a clinical trial in rheumatoid arthritis.

#### PLAN OF INVESTIGATION

Two chief policies governed our investigation.

*Policy Regarding Selection of Cases*—The only cases chosen for trial of treatment with penicillin were those in which the disease had advanced far enough to be diagnostically unmistakable but not far enough to have produced irreversible changes (destruction of cartilage).

Lieutenant Colonel Hensch is on leave of absence from the Division of Medicine, Mayo Clinic, Rochester, Minn.

From the Rheumatism Center of the United States Army, Army and Navy General Hospital, Hot Springs, Ark.

1 Hensch, P. S. Is Rheumatoid (Atrophic) Arthritis a Disease of Microbic Origin? A Summary of the Arguments For and Against the Infectious Theory. In Gordon, R. G. A Survey of Chronic Rheumatic Diseases. Contributed by Contemporary Authorities in Commemoration of the Bicentenary of the Royal National Hospital for Rheumatic Diseases, Bath, 1738-1938. New York: Oxford University Press, 1938, pp. 35-62.

2 Coggeshall, H. C. and Bauer, Walter. The Treatment of Gonorrhea and Rheumatoid Arthritis with Sulfanilamide. New England J. Med. 220: 95-103 (Jan. 19) 1939.

3 Hensch, P. S. and Boland, E. W. Unpublished data.

and subchondral bone notable flexion deformities) the presence of which might have made difficult a clearcut evaluation of results

**Policy Regarding Dosage.**—We decided to give penicillin long enough and in large enough doses so that were our results negative, it could not well be said that our patients had not received sufficient amounts of the material

#### PATIENTS TREATED

Ten patients have been treated intensively (table 1). All were male soldiers recently on active duty. Their ages were from 23 to 45 (average 30) years.

**Duration of Illness.**—Eight of the patients never had had the disease prior to active duty. Two of the patients had had the disease mildly in civilian life. One of these 2 (patient 7) had had three interrupted periods of mild arthritis between 1930 and 1934 then none until 1943, the other (patient 10) had had mild periodic sacroiliac backache since 1938, but the periph-

ingers, thickened, tender metatarsals swollen toes ankles wrists, knees and so forth. In 6 cases definite effusion was present in the knees. There were early slight flexion deformities of the knees in 4 cases and of the elbows in 2 cases. Several patients exhibited mild but definite muscular atrophy. Therefore the activity of the disease was graded 2 to 2 plus (table 1).

**Roentgenograms.**—In no case were there as yet any notable roentgenographic alterations in the joints, such as definite thinning of joint spaces or irregularities in bony contour. Present in some joints were increases in periartricular shadows and evidence of slight atrophy of bone.

**Laboratory Data.**—Sedimentation rates were determined by the Wintrobe method (normal values 0 to 9 mm per hour). Rates were increased in every case (table 1). Of the 10 patients 4 had slight secondary anemia (hemoglobin 11 to 12.5 Gm per hundred cubic centimeters) and 1 had moderate anemia (hemoglobin

TABLE 1—Effect of Penicillin on Rheumatoid Arthritis

| Case | Age, Years | Duration of Current Symptoms, Months | Activity of Disease* | Extension of Disease | Penicillin   |            |              | Clinical Results |                   | Sedimentation Rate, mm per Hour |                 |
|------|------------|--------------------------------------|----------------------|----------------------|--|------------|--------------|------------------|-------------------|---------------------------------|-----------------|
|      |            |                                      |                      |                      | Daily Dosage in Oxford Units (Intramuscular) and Days Given                  | Total Dose | Days Treated | Objective        | Subjective        | Before Treatment                | After Treatment |
| 1    | 30         | 5                                    | 2+                   | 0                    | 320,000 for 5 days;<br>160,000 for 10 days                                   | 800,000    | 15           | No change        | No change         | 45                              | 43              |
| 2    | 41         | 18                                   | -                    | -                    | 90,000 for 5 days;<br>160,000 for 10 days;<br>(20,000 intra articular twice) | 1,500,000  | 15           | No change        | No change         | 31                              | 25              |
| 3    | 28         | 6                                    | 2                    | 2                    | 160,000 for 20 days  | 3,200,000  | 20           | No change        | No change         | 21                              | 31              |
| 4    | 1          | 1                                    | 2                    | -                    | 160,000 for 20 days  | 3,200,000  | 20           | No change        | No change         | 29                              | 41              |
| 5    | -          | 4                                    | 2                    | 2+                   | 240,000 for 1 day;<br>120,000 for 12 days                                    | 1,560,000  | 14           | No change        | No change         | -                               | 0               |
| 6    | 4          | 0                                    | 2                    | 1                    | 240,000 for 1 day;<br>120,000 for 12 days                                    | 1,560,000  | 14           | No change        | Slightly improved | -                               | 0               |
| 7    | 1          | 6                                    | 0                    | 2                    | 240,000 for 1 day;<br>120,000 for 12 days                                    | 1,560,000  | 14           | No change        | No change         | 4                               | 4               |
| 8    | 24         | 0                                    | -                    | 2                    | 240,000 for 1 day;<br>120,000 for 13 days                                    | 1,840,000  | 14           | Improved         | Improved          | 6                               | 4               |
| 9    | 20         | 2                                    | 2                    | 2                    | 240,000 for 1 day;<br>120,000 for 13 days                                    | 1,560,000  | 14           | No change        | Worse             | 1                               | 20              |
| 10   | 2          | 1                                    | 2+                   | 2+                   | 240,000 for 1 day;<br>120,000 for 12 days                                    | 1,560,000  | 14           | No change        | No change         | 30                              | 6               |

\* Grade 1 would indicate the least and grade 4 the greatest activity.

eral joints had been affected only in the past thirteen months. Excluding the disease from which these 2 patients had suffered before they entered military service, the 10 patients had been ill from two to eighteen months, an average of 7.4 months. Thus, their disease was in a fairly early stage.

**Symptoms.**—The symptoms were characteristic of rheumatoid arthritis: aching, soreness, stiffness and "jelling" of joints and muscles, weakness, fatigue, malaise, loss of appetite, some loss of weight and hyperhidrosis of the extremities. Five of the patients walked with a limp, 1 was temporarily bedridden. Before they had come to this hospital the patients had been treated with salicylates, rest, vitamins, sulfonamides (no effect) and the removal of tonsils (2 cases) and teeth.

**Examination of Joints.**—Despite its relatively short duration, the disease had been decidedly progressive such that in every case several or many joints were involved. Extension of the disease therefore was graded 2 and 3 on a scale in which 1 would indicate the least and 4 the greatest extension (table 1). The joints presented the classic picture of advancing rheumatoid arthritis: symmetrical fusiform swelling of the

9.5 Gm per hundred cubic centimeters). Blood cultures, made in every case, were negative. Cultures and smears for bacteria in the synovial fluid were made in 6 of the 10 cases and in all results were negative. Agglutinations for brucellosis and serologic tests for syphilis gave negative results in the 10 cases. In 4 of the 10 cases leukocyte counts were made of the synovial fluid (table 2).

TABLE 2—Leukocytes per Cubic Millimeter of Synovial Fluid

| Case | Before Treatment | After Treatment |
|------|------------------|-----------------|
| 3    | 28,000           | 26,700          |
| 6    | 5,800            | 5,100           |
| 7    | 5,500            | 8,700           |
| 10   | 44,000           | 78,700          |

#### DOSES OF PENICILLIN

In the treatment of other diseases the following doses of penicillin generally have been considered adequate for severe acute infections with hemolytic streptococci or *Staphylococcus aureus*: about 120,000 to 240,000 Oxford units daily for ten to fourteen days, the total dose being from 500,000 to 1,000,000 or more units for severe chronic infections such as osteomyelitis and

compound infected fractures, about 120,000 Oxford units daily.<sup>4</sup> Recent reports have indicated that doses somewhat smaller than those mentioned are generally effective for severe infections with or without bacteremia, 48,000 to 160,000 Oxford units daily for chronic infections 60,000 or more Oxford units daily. Indeed one experienced investigator (Herrell) has stated that a daily dose of from 40,000 to 60,000 (occasionally 100,000) Oxford units is entirely adequate even for severe infections.

In the light of the foregoing and in view of our policy of giving doses that might be considered more than sufficient rather than too low, we administered penicillin as follows. The first 2 patients received 320,000 units daily for the first five days then 160,000 units daily for the next ten days. In addition, the second patient received 25,000 units intra-articularly (into a knee) on two successive days, making the total dose in the first 2 cases respectively 3,200,000 and 3,250,000 Oxford units over a period of fifteen days.

In view of the negative results in these first 2 cases, it was decided to treat the next 2 patients daily for one month if possible. They were given daily doses of 160,000 units but, at the end of twenty days it seemed wise to stop the injections since no results were apparent and the patients were becoming "needle shy." Thus in case 3 as well as in case 4 a total of 3,200,000 units was given over a period of twenty days.

In the remaining 6 cases the doses were 240,000 units for the first day and 120,000 units daily thereafter for thirteen more days, a total of 1,800,000 units for each patient within fourteen days.

In each case the penicillin was given intramuscularly in divided doses, one dose every three hours day and night (table 1).

#### RESULTS

To evaluate our results critically we used a modification of a special research examination chart described elsewhere.<sup>5</sup> Every so often (before, during and after treatment) notations were carefully made as to articular swelling and tenderness, pain at rest, pain on voluntary and on forced motion of joints, limitation of motion and size of joints (measured with tape). Each examination sheet was filed away and was not studied until the courses of treatment had been concluded. In this way we were not influenced by the previous examinations.

Results from penicillin were essentially negative (table 1). We cannot even report the "inevitable 75 per cent of cases improved," as is reported so frequently after a wide variety of treatments. Throughout the course of treatment minor fluctuations in some of the articular characteristics were noted as can be expected even in cases of rheumatoid arthritis in which treatment is not given. But in general what few changes occurred were insignificant.

4. Keefer, C. S., Blake, I. G., Marshall, E. K., Jr., Lockwood, T. S., and Wood, W. B., Jr. Penicillin in the Treatment of Infections. A report of 500 cases. Statement by Committee on Chemotherapeutic and Other Agents, Division of Medical Sciences, National Research Council. *J. A. M. A.* **122**: 1217-1224 (Aug. 28) 1943.

5. Herrell, W. E. Further Observations on the Clinical Use of Penicillin. Proc. Staff Meet. Mayo Clin. **18**: 65-76 (March 10) 1943. The Clinical Use of Penicillin. An Antibacterial Agent of Biologic Origin. *J. A. M. A.* **124**: 622-627 (March 4) 1944. Herrell, W. E., Nichols, D. R., and Hedman, Dorothy H. Penicillin: Its Usefulness, Limitations, Diffusion and Detection with Analysis of 150 Cases in Which It Was Employed. *ibid.* **125**: 1003-1010 (Aug. 12) 1944.

6. Hench, P. S., Slocumb, C. H., and Popp, W. C. Fever Therapy: Results for Chronic Arthritis, Chronic Infectious (Atrophic) Arthritis and Other Forms of Rheumatism. *J. A. M. A.* **104**: 1779-1790 (May 18) 1933.

7. Hench, P. S., Bauer, Walter, Dawson, M. H., Hall, Francis, Hollbrook, W. P., and Key, J. A. The Problem of Rheumatism and Arthritis. Review of American and English Literature for 1937 (Fifth Rheumatism Review). *Ann. Int. Med.* **12**: 1092 (Jan.) 1939.

**Joints**—In 7 cases there was no significant objective or subjective improvement. One patient felt worse after two weeks of treatment. In 1 case (case 6) there was slight subjective but no definite objective improvement. In 1 case (case 8) there was moderate objective and subjective improvement during the two weeks of treatment, that is slight but definite reduction of pain and tenderness of fingers and ankles. But the condition of the metatarsophalangeal joints was not definitely improved; the sedimentation rate had increased slightly, and the patient was by no means cured or even much improved in condition. In view of the capricious nature of rheumatoid arthritis the improvement in this case must be regarded as unrelated to the penicillin.

**Laboratory Data**—The sedimentation rates recorded in table 1 are the average of three contiguous (and almost similar) determinations made before treatment and two made after treatment. In no case were there changes in the rate which could not be explained on the basis of variations inherent in the test itself or of the minor fluctuations of the disease.

Leukocyte counts made on synovial fluid after treatment did not differ materially from those made before treatment (table 2).

**General**—Six of the 10 patients noted definite improvement in appetite in the course of treatment. In 4 the increased appetite was sustained after discontinuance of administration of penicillin. It is problematic whether this improvement was a side effect from penicillin or the result of rest and diet in the hospital.

#### TOXIC REACTIONS

Fever, chills, urticaria or other toxic reactions did not develop in any of the cases. The only unpleasant reaction noted was the transitory mild to moderate intramuscular soreness at the sites of injection, for this no special applications were necessary.

#### SUMMARY AND CONCLUSIONS

1. Penicillin was given to 10 soldiers with early but progressive rheumatoid arthritis.

2. Large doses of penicillin were given intramuscularly every three hours day and night. The daily doses of penicillin were from 120,000 to 320,000 Oxford units; total doses were from 1,800,000 to 3,250,000 units within fourteen to twenty days. Such large doses are known to be adequate, indeed perhaps more than adequate, against even severe infections (with or without bacteremia) from hemolytic streptococci, *Staphylococcus aureus* and so forth.

3. Our clinical results from penicillin given in the doses stated over a period of fourteen to twenty days were essentially negative. In 7 of the 10 cases there was no significant subjective or objective improvement. One patient felt worse but did not appear to be in worse condition than before treatment. In 1 case there was slight subjective, but no definite objective improvement. One patient experienced moderate objective and subjective improvement in some but not in all his affected joints; the sedimentation rate increased slightly during treatment and he was by no means cured or even decidedly improved. In view of the capricious nature of rheumatoid arthritis the improvement in these 2 cases must be regarded as unrelated to the penicillin.

4. There was no definite evidence of improvement as measured by laboratory tests. There was no significant improvement in sedimentation rates or in the



comparative leukocyte counts on synovial fluid, made before and after treatment

5-Definite improvement in appetite was noted by 6 of the 10 patients. It may have been unrelated to treatment with penicillin or it may have been a general side effect thereof

6 Our results offer no support to the idea that hemolytic streptococci may be etiologically related to rheumatoid arthritis

7 In view of these negative results with rather large doses of penicillin, it does not seem unreasonable to assume that rheumatoid arthritis is not caused by any of the bacteria which are already known to be rapidly affected by penicillin

8 From these negative results we would conclude that penicillin probably should not be used for the further clinical treatment of rheumatoid arthritis, at least until the material is available in something approaching inexhaustible quantities. Further researches with penicillin in rheumatoid arthritis may be in order. At present the limited supplies available for clinical use should be allotted for the treatment of patients with diseases in which curative results are more likely to eventuate than in rheumatoid arthritis

## THE EFFECT OF VITAMIN SUPPLEMENTS ON NORMAL PERSONS

JULIAN M. RUFFIN, MD

AND

DAVID CAYER, MD

DURHAM, N. C.

At the present time the use of vitamins is widespread throughout the country, not only in the treatment of disease, but also by apparently normal persons. While no one would question the employment of vitamin therapy in frank deficiency diseases or even in suspected deficiency states, still one wonders if the indiscriminate use of vitamins, sold over the counter to people who have no obvious disease, is justified. It has been argued that such vague symptoms as weakness, nervousness, fatigability and insomnia can result from a vitamin deficiency and therefore, when such symptoms appear, vitamin therapy should be instituted.<sup>1</sup> Recent surveys, with the recommended daily allowances of the National Research Council as a guide, have indicated that the average American diet often is not adequate to maintain optimal nutrition.<sup>2</sup> This has been used as an additional argument for the administration of vitamins to people without obvious disease on the assumption that they may actually have a "subclinical deficiency" of which they are not aware.<sup>3</sup> It has been implied that even when no demonstrable deficiency exists, one's sense of well-being and ability to perform work can be improved greatly by the addition of vitamins to the diet. As pointed out by the Councils on Food and Nutrition and on Industrial Health there is at present no conclusive evidence to substantiate this point of view.<sup>4</sup> In an

effort to determine the effect, if any, of various vitamin supplements on apparently normal persons, the following study was undertaken

### METHOD

Volunteer medical students and technicians were used as subjects. They all continued their usual activities and ate essentially the same diet. Each subject was

TABLE 1—Supplements for Each Group

|                         |           |
|-------------------------|-----------|
| Group A—Vitamin tablets | 3 per day |
| Liver extract tablets   | 6 per day |
| Group B—Vitamin tablets | 3 per day |
| Yeast extract tablets   | 6 per day |
| Group C—Vitamin tablets | 3 per day |
| Placebos                | 6 per day |
| Group D—Vitamin tablets | 3 per day |
| Group E—Placebos        | 6 per day |

given a work sheet to be kept daily and was instructed to record his impression as to the effect of the medication he was taking on the appetite, energy and pep, general health, "gas" or indigestion, nausea, vomiting, the number of stools per day, abdominal pain and weight. Extraneous factors which might possibly have affected the subject also were noted. A code was printed on the work sheet to insure uniformity of recording. The time of the experiment was purposely placed in the mid-term to avoid the factor of examinations. The duration was one month during which each subject took his supplements daily. No subject knew what he was receiving or to what group he belonged. At the beginning of the experiment they were told that one group would receive placebos and the remainder various vitamins. They were instructed not to compare notes or discuss their symptoms with fellow subjects.

Two hundred subjects were selected and divided into five groups. The supplements for each group were shown in table 1. The supplements used were of the same size and appearance, so that identification was difficult, if not impossible without chemical analysis.

The contents of the various supplements were

Vitamin tablets 5 vitamin A 2500 U S P units vitamin D, 200 U S P units thiamine hydrochloride, 1 mg riboflavin 15 mg ascorbic acid, 27.5 mg nicotinamide 10 mg  
Liver extract tablets 0.5 Gm of Wilson's liver extract 120  
Yeast extract tablets 0.5 Gm of dried yeast extract  
Placebos dextrose

TABLE 2—Appetite

| Supplement | Group A<br>Vitamins<br>and Liver<br>Extract | Group B<br>Vitamins<br>and<br>Yeast | Group C<br>Vitamins<br>and<br>Placebos | Group D<br>Vitamins | Group E<br>Placebos |
|------------|---|-------------------------------------|--|---------------------|---------------------|
| Improved   | 6   | 3                                   | 9                                      | 5                   | 3                   |
| Unchanged  | 11  | 2                                   | 24                                     | 5                   | 9                   |
| Decreased  | 0   | 3                                   | 2                                      | 2                   | 1                   |
| Total      | 17  | 38                                  | 35                                     | 32                  | 13                  |

The coating of the tablets was gelatin cane sugar with iron oxide as a coloring matter.

Reliable data were obtained from 182 subjects, the number in each group being shown in the accompanying tables.

**Appetite**—The appetite was indicated as improved, unchanged or decreased. The subject was classified as having an improvement or impairment of appetite only

The vitamin tablets were the usual government issue and furnished by the Office of the Quartermaster General. The remainder of the supplement were furnished through the courtesy of the Vitco Products Company, Chicago.

From the Department of Medicine, Duke University School of Medicine.

This study was conducted at the request of the Office of the Quartermaster General, U. S. Army.

1. Haggard, H. W. Should War Workers Be Fed Vitamins? In The Nutrition Front. Report of the New York State Joint Legislative Committee on Nutrition Legislative Document No. 64 Albany, N. Y. 1942.

2. Recommended Dietary Allowances. Report of Food and Nutrition Board, National Research Council, January 1943.

3. Nutritional Deficiencies in the United States. Nutrition Rev. 2:230 (Aug.) 1944.

4. Indiscriminate Administration of Vitamins to Workers in Industry. Report of Council on Food and Nutrition and Council on Industrial Health. J. A. M. A. 115:618 (Feb. 21) 1942.

in those cases in which definite and significant changes were recorded. The findings are shown in table 2. It will be seen that there is no essential difference among the various groups.

*Energy and "Pep," General Health and Weight*—The same method of classification was employed in

TABLE 3—*Energy and Pep*

| Supplement | Group A<br>Vitamins<br>and Liver<br>Extract | Group B<br>Vitamins<br>and<br>Yeast | Group C<br>Vitamins<br>and<br>Placebos | Group D<br>Vitamin | Group E<br>Placebo |
|------------|---|-------------------------------------|--|--------------------|--------------------|
| Improved   | 29  | 32                                  | 28                                     | 28                 | 27                 |
| Unchanged  | —   | 1                                   | 2                                      | 0                  | 2                  |
| Decreased  | —   | —                                   | —                                      | —                  | —                  |
| Total      | —   | 33                                  | 30                                     | 28                 | 29                 |

TABLE 4—*General Health*

| Supplement | Group A<br>Vitamins<br>and Liver<br>Extract | Group B<br>Vitamins<br>and<br>Yeast | Group C<br>Vitamins<br>and<br>Placebos | Group D<br>Vitamin | Group E<br>Placebo |
|------------|---|-------------------------------------|--|--------------------|--------------------|
| Improved   | 1   | 2                                   | 1                                      | 1                  | 2                  |
| Unchanged  | —   | 37                                  | 34                                     | 34                 | 30                 |
| Decreased  | —   | —                                   | —                                      | —                  | —                  |
| Total      | 1   | 39                                  | 35                                     | 35                 | 32                 |

cluding energy and pep, general health and weight (tables 3, 4 and 5). It will be observed that the number recording improvement in energy and "pep" and in general health, as well as gain in weight, was essentially the same in the group taking placebos as in the other four groups who were taking various vitamin supplements.

*"Gas" and Indigestion and Abdominal Pain*—These symptoms were recorded as being present or absent. Here again, unless the changes were definite and unmistakable, they were not classified as being present. The

TABLE 5—*Weight*

| Supplement | Group A<br>Vitamins<br>and Liver<br>Extract | Group B<br>Vitamins<br>and<br>Yeast | Group C<br>Vitamins<br>and<br>Placebos | Group D<br>Vitamin | Group E<br>Placebo |
|------------|---|-------------------------------------|--|--------------------|--------------------|
| Increased  | 1   | 1                                   | 1                                      | 1                  | 1                  |
| Unchanged  | 24  | 30                                  | 30                                     | 28                 | 29                 |
| Decreased  | —   | —                                   | 0                                      | —                  | 0                  |
| Total      | 25  | 31                                  | 31                                     | 29                 | 30                 |

TABLE 6—*Gas and Indigestion*

| Supplement | Group A<br>Vitamins<br>and Liver<br>Extract | Group B<br>Vitamins<br>and<br>Yeast | Group C<br>Vitamins<br>and<br>Placebos | Group D<br>Vitamin | Group E<br>Placebo |
|------------|---|-------------------------------------|--|--------------------|--------------------|
| Present    | 1   | 32                                  | 21                                     | 1                  | 0                  |
| Absent     | —   | —                                   | —                                      | —                  | —                  |
| Total      | 1   | 32                                  | 21                                     | 1                  | 0                  |

results are shown in tables 6 and 7. No significant differences were noted in the symptoms "gas and indigestion" by the various groups. However, in the group taking yeast, there was a definite increase in the number of subjects who recorded the development of abdominal pain.

*Nausea, Vomiting and Diarrhea*—Except for 1 subject taking placebos, nausea and vomiting occurred only in those taking liver extract and yeast, particularly

the liver extract. Likewise, diarrhea developed most frequently in those taking liver and yeast (tables 8 and 9).

## STATISTICAL ANALYSIS

A statistical analysis of the data was made using the chi square test.<sup>6</sup> In analyzing the effects of the supplements in the five respective groups, only six comparisons indicated real or significant differences. These were noted in nausea and vomiting, abdominal pain and diarrhea. A significant increase in diarrhea and a highly significant increase in abdominal pain and in nausea and vomiting occurred in those groups receiving liver extract and yeast. No significant difference was noted in appetite, energy and "pep," "gas" and indigestion, general health or weight among the various groups.

TABLE 7—*Abdominal Pain*

| Supplement | Group A<br>Vitamins<br>and Liver<br>Extract | Group B<br>Vitamins<br>and<br>Yeast | Group C<br>Vitamins<br>and<br>Placebos | Group D<br>Vitamin | Group E<br>Placebo |
|------------|---|-------------------------------------|--|--------------------|--------------------|
| Present    | 6   | 9                                   | 21                                     | 1                  | 1                  |
| Absent     | 0   | 20                                  | —                                      | 34                 | 34                 |
| Total      | 6   | 29                                  | 21                                     | 35                 | 35                 |

TABLE 8—*Nausea and Vomiting*

| Supplement | Group A<br>Vitamins<br>and Liver<br>Extract | Group B<br>Vitamins<br>and<br>Yeast | Group C<br>Vitamins<br>and<br>Placebos | Group D<br>Vitamin | Group E<br>Placebo |
|------------|---|-------------------------------------|--|--------------------|--------------------|
| Present    | 8   | 2                                   | 0                                      | 0                  | 1                  |
| Absent     | 21  | 27                                  | 4                                      | —                  | 34                 |
| Total      | 29  | 29                                  | 4                                      | —                  | 35                 |

TABLE 9—*Diarrhea*

| Supplement | (Three or More Stools per Day)<br>Group A<br>Vitamins<br>and Liver<br>Extract | Group B<br>Vitamins<br>and<br>Yeast | Group C<br>Vitamins<br>and<br>Placebos | Group D<br>Vitamin | Group E<br>Placebo |
|------------|---|-------------------------------------|--|--------------------|--------------------|
| Present    | 8   | 1                                   | 2                                      | 1                  | 4                  |
| Absent     | 27  | —                                   | 1                                      | 4                  | 1                  |
| Total      | 35  | 1                                   | 3                                      | 5                  | 5                  |

## CONCLUSION

Our purpose in this study was to obtain impartial and intelligent daily records of the effect of various vitamin supplements on apparently normal persons. It was felt that in such a study, medical students would be not only cooperative but critical as well. The duration of the experiment was set arbitrarily at thirty days. In our experience, patients having frank deficiencies recover rapidly when specific therapy is instituted. It is reasonable to assume that a subclinical deficiency should respond just as promptly to treatment and therefore it was felt that nothing would be gained by prolonging the experiment.

All of the subjects were consuming the usual American diet and apparently were in good health. Before beginning the experiment, 20 of them selected at random had vitamin studies made, including the determination of carotene, vitamins A and C, nicotinic acid, thiamine hydrochloride, riboflavin, pyridoxamine, pantothenic acid and prothrombin time. All of these were within normal limits.

<sup>6</sup> The Office of the Quartermaster General prepared this statistical study.

The selection of appetite energy and "pep" and general health for evaluation was based on the assertion that vitamins will stimulate the appetite, increase energy and "pep" and improve the general health even in apparently normal persons. Our own experience suggested that untoward symptoms might arise following the administration of yeast or liver extract. Therefore "gas," indigestion, nausea, vomiting, abdominal pain and diarrhea were included in the work sheet.

As already stated the greatest care was exercised in the evaluation of changes noted by the subject. Only when these were definite and unmistakable were they recorded as such. The evaluation of the data submitted by each subject was made without knowledge of what supplement he had been taking.

It is well known that yeast and liver extract occasionally may cause distressing gastrointestinal symptoms, and this was confirmed by the observations reported in this study. The same beneficial effect was noted on the appetite energy and "pep," general health and weight in the group taking placebos as in the groups taking the various vitamin supplements.

#### SUMMARY

The administration of vitamin supplements to a group of apparently normal persons, consuming the usual American diet had no demonstrable beneficial effect.

## INTERSTITIAL CYSTITIS OF MEN

### A REVIEW OF SEVENTY-EIGHT CASES

DAVID S. CRISTOL, M.D.

Fellow in Urology, Mayo Foundation

LAURENCE F. GREENE, M.D.

Member of the Section on Urology, Mayo Clinic

ROCHESTER, MINN.

AND

COMMANDER GERSHOM J. THOMPSON

MC-V(S), USNR

Ever since Hunner<sup>1</sup> described the clinical picture of ulcer of the bladder in women which has since borne his name, relatively few cases involving men have been described. Peterson and Hager<sup>2</sup> demonstrated the general incidence of interstitial cystitis by reporting 8 cases, all involving women from a series of 1,707 urologic patients. This group was made up of 1,292 men and 415 women. While most of the patients have been women, this disease has been observed among men by many investigators. In a series of 14 cases reported in 1922, Kretschmer<sup>3</sup> described 1 case in a man. In 1929 Hinman<sup>4</sup> reported 6 cases in men in a series of 110 cases. Two of the 15 cases that Bumpus<sup>5</sup> reviewed in 1930 were in men. In 1932 Folsom<sup>6</sup> described his series of 20 cases of interstitial

cystitis, 3 of which were in men. In 1935 Young<sup>7</sup> reviewed 45 cases, of which 41 were in women and 4 in men. Higgins<sup>8</sup> reviewed 100 cases in 1941, 6 in men.

We are presenting some observations derived from reviewing the records of 78 cases of interstitial cystitis involving men. It is interesting that from an original group of 113 cases accumulating over a period of twenty-six years in which a diagnosis of interstitial cystitis had been made, only 2 have proved subsequently to be cases of vesical neoplasm and 1 eventually proved to be a case of tuberculous cystitis. Of the original group we selected 78 cases in which we have follow-up information which corroborates the diagnosis of interstitial cystitis. The remaining 32 cases are not included in this report because we did not believe that the diagnosis of interstitial cystitis was established unequivocally.

#### ETIOLOGY

The causation of interstitial cystitis is still a mystery. As in many other conditions in which the etiologic agent is not definitely established, focal infection has received its share of consideration. Hunner, as well as Meisser and Bumpus,<sup>9</sup> favored the hypothesis of the focal origin of this disease. However, Keene<sup>10</sup> was unable to produce even symptomatic relief after carefully eradicating all foci of infection. Hinman made a careful search for foci of infection in the 110 cases that he reviewed. In 80 per cent of the cases induced abortions, ectopic pregnancies, pelvic inflammatory disease or pronounced menstrual irregularity had occurred. Of his 6 male patients, 3 had a positive history of gonorrhea and 1 had syphilis with a primary genital chancre. Higgins found disease of the upper part of the urinary tract, such as pyelonephritis, hydronephrosis or infected hydronephrosis, to be present in 19 per cent of 100 cases. Of the 6 men in Higgins's group, 3 had coexisting prostatitis and 1 had syphilis. Meads<sup>11</sup> considered neglected cystitis as ranking with foci of infection as an etiologic agent. Nelson and Pinar<sup>12</sup> stated that practically all men suffering from interstitial cystitis have pyogenic infection of the prostate and seminal vesicles. Young<sup>7</sup> reported that 2 patients were completely cured after eradication of chronic prostatitis.

In our series 11 (14 per cent) men had coexisting chronic prostatitis. In 5 of the 67 cases in which the upper part of the urinary tract was investigated there were chronic inflammatory changes of the kidney and ureters. In 1 there was rather active bilateral pyelonephritis and in 2 there were small, asymptomatic renal calculi. Twenty-six patients (33 per cent) gave a positive history of previous gonorrheal infection, while 48 patients (62 per cent) denied any such history. Urethral strictures were present in 8 cases (10 per cent) and previous abdominal operations had been performed in 9 (12 per cent) of the cases.

This article has been released for publication by the Division of Publications of the Bureau of Medicine and Surgery of the U. S. Navy. The opinions and views set forth in this article are those of the writers and are not to be considered as reflecting the policies of the Navy department.

1. Hunner G. L. A Rare Type of Bladder Ulcer in Women. Report of Cases. *Tr. South Surg. & Gynec. A.* 27: 247-288 (1914).

2. Peterson Anders and Hager B. H. Interstitial Cystitis. Report of Cases. *California & West Med.* 31: 262-266 (Oct.) 1929.

3. Kretschmer H. L. Elusive Ulcer of the Bladder. *Surg. Gynec. & Obst.* 35: 759-765 (Dec.) 1922.

4. Hinman Franklin. Discussion on Peterson and Hager. p. 267.

5. Bumpus H. C. Jr. Interstitial Cystitis. Its Treatment by Overdistention of Bladder. *U. Clin. North America* 13: 1495-1498 (May) 1930.

6. Folsom A. I. Hunner's Ulcer. *Texas State J. Med.* 27: 718-721 (Feb.) 1932.

7. Young J. E. Jr. Hunner Ulcer of the Bladder. *Cleveland Clin. Quart.* 2: 51-54 (Jan.) 1935.

8. Higgins C. C. Hunner Ulcer of the Bladder (Review of 100 Cases). *Ann. Int. Med.* 15: 708-715 (Oct.) 1941.

9. Meisser J. G. and Bumpus H. C. Jr. Focal Infection in Relation to Submucous Ulcer of the Bladder and to Cystitis. *J. Urol.* 6: 285-298 (Oct.) 1921.

10. Keene F. F. Circumscribed Pan Mural Ulcerative Cystitis. *Elusive Ulcer (Hunner)*. *Ann. Surg.* 71: 479-485 (April) 1920.

11. Meads A. N. Hunner Ulcer. *Urol. & Cutan. Rev.* 28: 631-634 (Sept.) 1934.

12. Nelson O. A. and Pinar C. J. Jr. Interstitial Cystitis. *Northwest Med.* 40: 240-233 (July) 1941.

## INCIDENCE

Interstitial cystitis is predominantly a disease of women. Most authorities estimate that it is four times as common among women as among men. Our experience essentially bears out this information. Symptoms began between the ages of 20 and 59 years in 64 (82 per cent) of our 78 cases in men. We have observed that



Fig. 1—Thinned vesical epithelium and subepithelial inflammatory changes, slightly reduced from a photomicrograph with a magnification of 11 diameters.

in the reported cases men were generally younger at onset of symptoms than women. The earliest onset of symptoms in our series was at the age of 16 years. The oldest was at the age of 74 years.

## PATHOLOGY

Specimens of the vesical wall were available for microscopic examination in 17 of our cases. These examined specimens were from the cases in which

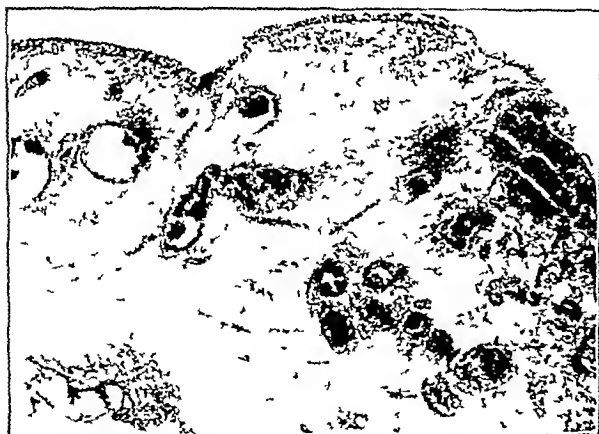


Fig. 2—Inflammatory changes within the subepithelial connective tissue, slightly reduced from a photomicrograph with a magnification of 40 diameters. Increased vascularity, collections of leukocytes and erythrocytes and varying degrees of edema.

biopsy, segmental resection or total cystectomy had been performed. A pathologist confirmed our diagnosis in each of these cases. Following is a description of the pathologic characteristics of interstitial cystitis written by Dr. Broders.<sup>13</sup>

13. Dr. Broders is head of the Section on Surgical Pathology in the Mayo Clinic and professor of pathology in the Mayo Foundation Graduate School, University of Minnesota.

Little can be added to Hummer's description of the pathologic process in the urinary bladder variously designated "Hummer's ulcer," "submucous ulcer," "elusive ulcer," "paracystitis," "panmural ulcerative cystitis" and "chronic interstitial cystitis." The process is an inflammation of the connective tissue of the bladder that is by far most pronounced and apparently primary in the subepithelial connective tissue. This layer consists of the connective tissue of the mucosa and the so-called submucosa and it lies between the epithelium and the musculature. The inflammatory process extends to the epithelium, intermuscular connective tissue, musculature, serosa or adventitia.

When the lesion is removed and examined, the inflammation is found to be in a chronic state. However, it would be contrary to sound reasoning to assume that the inflammation is chronic from the outset. It seems reasonable to assume, therefore, that the inflammatory process passes through acute, subacute and chronic phases and that there are exacerbations of acute and subacute phases which tend to intensify the chronic phase.

The involved portion of the wall of the bladder is thickened; however, the epithelial layer is for the most part thinned (fig. 1) so that areas exist in which the epithelium is only one or two cell-layers thick and in other areas the epithelium is destroyed and superficial ulceration remains.



Fig. 3—Collections of inflammatory cells within the intermuscular connective tissue, slightly reduced from a photomicrograph with a magnification of 80 diameters.

In the subepithelial connective tissue where the inflammation is most pronounced the characteristics are as follows: increased vascularity, numerous lymphocytes, mostly small lymphocytes, a fair number of polymorphonuclear leukocytes both within and without the blood and lymph vessels and spaces, a few monocytes and plasma cells, numerous erythrocytes within and without the blood vessels and blood spaces, and varying degrees of edema (fig. 2). In other words, the process is comparable to that found in the inflammatory granulating base of a chronic excavated ulcer of the urinary bladder or stomach.

The inflammatory process in the intermuscular connective tissue (fig. 3), musculature, serosa or adventitia is less pronounced than that in the subepithelial connective tissue. The serosa or adventitia is usually thickened. The musculature may be distorted to some extent, however, there is very little loss of continuity of the musculature in contrast to the marked loss of continuity found in an excavated ulcer of the bladder or stomach.

In some lesions there is very little increase of fibrous connective tissue, while in others the increase is so marked as to produce real fibrosis throughout the vesical wall with or without hyaline degeneration. The amount of fibrosis is probably in direct proportion to the duration of the inflammatory process. The process as a whole resembles closely that relatively rare lesion of the stomach known as "limitis plastica" of non-neoplastic type.

## SYMPTOMS

The most distressing symptoms of interstitial cystitis are highly characteristic regardless of the sex. Most prominent is "clocklike" urinary frequency with urgent voidings approximately every two hours during day and night. Almost equally distressing and universal is lower abdominal suprapubic or perineal pain relieved by voiding small amounts of urine and aggravated by jarring or overdistention of the bladder. These symptoms predominated in our series. Hematuria noted prior to treatment or excretion occurs fairly often and has been noted in 18 per cent of Higgins's<sup>5</sup> series, in 13 of Krietschmer's,<sup>3</sup> 44 reviewed cases and in 20 per cent of the cases reviewed by Smith and Conroy.<sup>14</sup>

In our series 24 patients (31 per cent) gave a history of terminal gross hematuria. Burning urgency and vesical tenesmus were occasional complaints. Obstructive urinary symptoms of varying degrees were present in 14 (18 per cent) of our cases. While one would expect obstructive urinary symptoms to affect some of any such group of male patients, it is interesting that in several cases after a transurethral prostatic operation had been performed the obstructive symptoms persisted and were relieved only after the interstitial cystitis had been discovered and treated. The report of case 2 illustrates this point. It is also interesting that obstructive symptoms have been observed among women.

## DIAGNOSIS

The diagnosis of interstitial cystitis is established by the patient's characteristic history together with rather typical cystoscopic findings. The more important findings include reduction of vesical capacity, ideally a urine free from pus, blood or organisms unless the patient has had previous treatment or accompanying urologic pathologic changes, and a rather typical cystoscopic appearance of the bladder which will vary to a great extent depending on the degree of healing present. The most characteristic cystoscopic finding is one or more discrete salmon pink, shrimp or Russian dressing colored areas found mostly on the apex or dome but frequently on any area of the bladder except the trigone. Instrumental palpation of these areas will produce the identical pain that the patient has described in the case history. Overdistention of the bladder produces a linear splitting with associated hemorrhages of the mucosa overlying these areas. Finally, most patients will obtain symptomatic relief from overdistention of the bladder lavage with increasing concentrations of silver nitrate fulguration of the involved mucosa or a combination of these procedures. Cases in which essentially all of these features were observed we regarded as typical. Cases in which other urinary complaints were recorded or in which these findings were lacking we arbitrarily considered as being atypical. We insisted on all the cystoscopic findings for the diagnosis, and in every case the opinion of at least two cystoscopists was obtained.

The data in 64 (82 per cent) of the 78 cases were typical, while the data in the remaining cases were considered as being atypical because of additional obstructive symptoms. In only 16 (21 per cent) of our cases was the urine free from pus, blood and organisms. It is interesting to note that in these cases there had been no previous cystoscopy or treatment. In 37 cases

(47 per cent) 0 to 15 pus cells per high power field were observed in the initial examination of the urine while in 34 cases (44 per cent) 15 to 40 pus cells were observed which were negative to Gram's stain. Positivity to Gram's stain and positive culture of the urine were present in 7 cases (9 per cent). Of the latter group there were 3 cases in which *Escherichia coli* was cultured, 2 cases in which *Pseudomonas* was cultured and 2 cases in which *Streptococcus fecalis* was cultured. In 1 of the cases in which *Escherichia coli* was cultured gram-negative bacilli were recovered from both kidneys and the disease in this case was considered to be active bilateral pyelonephritis with interstitial cystitis. As had been pointed out by Hinman,<sup>4</sup> Higgins<sup>5</sup> and others the high percentage of patients suffering from pyuria can be attributed to previous treatment and instrumentation.

Interstitial cystitis in both sexes is to be distinguished from so-called simple ulceration, tuberculous ulceration, the accompanying inflammation of an underlying neoplasm and mucosal lesions resulting from extravescical lesions and among women, from ulceration following application of radium to the cervix or vagina. We considered it necessary to exclude tuberculosis in 67 (86 per cent) of the cases.

## TREATMENT

We have relied chiefly on vesical overdistention or on instillation into the bladder of increasing concentrations of silver nitrate. The former method is usually selected in cases of severe interstitial cystitis in which prompt relief is desired. It is our impression that overdistention with the patient under local anesthesia is useless; this procedure requires either intravenous or spinal anesthesia. Our method of vesical overdistention consists in distending the bladder under vision until actual splitting of the mucosa which overlies the region or regions of interstitial cystitis is noted. During the process the affected regions are kept under constant inspection and the first evidence that "splitting" is about to occur is a bluish white discoloration of the mucosa. Actual splitting occurs shortly thereafter and is followed by bleeding from the site of rupture. The amount of fluid necessary to produce splitting varies from 200 to 800 cc and the procedure can be repeated safely at intervals. Usually, superficial fulguration of the regions of interstitial cystitis is carried out. At times overdistention is supplemented by the use of continuous vesical lavage with increasing concentrations of silver nitrate.

Dramatic results may be obtained by the use of silver nitrate. The method we employ consists in the instillation of 1 to 2 ounces (30 to 60 cc) of solution of silver nitrate into the bladder daily. At the outset a 1:3,000 solution is employed, and the concentration is increased gradually until 1 per cent solution of silver nitrate can be tolerated. The solution is instilled into the bladder by means of a catheter, allowed to remain in place for five minutes and then drained off through the catheter. We do not employ any local anesthetic agents although it may be necessary to prescribe codeine or belladonna and opium suppositories if the treatment results in unusual pain. When the proper concentration has been reached and the patient is comfortable, it may be possible to keep him in that condition by the monthly or bimonthly instillation of 1:1,000 or 1:2,000 solution of silver nitrate. Segmental resection, subtotal cystec-

<sup>14</sup> Smith E. and Conroy F. D. Interstitial Cystitis. *Canad. M. A. J.* 45: 342-345 (Oct.) 1941.

total presacral neurectomy and the instillation of mild protein silver, phenol or alcohol are mentioned simply for the sake of completeness

#### REPORT OF CASES

In the reports of the cases which follow, the first illustrates a rather typical case. The second illustrates the fact that obstructive urinary symptoms which were not relieved by a prostatic operation were relieved by treatment of the interstitial cystitis.

**CASE 1**—A white man aged 35, a school teacher, registered at the Mayo Clinic on Dec. 27, 1933 complaining of day and night urinary frequency associated with an aching discomfort in the bladder and urethra. These symptoms first had begun three years before and had been becoming constantly more severe. In February 1932 cystoscopy had been performed and the patient had been told that he suffered from interstitial cystitis. A left pyelogram was made at the same time and no abnormalities were noted. Tuberculosis had been excluded by acid fast stains and inoculations of guinea pigs. Vesical overdistention and lavage had been performed repeatedly without improvement. One physician had found that the patient had prostatitis and administered many prostatic massages, which did not affect the patient's symptoms. On the recommendation of his physician his tonsils were removed. The patient's history by symptoms as well as his family history was noncontributory. His past medical history was also of no significance and he stated that he had never had gonorrhea.

The results of general physical examination were essentially negative. Urinalysis revealed 7 pus cells per high power field of the microscope. The erythrocyte count, the leukocyte count and the value for hemoglobin were within normal limits. The prostatic secretion appeared normal. Results of the flocculation test for syphilis and roentgenograms of the thorax and pelvis were all negative. Cystoscopy with the patient under pentothal sodium anesthesia revealed an area of interstitial cystitis involving the posterior wall and extending up to the dome. The vesical capacity was 150 cc. The bladder was overdistended with 475 cc of water to produce splitting of the mucosa over the involved areas. Vesical overdistention was repeated twice more at six day intervals and the patient was given vesical lavage was instructed to follow a ketogenic diet and was dismissed with only moderate relief of symptoms.

The patient returned to the clinic on Feb. 15, 1939 with symptoms similar to those at the time of his first visit after having been free from symptoms in the intervening six years. Cystoscopy performed the next day with the patient under pentothal sodium anesthesia disclosed a typical region of interstitial cystitis on the left wall of the bladder measuring approximately 3 cm in diameter and another on the right lateral wall measuring approximately 2 cm in diameter. The bladder was overdistended to 225 cc with characteristic splitting and hemorrhage in both regions. Specimens taken at this time for biopsy were reported as being inflammatory tissue. The patient was given a course of emetine and instructions were sent to his local physician for administering the second course of treatment.

The patient returned on Aug. 27, 1940 complaining of a return of the original symptoms after sixteen months of considerable improvement. Since he could not remain here he was referred to his local urologist for overdistentions of his bladder to be performed at intervals.

**CASE 2**—A white man aged 42 presented himself at the clinic on Sept. 23, 1942 complaining of periodic dysuria, urinary frequency, nocturia and perineal pain that had begun in 1932. These symptoms had progressed and become more severe so that by April 1942 he was voiding small amounts of urine every hour during the day and six times during the night suffering from considerable dysuria and perineal pain and experiencing hesitancy with narrowing of the urinary stream. He consulted a urologist in his home town and transurethral prostatic resection was performed in April 1942. His post-operative course was uneventful but his symptoms were unaffected. Since that time his home physician had been giving him vesical lavages and urethral dilations. The patient had

suffered a definite attack of gonorrhea seventeen years and a questionable attack of gonorrhea seven years before. Appendectomy had been performed in 1927.

Results of general physical examination were essentially negative. Urinalysis revealed 4 pus cells and an occasional erythrocyte per high power field of the microscope. A culture of the urine was negative. There was 20 cc of residual urine. The erythrocyte count, leukocyte count and value for hemoglobin were within normal limits. Results of the flocculation test for syphilis were negative. The blood urea was 26 mg per hundred cubic centimeters of blood. Roentgenograms of the thorax and colon did not reveal any abnormalities. The prostatic secretion was normal. An excretory urogram was negative. Cystoscopy performed with the patient under intra-venous pentothal sodium anesthesia disclosed a typical region of interstitial cystitis on the dome of the bladder just anterior to the air bubble. The prostatic urethra and the vesical neck appeared normal. The bladder was overdistended to 425 cc resulting in bleeding and rupture of the mucosa at the site of the region of cystitis. A course of lavage of the bladder with silver nitrate was given. By Oct. 12, 1942 the patient was voiding a good stream without dysuria and his nocturia was reduced 50 per cent.

The patient returned to the clinic on April 14, 1943 complaining of a recurrence of his urinary symptoms but to a less severe degree than formerly. The results of physical examination and the laboratory findings were similar to those of the earlier admission. Repeated examinations of his urine for the tubercle bacillus were negative. On April 19, 1943 cystoscopy was done with the patient under intravenous pentothal sodium anesthesia and a region of interstitial cystitis was found in the right side of the dome. This region was seen to have torn and bled after the bladder had been overdistended with 600 cc of water and was then lightly fulgurated. Symptomatic improvement was almost immediate and the patient was given a further course of lavage with silver nitrate. The patient requested and was granted another overdistention of the bladder. He was dismissed as greatly improved on May 13, 1943. The patient wrote to us on Aug. 30, 1943 and stated that he was feeling entirely well.

#### SUMMARY AND CONCLUSIONS

On the basis of a review of data on 78 cases of interstitial cystitis of men the following conclusions are drawn:

1. Although interstitial cystitis is predominantly a disease of women it is found to have a significant incidence among men. A search for evidence of interstitial cystitis among male patients will explain a number of cases of puzzling and intractable cystitis.

2. The clinical picture among male patients is often deceiving because of accompanying obstructive symptoms especially in the prostatic age group.

3. Still more deceiving are the cases in which obstructive symptoms are superimposed without any obstructive pathologic change. In these cases the obstructive symptoms are part of the picture of cystitis and will be found to be relieved by treatment of the cystitis rather than by a prostatic operation.

---

**A Great Figure in Syphilology**—Philippe Ricord (1800-1889) is one of the great figures in syphilology. He was an investigator of the first rank and he is another illustration of the men who have been most fruitful in original scientific work while carrying the burdens of an enormous practice. He rose from poverty to large wealth and became one of the most popular and influential citizens of Paris. He was born in Baltimore and until he was 20 lived in the United States, but the only claim the United States can make upon him is that it gave his father's family refuge in time of revolution and afforded him an opportunity to get his preliminary education and to study natural history under his uncle—Pusey, William Allen. *The History of Dermatology*. Springfield, Ill., Charles C. Thomas, 1933.



## TRANSIENT HYPERTENSION

ITS SIGNIFICANCE IN TERMS OF LATER DEVELOPMENT OF SUSTAINED HYPERTENSION AND CARDIOVASCULAR-RENAL DISEASES

ROBERT L. LEVY, MD

NEW YORK

BRIGADIER GENERAL CHARLES C. HILLMAN

UNITED STATES ARMY

WILLIAM D. STROUD, MD

PHILADELPHIA

AND

PAUL D. WHITE, MD

BOSTON

For many years the significance of transient hypertension has been a topic of discussion. As long ago as 1921 Fahrenkamp<sup>1</sup> and Kylin<sup>2</sup> independently noted that excessive variability of the blood pressure, with temporary rises above the usual normal, sometimes was found in the early stages of hypertensive vascular disease. A little later Fahrenkamp<sup>3</sup> stressed the importance of psychic disturbances as a cause of such vasomotor instability. More recently, numerous authors have presented data in support of the view that transient elevations of blood pressure, induced by emotion or some other stimulus, should be regarded as evidence of a possible prehypertensive state.<sup>4</sup> But the number of cases studied has been relatively small, the periods of observation usually have not been long and no records have been kept between their beginning and end. Inferences drawn from insurance statistics are based almost entirely on mortality experience following a single reading and so have a limited value.

In examinations of registrants for military service transient hypertension, presumably due to nervousness, has been commonly encountered and examiners have varied in their judgment as to its importance.<sup>5</sup> Mobilization Regulations prescribe that if the blood pressure appears to be abnormally high it is to be measured after the subject has rested in the recumbent position. The decision as to the acceptability of the selectee is

left to the physician who is permitted to disregard a persistent pressure of over 150 mm of mercury systolic or over 90 diastolic if, in his opinion, the rise is due to psychic reaction and is not secondary to renal or other systemic disease. It is our purpose in this study to inquire into the validity of these criteria by critical analysis of the medical records of 22,741 army officers. In the course of the discussion facts believed to apply to the general male population of comparable physical fitness and similar age groups will become evident.

## MATERIAL, DEFINITIONS AND PROCEDURE

In a previous paper<sup>6</sup> were described the sources of the 22,741 records on which this analysis is based, the general character of the material and the scheme followed in preparing it for study. The manner in which the blood pressures were taken and the points at which systolic and diastolic levels were measured is not known. Errors and variations in either direction were probably not great, and it is fair to assume that in such a large series of readings they canceled one another.

Definition of the terms employed is necessary for clear understanding. By transient hypertension is meant a reading of over 150 mm of mercury systolic or 90 diastolic which is followed, on any particular examination or at a later examination by a reading below these levels. The highest systolic and diastolic readings obtained in any one of a series made at a given examination were recorded. Sustained hypertension is taken to mean a reading of over 150 systolic or over 90 diastolic persisting throughout an examination and not followed in subsequent examinations by lower levels. A persistent elevation of either systolic or diastolic pressure on a final examination, even though this marked its first appearance, is considered to represent sustained hypertension.

Cardiovascular-renal diseases were grouped and included those conditions due to vascular degeneration which involved brain, heart or kidneys. Cerebral hemorrhage and thrombosis, hypertension, the various manifestations of coronary heart disease and chronic nephritis and uremia were the most frequent diagnoses. Rheumatic heart disease, bacterial endocarditis, syphilitic aortitis and disturbances due to thyrotoxicosis were excluded. In the tables dealing with disability retirement and death rates, both primary (basic) and secondary (immediate) causes were included. In other words the presence of a cardiovascular-renal condition always was recorded, even though it was not directly responsible for retirement or death.

The group of neuropsychiatric disorders comprised chiefly psychoneuroses, psychoses (including the psychosis due to alcohol), manic depressive psychosis, dementia precox and mental disturbances due to cerebral arteriosclerosis (these patients often were classed merely as "mentally unsound"), it included deaths due to suicide. A few cases of tabes dorsalis and dementia paralytica were not placed in this category but were listed under the diagnosis of syphilis.

In dealing with data of this sort, age is of fundamental importance and in each table the figures are given according to age groups. The actuarial summaries (tables 7 and 8) are of necessity based on cumulative figures derived from these groups. In order to

This is the second in a series of papers dealing with 'Studies of Blood Pressure in Army Officers.'

The work described in this paper was done under a contract recommended by the Committee on Medical Research between the Office of Scientific Research and Development and Columbia University.

Dr. John W. Fertig, professor of biostatistics, Columbia University College of Physicians and Surgeons, aided in the analysis and preparation of the material for final presentation.

Read before the Section on Practice of Medicine at the Ninety-Fourth Annual Session of the American Medical Association, Chicago, June 15, 1944.

1. Fahrenkamp, Karl. Beitrag zur Kenntnis der Tagesschwankungen des Blutdrucks bei der Hypertonie, *Med. Klin.* 17: 776 (June 26) 1921.

2. Kylin, Eskil. Studien über die Tagesvariationen des arteriellen Blutdrucks bei der Hypertonie auf der Basis von Morbus Brightii, nebst einigen Bemerkungen über die Hypertoniefrage. *Zentralbl. f. inn. Med.* 42: 417 (May 25) 1921.

3. Fahrenkamp, Karl. Die psychophysischen Wechselwirkungen bei den Hypertonieerkrankungen, Stuttgart, Hippokrates, 1926.

4. Palmer, R. S. The Significance of Essential Hypertension in Young Male Adults. *J. A. M. A.* 64: 694 (March 8) 1930. Ayman, David. Normal Blood Pressure in Essential Hypertension. *ibid.* 64: 1214 (April 19) 1930. Diehl, H. S., and Heschdorffer, M. B. Changes in Blood Pressure in Young Men over a Seven Year Period. *Arch. Int. Med.* 52: 948 (Dec.) 1933. Mackenzie, L. F., and Shepherd, P. The Significance of Past Hypertension in Applicants Later Presenting Normal Average Blood Pressures. *Proc. A. Life Insur. M. Dir. America* 24: 157, 1937. Robinson, S. C., and Brucer, Marshall. Range of Normal Blood Pressure: A Statistical and Clinical Study of 11,383 Persons. *Arch. Int. Med.* 64: 409 (Sept.) 1939. Hines, E. A., Jr. Range of Normal Blood Pressure and Subsequent Development of Hypertension: A Follow Up Study of 1,522 Patients. *J. A. M. A.* 115: 271 (July 27) 1940. Hines and Brown.<sup>4</sup>

5. Fenn, G. K., Kerr, W. J., Levy, R. L., Stroud, W. D., and White, P. D. Reexamination of 4,994 Men Rejected for General Military Service Because of the Diagnosis of Cardiovascular Defects. Individual Reports by the Chairmen of Special Medical Advisory Boards in Five Cities in Which the Combined Study Was Made. *Am. Heart J.* 27: 435 (April) 1944.

6. Hillman, C. C., Levy, R. L., Stroud, W. D., and White, P. D. Studies of Blood Pressure in Army Officers. Observations Based on Analysis of the Medical Records of 22,741 Officers of the United States Army. *J. A. M. A.* 125: 699 (July 8) 1944.

demonstrate the influence of transient hypertension on the subsequent state of health and the cause of death, it was necessary to select, for correlation certain specific indexes. Those chosen for the purpose were the later development of sustained hypertension and the disability retirement and death rates for cardiovascular-renal diseases.

RESULTS

*First Occurrence of Transient Hypertension by Age* (table 1)—In this table are included only cases observed throughout each five year period. Those entering the study or dropping out during a given period were eliminated because it was impossible to know whether they had developed transient hypertension during those five years. There are two noteworthy features of this table—first that transient hypertension appears not uncommonly in the younger groups and second that the frequency with which it is first noted

TABLE 1—First Occurrence of Transient Hypertension by Age

| Age   | Number Under Observation Throughout Each Age Period | Number Showing First Transient Hypertension | Frequency per Cent |
|-------|---|---|--------------------|
| 25-29 | 5,090   | 178   | 5.0                |
| 30-34 | 4,407   | 396   | 9.0                |
| 35-39 | 3,377   | 577   | 10.4               |
| 40-44 | 5,150   | 654   | 12.7               |
| 45-49 | 3,478   | 562   | 16.2               |
| 50-54 | 2,101   | 392   | 18.6               |
| 55-59 | 681   | 183   | 18.0               |

TABLE 2—Later Occurrence of Sustained Hypertension, by Age in Those With and Without Transient Hypertension

| Age   | Person Years Observed       |                                | Number Developing Sustained Hypertension |                                | Rate per Thousand           |                                | Ratio |
|-------|-----------------------------|--------------------------------|--|--------------------------------|-----------------------------|--------------------------------|-------|
|       | With Transient Hypertension | Without Transient Hypertension | With Transient Hypertension              | Without Transient Hypertension | With Transient Hypertension | Without Transient Hypertension |       |
|       | Person Years                | Person Years                   | Number                                   | Number                         | Rate                        | Rate                           |       |
| 25-29 | 2,137                       | 31,072                         | 11                                       | 14                             | 2.4                         | 0.5                            | 4.8   |
| 30-34 | 4,401                       | 4,670                          | 11                                       | 30                             | 2.5                         | 0.0                            | 2.8   |
| 35-39 | 7,261                       | 3,718                          | 41                                       | 30                             | 5.0                         | 1.7                            | 3.0   |
| 40-44 | 9,799                       | 1,901                          | 110                                      | 41                             | 11.1                        | 2.1                            | 4.1   |
| 45-49 | 10,381                      | 1,703                          | 239                                      | 14                             | 22.0                        | 0.7                            | 30.8  |
| 50-54 | 8,218                       | 1,736                          | 213                                      | 13                             | 33.2                        | 0.7                            | 34.4  |
| 55-59 | 5,768                       | 1,008                          | 203                                      | 9                              | 48.0                        | 14.0                           | 3.2   |

increases with age. The curve of increase is a smooth one beginning with 5.9 per cent in the age group 25 to 29 and reaching a plateau of 18.6 per cent at 50 to 54. In this table and in the tables which follow, no figures are given for men under 25 years of age. This is due to the fact that no provision was made in the statistical forms for five year periods below this age. Such division was omitted because it was believed that a sufficient number had not been observed long enough to contribute any appreciable period of exposure. It seems likely, however, that the figures applying to the age period 25 to 29 apply also to those under age 25. Thus 8,252 men were observed at some time prior to age 25, the total group observed at some time between ages 25 and 29 was 10,123. In both groups the frequency of transient hypertension was approximately 4 per cent. Although the inference made is not based on proper statistical procedure, in that it disregards the length of the period of observation, it probably approximates the fact. No observations were included beyond age 60 because adequate follow-up of these older men was possible in so few instances. This obtains also in the other tables.

*The Later Occurrence of Sustained Hypertension, by Age, in Those With and Without Transient Hypertension* (table 2)—In this and in subsequent tables the rates quoted are based on person-years observed. This method is employed to measure the total number of

TABLE 3—Disability Retirement Rate With Cardiovascular-Renal Diseases by Age for Those With and Without Transient Hypertension

| Age   | Person Years Observed       |                                | Retirements with Cardiovascular-Renal Diseases |                                | Rate per Thousand           |                                | Ratio |
|-------|-----------------------------|--------------------------------|--|--------------------------------|-----------------------------|--------------------------------|-------|
|       | With Transient Hypertension | Without Transient Hypertension | With Transient Hypertension                    | Without Transient Hypertension | With Transient Hypertension | Without Transient Hypertension |       |
|       | Person Years                | Person Years                   | Number   | Number                         | Rate                        | Rate                           |       |
| 25-29 | 2,137                       | 31,072                         | 0  | 5                              | 0.0                         | 0.2                            | 0.0   |
| 30-34 | 4,424                       | 24,753                         | 2  | 8                              | 0.7                         | 0.2                            | 3.5   |
| 35-39 | 7,156                       | 35,491                         | 14   | 18                             | 1.0                         | 0.5                            | 2.5   |
| 40-44 | 10,971                      | 31,810                         | 52   | 44                             | 5.2                         | 1.4                            | 3.7   |
| 45-49 | 10,989                      | 24,716                         | 68   | 60                             | 8.9                         | 3.9                            | 2.3   |
| 50-54 | 8,989                       | 14,360                         | 184  | 148                            | 20.5                        | 10.5                           | 2.0   |
| 55-59 | 6,041                       | 6,981                          | 230  | 137                            | 38.1                        | 22.5                           | 1.7   |

\* This distribution of person years also constitutes the base for the rates in tables 4, 5 and 6.

years that all of the cases in each age group were exposed to the indicated risk. Some of the men will have been present throughout the given age period. Others will have come in during it, while still others may have dropped out before its end either because they left the service, retired or died. Each of these individuals must be credited with the proper amount of exposure during that age period for the purpose of computing rates on the usual annual basis.

It is at once apparent that, at all ages, sustained hypertension develops more frequently in those who have previously shown transient hypertension than in those who have not. The differences in each age group are significant. The rate per thousand persons per year, 1.6 per thousand person-years increases progressively in both groups with the ratio varying from 2.8 to 4.8.

*Disability Retirement Rate with Cardiovascular-Renal Diseases, by Age, for Those With and Without Transient Hypertension* (table 3)—The disability retirement rate is one index of the usefulness of an

TABLE 4—Disability Retirement Rate Excluding Cardiovascular-Renal Diseases, by Age for Those With and Without Transient Hypertension

| Age   | Disability Retirements Excluding Cardiovascular-Renal Diseases |                                | Rate per Thousand           |                                | Ratio |
|-------|--|--------------------------------|-----------------------------|--------------------------------|-------|
|       | With Transient Hypertension                                    | Without Transient Hypertension | With Transient Hypertension | Without Transient Hypertension |       |
|       | Person Years   | Person Years                   | Number                      | Number                         |       |
| 25-29 | 4  | 61                             | 1.9                         | 2.0                            | 1.0   |
| 30-34 | 18   | 114                            | 4.1                         | 3.0                            | 1.3   |
| 35-39 | 42   | 1,243                          | 0.7                         | 3.8                            | 1.5   |
| 40-44 | 75   | 174                            | 7.4                         | 0.9                            | 1.0   |
| 45-49 | 78   | 163                            | 7.1                         | 7.0                            | 1.0   |
| 50-54 | 80   | 117                            | 8.9                         | 8.2                            | 1.1   |
| 55-59 | 48   | 71                             | 7.9                         | 10                             | 0.8   |

officer to the Army. The figures under age 35 are not significant because of the small numbers involved. From 35 to 60 the retirement rate for cardiovascular-renal diseases is consistently greater among those with transient hypertension than in those without, and the difference in every age group above 35 is statistically significant. As the ages increase the ratio becomes smaller. This might have been anticipated since the

incidence of degenerative diseases increases in all persons in the older age groups, regardless of other factors. Reed and Love<sup>7</sup> in their biometric studies of army officers noted that cardiovascular-renal diseases developing in later life were the most frequent causes of disability and death. Of officers who were active at age 46, 114 per cent subsequently had a disease of this type.

**Disability Retirement Rate Excluding Cardiovascular-Renal Diseases, by Age, for Those With and Without Transient Hypertension** (table 4)—The ratios in this table approximate unity, although there is a slight preponderance in favor of cases of transient hypertension. However, neither the individual differences nor the series of differences as a whole show clear statistical significance.

Many persons with a permanent elevation of blood pressure give a history of vasomotor and nervous

TABLE 5—Death Rate with Cardiovascular-Renal Diseases, by Age, for Those With and Without Transient Hypertension

| Age   | Deaths with Cardiovascular-Renal Diseases |                                | Rate per 1 thousand         |                                | Ratio |
|-------|---|--------------------------------|-----------------------------|--------------------------------|-------|
|       | With Transient Hypertension               | Without Transient Hypertension | With Transient Hypertension | Without Transient Hypertension |       |
|       | 10-19                                     | 20-29                          | 30-39                       | 40-49                          |       |
| 20-29 | 0   | 7                              | 0.0                         | 0.2                            | 0.0   |
| 30-39 | 1   | 3                              | 0.2                         | 0.1                            | 2.0   |
| 40-49 | 9   | 5                              | 1.2                         | 0.1                            | 12.0  |
| 50-59 | 16  | 12                             | 1.6                         | 0.4                            | 4.0   |
| 60-69 | 27  | 30                             | 2.7                         | 1.2                            | 2.1   |
| 70-79 | 44  | 30                             | 4.4                         | 2.1                            | 2.1   |
| 80-89 | 54  | 36                             | 5.4                         | 3.6                            | 1.7   |

TABLE 6—Death Rate Excluding Cardiovascular-Renal Diseases, by Age for Those With and Without Transient Hypertension

| Age   | Deaths Excluding Cardiovascular-Renal Diseases |                                | Rate per 1 thousand         |                                | Ratio |
|-------|--|--------------------------------|-----------------------------|--------------------------------|-------|
|       | With Transient Hypertension                    | Without Transient Hypertension | With Transient Hypertension | Without Transient Hypertension |       |
|       | 10-19  | 20-29                          | 30-39                       | 40-49                          |       |
| 20-29 | 5  | 176                            | 2.3                         | 5.7                            | 0.4   |
| 30-39 | 19   | 121                            | 4.3                         | 3.8                            | 1.1   |
| 40-49 | 44   | 104                            | 6.0                         | 2.9                            | 2.1   |
| 50-59 | 89   | 60                             | 3.9                         | 2.8                            | 1.4   |
| 60-69 | 46   | 74                             | 4.2                         | 3.1                            | 1.4   |
| 70-79 | 43   | 62                             | 4.8                         | 3.6                            | 1.3   |
| 80-89 | 33   | 37                             | 3.3                         | 3.7                            | 1.0   |

instability earlier in life.<sup>8</sup> In view of this fact it was thought worth while to determine the retirement rates with neuropsychiatric disorders in those with and without transient hypertension. Whereas a comparison of these rates shows a ratio favoring the group with transient hypertension consistently up to age 50, the differences are not great and considered individually or as a whole, are not statistically significant. Redetermination of the retirement rates excluding both cardiovascular-renal and neuropsychiatric diseases, shows them to be approximately the same in the two groups and, again, the differences are of no statistical significance.

**Death Rate with Cardiovascular-Renal Diseases, by Age, for Those With and Without Transient Hypertension** (table 5)—The figures under age 35 are not

significant because of the small numbers involved. From then on the death rate is consistently greater for those with transient hypertension, with rising figures in the older age groups. In fact the difference at every age over 35 is statistically significant.

TABLE 7—Survivals, Deaths and Retirements by Age 60 Among 10,000 at Age 25, According to the Death and Retirement Rates Among Officers With and Without Transient Hypertension Respectively

|                                | Survivals | Deaths                             |              | Total | Retirements                        |              | Total |
|--------------------------------|-----------|------------------------------------|--------------|-------|------------------------------------|--------------|-------|
|                                |           | With Cardiovascular-Renal Diseases | Other Causes |       | With Cardiovascular-Renal Diseases | Other Causes |       |
| With transient hypertension    | 4,332     | 603                                | 1,202        | 1,811 | 2,130                              | 1,608        | 3,738 |
| Without transient hypertension | 5,668     | 379                                | 1,118        | 1,497 | 1,357                              | 1,073        | 2,430 |
| Ratio                          | 0.77      | 1.60                               | 1.06         | 1.23  | 1.60                               | 1.02         | 1.33  |

**Death Rate Excluding Cardiovascular-Renal Diseases by Age, for Those With and Without Transient Hypertension** (table 6)—As in the figures for disability retirement the death rate is slightly higher in the group with transient hypertension. The ratios are not as large however as in the death rates for cardiovascular-renal diseases. Although only one of the individual differences is statistically significant (that for the 35 to 39 age group), there is significance in the series of differences as a whole. In addition to cardiovascular-renal diseases neuropsychiatric disorders and suicide are excluded as a cause of death the rate remains slightly higher in the group with transient hypertension. The series of differences is still significant although much less so than before this exclusion. The reason for these differences is not evident.

The death rate with neuropsychiatric disorders after age 30 is uniformly and significantly higher in the group with transient hypertension. It should be stressed, however, that almost all of these deaths were due to suicide.

**Summarized, Cumulative Actuarial Tables**—In tables 7 and 8 the figures have been recast in actuarial form. In table 7 are given survivals, deaths and retirements by age 60 among 10,000 officers of age 25, according

TABLE 8—Survivals and Deaths by Age 60 Among 10,000 at Age 25, According to the Death Rates Among Officers With and Without Transient Hypertension Respectively

|                                | Survivals | Deaths                             |              | Total |
|--------------------------------|-----------|------------------------------------|--------------|-------|
|                                |           | With Cardiovascular-Renal Diseases | Other Causes |       |
| With transient hypertension    | 7,777     | 822                                | 1,400        | 2,223 |
| Without transient hypertension | 8,333     | 410                                | 1,257        | 1,667 |
| Ratio                          | 0.93      | 2.01                               | 1.11         | 1.66  |

to the death and retirement rates with and without transient hypertension. At the end of such an observation period there would be 4,292 survivors with a record of transient hypertension, contrasted with 5,608 without it—a ratio of 0.77. Among those who died of cardiovascular-renal diseases 603 would have had transient hypertension and 329 would not—a ratio of 1.85. Deaths from other causes among those with

<sup>7</sup> Reed I. J. and Love A. G. Biometric Studies on Army Officers—Semiotological Norms in Disease. Human Biol. 5: 61 (Feb.) 1933.  
<sup>8</sup> Ollare, J. P., Walker W. G. and Vickers M. C. Heredity and Hypertension. J. A. M. A. 83: 27 (July 5) 1924.

transient hypertension would have been 1,202, as against 1,138 among those without—a ratio of 1.06

With respect to retirements for disability with cardiovascular-renal diseases, there would have been 2,289 in the group with transient hypertension and 1,352 without—a ratio of 1.69. Retirement for other causes would have occurred 1,608 times in the group with transient hypertension and 1,573 in the group without—a ratio of 1.02.

In table 8 appear the survivals and deaths by age 60 among 10,000 officers at age 25, with and without transient hypertension, according to the death rates only. At age 60 there would be 7,777 survivals among those with transient hypertension and 8,333 without—a ratio of 0.93. Deaths from cardiovascular-renal diseases for those with transient hypertension would number 823, as against 410 for those without—a ratio of 2.01. Deaths from other causes would number 1,400 in those with transient hypertension and 1,257 in those without—a ratio of 1.11. These tables bring into focus, in condensed form, the higher rates of disability, retirement and death in the group with transient hypertension.

#### COMMENT

The upper limits of the normal blood pressure have not been firmly established. The critical levels of 150/90 used in this study are those prescribed in Mobilization Regulations 1-9, issued by the War Department on Oct. 15, 1942. The standards of physical examination for commission in the Regular Army, according to Army Regulations 40-105, define hypertension as a persistent systolic blood pressure of 150 or more or a persistent diastolic of 95 or more if the candidate is over 25 years of age, and a persistent systolic of 140 or more or a persistent diastolic of 90 or more if the candidate is less than 25 years of age. It has seemed proper to accept 150 systolic and 90 diastolic as the upper limits in this study because of the large numbers now involved in Selective Service examinations. The relative importance of various higher levels, both systolic and diastolic, will be considered in a forthcoming publication.

No mention has been made of the condition of the retinal vessels. Records concerning them were available in so few cases that no conclusions are justified. The cold pressor test<sup>9</sup> was not employed in any of these examinations, but hyperreaction to cold and to emotion appear to carry similar implications.

Two recent papers have appeared dealing with the problem of transient hypertension in the Navy. Master<sup>10</sup> called back for reexamination 50 patients, all 40 years of age and over, who during their stay in the hospital one to seven years previously had shown blood pressure readings at the upper limits of normal. These varied from 140 to 156 systolic and 80 to 94 diastolic. There was only a single reading for each patient. On reexamination, 76 per cent were found with hypertension and at least 25 per cent had a diastolic pressure over 100. It was concluded that even one high reading may be an indication of future hypertension and that some men with such levels may already have cardiovascular disease. The suggestion was made that in borderline cases a complete physical examination should be performed and the final decision should be based on the composite picture presented.

A somewhat more liberal point of view has been expressed by Rogers and Palmer.<sup>11</sup> During one month at the Office of Naval Officer Procurement, Boston, they found that 222 of 1,574 applicants (14 per cent) had mild variable hypertension at the initial examination. Their recommendations, however, are based on a favorable follow-up experience, in civilian life, with 25 cases of nervous hypertension and 448 cases of early and late essential hypertension. They suggest criteria for the acceptance of applicants who show a labile blood pressure and conclude that transient nervous hypertension, taken as the first sign of essential hypertension, need not be disqualifying for military service.

The results of the present study must be applied according to the need for men in the armed forces. It is clear that persons who show a transient elevation of blood pressure above 150 systolic or above 90 diastolic are more likely to show sustained hypertension at a later date than those whose readings remain below these levels. In addition the transient hypertension group shows higher rates for disability, retirement and death from some form of cardiovascular-renal disease than does the group with a consistently normal blood pressure. It is also apparent that in those with transient hypertension there are slightly higher death rates from diseases other than those affecting the cardiovascular system and kidneys. This is explained in part, though not entirely by the higher mortality, in this group, from nervous and mental diseases, and particularly from suicide. The same general trend is evident in the retirement rates, although here the differences are not clearly significant.

#### SUMMARY AND CONCLUSIONS

1. An analysis has been made of the medical records of 22,741 officers of the United States Army in order to appraise the significance of transient hypertension. Blood pressure readings over 150 mm of mercury systolic or over 90 diastolic were considered abnormally high.

2. The length of the observation period was from one year to more than twenty-five years, 84 per cent were under observation from five to nineteen years and 38 per cent from fifteen to nineteen years. In 1,437 instances the duration of the observation period was twenty years or over. These figures are quoted from the first paper in the series.<sup>6</sup>

3. The frequency with which transient hypertension was first noted increased with age. The curve of increase was smooth, beginning with 5.9 per cent in the age group 25 to 29 and reaching a plateau of 18.6 per cent at 50 to 54.

4. At all ages, sustained hypertension developed more frequently in those with previous transient hypertension than in those who never showed an elevation of blood pressure. In both groups the rate increased with advancing years.

5. The rate for disability retirement with cardiovascular-renal diseases, which is one index of the usefulness of an officer to the Army, was consistently higher among those with transient hypertension than in those without, at all ages from 35 to 60.

6. The death rate with cardiovascular-renal diseases was also higher in those with transient hypertension, the figures rose in the older age groups.

7. Both disability retirement and death rates from diseases other than those of cardiovascular-renal origin

9. Hines E. A. Jr. and Brown G. E. A Standard Test for Measuring the Variability of Blood Pressure. Its Significance as an Index of the Prehypertensive State. *Ann. Int. Med.* 7: 209 (Aug.) 1933.

10. Master A. M. Cardiovascular Problems in the War. Hypertension and the Navy. *Bull. New York Acad. Med.* 19: 704 (Oct.) 1943.

11. Rogers W. F. and Palmer R. S. Transient Nervous Hypertension as a Military Risk. Its Relation to Essential Hypertension. *New England J. Med.* 230: 39 (Jan. 13) 1944.

were slightly higher in the group with transient hypertension. In the case of the retirement rates the differences were not significant. The higher death rates in the group with transient hypertension were explained in part, though not entirely, by the relatively greater number of suicides.

8 The decision as to the usefulness to the Army of a man with transient hypertension will depend on the need for manpower. If this is urgent he may be accepted, provided heart, arteries and kidneys are normal. In doubtful cases the examination should include a teleroentgenogram of the heart and an electrocardiogram, as well as examination of the retinal vessels and urine. A certain number so accepted will develop permanent hypertension and the number will increase as age advances, in this series the rate per thousand ranged from 5.6 between the ages of 35 and 39 to 48.0 between 55 and 59. During times of peace, or whenever the need for men in the service is not acute, the transient hypertensive is not to be regarded as a first rate risk, he may later prove a burden to the Veterans Administration.

9 It seems probable that the facts pertaining to transient hypertension which have been derived from an analysis of the records of army officers apply also to the general male population of comparable physical fitness and similar age groups.

#### ABSTRACT OF DISCUSSION

DR E. A. HINES JR., Rochester, Minn. It is often stated in articles in medical textbooks and periodicals that transient elevations of blood pressure are due to nervous tension and therefore are of no significance. It is usually further advised that subsequent blood pressure readings should be taken when the subject is more relaxed and that the lowest reading should be recorded as the proper blood pressure reading. The proponents of the idea that such elevations of blood pressure are of no significance have offered no proof that this is so. As Dr. Levy has indicated, there are those who believe that transient elevations of the blood pressure, particularly in the diastolic blood pressure, may be indicative of a prehypertensive state, if not actually representative of the earliest stages of hypertensive disease. The data which Dr. Levy and his associates have presented are another link in the chain of evidence supporting this contention. Dr. Levy has concluded that transient elevations of blood pressure are probably of some significance in the subsequent development of hypertension. He has not been able to state or to show just what should be done with the individual with an elevation of blood pressure which sometimes goes into the upper range of normal. For instance, what should be done with a person 20 years of age who has a blood pressure of 150 systolic and 95 diastolic or what should be done with a person of 30 who has a blood pressure of 145 systolic and 90 diastolic? The answer to this question—and it is a most pertinent one—probably cannot be obtained as far as concerns the armed services without a long term follow-up study of a group of young men and women which is sufficiently varied and adequately controlled and who have had special blood pressure studies carried out and have been followed in the armed services through varying types of duties and for from ten to twenty years afterward.

DR ROY W. SCOTT, Cleveland. Both the large number (22741) and the length of time over which the observations of Dr. Levy and his colleagues extended make this study of great statistical value. Clinicians may now speak with increasing assurance about certain concepts based on personal experience gained in following patients with vascular disease and hypertension. Among these is the more frequent appearance of sustained hypertension at all ages in persons with previous transient hypertension. Since transient hypertension is a frequent forerunner of sustained hypertension which in turn is so often associated with arterial and arteriolar disease, one would expect, as these workers have found, that both the rate of disability

retirement and the death rate from cardiovascular renal disease are higher in persons with transient hypertension. These data are so consistent with clinical experience among the civilian population that the facts derived from their analysis of the records of army officers probably apply to our male population of comparable physical fitness and similar age group.

DR N. S. DAVIS III, Chicago. It seems that the syndromes characterized by arterial hypertension develop whenever the auxiliary humeral renal-hypertensin pressor mechanism becomes permanently established. This occurs when "emotional" hypertension or that caused by fatigue, overexertion or exposure to cold or high altitude is of sufficient duration to exhaust the adrenals and prevent the secretion of adequate amounts of epinephrine when there is hypoadrenalism with the formation of toxic steroids which inhibit renal amino acid oxidation when adrenal corticosterones are increased sufficiently to inhibit renal amino acid oxidation when there is renal ischemia due to vasoconstriction of anomalous arteries or when the formation or action of renal amino acid oxidases is inhibited because of exposure to toxic chemicals, to toxic metabolic and bacterial products of disease or because of deficient intake, absorption and utilization of minerals, amino acids and vitamins required for their synthesis. When renal oxidation is inhibited, deamination of amino acids is by decarboxylation with the formation of pressor amines which cause local foci of renal ischemia and the formation of renin. The renin reacts with the alpha globulin, hypertensinogen to form hypertension which causes more renal vasoconstriction and so increases renin formation. Thus the renin-hypertensin pressor mechanism tends to establish itself and initiate the insidiously progressive syndrome with which high arterial tension is associated.

DR ROBERT L. LEVY, New York. Although as a group those showing a transient elevation of blood pressure are more likely later to develop sustained hypertension and various manifestations of cardiovascular-renal disease, this sequence of events is by no means invariably observed. Our next problem is to define, if possible, adequate criteria for the recognition of those persons in whom transient hypertension is an early sign of future trouble.

## Clinical Notes, Suggestions and New Instruments

### SULFADIAZINE SENSITIVITY

THE CAUSE OF SEVERE TOXIC SYMPTOMS IN A CHILD

PHILLIS KOTEEN, M.D., NEW YORK

This case is reported because of severe and unusual manifestations of sulfadiazine idiosyncrasy and diagnostic and therapeutic problems involved.

P. R.,<sup>1</sup> a white boy aged 5½ years, was admitted to the private pediatric service of the New York Hospital on Feb. 24, 1944, with the chief complaints of fever and cough of four days' duration.

Two years prior to admission the patient suffered from otitis media and mastoiditis for which he was treated at another hospital with sulfadiazine and sulfathiazole. His mother believed that hematuria had occurred with sulfadiazine therapy and fever and a rash with sulfathiazole. Following this illness the patient remained well except for respiratory infections until the onset of the present illness.

The present illness began February 6, eighteen days before admission, with fever and sore throat, which improved without specific therapy. Ten days prior to admission a sibling had a streptococcal sore throat and rash. On February 18 the patient vomited, complained of slight abdominal pain and had three loose bowel movements. The following day he started to cough. Two days later sulfadiazine therapy was begun because of a temperature of 39 C (102.2 F), signs of a severe respiratory infection and tonsillitis. He received 0.75 Gm every four hours for a total dosage of 9 Gm. Absence of

From the Department of Pediatrics of the New York Hospital and Cornell University School of Medicine.

<sup>1</sup> Dr. Benjamin Speck gave me permission to report this case.

response led to discontinuance of the drug, and on the following day he was admitted to the hospital.

On admission examination revealed that the patient was moderately well developed, slender, flushed and listless, but he did not appear severely ill. His temperature was 39 C rectally. The skin was dry and showed a fine brawny desquamation. At the left wrist were a few pink maculopapular lesions. The nasal turbinates were inflamed, the tongue was coated and dry. The tonsils were hypertrophied and injected. Examination of the chest revealed increased tactile fremitus, exaggerated breath sounds and rhonchi throughout the right side. The abdomen was diffusely tender, the spleen was firm and was palpated 2.5 cm below the costal margin, the liver was felt 1 cm below the costal margin in the midclavicular line. The remainder of the examination was negative.

On admission the hemoglobin was 11 Gm, the red blood cells were 4.4 million and the white blood cells were 12,000, with a differential of 17 per cent lymphocytes and 83 per cent polymorphonuclear leukocytes. On smear no abnormal blood cells were noted, and the platelets appeared adequate. The urine was clear and yellow with a specific gravity of 1.025 and without albumin, sugar, red cells, white cells or casts. Subsequent urine examinations, red cell counts and hemoglobin

noted that the patient's blood in a tube did not clot for thirty minutes. The prothrombin level<sup>2</sup> was found to be 54 per cent of normal, and the platelet count<sup>3</sup> was 8,000 on this day. The diagnosis of sulfadiazine sensitivity with thrombocytopenia and severe generalized toxic symptoms seemed justified. This opinion was substantiated by a sulfadiazine blood level of 2.3 mg per hundred cubic centimeters four days after cessation of therapy and the presence of detectable amounts of the drug in the blood after twelve days.

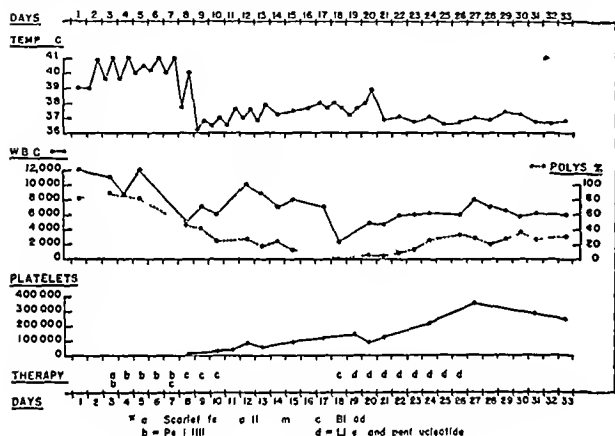
The patient received several direct transfusions and showed gradual clinical improvement and rise in platelet count. However on the eighteenth day the white count fell precipitously to 2,200 with complete disappearance of the granulocytes. He was given 2 cc of liver extract and 10 cc of pentnucleotide daily for eight days. His improvement was steady thereafter and he was discharged on the thirty-seventh hospital day, at which time his blood picture had returned to normal. He was clinically well with the exception of remaining hepatosplenomegaly.

After discharge details of the patient's previous hospitalization became available. He had been hospitalized two years previously because of otitis media and mastoiditis. He was given sulfadiazine therapy, and ten days after initiation of this treatment he developed a rise in temperature, generalized maculopapular rash, lymphadenopathy and hepatosplenomegaly. Sulfathiazole was given a few days later because of tonsillitis. The patient responded with anuria, a hemorrhagic rash and continued hepatosplenomegaly. A reduction in the polymorphonuclear leukocytes occurred eight days after discontinuance of the sulfathiazole.

If this record had been available at the time of the patient's hospitalization there would have been no diagnostic problems. However, he would still be of interest because of the variety and severity of toxic manifestations presented by 1 patient. Hepatosplenomegaly has rarely been reported as a complication of sulfonamide therapy. Williams<sup>4</sup> reports 1,000 cases of infection treated with sulfapyridine. Twelve of these patients developed rashes, and 9 had concurrent hepatosplenomegaly. One case fully reported was similar to ours, with a severe toxic reaction, purpuric rash, edema, enlarged liver and spleen and basal rales. No mention was made of platelets, and there was leukocytosis with eosinophilia in contradistinction to our case.

There have been only a few instances of thrombocytopenic purpura noted resultant from all forms of sulfonamide therapy. When this complication does occur it is apt to be extremely serious.<sup>5</sup> Five out of 9 cases reported terminated fatally. An additional case of thrombocytopenia following three weeks of sulfadiazine therapy occurred in a boy aged 5 years in our wards.<sup>6</sup> He developed a picture resembling the Waterhouse-Friedrichsen syndrome with diffuse hemorrhages into the skin, shock and a low platelet count. Autopsy revealed massive hemorrhages into the adrenals, which seemed satisfactorily accounted for by the depressed platelets and not by septicemia. These reactions appear to be definitely due to sensitivity to sulfonamides and not to direct toxic reaction of the drug on the platelets. Kracke and Townsend<sup>7</sup> followed 61 patients receiving sulfathiazole and found an increase in the platelet count during the course of therapy.

The other reactions exhibited by our patient, such as hyperpyrexia, rash and agranulocytosis, are of more frequent occurrence and have hitherto been reported adequately.<sup>8</sup>



Temperature chart therapy and essential laboratory data

determinations remained normal. The changes in leukocyte count, differential and platelets are recorded in the accompanying chart. Daily blood cultures taken for the first five days showed no growth. Initial throat cultures grew a few beta hemolytic streptococci and Hemophilus influenzae. Repeated blood agglutinations for the typhoid-paratyphoid group, Brucella, rickettsial organisms and heterophile antigen were negative. X-ray examination of the chest gave normal results.

On the second hospital day the patient's temperature reached 40.8 C (105.4 F), his tonsils appeared more injected and the cervical glands seemed larger. On the assumption that this infection was caused by the beta hemolytic streptococcus, 100 cc of anti scarlet fever convalescent serum was administered. The following day this high fever was maintained, and the patient appeared very toxic and developed a diffuse morbilliform rash. An additional 100 cc of convalescent serum was given without effect. Because of the questionable history of sulfonamide sensitivity these drugs were not used.

Despite the report of no growth in the first blood culture, septicemia appeared the most likely diagnosis. For this reason penicillin therapy was started on the third hospital day. He received a total of 500,000 units in the subsequent four days. During this interval the throat infection and cervical lymphadenitis subsided entirely; however, the patient's condition became critical, he was semicomatose and generalized edema developed. The temperature ranged from 39 to 41 C (102.2 to 105.8 F), the rash became more extensive and numerous petechiae appeared. It was apparent that penicillin was not influencing the general course of the disease and many unusual febrile illnesses were considered as a possible cause of this boy's serious condition. On the eighth hospital day it was

2 Kato K. Micro-Prothrombin Test. *Am J Clin Path* 10: 147, 1940.

3 Direct method, normal value 200,000 to 300,000.

4 Williams H. V. Hepatosplenomegaly with Other Clinical Reactions to Sulfapyridine. *Lancet* 1: 105, 1943.

5 Hurd R. W. and Jacob R. F. Thrombocytopenic Purpura Developing as a Complication of Sulfathiazole and Sulfadiazine Therapy. *J A M A* 122: 296 (May 29) 1943. Gorham L. W. Propp S. Schwinn J. L. and Climenko D. R. Thrombocytopenic Purpura Caused by Sulfonamide Drugs. A Report of Three Cases. *Am J Med Sci* 205: 246, 1943. Kracke and Townsend.

6 Dale J. Jr. Personal communication to the authors.

7 Kracke R. R. and Townsend E. W. The Effect of Sulfonamide Drugs on the Blood Platelets. Report of Two Cases of Thrombocytopenic Purpura and Experimental Studies on Patients Receiving Sulfonamide Drugs. *J A M A* 122: 168 (May 15) 1943.

8 Finland M., Peterson O. L. and Goodwin R. A. Sulfadiazine. Further Clinical Studies of Its Efficacy and Toxic Effects in 460 Patients. *Ann Int Med* 17: 920, 1942. Spink W. W. Sulfonamide and Related Compounds in General Medicine, ed. 2. Chicago: Year Book Publishers, Inc., 1942.



## SUMMARIES

A case of severe and unusual sulfadiazine sensitivity with multiple manifestations presented hyperpyrexia, rash, generalized edema, a semicomatose state, lymphadenopathy, hepatosplenomegaly, thrombocytopenic purpura and agranulocytosis with eventual recovery

New York Hospital

## Council on Pharmacy and Chemistry

### NEW AND NONOFFICIAL REMEDIES

The following additional articles have been accepted as conforming to the rules of the Council on Pharmacy and Chemistry of the American Medical Association for admission to *New and Nonofficial Remedies*. A copy of the rules on which the Council bases its action will be sent an application

AUSTIN SMITH, M D, Secretary

**ALLERGENIC EXTRACTS** (See New and Nonofficial Remedies, 1944, p 35)

ENDO PRODUCTS, INC., RICHMOND HILL, N Y

**Allergenic Extracts** The following extract is marketed in treatment set packages of four 10 cc vials containing respectively, slightly more than 1 cc of a 2.5 per cent, 0.25 per cent, 0.025 per cent and 0.0025 per cent dilution of the original extract in glycerosaline solution (50 per cent glycerin) and four 10 cc vials containing 9 cc of diluting fluid (0.4 per cent phenol in isotonic solution of sodium chloride). The extract is also supplied in special treatment packages of one 10 cc vial containing 4 cc of a 2.5 per cent dilution of the original extract in glycerosaline solution (50 per cent glycerin) and one 10 cc vial containing 6 cc of diluting fluid (0.4 per cent phenol in isotonic solution of sodium chloride)

**House Dust (Purified Concentrate)**

Allergenic extract house dust (purified concentrate) Endo is prepared from dust obtained from mattresses and household furniture

A mixture of 1 part by weight of house dust and 2 parts by volume of distilled water is covered with toluene and extracted while stirring at 0 to 5 C for seventy-two hours. The aqueous extract is separated from the dust by centrifugation

Three volumes of the water extract are cooled to 0 to 5 C and treated with 2 volumes of previously cooled acetone. The precipitated material separated by centrifugation is discarded. Acetone is added to the clear centrifugate until a concentration of 75 per cent acetone is reached. The precipitated material is centrifuged and the liquid is discarded. Adhering acetone is blown off with cold dry air. The precipitate is taken up in one tenth the original volume of distilled water. Three volumes of this aqueous solution are treated with 2 volumes of acetone mixed thoroughly and centrifuged. The liquid is reserved. The residue is washed with a small amount of a 40 to 60 per cent V/V acetone-water solution until the original volume of supernatant and wash liquids is equal to one tenth the original volume. Sufficient acetone is added to yield a 75 per cent concentration. The syrupy precipitate is separated by centrifugation and the adhering acetone is removed by cold dry air. The syrup is taken up with one tenth the original volume of distilled water and dialyzed against running distilled water until about 50 per cent of the total dissolved solids has been removed. To the 5 per cent solution w/v (adjusted by low temperature vacuum distillation if necessary) obtained by dialysis sodium chloride is added (18 Gm per hundred cubic centimeters) and the solution is passed through a Seitz filter. The sterile solution is added to an equal volume of previously sterilized glycerin. This solution of 2.5 per cent allergenic extract constitutes the stock solution from which appropriate dilutions are prepared. All diluted solutions are passed through a Seitz filter before filling into sterile vials by aseptic technique

**Allergenic Extracts Diagnostic** The following extract is marketed in packages of a single vial, with accompanying applicator containing 1 cc of a 1:200 solution (0.5 per cent) of the original extract in 50 per cent glycerin

**House Dust (Purified) Concentrate**

This extract for use by the scratch method and cutaneous testing is prepared in much the same manner as the allergenic extract Endo for treatment just described. The procedure is the same up to the point of dialysis whereupon the extract for diagnosis undergoes the following treatment. To the solution obtained immediately before dialysis ammonium sulfate is added (60 Gm per hundred cubic centimeters). The coagulated material is centrifuged. The separated solid is dissolved in one half the original volume of distilled water and the ammonium sulfate precipitation is repeated. The solid separated by centrifugation is suspended in a small volume of water and dialyzed until the solution in the sac does not respond to tests for the sulfate ion. The dialyzed solution is centrifuged to remove a small amount of suspended solids and the solution is adjusted by vacuum distillation at low temperature if necessary to contain 1 per cent of dissolved solids. Sufficient sodium chloride is added to yield a 1.8 per cent solution with respect to sodium chloride. The solution is diluted with an equal volume of glycerin and filtered through a Seitz filter. This 0.5 per cent solution constitutes the allergenic extract purified house dust concentrate for diagnosis by scratch testing

## Council on Physical Medicine

The Council on Physical Medicine has authorized publication of the following article

HOWARD A CARTER, Secretary

### ARTIFICIAL RESPIRATION—MANUAL AND MECHANICAL

In all cases of asphyxia it is of paramount importance that artificial respiration be administered immediately. Loss of a minute may mean the difference between life and death. There is little hope of reviving a victim who has ceased to breathe for more than five to seven minutes and even less chance if he has been in a state of apnea for more than ten minutes. Effective artificial respiration may be applied by the acceptable manual methods—Schafer prone pressure and Howard-Silvester methods—or by mechanical means—respirator or resuscitator. The inhalator is a valuable adjunct to manual methods of artificial respiration. One disadvantage to mechanical apparatus, either resuscitator or inhalator is that it is not always on the scene of an accident and precious first minutes or seconds may be lost waiting for its arrival

All rescue crews, and also the public should be taught a correct method of administering manual artificial respiration. The one most generally used is the Schafer prone pressure method, which may be administered effectively by one person. The American Red Cross, the Boy Scouts and the Y M C A give instruction in this method. Physiologic experiments prove that an exchange of air in the lungs is achieved when the method is applied correctly. The Council highly recommends that every man, woman and child take advantage of the opportunity made available through defense activities to learn how to apply manual artificial respiration

The Howard-Silvester method is somewhat more cumbersome to administer and requires the services of a team of trained persons. The Coast Guard uses this method

In 1932 Dr F C Eve of Hull, England, described a new method of artificial respiration which is unlike all previous methods mentioned. It is a rocking method and the force of gravity causes the abdominal organs to shift, thus moving the diaphragm in and out like a bellows. It has been adopted on the British warships. In Eve's method the drowning victim is laid face downward on a stretcher and is well wrapped with blankets. His wrists and ankles are lashed to the handles. Then he is hoisted on a trestle or sling and rocking is begun. This method, according to Dr Eve, is best because in cases of drowning the inspiratory recoil may be lost as the result of loss of tone in the diaphragm, and it is independent of tone. This method is safe and can be done by any one, but the disadvantage is that the equipment, although simple, may not be on hand in emergency cases when it is needed

Included in the Council's list of accepted devices are inhalators and resuscitators, the two types of apparatus for administering mechanical artificial respiration. These devices are often confused as to function, the following briefly describes them

Inhalators provide an atmosphere of oxygen and carbon dioxide gas mixture slightly higher than atmospheric pressure around the mouth and nose of the victim and are used in conjunction with an approved method of manual artificial respiration. Inhalators consist essentially of a face piece, rubberized fabric breathing bag, pressure reducing valve, tanks of carbon dioxide-oxygen mixture and carrying case

Resuscitators create positive and negative pressure by means of a mechanical appliance operated by the energy of the stored gas merely positive pressure only. A face piece, reduction valve, tanks of carbon dioxide-oxygen mixture or merely tanks of oxygen, a carrying case and a reciprocating mechanism are the principal parts of the resuscitator

The efficacy of the two types of appliances has been shown to be essentially the same by the evidence coming to the Council. Records show that when an inhalator and a resuscitator are on the scene of an accident at the same moment and if either one is employed efficiently, the final result will not differ

The Council on Physical Medicine is now carrying on a five year survey and is supporting research on artificial respiration. It is hoped that this work will produce additional data

# THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

535 NORTH DEARBORN STREET CHICAGO 10, ILL

Cable Address

'Medic Chicago

Subscription price

Eight dollars per annum in advance

*Please send in promptly notice of change of address giving both old and new addresses state whether the change is temporary or permanent. Such notice should mention all journals received from this office. Important information regarding contributions will be found on second advertising page following reading matter.*

SATURDAY NOVEMBER 25, 1944

## ENVIRONMENTAL CANCER

Environmental cancer is cancer due to prolonged contact with some cancerogenic agent in the environment. The relationship of a previous exposure to such an agent and the cancer often appearing many years later is frequently overlooked or not understood. Environmental cancers can be divided into four main groups according to the type of exposure.

First are the cancers caused by agents in the normal environment. Representative of this group is cancer due to the continued ingestion of arsenic in drinking water and foodstuffs in certain regions, the solar cancers of the skin in dry and sunny regions, as in our Midwestern and Southwestern states, the bladder cancers in people in places like Egypt with endemic schistosomiasis, and possibly also lung cancers due to inhalation of road dust containing cancerogenic tar. The second group of environmental cancer results from certain habits (habitual cancer), as for example cancer of the lip and mouth in smokers, cancer of the oral lining in betel and tobacco chewers, and cancer of the abdominal skin in kangri users. The third group comprises cancer resulting from use of certain medicinal agents (medicinal cancers), e. g. cancer of the skin after arsenical medication and after exposure to roentgen rays and radioactive substances. The fourth, which is the largest and most important group, is represented by occupational cancer elicited by exposure to chemical and physical agents in the course of regular occupations.<sup>1</sup>

The agents known or suspected to cause occupational cancer are arsenic, chromates, nickel carbonyl, radium, mesothorium, asbestos, crude and processed mineral oils,

pitch, tar, soot, paraffin oil, anthracene oil, creosote, aromatic amino compounds (aniline, naphthylamine, benzidine), benzene, ultraviolet rays, roentgen rays, radioactive materials and substances from certain parasitic worms. Approximately 8,000 to 9,000 cases of occupational cancer appear to have been placed on record, the majority during the last two to three decades, during which the sources of occupational cancer were mostly discovered. These figures, however, do not reflect the actual incidence of industrial cancer, as the cause of many cases of this type is not properly recognized or their occurrence is not recorded.

Environmental cancer may involve many organs and tissues, notably the skin, lip, tongue, cheek, oral cavity, nasal sinuses, larynx, bronchi, lung, liver, kidney, ureter, bladder, connective tissue, bone and hemopoietic tissues. The site of the cancer depends on the type of the cancerogenic agent and the kind of exposure. The sex ratio is determined mainly by the exposure to the various cancerogenic agents. It is for this reason that the male sex is predominantly affected by occupational cancer, but osteogenic sarcoma occurs in women working in luminous dial factories. Undoubtedly the rapid increase in the employment of women in hazardous industries will be followed by an increase of occupational cancer in women.

The public health importance of industrial cancer undoubtedly will increase not only with respect to the number of workers, male and female, exposed to industrial cancerogenic agents but also with respect to the variety of plants and operations in question. Public health authorities will wish to institute effective technical and sanitary supervision of such establishments as well as medical control of the workers, present as well as past. Practitioners and cancer clinics, in addition to industrial physicians, will aid greatly in meeting this situation by close study of the occupational history of all patients coming to them with precancerous and cancerous lesions. It is mainly in this way that the industrial origin of cancer can be established and new sources of occupational forms discovered. The benefits from such efforts will be not only the early detection and improved prognosis of cases of occupational cancer but also the prevention of industrial cancer by the elimination of exposures to cancerogenic agents. Industrial cancer is largely preventable by proper technical measures.

Organized investigation of environmental and especially occupational cancers is a promising approach to the study of fundamental problems of human cancer because these cancers are the counterpart of experimental cancer in animals. Environmental cancers permit a scientific analysis of cancerogenic agents and of local and general reactions induced by them in human beings.

<sup>1</sup> Clemensen J. Cancer and Occupation in Denmark. 1935. 1939. Copenhagen. Nyt Nordisk Forlag Arnold Busck. 1941. Davis E. Chemical Carcinogenesis. Drugs, Dyes, Remedies and Cosmetics with Particular Reference to Bladder Tumors. J. Urol. 49: 14. 1943. Gross E. Das Carcinom vom Standpunkt des Gewebetumorkologen. Ztschr. f. angew. Chem. 53: 368. 1940. Hueper W. C. Occupational Tumors and Allied Diseases. Springfield, Ill. Charles C. Thomas. 1942. p. 896. Cancer in Its Relation to Occupation and Environment. Bull. Am. Soc. Control of Cancer. 25: 6. 1943. Warren S. Minimal Criteria Required to Prove Causation of Traumatic or Occupational Neoplasms. Ann. Surg. 117: 585. 1943.

# TRANSITORY PULMONARY INFILTRATIONS ASSOCIATED WITH EOSINOPHILIA— LOEFFLER'S SYNDROME

Loeffler reported in 1932 and again in 1936<sup>1</sup> a syndrome characterized by transitory pulmonary infiltrations, blood eosinophilia and a mild clinical course which was in striking contrast to the extensive pulmonary lesions as seen in the roentgenograms. Some of the cases were discovered in supposedly normal persons in the course of mass radiography, while others were in ambulatory cases suspected of pulmonary tuberculosis. Symptoms when present were those of fatigue, irritating cough, associated sometimes with pain in the chest and with scanty sputum, normal or moderately elevated temperature, mild leukocytosis, and increased sedimentation rate. Exaggerated vesicular breathing and sibilant rales over the area of infiltration were the only auscultatory signs. The eosinophilia ranged from 6 per cent to 66 per cent and accompanied rather than followed the appearance of the infiltration of the lung, so that it could not be considered a post-infectious phenomenon. However, strict parallelism between the extent of the infiltration and the grade of eosinophilia was not demonstrable.

The essential and distinguishing feature of the syndrome as emphasized by Loeffler is the fleeting, migratory character of the infiltrations. The shadows appear and disappear in from three to eight days. They may be extensive and irregular in shape or small and round, resembling remarkably the shadows of primary tuberculous infiltration, they may be fleecy or dense, unilateral or bilateral, they may involve the entire lung or be limited to one lobe. In a small number of cases Loeffler observed involvement of the pleura with occasionally small circumscribed pleuritic effusion. Breton<sup>2</sup> likewise stresses the fleeting, migratory and in some cases recurring character of the x-ray shadows in the Loeffler syndrome and points out that attacks of asthma, which, according to various authors, accompany the syndrome in from 5 to 8 per cent, need not be considered as an essential feature of the syndrome. The syndrome is observed more frequently in asthma because the latter is the most frequent allergy.

Pathologic observations on this condition are limited to postmortem studies of Meyenburg<sup>3</sup> on four accidental deaths. He found that the infiltrations were of pneumonic type with exudation into the alveoli and with eosinophilic infiltration of both the alveoli and the interstitial tissue. There was also an inflammatory involvement of the pleura and of the interlobar fissures. Meyenburg failed to demonstrate tubercle bacilli or *Ascaris* larvae in the pulmonary tissue.

The etiology of the syndrome is obscure. Loeffler first suspected that these cases represented a mild atypical form of pulmonary tuberculosis. Maier<sup>4</sup> reviewed the 100 cases seen at Loeffler's clinic in Zurich and found only 2 patients with active tuberculosis at the time of sickness, the tuberculous process was present in both for some time. The first important contribution to the etiology of the syndrome is probably that of Engel, who had observed seasonal occurrences of cough in Shanghai which coincided with the flowering of the privet plant. Fifty-two of the 100 cases in Maier's series displayed such allergic phenomena as eczema, hay fever, migraine, vasomotor rhinitis and urticaria either before or at the time of the illness. The blood eosinophilia of course suggested the allergic character of the disease. Swiss observers emphasized the rather frequent association of the syndrome with *Ascaris* infestation. Thus Zweifel<sup>5</sup> found sensitivity to *Ascaris* extract in 70 per cent of the cases with the Loeffler syndrome, whereas normal persons, persons with ascariasis and allergic persons reacted to it in only 40 per cent. Zweifel concludes that, while *Ascaris* appears to be the most frequent cause of these pulmonary infiltrations, it is not the exclusive allergen. Lavier<sup>6</sup> reported a case of hepatitis associated with Loeffler's syndrome caused by the liver fluke (*Fasciola hepatica*). Hoff and Hicks<sup>7</sup> reported a case in which asthmatic attacks and pulmonary infiltrations which persisted for three months disappeared dramatically on the discovery and treatment of *Endameba histolytica*. The syndrome appears to represent a genuine allergic phenomenon, the pulmonary tissues constituting the shock organ. Gravesen<sup>8</sup> stresses that it is the interstitial tissue of the lung that is hypersensitive rather than the bronchi, as is the case in asthma. The cases in which ascarids appear to be the cause raise the question whether the pulmonary infiltrations are the result of invasion of the lungs by the larvae of the helminth or whether these infiltrations represent a purely allergic inflammatory reaction in response to the *Ascaris* toxin. Most observers, including Maier, failed to find the larvae of the ascarids in the sputum. The only support for the thesis of this being an *Ascaris* larva pneumonia is the experiment of Koino, in which he swallowed 2,000 larval eggs of ascarids with resultant pneumonic consolidation and sputum containing larvae. This experiment of course is not necessarily comparable to the natural evolution of the disease.

<sup>1</sup> Maier C. Das flüchtige eosinophile Lungeninfiltrat zusammenfassende Ergebnisse von über 100 Beobachtungen. *Helvet med acta* 10: 95 (April) 1943.

<sup>2</sup> Zweifel E. Hautprüfungen mit Ascaridenextrakt bei flüchtigen eosinophilen Lungeninfiltraten. *Helvet med acta* 11: 117 (April) 1944.

<sup>3</sup> Lavier G, Bariety M and Caroli J. D'atomose hepatique et syndrome de Loeffler. *Paris med* 29: 434 (May 20) 1939.

<sup>4</sup> Hoff Amanda and Hicks H. Mason. Transient Pulmonary Infiltrations. A Case with Eosinophilia (Loeffler's Syndrome) Associated with Ascariasis. *Am Rev Tuberc* 45: 194 (Feb) 1942.

<sup>5</sup> Gravesen Poul B. Transitory Lung Infiltrations with Eosinophilia. *Acta med Scandinav* 96: 523 (nos 5-6) 1938.

<sup>1</sup> Loeffler W. Die flüchtigen Lungeninfiltrate mit Eosinophilie. *Schweiz med Wchnschr* 66: 1069 (Nov 7) 1936.

<sup>2</sup> Breton A. A Propos de la radiologie de l'asthme. Le syndrome de Loeffler. *Paris med* 28: 538 (June 25) 1938.

<sup>3</sup> von Meyenburg H. Eosinophile Pulmonary Infiltration. *Pathologic Anatomy and Pathogenesis*. *Schweiz med Wchnschr* 72: 809 (July 25) 1942. *abstr J A M A* 121: 626 (Feb 20) 1943.

For the present it may be assumed that Loeffler's syndrome is an allergic reaction that can be provoked by a variety of allergens. The relationship of tropical eosinophilia to Loeffler's syndrome is not clear, according to Apley and Grant<sup>9</sup> the two conditions are similar and are not clearly distinguishable.

## Current Comment

### THE 1945 ANNUAL SESSION IN PHILADELPHIA

As indicated under the Organization Section in this issue of *THE JOURNAL*, the Board of Trustees, through authority vested in it by the constitution of the Association has transferred the annual session for 1945 from New York City to Philadelphia. The dates are June 18 to 22 inclusive. Because of the tremendous demands on the hotels for rooms, physicians are asked to cooperate by refraining from making a reservation in more than one hotel, also by limiting their reservations to the minimum amount of space that they need to occupy. Physicians are asked to share accommodations by utilizing a double room with another physician whenever that is convenient. The medical profession of Pennsylvania and of Philadelphia and all of the groups in Philadelphia concerned in the holding of this session promise to do their utmost to aid the success of the meeting.

### MATURITY AND THE COMPLETION OF HIGHER EDUCATION

The average age of students who complete their formal programs of higher education, including that in medicine, has shown a consistent rise during the past century. The only exception has been the recent reversal due to the war. Pressey,<sup>1</sup> who has recently reviewed the history of this trend in the United States, points out that many efforts have been made to counter this development over the same period. A great variety of evidence, he says, medical, psychologic, educational and sociologic, indicates that maturity of the human organism is reached at about 20 and that thereafter only a relatively few years remain at prime. Before the war the average age of obtaining the M.D. degree was 28, consequently many of the best years are spent in learning rather than in "doing." Pressey's plea is that completion of programs of higher education is desirable—preferably about two years earlier than was usual before the war. In the field of medical education this problem is peculiarly complex, the subject deserves discussion and study, but decision as to the desirability of a shortened course with graduation at an earlier age should not be unduly influenced by the abnormal conditions of medical training which exist during the war.

### UNUSUAL BRAVERY OF THE MEDICAL CORPS

The heroic and self-sacrificing acts of many men of the medical corps have been repeatedly noted under Medicine and the War in *THE JOURNAL*. Feats of combat pilots, gunners, submarine crews, pioneer troops and tank crews are frequently vividly described in the newspapers. Physicians with the armed services are daily performing great and small acts of heroism in the care of the sick and injured. Often their work is unnoticed beyond the small group in which they regularly do their professional duties. A War Department release of November 19 announces the award of the Silver Star to five men, of whom three were members of the Medical Corps of the Army of the United States. Among twenty-two men awarded the Bronze Star Medal, seven were medical officers and eight enlisted men of the Medical Department. Nearly all of the citations were given for the high devotion to duty displayed by medical officers in going to the aid of wounded soldiers in the face of intense enemy infantry and artillery fire with utter disregard for their own personal safety. This record all doctors may share with pride.

### THE TRANSFORMATION OF NORMAL CELLS INTO CANCER CELLS

In his review of recent work on cellular transformations, Haddow<sup>1</sup> pays special attention to cytoplasmic mechanisms in cancer. In cell division different characters in cells with the same nuclear genes may result from a differential segregation of cytoplasmic constituents and "determiners." The change of normal cells into cancer cells is a most remarkable transformation. This change occurs spontaneously, and experimentally it can be produced by, cancerogenic chemicals, x-rays and other radiations. Generally speaking, the change involves more or less loss of differentiation with gain in the rate of growth. Not infrequently specific differentiation cannot be recognized. The change is permanent and irreversible—the cancer cell continues to multiply as such in the original host, in transplants to new hosts and in cultures outside the body. But this multiplication is not dependent on the presence of the agent which started it. As Haddow puts it "it is patent that the carcinogen does not provide the real stimulus to growth, since growth proceeds without it. Hence the mechanism which permits unlimited growth must clearly reside in the cell itself." What the carcinogen appears to do is to change permanently the normal mode of growth of the cells, and this change is inheritable. In the light of the current developments in cytogenetics it is Haddow's conclusion that the mechanisms of the unlimited growth of the cancer cell "may reside partly at least in the cytoplasm."

<sup>9</sup> Apley, John and Grant, G. H. Eosinophilia with Pulmonary Disease on Return from the Tropics. *Lancet* 2: 308 (Sept. 2) 1944.  
<sup>1</sup> Pressey, Sidney L. A Neglected Crucial Psychoeducational Problem. *J. Psychol.* 18: 217 (Oct.) 1944.

<sup>1</sup> Haddow, A. Transformation of Cells and Viruses. *Nature* 154: 194 (Aug. 12) 1944.

# MEDICINE AND THE WAR

## ARMY

### CONFERENCE OF FLIGHT AIR SURGEONS

Top flight air surgeons from all fighting theaters recently conferred at the AAF Personnel Distribution Command Atlantic City, and assumed duties of flight surgeons consultant in army general and service forces regional hospitals all over the country. Specially selected by the chief of the Professional Services Division they will confer with hospital authorities on aviation medical matters and visit air forces patients and discuss individual problems relative to transfer to AAF medical facilities or to duty on a flying status in the Air Forces through the PDC.

he and an ambulance driver proceeded to the scene. The wrecked aircraft was burning rapidly, creating an imminent danger of the high octane gasoline or the bomb load exploding. He climbed along the wing until he ascertained that the pilot was not in the forward cockpit, while the ambulance driver searched the rear section for the gunner. With 0.50 caliber ammunition exploding from the plane they also searched the area until first one crew member and then the other were located from 200 yards away. During this time the bombs exploded while these men were only 40 yards from the wreckage. Escaping injury, they administered to the injured fliers



Top flight air surgeons at the conference. Standing left to right: Major A. A. Sprong, Sterling, Kan. from Hwain and the South Pacific; Major D. E. James, Belvidere, Ill. China Burma India theater; Major L. M. Kistler, Los Angeles, Ind. Capt. J. H. Arrington Jr., Columbia, Mo. eye, ear, nose and throat specialist; Major G. R. Elliott, Orange, Va. European theater; Capt. E. W. Furgurson, Plymouth, N. C. India Burma; Major J. M. Smolev, Erie, Pa. Southwest Pacific; Major H. W. Cummings, Greenfield, Mass. Africa; Major B. H. Bennett, Washington, D. C. Australia New Guinea; Capt. A. J. Gantz, Greenfield, Iowa. Central Pacific. Seated left to right: Major R. C. Page, Carmel, N. Y. chief Professional Services AAF Washington, D. C. Major F. L. Spann, Fort Worth, Texas, chief of Professional Standards Branch Professional Services; Major P. P. Leone, Philadelphia, former registrar Surgeons Division.

### ARMY AWARDS AND COMMENDATIONS

#### Major Clarence S. Livingood

Major Clarence S. Livingood, formerly of Philadelphia, has been awarded the Bronze Star Medal with a citation from the Commanding General for some as yet unpublished work which cannot be described because of censorship requirements. The citation reads "for meritorious service in connection with military operations against the enemy to provide information which would obviate the extension of this disabling condition in American troops. His work reflected great credit on himself and on the Medical Department." Dr. Livingood graduated from the University of Pennsylvania School of Medicine, Philadelphia in 1936 and entered the service Feb. 15, 1941.

#### Captain George R. Conner

Capt. George R. Conner, formerly of Kirksville, Mo., was recently awarded the Soldiers Medal. The citation accompanying the award reads: "When a plane hit an obstruction and crashed during a take-off on June 14, 1944 in the Far East,

who were then removed to a hospital. The complete disregard for personal safety displayed by them reflects great credit on themselves and the military service." Dr. Conner graduated from the University of Louisville School of Medicine in 1936 and entered the service Aug. 10, 1942.

#### Captain Harold C. Rosenthal

Capt. Harold C. Rosenthal, formerly of Poughkeepsie, N. Y., was recently cited by Lieut. Gen. S. B. Buckner Jr., commanding officer of the Advance Command Post Headquarters Alaska Defense Command. The citation reads: "Reports have reached me from several sources concerning the splendid service rendered by you to U. S. Army troops wounded at Attu and being evacuated in your ship. Your untiring effort and professional skill greatly alleviated the suffering of our troops during their trying voyage. I wish to convey my appreciation of your magnificent work and trust we may be so fortunate as to have the benefit of your services again in this theater." Dr. Rosenthal graduated from Cornell University Medical College, New York, in 1929 and entered the service Aug. 13, 1942.

### DISTINGUISHED MEDICAL OFFICERS HONORED AT WINTER GENERAL HOSPITAL

The Winter General Hospital, Topeka, Kan., has adopted the plan of naming its important clinics, buildings and streets for distinguished deceased medical officers of the Army who so far have never been honored by having their names given to buildings, general hospitals or other entities of the Medical Department U S Army. The names are selected as appropriate for the particular clinic or building. The names of the streets are those of medical officers who have become the heads of other branches of the Army. The following are the names so far selected:

The Waterhouse Medical Clinic, named for Surgeon Benjamin Waterhouse (1754-1846) of Massachusetts, who introduced vaccination in America and was first professor of medicine at Harvard.

The John Jones Surgical Clinic, named for Surgeon John Jones (1729-1891) of New York who wrote the first American medical book, founded the New York Hospital and was first professor of surgery at King's College, now Columbia University.

The Northington Roentgenological Clinic, named for Col Eugene Garland Northington (1880-1933) of Alabama, pioneer student of military roentgenology, who lost both arms and finally his life from cancer due to exposure to the rays before their danger was known to science.

The Rodriguez Dental Clinic, named for Major Fernando Emilio Rodriguez (1888-1932) of Puerto Rico, who made the first studies of the bacteriology of dental caries.

The Keen Neurosurgical Clinic named for Major Williams Keen (1837-1932) of Pennsylvania, pioneer student—with his colleagues Acting Assistant Surgeons Silas Weir Mitchell and George Reed Morehouse—of gunshot wounds of nerves and one of the few medical officers who served in both the Civil War and the first world war.

The Rush Neuropsychiatric Clinic, named for Surgeon General Benjamin Rush (1745-1813) of Pennsylvania, author of the first American book on insanity, the only systematic American treatise on the subject before 1883, signer of the Declaration of Independence and founder of the University of Pennsylvania.

The Shippen Clinic for Women named for Director General William Shippen Jr (1736-1808) of Pennsylvania first teacher of obstetrics in America, first professor of surgery in America and founder of the University of Pennsylvania.

The Woodward Laboratory, named for Lieut Col Joseph Janvier Woodward (1833-1884) of Pennsylvania, pioneer in photomicrography, eminent anthropologist and President of the American Medical Association.

The names of other important clinics, buildings and streets after distinguished deceased officers of the Army were published in THE JOURNAL, July 24, 1943, page 878.

### AVIATION MEDICAL EXAMINERS

Graduation exercises for a class of medical officers who have successfully completed the Aviation Medical Examiners Course were held October 13 at the School of Aviation Medicine Randolph Field Texas. The graduation address was made by Brig Gen Aubrey Hornsby chief of staff, AAF Central Flying Training Command, Randolph Field Texas. Presentation of the diplomas was made by Brig Gen Eugen G Reinartz school commandant.

### MEDICAL ADMINISTRATIVE CORPS OFFICER HONORED

Lieut. Ralph H Major Jr M A C formerly of Kansas City Mo aide de camp to General Hume in Italy, has been awarded the Cross of War for Military Valor by the Italian government. The presentation was made by Gen Roberto Benavenga, who was Italian military commander of Rome at the time of the Allied entry last June. The citation declared that Lieutenant Major has 'shown great devotion to duty under shell fire in connection with the capture and administration of the city of

Rome.' Last June Lieutenant Major was presented with the Magistral Cross of the Sovereign Military Order of Malta by Prince Ludovico Chigi Albani, grand master of the famous order of knighthood, which was founded in the twelfth century.

### WOMEN'S ARMY CORPS PERSONNEL MAY BE ASSIGNED TO SANITARY CORPS

According to a recent release from the Sixth Service Command, Chicago, provisions of section X, Circular No 333, War Department, 1944, as far as they pertain to bacteriologists, biochemists and serologists, apply to enlisted women of the Women's Army Corps. Such personnel may be appointed second lieutenants in the Women's Army Corps for assignment and immediate detail in the Sanitary Corps. Officers appointed under this authority who later prove unsatisfactory are subject to the provisions of AR 605-230. They may be reassigned within the Medical Department. Under no condition will officers so appointed be reassigned outside the Medical Department.

### PROMOTION AND NEW ASSIGNMENT FOR COLONEL PADEN

Lieut Col Paul A Paden, Cleveland, former director, Military Personnel Division, has been promoted to colonel and assigned as chief of the Personnel Service, Office of the Surgeon General, relieving Col J R Hudnall, who has been assigned as executive officer of Walter Reed General Hospital, Washington, D C. Colonel Paden has been in the Office of the Surgeon General since 1941, where he was first executive officer in the Military Personnel Division, becoming director in 1943. He graduated from the University of Tennessee College of Medicine Memphis, in 1932 and entered the service in 1934. Prior to coming to the Office of the Surgeon General, Colonel Paden was executive officer of the Station Hospital at Fort Riley, Kansas.

### COLONEL ASH APPOINTED DIRECTOR OF ARMY INSTITUTE OF PATHOLOGY

Col James E Ash has been appointed director of the Army Institute of Pathology, Army Medical Museum. His title was formerly that of curator. He recently made an extended trip through the North African and other theaters of war in the interests of the Museum and Medical Arts Services. The museum is undertaking to supply all medical schools in the United States and Canada with material for research and training in tropical diseases. Lieut Col Baldwin Lucke, who was acting curator during the absence of Colonel Ash, has been named deputy director.

### ARMY DENTAL CORPS CONFERENCE

Dental surgeons representing the twelve major Army Air Force commands met in conference recently at the headquarters of the Second Army Air Force, Colorado Springs. The conference planned and guided by Col George R Kennebeck, D C Chief of the Dental Branch, Professional Service Division of the Air Surgeon's Office, and his assistant, Lieut Col Raymond C Turk D C, marks the first such event for Army Air Forces command dental surgeons.

### MENTAL HYGIENE COMMITTEE HONORS GENERAL KIRK

The National Committee for Mental Hygiene has elected Major Gen Norman T Kirk, Surgeon General of the Army, as one of its six new members in recognition of his 'unusual awareness of the importance of skilled psychiatric treatment in the Army.'

### HEADS SIXTH SERVICE COMMAND

Brig Gen Russel B Reynolds was recently appointed to succeed Major Gen R S Aurand as commanding general, Sixth Service Command. General Aurand's new assignment has not as yet been made public.



## NAVY

PHYSICAL TRAINING ROUTINE ORDERED  
IN NAVAL HOSPITALS

Vice Admiral Ross T McIntire, Surgeon General of the Navy, set in operation recently a system of organized physical training for patients in all continental naval hospitals and convalescent hospitals. The program, established under the Rehabilitation Branch Professional Division, Bureau of Medicine and Surgery, calls for "physical exercise of graded intensity" for patients to minimize "the deterioration in physical fitness which accompanies confinement to bed and thus reduce the number of sick days. Physical training thus becomes part of the daily naval hospital routine and of the general treatment plan. Exercise for individual patients will, however, be confined to activities which the responsible medical officer deems appropriate and will not exceed limitations set by him.

To facilitate assignment of patients to appropriate physical training, patients will be classified in the following groups: (1) Ambulant—no limitations on physical activity, (2) Ambulant but with stated restrictions on physical activity, (3) Confined to ward, (4) Confined to bed, (5) No activity. This phase of the Navy's rehabilitation program will be carried on under the command of medical officers by physical training officers graduated from the school established recently at the Naval Training Center, Sampson, N. Y. The first group completed the course on October 21 and subsequent groups will follow at weekly intervals. Personnel selected for this work by the Bureau of Naval Personnel majored in physical education in civil life and in many instances had experience in corrective exercises. Their indoctrination includes many of the features of a "refresher course" in physical education. To insure further uniformity in their activities each physical training officer is furnished a manual of carefully selected graded physical activities satisfactory to the Bureau of Medicine and Surgery which may be followed without interruption when a patient is transferred from one hospital to another.

Complements of physical training personnel who come under the cognizance of the Bureau of Naval Personnel but who are under the command of medical officers in command will be assigned to hospitals on an approximate basis of one officer to 1,000 patients and one specialist (A) to each 100 patients.

## NAVY NEEDS 3,000 DOCTORS

Vice Admiral McIntire, who is chief of the Bureau of Medicine and Surgery, stated recently that 3,000 more physicians will be required by the Navy because personnel expansion and intensification of naval operations in the Pacific area has precipitated a grave shortage of medical officers. Admiral McIntire told Mr. Paul V. McNutt, chairman of the War Manpower Commission, that "with less than 13,000 medical officers on active duty in the Navy the procurement of at least 3,000 more as soon as possible is imperative."

The Army will fill its future requirements for military physicians from sources now available and therefore will not require future certification of availability of additional physicians from the Procurement and Assignment Service of the War Manpower Commission.

## THE NAVY'S REHABILITATION PROGRAM

Vice Admiral Ross T. McIntire, surgeon general of the Navy, recently stated that "proper rehabilitation starts the day a man is wounded or breaks down." The Navy, therefore, has developed a broad program which involves a number of new ideas and is showing bright promise. "No man is so handicapped," the surgeon general said, "that he cannot become a useful citizen. So far as it is in the Navy's power, no disabled man will be returned to his community without being well equipped physically and psychologically. Whatever has happened, the disabled man is taught that he still has a valuable place to fill in the world. The chaplains who play a valued part in rehabilitation do much to replace despair and bitterness with hope and a healthy, optimistic outlook."

In this counterattack on disability encouraging victories are being won. There are very few men who have been blinded

In the Philadelphia Naval Hospital, where the blind ultimately are brought for training, there are not more than a score of these patients including men blinded by the sort of mishaps common in civilian life. They are trained to live a full and normal life, trained to take up civilian status with assurance. Highly encouraging work also is being done with the deaf. Excellent procedures have been worked out in the treatment of amputations and the training of amputees. If a man has lost an arm or a leg a plastic substitute exactly suited to his needs is made in the hospital by skilled craftsmen working in constant collaboration with the surgeons. It is routine that these men learn to drive an automobile and to dance. A great many are permitted to return to military duty. Others go into civilian life at trades learned while they are recuperating.

OFFICIAL NAVAL MEDICAL HISTORY  
OF THE WAR

Capt. Louis H. Roddis (MC), U.S.N., twice editor of the *Naval Medical Bulletin* reported for duty at the Bureau of Medicine and Surgery October 30 and has been made responsible for the preparation of the official naval medical history of the war. He recently completed thirty-one years of naval service.

## NAVY AWARDS AND COMMENDATIONS

## Lieutenant John E. Stewart

The Legion of Merit medal was recently awarded to Lieut. John E. Stewart, formerly of Juneau, Alaska. The citation reads: "For exceptionally meritorious conduct in the performance of outstanding services to the government of the United States as a medical officer during action against enemy Japanese forces on Tarawa Atoll, Gilbert Islands, Nov. 20, 1943. Although hampered by heavy enemy antiaircraft gun, machine gun and sniper fire, at extreme risk of his own life, he made his way to the wounded men and administered aid to them and displayed marked ingenuity in utilizing rubber boats to convey the wounded men through the surf. On November 22 he volunteered to take six corpsmen to an area of heavy fighting and under heavy enemy machine gun fire he maintained an aid station under extremely difficult and dangerous conditions. Through his resourcefulness in the use of an amphibian tractor for the evacuation of wounded, and through his courage, endurance and devotion to duty, many lives were saved that might otherwise have been lost. His conduct throughout was in keeping with the highest traditions of the naval services." Dr. Stewart graduated from Harvard Medical School, Boston, in 1941 and entered the service in September 1942.

## Lieutenant Commander Tracy D. Cuttle

Lieut. Comdr. Tracy D. Cuttle, formerly of Philadelphia, has been awarded the Bronze Star Medal "for meritorious service while serving as senior medical officer of a tank landing ship operating in the Solomon Islands area from August 1943 to April 1944. Lieutenant Commander Cuttle, by his highly intelligent planning, professional ability, initiative and untiring efforts was largely responsible for equipping and training his own and other tank landing ships so that the medical service of these vessels was greatly improved, which undoubtedly resulted in the saving of many lives. The improvements were performed under adverse circumstances when equipment was difficult to obtain and numerous improvisations were necessary. His accomplishments were of inestimable value and his conduct and devotion to duty throughout were in keeping with the highest traditions of the United States Naval Service." Dr. Cuttle graduated from the University of Pennsylvania School of Medicine, Philadelphia, in 1935. He entered the service in 1940.

## Captain George B. Dowling

The Distinguished Service Medal was recently awarded to Capt. George B. Dowling, formerly of Washington, D. C. His citation reads: "For exceptionally meritorious service to the government in a duty of great responsibility, as staff medical

officer of a task force of United States Naval Forces in Europe, during the period Nov. 29, 1943 to July 20, 1944. Captain Dowling, by his part in the planning for an operation of the system of evacuation of the wounded from the continent to the United Kingdom by LSTs, has made a significant contribution to the war effort. His experience, ability, wisdom and energy were invaluable in the solution of the many intricate problems involved. The personal and enthusiastic assistance rendered by Captain Dowling in every undertaking of this important task resulted in the ameliorating of much suffering and in the saving of many lives. Dr. Dowling graduated from George Washington University Medical School, Washington, D. C., in 1917 and was appointed to the Navy in the same year.

#### Commander Jasper L. Custer

The Bronze Star Medal was recently awarded to Comdr. Jasper L. Custer, formerly of Shreveport, La. The citation accompanying the award read: "For meritorious performance of duty as Senior Medical Officer of the U. S. S. *Block Island* when that vessel was sunk by enemy action on May 29, 1944. Commander J. L. Custer unhesitatingly went to the aid of a man pinned between the wreckage of the port forward catwalk and the ship's side and gave what medical aid and comfort was possible while attempts were being made to free him. After it became evident that it would be necessary to amputate the man's leg if he was to be freed before the ship sank, Commander Custer performed the operation under extremely hazardous and unfavorable conditions and succeeded

in releasing the man in time to remove him from the rapidly sinking ship. Commander J. L. Custer's calm and efficient performance of duty in the face of great danger was an inspiration to the entire crew and was in keeping with the highest tradition of the United States Naval Service." Dr. Custer graduated from the University of Texas Medical Branch, Galveston, in 1927 and entered the service April 6, 1942.

#### Lieutenant Mark W. Wolcott

The Air Medal was recently awarded to Lieut. Mark W. Wolcott, formerly of Philadelphia, for "meritorious achievement in aerial flight as crew member of an R4D transport plane attached to the South Pacific Air Transport Command from July 15 to 25, 1943. When his craft was unable to land on the densely overgrown jungle terrain while transporting urgently needed supplies to our forces on New Georgia Island, Lieutenant Wolcott skilfully performed his duties and rendered invaluable assistance to his pilot in accurately dropping the cargo as the unarmed plane flew in at terrific speed and at tree top level to avoid intense enemy antiaircraft fire and aerial opposition, making several hazardous runs on the targets to complete the mission and frequently returning to base without the protection of covering planes. Lieutenant Wolcott's cool courage and unwavering devotion to duty under extremely difficult conditions contributed materially to the success of these vital missions and were in keeping with the highest traditions of the U. S. Naval Service." Dr. Wolcott graduated from the University of Pennsylvania School of Medicine, Philadelphia, in 1941 and entered the service July 15, 1942.

## MISCELLANEOUS

### WARTIME GRADUATE MEDICAL MEETINGS

The following subjects and speakers for Wartime Graduate Medical Meetings have just been announced:

U. S. Naval Hospital, San Diego, Calif.: Surgery of the Chest. Dr. Leo Elocsser, November 30.

U. S. Naval Hospital, Philadelphia: Recent Physiologic and Pharmacologic Studies Bearing on Respiration. Dr. Carl Schmidt, December 1. The Common Cold, Influenza. Dr. Hobart A. Reimann, December 15.

Cirle General Hospital, Cleveland: Bone Grafting. Dr. James A. Dickson, December 12.

Camp McCoy, Wisconsin: Endocrinology. Dr. Elmer L. Sevringhaus, November 29. Virus and Rickettsial Diseases. Dr. Marcos Fernan-Nunez, December 13.

U. S. Naval Hospital, Great Lakes, Ill.: Diagnosis and Treatment of Acute Suppurative Meningitis. Dr. Paul S. Rhoads, December 5. The Physiology of Respiration as It Affects Thoracic Surgery. Dr. Ralph B. Bettman, December 19.

### THE NETHERLANDS FACING FAMINE AND EPIDEMICS

The Netherlands Information Bureau reports that the Dutch people are now faced with a dangerously rising death rate caused by the shortage of food and fuel. One of the most alarming symptoms of the people's lowered resistance is the increase in tuberculosis, a direct cause of which is malnutrition. At the beginning of this month the diet for the inhabitants of the larger cities dropped to less than 900 calories a day. By international standards a person who sits quietly all day engaging in no activities whatever requires a minimum of 1,200 calories each day, while any one who does a normal day's work needs from 2,500 to 4,000 calories. Margarine and butter supplies were completely exhausted by November 1 in Amsterdam and Haarlem; there is no flour for the baking of bread while in other cities all flour will be gone soon.

Unless the cities of the Netherlands are liberated within a short time, the disaster will assume gigantic proportions. Owing to the complete lack of fuel, the pumping stations, which supply the Dutch people with their drinking water, will soon cease to operate. Holland's intricate sewerage system will also come to a standstill and an outbreak of epidemics of the worst sort may be expected.

### PLACEMENT PROGRAM FOR VETERANS

Northrop Aircraft, Inc., Hawthorne, Calif., recently developed a placement program by which veterans of this war, particularly those with physical handicaps, may be intelligently moved into industry. The Northrop placement program begins at Birmingham General Hospital at Van Nuys, Calif., where the company has established an airplane production department. It contains machines, tools and all equipment necessary for light metal shop work. Convalescents, nearly all of whom are overseas casualties, are given a short training course and then start on actual production, for which they are paid standard shop rates. When these men are discharged for return to civilian life they are encouraged to take employment at the main Northrop plant. On recovery the veteran who is discharged is adjusted to a special type of work and readily fits into this work. This is primarily for the physically handicapped or injured. Dr. Harold B. Dye, chief surgeon at Northrop Aircraft, Inc., stated that the same basic plan could be worked out for the mentally handicapped. Agencies should be established in connection with hospitals to assure a round peg being placed in a round hole. The United States Employment Service is of assistance in finding work for veterans but is not able to approach the subject from the standpoint of specialized work for the physically and mentally handicapped.

### RED CROSS SENDS PENICILLIN BY AIR FOR PRISONERS OF WAR IN GERMANY

The American Red Cross has sent 5,000 tubes of penicillin by air express to the International Red Cross Committee in Geneva to be used for American prisoners of war held by Germany. The Red Cross plans additional shipments of medicines and medical supplies for prisoners of war. The International Committee has been asked to keep the prison camp leaders informed of the medicines available in the stocks held in Geneva for their use and to suggest that the leaders not allow camp stocks to become depleted before reordering.

Regular shipments of Red Cross first aid kits intended for use when doctors are not available have been made to the prison camps in Germany. Bulk shipments of medicine and medical supplies also have been made to supplement those provided by German military authorities for the care of sick and wounded prisoners of war.

# ORGANIZATION SECTION

## Official Notes

### THE 1945 ANNUAL SESSION

The Ninety-Fifth Annual Session of the American Medical Association will be held in Philadelphia June 18 to 22, 1945. This session was originally scheduled to be held in New York June 11 to 15, but because of untoward conditions growing out of the war emergency it was found that needed facilities would not be available in that city.

A very cordial invitation has been extended to the Association by the Philadelphia County Medical Society to hold the 1945 session in that city. The Philadelphia Convention and Tourists Bureau, the Hotel Association, those concerned with the operation of transportation facilities and other civic groups have given assurances that everything possible will be done to contribute to the success of a meeting in Philadelphia. Final arrangements are being made as rapidly as possible.

#### Hotel Reservations

Hotel reservations will be made through a central office in Philadelphia. It is highly desirable that reservations be made as early as possible. Those who expect to attend the Philadelphia session are urgently requested to refrain from making reservations in more than one hotel. In numerous instances at the annual session held in Chicago in 1944, and at other sessions previously held, individual physicians have made reservations at two or three hotels and on arrival at the place of meeting have completed their reservations at one hotel and failed to cancel other reservations. The result has been that many physicians have found it impossible to secure accommodations. If this practice is persisted in it will become increasingly difficult for the Association to find a satisfactory place of meeting.

At the Chicago session several hotels had a large number of reservations which they had made in good faith only to find that multiple reservations made by individuals which were not needed, were not canceled, and the result was that the hotels had vacant accommodations, which after a short time were given over to persons who were not concerned with the annual session of the American Medical Association.

## Washington Letter

(From a Special Correspondent)

Nov. 20 1944

### Medical Stand on Extension of Social Security Considered

A determined move is under way in Congress for extension of social security. It is expected that extension of social security will ultimately be achieved and, when this happens social security taxes must go up. Another argument, not connected with the extension issue, is now raging on the question of doubling social security taxes next year on both employers and employees. More than 50 million people are affected. The administration favors the doubling, but House and Senate leaders close to the subject are against it as in several previous years. The "pro" argument is that the terms of the Social Security law should be carried out now because so many people are making money. The "against" argument is that so much money has already been earmarked for future social security payments on the basis of benefits under the present law, that it would be unnecessary and unwise to increase the tax burden. Senator Arthur Vandenberg, Republican of Michigan, made his fourth annual move to freeze the rate at the present 1 per cent level. He argues that at existing pay roll rates the social security reserve (now estimated at more than 6 billion dollars in government bonds) is from eight to twelve times the contemplated annual drain on the fund in the next five years. House and Senate tax committee leaders have tentatively moved to compromise the 1 per cent tax increase now scheduled to take effect automatically January 2. Instead of the 2 per

cent doubled rate on workers and employers starting New Year's day, they propose to spread the increase over two years. Under the plan, still in renegotiation, the tax would be moved up to 1.5 per cent in January 1945 and would not reach the full 2 per cent rate until January 1946.

### President Asks Year's Compulsory Training for Young Persons

President Roosevelt told his latest White House press conference that he hopes Congress acts this winter on legislation requiring the youth of the nation to give a year's service to the government. Seemingly aware of opposition of both Protestant and Catholic church leaders, the President did not commit himself on whether compulsory training should be military. The President recalled physical benefits gained by youths who went through the Civilian Conservation Corps program. He pointed out that the CCC boys did not have military training but benefited greatly from their experience. He said that a universal training program would give the nation a large number of young people trained to defend the country in the event of future wars. The Army favors compulsory training to make it possible to mobilize four million men overnight, and several bills along this line have been introduced in Congress.

### Service Chiefs Ask for Increased Blood Donations

An appeal for increased blood donations was made here by Vice Admiral Ross T. McIntire, Surgeon General of the Navy, and Major Gen. Norman T. Kirk, Surgeon General of the Army. Increasing casualties in both Europe and the South Pacific are necessitating air shipments of whole blood to both battle fronts. The service chiefs have pointed out that among those who have given blood are a number of men in service who themselves have faced death and suffered wounds. Many World War I veterans, they added, have been consistent blood donors. Whole blood is shipped daily from Washington and New York to Europe, and regular shipments go from the West Coast to the South Pacific. A new method had to be devised to keep blood fresh on its long journey via Naval Air Transport Service from San Francisco to Pearl Harbor and then to island bases.

### Army Medical Research Board to Continue in Peace

Brig. Gen. James S. Simmons, chief of the preventive medicine service in the Office of the Surgeon General, U. S. Army, told the meeting of the National Academy of Sciences here that plans are being made for an Army Medical Research Board to continue in peacetime to seek ways to protect army health for better defense of the nation. Correlated with the proposed Army Medical Research Board, under present plans, would be a committee on Medical Research for developing within civilian institutions medical investigations of importance to the armed forces. The Army board would include one member of the civilian committee, which in turn would have one member from the Army board, to provide closest cooperation.

## Society Proceedings

### COMING MEETINGS

- American Society of Anesthetists New York Dec. 14 Dr. McKinnis L. Phelps, 745 Fifth Ave. New York 22 Secretary
- Association for Research in Nervous and Mental Diseases New York Dec. 15-16 Dr. Thomas E. Bamford Jr. 115 E. 82d St. New York 25 Secretary
- Puerto Rico, Medical Association of Santurce Dec. 15-17 Dr. E. Martinez Rivera P. O. Box 3866 Santurce Secretary
- Southern Surgical Association Hot Springs Va. Dec. 5-7 Dr. Alfred Blalock Johns Hopkins Hospital Baltimore 5 Secretary
- Western Surgical Association Chicago Dec. 1-2 Dr. Arthur R. Metz 250 East Superior St. Chicago Secretary

## WINNEBAGO COUNTY MEDICAL SOCIETY PLAN

Edwin G Quattlebaum Jr, M D  
ROCKFORD ILL

In early 1942 most members of the Winnebago County Medical Society were aware of increasing interest in medical social security. Some of the membership realized how difficult it was for the average busy physician to keep in close touch with the needs, desires and demands of the people. A committee was established to be known as a Public Relations and Planning Committee. Its major functions were

1 To keep itself posted on trends of public thought and on ways and means of meeting requests of the public for increased medical service

2 To keep the membership of the society advised as to these trends and their extent

3 Possibly to some extent to mold public opinion

The committee's membership was almost unanimously opposed to governmental administration of medical services under the Surgeon General of the U S Public Health Service or under any other individual. The committee was convinced that medical service to the American public could be increased through prepaid medical care programs in which the individual could obtain partial reimbursement by paying the premium directly out of his pocket rather than through taxation.

It soon became obvious that several fundamental principles should be kept in mind. First, the absolute right of any patient to select his own physician without any restraint, interference or pressure from any source and the right to do this at any time, should be maintained. Second, the patient-physician relationship should be carefully guarded. Third the premium should be low so as to reach the average family. It was our desire that the plan should not prepay all expenses. We wanted something similar to the automobile collision deductible policy, which meets the bulk of auto accident costs without encouraging careless driving and unwarranted claims. Moreover we believed that a total payment plan would have a tendency to influence fees. Fourth it was felt that under no circumstances should the fee be paid directly to a physician, so as to avoid any semblance of self interest or collusion between insurance carriers and physicians. The ideas were in keeping with those developed in the House of Delegates of the American Medical Association.

As time went by it became apparent that no plan yet devised met in every respect the principles listed. Throughout the country plans were beginning to be developed most of which were based on the idea of a group of physicians caring for a group of patients for an annual fee. This, to our way of thinking, interfered with the unlimited choice of physicians on the part of the patient and for that reason did not meet with our approval. Further, most of the plans developed in the beginning did not attempt to care for medical as well as surgical disabilities, and we felt that this should be attempted.

Fortunately for our community a Blue Cross plan for partial prepayment of hospital care had been organized under the able direction of Mr F F Armstrong executive secretary, and with the cooperation of the physicians and hospitals of the community, had done an outstanding job. The success of the nonprofit hospital plan in Winnebago County led us in the beginning to consider an extension of Blue Cross, to include reimbursement of medical expenses, but we learned that the hospital service could not enter the medical-surgical field until the Illinois state legislature passed an enabling act.

The county medical society authorized the committee to aid in passage of an enabling act. This procedure, of course requires time and there are dangers. The greatest danger is that unless the act is painstakingly worded it might be possible for unethical organizations to practice medicine. In any event the Illinois legislature was not to meet until January 1945.

Rather than to await passage of such an act, we began to consider commercial plans and soon discovered that we were unable to find any that attempted to meet the overall ideas we

had in mind. Fortunately, about this time we learned that one of the larger writers of accident and health insurance in this country was considering the idea of trying such a plan in a small way. As a result of this discovery our conversations with the North American Accident Insurance Company began. This organization was interested, and after considerable discussion between members of the committee and executives of this company a tentative plan was worked out. At this time the committee took to the county medical society a request for the adoption of two resolutions.

1 That the society go on record as approving the development of any prepaid medical care plan which would meet the prerequisites listed.

2 That the committee be empowered to approve the plan submitted by the North American Accident Insurance Company.

The two resolutions were adopted.

The plan submitted by the North American Accident Insurance Company is experimental, to be tried in Winnebago County only until such time as an actuarial experience can be developed which might warrant its wider use.

This particular commercial insurance company has been most cooperative. It has agreed, for example, that official advertising done would be released only after its approval by the planning committee of the Winnebago County Medical Society. It has also agreed that, if the experience in this community warrants, the plan will be rapidly liberalized. At present, unfortunately, if the plan is to be sold at low cost it is necessary that it contain some exclusions and exceptions.

The Winnebago County Medical Society has no desire to sponsor any one insurance carrier. On the contrary, it hopes that every reputable insurance carrier in the United States will see fit to sponsor and sell such plans, not only elsewhere in the country but also in this community. Just as we feel that the free choice of a physician on the part of a patient makes for better medical care, we feel that competition among insurance carriers, profit and nonprofit, is most advantageous to the public. This community, therefore, is anxious to support any plan that meets the specifications outlined and feels that, the more organizations that can be developed the more rapidly low cost prepaid medical care plans may be obtained by the public.

Briefly, the plan approved by this committee as presented by North American Accident Insurance Company is as follows.

The plan will partly reimburse the patient for medical expenses thus:

A fee of \$2 per call in the event of any disabling illness on the part of husband or wife up to 65 years of age and any dependent member of the family between the ages of 3 months and 18 years. The fee is to be paid regardless of whether the call is made in a physician's office, in a hospital or in the patient's home. The first two calls are deducted, being left to the patient to pay. In the event that the disability is due to accident, payment begins for first call. The total paid by the insurance carrier in any one illness for any one member of the family shall not exceed \$250 in any one year. The total for all children shall not exceed \$500 in any one year. The total for husband and wife shall not exceed \$500 in any one year. In the event of a surgical disability, in lieu of the \$2 per call the patient may elect to take a flat surgical fee, which fee favorably compares with fees provided in standard accident and health policies.

The premium charge for the foregoing shall be \$3 per month, less 10 per cent for an annual premium paid in advance. This provides for the entire family of husband, wife and any dependent children between the ages of 3 months and 18 years. Single persons obtain protection at proportionately lower cost.

There are other exceptions and exclusions most of which are minor, and it is sincerely hoped that the plan will be sufficiently successful from an actuarial point of view to warrant the rapid elimination of many of these minor exclusions.

It would not be fair to close this article without expressing for the committee its great appreciation of the help, courtesies and kindnesses extended to us by the American Medical Association, particularly its legal department, the National Physicians Committee for the Extension of Medical Care and representatives of local newspapers.

## Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES NEW HOSPITALS EDUCATION AND PUBLIC HEALTH)

### CALIFORNIA

**Changes in Health Personnel**—Dr Harrison Eilers, health officer of San Luis Obispo has been appointed health officer of Long Beach, succeeding Dr Frank W Stewart, who resigned November 1. Dr Andrew M Harvey, assistant health officer, has been named acting health officer until Dr Eilers takes over his new work about January 1.

**Personal**—Morris A Stewart, Ph.D., associate professor of parasitology, College of Agriculture, University of California, Berkeley, has returned to the university after three months spent in South America (THE JOURNAL, July 22, p. 858), chiefly in Bolivia, as consulting parasitologist to the government. While there he was made honorary professor of parasitology of the Instituto Superior de Medicina Veterinaria and the Instituto Orientale de Biología.

**Human Death from Rabies**—A 3 year old child died in September in Albany following the bite of a rabid dog, according to *California's Health*, official bulletin of the state department of health. The dog strayed into Albany, where it was killed by a policeman after it had bitten the child. One dog bitten by the animal and 2 contacts are still under observation. The bulletin emphasizes the need for preventive measures and for the exercise of rigid control over dogs and cats in those communities where rabies is known to be present. During the past year the disease has been found in Kern, Imperial, Tulare, Kings, Fresno, Los Angeles, Monterey, Napa Contra Costa, Riverside Sacramento, San Bernardino, San Diego, San Luis Obispo, Santa Cruz, Solano, Sonoma, Stanislaus and Alameda counties. The latest area to be included is the east shore of San Francisco Bay, particularly in Berkeley, Albany, El Cerrito, Richmond and Crockett. The examination by the state laboratory of the head of a dog which had bitten a man and a woman in Berkeley proved the presence of the disease in the animal.

### CONNECTICUT

**Society Creates Section on Surgery**—Dr Paul W Vestal, New Haven has been appointed chairman and Drs Donald B Wells, Hartford, chairman elect, and Andrew J Jackson, Waterbury, secretary-treasurer of the newly created section on surgery of the Connecticut State Medical Society.

**Building Fund**—At a meeting of the council of the Connecticut State Medical Society, October 10, the trustees of the society's building fund were directed to proceed at once with a fund raising program to obtain contributions for \$50,000 to provide a building for the society's headquarters. The first meeting to discuss preliminary plans was held October 25.

**Statewide Peacetime Blood Bank**—The council of the Connecticut State Medical Society has appointed a special committee to confer with a similar committee from the Connecticut Hospital Association to discuss a proposed plan to continue, if possible, the community blood and plasma banks that have been developed during the war. Members of the committee are Drs Ralph E Kendall, Hartford chairman, John C Leonard, Hartford, Karl T Phillips, Putnam, Arthur J Geiger, New Haven, and Irving B Akerson, Bridgeport.

### DELAWARE

**State Journal Has New Address**—The *Delaware State Medical Journal* announces that its new address is 822 North American Building, Wilmington 7. For two and one-half years the *Journal* was located at 618 Citizens Bank Building, but the new owners of the building the North American Mutual Insurance Company, have renamed it the North American Building. The state journal now occupies larger quarters in the renamed building.

### DISTRICT OF COLUMBIA

**Personal**—Major Alfred Golden M.C. who has been on duty for the past four years at the Army Medical Museum has been transferred to the division of health and sanitation Office of the Coordinator of Inter-American Affairs.

**Child's Death from Rabies Called "Unique"**—On November 1 a positive rabies report was issued by Dr John M Byers health officer of Prince Georges County, Md. in the death of a 16 year old boy of Mount Rainier, Md., October 19. Newspapers stated that the case would be one of the most unusual in medical history if the parents' assumption is true that the boy was infected with rabies some fourteen months ago by his pet dog. The dog was taken to a hospital on Labor Day 1943 after he acted 'peculiar' and appeared to be sick. Several days later it was stated, the dog died after he had apparently strangled himself in a net at the hospital. No examination for rabies was performed. It was pointed out by the attending physician that no bite would have been necessary from the pet dog as the boy could have become infected through saliva through scratches on the skin. The physician said the boy showed no signs of any illness all the time he supposedly carried the deadly infection. He became ill suddenly October 13 was taken to George Washington University Hospital October 15 and died there four days later. In March a 65 year old woman died at Gallinger Municipal Hospital five months after being bitten by a rabid dog and in November 1943 a soldier stationed in Washington died after being infected by a dog.

### ILLINOIS

**Changes in Health Personnel**—Ruth Sumner Ph.D. has been appointed acting chief of the division of public health instruction, Illinois State Department of Public Health during the leave of absence of Leona de Mare East A.B., who is continuing her graduate training in health education at the University of North Carolina School of Public Health. Dr Donaldson F Rawlings, Cairo has resigned as health officer of the Alexander-Pulaski County Health Unit to enter the U.S. Navy. Dr Samuel S Reinglass, Dixon resigned as health officer of Lee County, effective October 1, to enter private practice in Canton, Ohio.

### CHICAGO

**Personal**—Dr Howard Glenn Gardiner, Chicago has resigned as medical director of Foote Brothers Gear and Machine Corporation, effective November 20 to become associate medical director of Oldsmobile division of General Motors, Lansing, Mich.

**Dr Ivy to Address Institute of Medicine**—Dr Andrew C Ivy, Nathan Smith Davis professor of physiology and pharmacology, Northwestern University Medical School will deliver the presidential address at the twenty-ninth annual meeting of the Institute of Medicine of Chicago, December 5, at the Palmer House, on "Contributions to Survival on a Raft at Sea."

### KANSAS

**Personal**—Dr Vernon M Winkle, director of the district health unit at Gering, Neb., has been named epidemiologist and assistant director of the health department of the Topeka-Shawnee Health Department. He will also be in charge of the school health services of the unit.

**Graduate Medical Clinic**—The fall clinic on obstetrics and pediatrics, sponsored by the Kansas Medical Society, the state board of health and the University of Kansas School of Medicine, was held at the Lassen Hotel, Kansas City November 2-3. The principal speakers were Drs Julian D. Boyd, associate professor of pediatrics, State University of Iowa College of Medicine, Iowa City, and M. Edward Davis, professor of obstetrics and gynecology, University of Chicago School of Medicine.

**Jayhawker, M.D.**—The October graduating class of the University of Kansas School of Medicine, Lawrence-Kansas City brought out the first student annual for publication by the medical class of the school. The volume is a testimonial to the members of the faculty, to the many students in all classes and to the school itself. It is replete with photographs of teachers, students and school buildings. The book is a splendid tribute to the efforts of the recent graduating class. In its own defense, editorially, the class rejects the comment passed at some time during its career that it was the worst class the school had seen in thirty-one years.

**Free X-Rays at State Fair**—A feature of the Kansas Free Fair in Topeka this year was the offer of chest x-rays to all who cared to have them. Of 5,000 visitors at the exhibit during the week of the fair, 1,129 were given roentgenograms which disclosed 18 cases of significant tuberculosis hitherto unreported to the state board of health. Two were in persons in the age group 15-24, 8 in the age group 25-44, 3 in the age group 45-64, and 5 persons more than 65 years



of age. In addition to these eighteen patients, all of whom were referred to their family physicians, 15 persons were advised to consult their physicians because of lesions suggestive of tuberculosis and 15 others showed chest or heart conditions which warranted further examination by a physician. The public health building at the fair, which has been under the supervision of the state board of health since 1936 was devoted entirely this year to tuberculosis education. The Topeka Tuberculosis Association and the division of tuberculosis control of the state board of health cooperated.

### MARYLAND

**Dr Williams Reappointed**—Dr Huntington Williams has been reappointed commissioner of health of Baltimore for a six year term. He has held the position since January 1933 after having first served as director of health from Oct 1 1931.

**Society News**—The Baltimore City Medical Society was addressed November 17 by Dr Edward M Hanrahan, Baltimore, on "Indications for and Procedures Used in Breast Plastic Operations" and Col Thomas Fitz-Hugh, M C. A Medical Officers' Experiences in a Jungle Theater of Operations."

**University News**—The department of pharmacology of the University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore, has received a gift of \$4000 from the Ohio Chemical and Manufacturing Company of Cleveland to establish a fellowship for the study of volatile anesthetics, especially "propethylenic," under the direction of John C Krantz Jr, Ph D, professor of pharmacology.

### MASSACHUSETTS

**Licenses Revoked**—At a meeting of the Massachusetts Board of Registration in Medicine, September 13, the license to practice medicine of Dr Mary E Bolger, Worcester was revoked because of violation of her probationary period as of Feb 10, 1942 and the license of Dr Don D Cornell, Pilcher, Okla formerly of Boston, because of the violation of the Harrison Narcotic Act.

**John Downing Named Professor at Tufts**—Dr John G Downing has been appointed professor of dermatology and syphilology at Tufts College Medical School, Boston and chief of the department of dermatology and syphilology at Boston City Hospital, the *Harvard Medical Alumni Bulletin* for October announced. Dr Downing is also professor of dermatology at Boston University School of Medicine and dermatologist in chief at the Massachusetts Memorial Hospitals.

### MONTANA

**Osteopaths Defeated in Montana**—On November 7 the Montana voters defeated an Initiative, Number 48 a bill that would have given Montana osteopaths "unlimited surgical rights" and would have defined osteopathy as a branch of medicine with its own ruling board. The bill was defeated almost two to one. Credit in the defeat of the bill is ascribed to the Public Health League of Montana a recently formed group with offices in Helena including dentists of the state, the Montana Hospital Association the Catholic Hospital Association Montana State Medical Association Montana State Nurses Association Optometric Association Hospital Service Association of Montana Montana Tuberculosis Association state division of the Field Army, pharmacists of the state and many other interested groups. Mr Joseph L Markham Butte newspaperman was designated campaign manager against the bill and the Montana State Medical Association was represented by its officers and a special seven man committee.

### NEBRASKA

**Ninety-Two Years of Age**—Dr John A Waggener Humboldt observed his ninety-second birthday in October. According to the *Nebraska State Medical Journal* Dr Waggener observed the day attending to his practice as usual.

### NEVADA

**State Medical Election**—Dr Moreton J Thorpe Reno secretary of the Nevada State Medical Association, writes that at the recent meeting of the state medical association Dr Daniel J Hurley, Eureka was reelected president. Dr Hurley had been elected in 1942 to take office as president but soon afterward he was called into service leaving his term unfilled. Dr Lemuel R Brigman, Reno, was at the same time president elect, so he automatically assumed the office in Dr Hurley's place in 1942 and then in his own right became president in 1943 causing

his presidency to run two years, through the unfilled term of Dr Hurley and his own. These circumstances left Dr John R McDaniel Jr, Las Vegas, as president-elect. He was to take office in 1942 as president, but when he was called into service the association chose Dr Hurley. Dr Thorpe points out that two president elects were called into service at almost the same time. Dr Hurley is now president and Dr McDaniel president-elect.

### NEW YORK

**Memorial to Physician**—A campaign is under way in Pavilion to collect funds to create a Dr Sweeting Memorial Fund in honor of the late Dr Sherman C Sweeting, who practiced in the community for more than fifty years. The memorial will honor the physician and be used as Pavilion's contribution to the campaign under way to build in Batavia a new Genesee Memorial Hospital.

**New Consultant Named for Silicosis**—Dr Edward G Whipple, Rochester, has been appointed a special consultant to the state department of labor on dust diseases, notably silicosis, to succeed the late Dr John J Lloyd, Rochester. Dr Whipple will serve with Drs Edgar Mayer and J Burns Amberson Jr, New York on the commission, which was established by the state legislature some years ago. Dr Whipple will have charge of the Buffalo Rochester districts.

**Paul Lembcke to Direct Temporary Commission of Medical Care**—Dr Paul A Lembcke, Rochester district number 4 health officer, under leave of absence granted by the New York State Department of Health, has been appointed director of study for the New York State Temporary Commission of Medical Care, according to the Rochester *Democrat and Chronicle*. Dr Lembcke served as state epidemiologist in 1939. Offices of the commission have been opened in the Terminal Building Rochester.

**Teaching Day on Rheumatic Fever**—November 30 has been designated teaching day on rheumatic fever and rheumatic heart disease at Syracuse University College of Medicine. Among the speakers will be

Dr T Duckett Jones Boston Etiology, Epidemiology and Diagnosis of Rheumatic Fever and Rheumatic Heart Disease  
Dr Albert D Kaiser Rochester Treatment of Rheumatic Fever  
Dr Homer T Swift New York Prevention of Recurrences in the Known Rheumatic Patient  
Dr David D Ruistein Albany Need for a Public Health Program for the Care of the Rheumatic Child

A dinner meeting will be addressed by Dr Brewster C Dost, professor of pediatrics at Syracuse. Among the agencies sponsoring the day's program will be Cayuga, Cortland Onondaga and Oswego county medical societies the state medical society, the state department of health and the university.

### New York City

**License Restored**—The license to practice medicine of Dr Millicent Morden Brooklyn which had been suspended for one year, was reinstated by the state education department on September 22.

**Max Bergmann Dies**—Max Bergmann, Ph D, a member of the Rockefeller Institute for Medical Research and prominent for his work in organic chemistry, died at Mount Sinai Hospital November 7, aged 58.

**Medical Bequest**—Under the will of the late Henry R Ickelheimer, a private banker, Cornell University will receive \$25,000 for cancer research, according to *Science*. There is also a provision for \$42,500 for Mount Sinai Hospital.

**Personal**—Dr Andrew J Warren who has been associated with the International Health Division of the Rockefeller Foundation since 1921, has been appointed assistant director.—Dr William H Kahrs was recently guest of honor in celebration of his completion of fifty years in the practice of medicine.

**The Janeway Lectures**—Dr Otto Loewi, research professor of pharmacology New York University College of Medicine, gave the Edward Gamaliel Janeway lectures at Mount Sinai Hospital, November 13 on 'Aspects of the Transmission of the Nervous Impulse' and one November 15 on 'Theoretical and Clinical Implications'.

### OHIO

**Personal**—Milton J Foter Ph D, has recently been appointed head of the department of bacteriologic research of the William S Merrell Company Cincinnati.—Dr James Howard Holmes Toledo, has been appointed a member of the Ohio Public Health Council to fill the unexpired term of the late Dr Ward D Coffman Zanesville which will end June 30 1950.—Dr Johnson S Hunter Jackson, recently completed fifty years in the practice of medicine.



**Physicians Honored**—A portrait of the late Dr Asa Brainerd Isham who died in 1912, one of the founders of the Cincinnati General Hospital and a former president of the Cincinnati Academy of Medicine, was recently presented to the hospital by the children of Dr Isham—Drs Charles I Thomas and William E Bruner received the distinguished service award of the Cleveland Community Fund for outstanding work in the field of sight restoration

**Fifty Thousand Dollars for Study on Proteins**—Swift & Company, Chicago, has given a special grant of \$50,000 to the University of Cincinnati for a five year research project on proteins and their role in rehabilitating persons disabled by nutritional deficiencies. The study is to be carried on at the Hillman Hospital, Birmingham, Ala under the direction of Dr Tom D Spies associate professor of medicine, University of Cincinnati College of Medicine. Since 1936 Dr Spies has been directing work in this field both at the university and at the Hillman Hospital, where he is director of the Nutrition Clinic

## PENNSYLVANIA

**Lester Perry Appointed Executive Secretary of State Society**—Mr Lester H Perry, A B, since 1934 manager of sessions and exhibits of the Medical Society of the State of Pennsylvania, has been appointed executive secretary. Mr Perry, who joined the state medical society after serving as executive secretary of the Allegheny County Medical Society, graduated at the University of Pittsburgh in 1925

**Annual Postgraduate Day**—The Harrisburg Academy of Medicine held its annual postgraduate day in Harrisburg, November 16. The program constituted a seminar by the following members of the faculty of Ohio State University College of Medicine Columbus

Laurence H Snyder Sc D. Importance of the Hereditary Background in Medical Diagnosis Prognosis Prevention and Treatment and Current Medical Significance of the Blood Groups with Special Reference to the Rh Factor

Dr George M Curtis Diseases of the Parathyroid Glands and Their Management and Surgical Considerations in Splenic Disease

Dr Charles A Doan Differential Diagnosis and Treatment of the Anemic States and Increasing Significance of the Pathologic Physiology of the Spleen in Clinical Medicine

## Philadelphia

**Hospital News**—The name of the National Stomach Hospital has been changed to the Physicians and Surgeons Hospital, effective October 15

**Personal**—Dr William B Griggs, who has completed fifty years in the practice of medicine, was guest of honor at a dinner November 1 given by members of the staffs of St Luke's and Children's Medical Center and the Women's Homeopathic Hospital

**The Pancoast Memorial Lecture**—The fourth Henry K Pancoast Memorial Lecture was presented before the Philadelphia Roentgen Ray Society and the College of Physicians of Philadelphia November 2 by Dr Edward B Benedict Boston. Dr Benedict's subject was "The Correlation of Gastroscopic, Roentgenologic and Pathologic Findings in Lesions Involving the Stomach"

## SOUTH DAKOTA

**Personal**—Dr Clarence L Sherwood, Madison, has been appointed to the state board of health to fill the unexpired term of the late Dr James B Vaughn, according to the *Journal Lancet*—Dr Frank W Haas, assistant superintendent of the Yankton State Hospital at Yankton, has been appointed by the governor to the commission for control of feebleminded succeeding the late Dr George S Adams

## TEXAS

**Dr Painter Named Acting President of University of Texas**—Theophilus S Painter, Sc D, research professor of zoology University of Texas, Austin, has been made acting president of the university

**Changes in Hospital Superintendents**—Included among the recent changes in hospital superintendents of the state hospitals are the following: Dr Roy Cameron Sloan assistant superintendent Terrell State Hospital Terrell superintendent, to succeed Dr William Thomas who retired September 15, Dr Bruce Allison assistant superintendent Wichita Falls State Hospital Wichita Falls to succeed Dr Monroe A Beckman at the Abilene State Hospital Abilene, effective September 1 and Dr David McCullough assistant superintendent of the State Tuberculosis Sanatorium, Sanatorium, superintendent of the Kerrville State Sanatorium Kerrville. Dr McCullough succeeds Dr Henry Y Swazze who resigned September 1 to enter private practice

## VIRGINIA

**Personal**—Thomas Gordon Bennett Ph D formerly of the U S Public Health Service and once superintendent of schools for Calvert and Queen Anne's counties, Md has been appointed consultant in health education to the Virginia Department of Education

**State Medical Election**—Dr Julian L Rawls Norfolk was named president-elect of the Medical Society of Virginia at its meeting in October and Dr Henry B Mulholland, Charlottesville, was inducted into the presidency. Miss Agnes V Edwards 1200 East Clay Street, Richmond 19, is the secretary. The 1945 session will be held in Roanoke

**Changes in Health Personnel**—Dr Glenn H Baird has resigned as venereal disease control officer of the Richmond City Health Department to become health officer of the Smyth-Washington-Bristol Health District, with headquarters in Abingdon—Dr William B Bailey, Montgomery, W Va has been appointed health director for Norfolk and Princess Anne counties—Dr Donald K Freedman, U S Public Health Service, has been named health officer of district number 5, Williamsburg, to succeed Dr William W Fuller, who resigned to enter the armed forces, effective November 1

## WASHINGTON

**Hospital News**—On October 15 the cornerstone of the new Doctors Hospital, Seattle, was laid at special ceremonies of the board of trustees of the King County Medical Service Corporation (THE JOURNAL, Dec 18, 1943 p 1059)

**Personal**—Dr Herbert A Perry, assistant superintendent of the Eastern State Hospital, Medical Lake, has been appointed superintendent. He succeeds Dr Marinus W Conway, who will enter private practice after serving in the position for eleven years—Dr John H O Shea, Spokane, was guest of honor at a banquet at the Davenport Hotel August 10, in recognition of his completion of thirty-five years with the Spokane fire department—Dr Edward B Rife, Aberdeen has been appointed temporary coroner of Grays Harbor County to succeed Dr Joseph H Fitz, Montesano, resigned

## WEST VIRGINIA

**State Association Acts to Remove Politics from Health Program**—At a meeting November 9 the council of the West Virginia State Medical Association unanimously adopted a legislative program providing for

The appointment by the governor of a state health commissioner from a list of three names or more to be submitted by the council of the West Virginia State Medical Association

The appointment of medical members of the Public Health Council from a panel of three names for each position to be filled to be submitted to the governor by the council of the West Virginia State Medical Association

The appointment of superintendents of state eleemosynary institutions from a list of names to be submitted to the governor by the Public Health Council

The council recommended that the Barboursville unit of the Weston State Hospital be reestablished as a unit of the Huntington State Hospital, that \$100,000 be appropriated for each year of the biennium for cancer control and that the arrangement with the Medical College of Virginia Richmond, for the admittance of twenty students annually from the two year medical school at West Virginia University Morgantown, be continued. Both committees and the council devoted a good deal of time to the consideration of an enabling act in connection with the operation of hospital-medical surgical plans in this state. The present act passed at the 1943 session of the legislature becomes inoperative Feb 28 1945. Solution of the problem was left to the legislative committee, which was instructed to consult with similar committees from the hospitals and hospital-medical service groups in drafting a bill to be introduced in the legislature in January. The association has already approved a basic contract for use by component societies in connection with the establishment of medical-surgical service plans over the state. The council also approved in principle the extension of Farm Security Administration service plans to provide medical and hospital service to certain families in the low income group in every part of the state. Sixteen such plans have already been established. The council recommended the establishment of a department of public health at West Virginia University and approved the university's plan to ask for an appropriation for a new building for the two year school of medicine. Approval was also given to the following items in the state health department's legislative program: antepartum serologic examination for syphilis transfer of the crippled children's division from the department of public assistance to the state health department transfer of the supervision of the superintendents of the state eleemosynary institutions from the board

of control to the public health council, creation of a dental hygiene division, increase in the salary of the state health commissioner and construction of a separate building on state property near the capitol to house all divisions of the state health department

### GENERAL

**Examinations in Otolaryngology**—The American Board of Otolaryngology will conduct examinations at the Waldorf-Astoria, New York, June 5-8, and at the Palmer House, Chicago, October 3-6

**National Public Health Nursing Day**—The first National Public Health Nursing Day will be held throughout the country on January 26. The theme of the observance will be "Know Your Public Health Nurse—Who She Is, What She Does." In charge of details is the National Organization for Public Health Nursing, Inc., 1790 Broadway, New York 19

**1945 Public Health Meeting**—The executive board of the American Public Health Association announces that the third wartime conference and seventy-fourth annual meeting, and meetings of related organizations, will be held in Chicago, September 17-23, with headquarters in the Hotel Stevens. The related organizations will include the American School Health Association and the Conferences of State and Municipal Public Health Engineers, of Public Health Nursing Directors, of Professors of Preventive Medicine, of State and Provincial Public Health Laboratory Directors, of State Directors of Public Health Education and of Industrial Health Consultants. The Illinois committee in charge of local arrangements will be headed by Dr. Herman N. Bundesen, president, Chicago Board of Health, and Dr. Roland R. Cross, state director of public health, Springfield, co-chairmen. The headquarters office of the American Public Health Association is located at 1790 Broadway, New York 19. Dr. Reginald M. Atwater is executive secretary.

**Southern Surgical Association**—The fifty-sixth annual session of the Southern Surgical Association will be held at the Homestead, Hot Springs, Va., December 5-7, under the presidency of Dr. Alton Ochsner, New Orleans. Among the speakers will be

Dr. William F. Rienhoff, Jr., Baltimore. Analysis of the Results of the Surgical Treatment of Peptic Ulcer of the Duodenum in a Series of 260 Cases

Lieut. Col. James Barrett Brown and Capt. Bradford Cannon, M. C. Repair of Gunshot Wounds of the Face and Jaws

Dr. Louis T. Byars, St. Louis. Color Matching of Skin Grafts and Flaps by Pigment Injection

Lieut. Col. Alfred R. Shands, Jr. and Major Randolph L. Clark, Jr., M. C. Surgical Problems in Aviation Medicine

Lieut. Col. Brian B. Blades, M. C. Penicillin as an Adjunct to the Surgical Treatment of Acute and Chronic Empyemas

Drs. Loyal Davis, George E. Perret and Walter W. Carroll, Chicago. Surgical Principles Underlying the Use of Grafts in the Repair of Peripheral Nerve Injuries

Drs. Thomas B. Aycock and Edward M. Farris, Baltimore. Effects of Sulfonamides on the Mortality Rate in Acute Appendicitis

Drs. Roy D. McClure and Conrad R. Lam, Detroit. End Results in the Treatment of Hyperparathyroidism

Lieut. Col. Lloyd G. Lewis, M. C. Cases of Severe Injury to the Pelvis

Drs. Kenneth L. Pickrell, Durham, N. C. and Richard K. Richards, Chicago. Pentothal Metrazol Antagonism: A Method of Shortening the Recovery Period Following Pentothal Anesthesia: A Clinical and Experimental Study

Drs. Warfield M. Firor and George O. Gey, Baltimore. Observations on the Conversion of Normal into Malignant Cells

Dr. John M. T. Finney, Jr., Baltimore and Lieut. Murray L. Johnson, (M. C.) Primary Carcinoma of the Gallbladder

Dr. Everett I. Evans, Richmond, Va. Studies on Traumatic Shock

V. The Treatment of Clinical Shock with Gelatin

Drs. Gammel B. Hodge, Keith S. Grimson and Herman M. Schiebel, Durham. Surgical Results of a Revival of Radical One Stage Excision and Stripping of Varicose Veins Coupled with Pressure Bandages and Early Activity

**Public Health Cancer Association Formed**—The Public Health Cancer Association was recently organized to meet the particular need of persons engaged in cancer control activities in federal, state, city and other official agencies. Active membership is limited to professional workers in such official cancer programs, and officers include Drs. Herbert L. Lombard, Boston, president, Raymond V. Brokaw, Champaign, Ill., vice president, and Morton L. Levin, Albany, N. Y., secretary-treasurer. Included in the membership of the executive committee are Drs. Frank L. Rector, Lansing, Mich., Louis C. Kress, Albany, and Edmund G. Zimmerman, Des Moines, Iowa. Representatives attending the organization meeting felt that the American Association for Cancer Research adequately covered that field that the American Cancer Society is chiefly engaged in lay educational work and that the new organization would meet the particular needs of full time employees engaged in cancer work in the official agencies. It was also felt that such an association would be of value in furthering cancer control by conducting an annual meeting and a cancer symposium in connection with

the annual session of the American Public Health Association. While representatives from about eleven states attended the organization meeting, the membership will not be limited solely to this group.

### LATIN AMERICA

**Health Activities in Latin America—Physicians Studying in the United States**—Among Latin American physicians who are studying in the United States are Drs. Germano Brasiliense Bretz, Brazil, who will go to the Johns Hopkins University, Baltimore, Guillermo Grebe H., tuberculosis specialist connected with the Chilean National Medical Service for Employees, who will do research work in his specialty at Columbia University College of Physicians and Surgeons, New York, Elias Motles, connected with the Sanatorio El Peral of Santiago, Chile, who will study at the Trudeau Sanatorium, Saranac Lake, N. Y., Jose Decusati, Brazil, who will pursue studies in urology at the Massachusetts General Hospital, Boston, Adhemar Paoliello, connected with the Brazilian public health service of Rio de Janeiro, who will study at Johns Hopkins University, Baltimore, and Albino Figueredo, specialist in antepartum hygiene, who will study maternal and child hygiene at the University of Michigan Medical School, Ann Arbor. All of these persons, with the exception of Dr. Paoliello, will first complete a short course in English before continuing with their studies in their specialties.

**Mexico's Health**—More Mexican patients die from diarrhea and enteritis than from any other disease, it was revealed by the latest mortality figures released by the Mexican Ministry of National Economy. The government statistics, which embrace the years from 1938 to 1942, show that these conditions take an average toll of 90,504 lives annually and that their mortality rate is 45.66 per 10,000. Occupying second place in the ministry's study is pneumonia, which is responsible for an average of 67,560 deaths a year, or a mortality of 34.12 per 10,000. The number of yearly deaths due to other illnesses, and their corresponding mortality rates, are, in the order of their importance, malaria, with an average of 25,454 deaths a year and a mortality rate of 12.9 per 10,000; congenital diseases and those of early childhood, 18,289 and 9.74 per 10,000; whooping cough, 12,893 or 6.5; bronchitis, 12,386 or 6.24; and tuberculosis, 11,066 or 5.6.

**Surgical Meeting**—The sixth assembly of Mexican surgeons was held at the Juarez Hospital, Mexico City, November 19-25. Speakers and the fields in which they gave papers include Traumatology, Drs. Pablo Mendizabal, Jose Castro Villagrana, Alfonso Ortiz Tirado, Alejandro Castanedo, and Alejandro Malo. Urology, Drs. Eduardo Castro, Adalberto Parra Aquino Villanueva, Manuel Pesqueira, Alberto Madrid, Herbert Stacpoole, and Carlos Aguirre. Neurosurgery, Drs. Clemente Robles, Mariano Vasquez, Alfonso Aceves Zubieta F., Manuel Sanchez Garibay and Miguel Lavalle. Throat and Thorax, Drs. Donato G. Alarcon, Carlos Jimenez Caballero and Julian Gonzalez Mendez. Gynecology, Drs. Conrado Zuckermann, Rosendo Amor, Arturo de los Rios Genaro Zenteno, Fernando Perera Castillo, Gilberto Sousa and Abelardo Monjes Lopez. Obstetrics, Drs. Manuel Mateos Fournier, Jose Rabago Isidro Espinosa y de los Reyes and David Frago. Pediatrics, Drs. Jesus Lozoya, Guillermo Christy and Vicente Roquemé. Gastroenterology, Drs. Abraham Ayala Gonzalez, Jose Aguilar Alvarez, Gustavo Baz, Jose Gaviola Gandara and Raul Pena Trevino. General Military and Emergency Surgery, Col. Gustavo Gomez Azcarete, Major Rafael Moreno Valle and Drs. Rafael Vargas Otero, Jose Rojo de la Vega, and Alfonso Diaz Infante. There also were sections devoted to ophthalmology and dental surgery.

### CORRECTIONS

**Dr. Henrik Dam**—In the editorial in *THE JOURNAL*, November 4, page 640 concerning the Nobel Prize Awards, it was stated that Dr. Henrik Dam is assistant professor of biochemistry at the University of Rochester School of Medicine and Dentistry, Rochester, N. Y. Dr. Dam is senior research associate at the university, not assistant professor.

**Brazilian War Bread**—The first four lines of the Brazil letter in *THE JOURNAL*, July 22, page 863 should read "Dr. Castro Barretto, Head Advising Physician of the Technical Department of National Feeding, Ex-Regular Professor of Clinical Medicine of the Faculty of Medicine of Rio de Janeiro and member of the Institute of Brazilian Studies, recently presented a report with the results of his studies on war bread to the Coordinator of Economic Mobilization. The report was approved by the War Bread Commission which was appointed by the Coordinator to study it. The author stresses

## Foreign Letters

### LONDON

(From Our Regular Correspondent)

Oct 22, 1944

#### Improved Vital Statistics Continue Highest Birth Rate for Nineteen Years

In previous letters the astonishing fact has been reported that our vital statistics have actually improved. The Ministry of Health has just announced the registrar general's returns for the June quarter of 1944 showing that the higher wartime level of the birth rate in England and Wales for which an explanation has been suggested in previous letters was more than maintained. A birth rate of 19.3 per thousand of population is recorded. This is the highest rate of any second quarter since 1925 and compares with a rate of 17.5 in the corresponding period last year and 17.9 for the first three months of this year. There were 199,326 births registered. Of these 102,603 were boys, giving a proportion of 1.061 boys to 1,000 girls. The average proportion of boys to girls for the ten preceding second quarters was 1.056 to 1.000.

For the second quarter in succession a new low record for infant deaths was established. A provisional rate of 4.3 per thousand related live births was 11 below the average of the ten preceding second quarters and was the lowest rate for any June quarter. The general death rate was 11.2 per thousand, compared to 14.2 in the preceding three months and 10.9 for the second quarter of last year. For the same period from 1938 to 1942 the average rate was 12 per thousand. The births exceeded the deaths by 83,801. Corresponding excesses in the second quarters of 1942 and 1943 were 50,674 and 67,802 respectively. Marriages numbered 82,215 and exceeded by 95 those for the corresponding quarter last year. But they were 23,460 fewer than the average for the same period of the years 1938-1942. This falling off is explained by the fact that allowances introduced at the outbreak of war have left comparatively few young people of marriageable age and circumstances unmarried today.

#### British Prisoners Killed in Allied Air Raids on Germany

In answer to a question in the House of Commons, Mr. Law, minister of state, said that it was unfortunately true that a number of British prisoners of war have lost their lives in allied air raids on the continent, but as the figures could not be given with any accuracy he would not attempt an estimate of them. Under the German prisoner of war system there are main camps to which are attached subsidiary work camps and detachments forming several thousand units scattered all over the country. Some of these camps have been or are situated near legitimate military targets, contrary to article 9 of the Geneva Convention. All available information as to the location of the camps is promptly passed to the Allied air forces and is used in briefing air crews. Whenever the delegates of the protecting power during their periodic visits to camps have observed that our prisoners were dangerously close to a military target they have immediately complained to the German authorities and demanded the transfer of the camp to a safer site. Also the British government made strong representations to the German government through the protecting power. But Mr. Law regretted to say, in several instances the German authorities have not complied with these demands. As an additional precaution the German authorities have been urged to provide adequate air raid protection for our prisoners. There was no evidence to show that casualties in prisoner of war camps said to be due to bombing were in fact executions, he added.

#### Neglect of Clinical Examination for Laboratory Tests

From time to time feminine teachers issue a warning against the neglect of thorough clinical examination in favor of a multitude of laboratory tests. Thus J. A. Ryke has said that in the past quarter of a century the main endeavor of medicine has been to discover new diagnostic methods. Countless improvements have been due to roentgenology, chemistry and endoscopy, but symptomatology has suffered neglect. Professor Ryke pleaded for a wider and closer clinical study of disease. The current number of the *Annals Medical Department Bulletin* presents an article entitled "Clinicians and Special Departments," which points out that in the medicine of today the final and conclusive piece of diagnostic evidence is often supplied by the pathologist or radiologist. But this is bad if it leads physicians to lose their clinical sense, instincts and judgment by turning first to special departments.

The case is quoted from the *Lancet* of a pallid, wasted, elderly man who had suffered from intestinal symptoms for nearly six months. He had a large bundle of documents which included twelve reports on elaborate examinations of his feces and eight on his blood. There was much about the Arnetti count, as it shifted more or less to the left on occasion. At times the hemoglobin rose 1 or 2 per cent from an average of 65 per cent, an improvement regarded as worthy of congratulation. The sedimentation rate was carefully scrutinized. Though invariably accelerated it exhibited minor variations regarded as of great consequence. The work on the urine comprised every possible sort of investigation. The diagnosis was an atypical infection by an anaerobic streptococcus for which intestinal antiseptics had proved disappointingly inadequate. No examination of the abdomen had been made for at least three months, yet a large tumor was palpable there and exploration exposed a huge cyst of the sigmoid.

#### Civil Defense Casualties

The German bombing of our cities and towns necessitated the formation of civil defense services to deal with the casualties and damage. At the time of the blitz the members employed amounted to 1,500,000, recently the total was 1,200,000. Members of this service have suffered casualties themselves. Addressing a civil defense parade at Birmingham the home secretary, Mr. Herbert Morrison, stated that some 2,000 members had been killed by the enemy and 8,300 had been seriously injured. These figures did not include casualties to the police and fire services, he added.

## Marriages

THOMAS SAMUEL ROYSTER, Henderson, N. C., to Miss Caroline Merck Henry of West Orange, N. J. in Philadelphia September 23.

LESLIE MORGAN MORRIS, Rutherfordton, N. C., to Miss Mary Alice King of Winston-Salem September 9.

CHARLES WALTER METZ JR., Denver to Miss Gloria Evelyn Smith of Nashville, Tenn., September 12.

WILLIAM GORDON LEARY JR., Charlottesville Va. to Miss Margaret Conley of Cincinnati recently.

ROGER ELLISON McQUIGG New York to Miss Elizabeth Schill of Newark, N. J. September 30.

CHARLES BENJAMIN HANNA Enoree, S. C. to Miss Lena Mae Bryant of Nichols, September 19.

JOHN DAWSON HARTIGAN St. Joseph Mo. to Miss Catherine Leone Fitzpatrick of Omaha recently.

CLARENCE D. LEIPHART Hellam Pa. to Miss S. Isabelle Manifold of Bridgeton, October 15.

ROY TURNER PARKER Pinetops N. C. to Miss Georgina Sugg of Hookerton September 26.

ABRAHAM MELAMED to Miss Hope Goodman both of Milwaukee September 3.

## Deaths

**Edward Marshall Pallette** ☉ a member of the Board of Trustees of the American Medical Association since 1942 died suddenly in Chicago November 15 while in attendance on a session of the Board, apparently of an attack of coronary thrombosis. Dr Pallette was born in Wichita Kan Jan 13 1874. He received the Ph B degree from Northwestern University in 1894 and the Ph M in 1895. During 1894 he did investigation in the field of biology as the Oliver Warcy Scholar of Northwestern University at the Marine Biological Laboratory Woods Hole Mass. He received the degree of doctor of medicine from the College of Medicine of the University of Southern California in 1898 and then did graduate study in the New York Polyclinic in 1901 and in London Vienna and Berlin at various times thereafter. He was assistant instructor of zoology at Northwestern University in 1894 and 1895 instructor in biology in the Los Angeles High School from 1896 to 1898 and at the same time instructor in histology and embryology in the College of Medicine of the University of Southern California. Following his graduation in medicine he began medical practice in Los Angeles giving special attention to gynecology. He was associated with the health department of Los Angeles as assistant health officer from 1898 to 1899 and as a member of the Los Angeles County Board of Health from 1905 to 1906. He taught physiology in the College of Dentistry of the University of Southern California from 1900 to 1912 and was a lecturer in obstetrics and gynecology in the Training School for Nurses of St Vincent's Hospital.

As a distinguished citizen of the state of California he held many special appointments including examiner for the California State Licensure Commission from 1905 to 1915 membership on the California State Board of Public Health from 1932 to 1940 and member of the Retirement Board of the Los Angeles City Schools from 1938 to 1939. Since 1938 he had served also as treasurer and member of the Board of Directors of the Blue Cross Plan known as the Hospital Service of Southern California.

During World I Dr Pallette served as a captain in the medical corps, serving as surgeon in the Letterman General Hospital at the Presidio in San Francisco and also at Camp Crane in Allentown Pa. In the present war he acted as chairman of the Procurement and Assignment Service for Physicians of the War Manpower Commission in southern California. His interest in general education was exemplified by his membership on the Medical School Advisory Committee of the University of Southern California and the presidency of the Los Angeles County Board of Education.

In the work of the American Medical Association Dr Pallette gave also fully of himself for the advancement of the medical profession. He was a member of the House of Delegates in 1933 1935, 1936 and for the period 1938-1942. He was a member of the California State Medical Association and its president in 1936 1937. He was also a former president of the Los Angeles County Medical Association. His membership in special societies included fellowship in the American College of Surgeons, membership in the Los Angeles Surgical Society, the Los Angeles Obstetrical and Gynecological Society, the Los Angeles Academy of Medicine, the Hollywood Academy of

Medicine, the Institute of American Genealogy and the American Association for the Advancement of Science. Of many of these groups he had been president.

In the death of Dr Pallette the American Medical Association lost a loyal and distinguished counselor, a self-sacrificing and devoted member of its Board of Trustees.

**Alexis Carrel** ☉ Paris, France died November 5 aged 71. He graduated at the Université de Lyon Faculté de Médecine et de Pharmacie, France, in 1900. He served as prosecutor at his alma mater until 1902, then came to the United States in 1905 and was appointed to the staff of the Rockefeller Institute for Medical Research in New York in 1906. He was made a fellow in 1909 and a member in 1912 and retired in 1939 as member emeritus. In 1912 Dr Carrel was awarded the Nobel Prize in Medicine for success in suturing blood vessels and transplanting organs, this was the first time the prize in medicine had been awarded in the United States. He won the Dr

Sofie Nordhoff-Jung Cancer Prize in 1931 and received the eighth Cardinal Newman Award of the Newman Foundation in 1937. In 1937 he received also the Phi Beta Kappa from Dartmouth College. He was presented with the gold service medal award by the New York Rotary Club in 1939.

During World War I Dr Carrel served as a major in the medical corps of the French army and helped to develop the Carrel-Dakin antiseptic solution for the sterilizing of deep wounds. In 1935 with Colonel Lindbergh, he announced the development of a mechanical heart, in which the heart kidney or glands from an animal could be kept alive for study in glass chambers supplied by circulation of artificial blood. In 1936 he was appointed Hitchcock professor at the University of California in Berkeley for the spring semester.

Dr Carrel was an Associate Fellow of the American Medical Association and a member of the American Society for Experimental Pathology, American Surgical Association, the Society of Clinical Surgery, American Society of Physiology, American Philosophical Society, Accademia Pontificia and the Pontificia Accademia delle Scienze an honorary fellow of the Royal Society of Medicine, foreign associate Società Italiana delle Scienze and a corresponding member of various foreign academies. Among other

honors he had been decorated Commandeur of the Légion d'honneur, commander of the Order of Leopold of Belgium, member of the Order of the Northern Star of Sweden and commendador de Isabel la Católica. He received the Distinguished Service Medal and was made a companion of the Order of St Michael and St George. He had been a member of the board of the Dazian Foundation for Medical Research New York, since 1937 and was a trustee of the Institute for Advanced Study from 1930 to 1942.

When war broke out Dr Carrel joined a special mission for the French Ministry of Public Health, 1939-1940.

He had received the honorary doctor of science degree from Columbia University, Princeton University, University of the State of New York and Manhattan College, the MD from Belfast and LL D from the University of California. At the time of his death he was director of the Vichy government's Carrel Foundation for the Study of Human Problems. His writing included 'Man the Unknown' and he was joint author with Georges Dehelly of 'Treatment of Infected Wounds' and with Charles A. Lindbergh of 'The Culture of Organs'.



EDWARD MARSHALL PALLETTE, 1874-1944

**Gardner Weld Allen**, Boston Harvard Medical School Boston, 1882, member of the Massachusetts Medical Society, American Association of Genito-Urinary Surgeons, Massachusetts Historical Society, American Antiquarian Society, Naval History Society, American Historical Association, Naval Historical Foundation, Essex Institute, Military Historical Society of Massachusetts and the Lincoln Group of Boston, at one time instructor, assistant professor and professor of genitourinary surgery at the Tufts College Medical School, veteran of the Spanish-American War, surgeon, Massachusetts Naval Militia from 1893 to 1901, formerly surgeon in the genitourinary department of the Boston Dispensary, author of 'Our Navy and the Barbary Corsairs,' 'Our Naval War with France,' 'A Naval History of the American Revolution,' 'Massachusetts Privateers of the Revolution' and 'Our Navy and the West Indian Pirates', editor of 'Papers of Isaac Hull, Commodore U S Navy,' and 'Papers of John Davis Long Secretary of the Navy', contributor of a chapter of Massachusetts in the War of 1812 to 'Commonwealth History of Massachusetts' and eleven naval biographies to the 'Dictionary of American Biography', died July 12, aged 88.

**Hugo Erichsen**, Birmingham, Mich., University of Vermont College of Medicine, Burlington, 1882, Detroit Medical College, 1882, Royal College of Physicians and Surgeons Kingston Ont, Canada, 1883, professor of neurology at the Quincy College of Medicine, Quincy, Ill., from 1883 to 1885, once city physician of Detroit, past president of the Cremation Association of America, honorary member of the Wayne County Medical Society, member of the Michigan Historical Society and the Michigan Academy of Science, Arts and Letters for many years affiliated with Parke, Davis & Company and the Burroughs Adding Machine Company in Detroit, in 1932 received the honorary degree of doctor of letters from the College of the City of Detroit, decorated by the French government as Chevalier Ordre du Merite Agricole and Officier d'Academie, assistant editor, *Detroit Clinic*, 1883, associate editor *Western Medical Reporter* 1883-1884, editor of the photographic department, *American Boy*, from 1903 to 1913, author of 'Medical Rhymes,' 'Cremation of the Dead,' 'Methods of Autopsies' and 'Roses and Ashes', died in the Harper Hospital, Detroit, October 10, aged 84.

**Frank Hilton McLeod** ☉ Florence, S C University of Tennessee College of Medicine, Memphis, 1888, member of the Southeastern Surgical Congress, past president of the South Carolina Medical Association, Florence County Medical Society and the Tri-State Medical Society, counselor of the Southern Medical Association from 1929 to 1935, fellow of the American College of Surgeons, in 1906 established the Florence Infirmary, now known as the McLeod Infirmary of which he had been medical superintendent and surgeon in chief, for many years regent at the South Carolina State Hospital Columbia, awarded the distinguished service plaque for 1941 by the South Carolina department of the American Legion, in 1943 a bronze bust of him was presented to the McLeod Infirmary to mark his many years service to the community, in 1928 received the Sullivan Award of the University of South Carolina, in 1935 received the honorary doctor of laws from the University of South Carolina, at one time editor of the *Journal of the South Carolina Medical Association*, died October 24, aged 76.

**Jerome Joseph McCaffrey** ☉ Providence, R I Harvard Medical School Boston, 1915, member of the New England Society of Psychiatry, a charter member and past president of the Rhode Island Society for Neurology and Psychiatry, served in France during World War I, a first lieutenant in the medical corps of the U S Army and adjutant and personnel officer of Evacuation Hospital number 34 American Expeditionary Forces, formerly chief of the State Division of Hospitals and Infirmaries since 1930 on the neuropsychiatric staff of the Charles V Chapin Hospital, consultant neurologist at the State Infirmary, Howard, on the neurologic staffs of St Joseph's Hospital and the Rhode Island Hospital where he died October 16, aged 56.

**Ward Denver Coffman** ☉ Zanesville Ohio University of Cincinnati College of Medicine 1919, fellow of the American College of Surgeons, past president of the Muskingum County Academy of Medicine, appointed a member in 1939 and in 1943 chairman of the Ohio Public Health Council, president of the board of education of Zanesville for a second term, served in the medical corps of the U S Army during World War I, formerly chief of the staffs of the Bethesda and Good Samaritan hospitals, at one time public school physician at Springfield, died in the Lake of the Woods, Nestor Falls Ont, Canada, September 7, aged 53, of myocarditis.

**Douglas C Moriarta** ☉ Saratoga Springs N Y Albany Medical College Albany, 1885, also a pharmacist, member

of the American Association of Obstetricians, Gynecologists and Abdominal Surgeons, fellow of the American College of Surgeons, formerly city physician, health officer and county coroner, past president of the chamber of commerce, medical examiner for the draft board during World War I, served as chief surgeon at St Christmas Hospital for fifty years, a member of the staff of the Saratoga Hospital where he died September 12, aged 85, of hypostatic pneumonia and diabetes mellitus.

**Arthur Grant Jacobs** ☉ Memphis, Tenn University of Virginia Department of Medicine, Charlottesville, 1896, Medical College of Ohio, Cincinnati, 1897, professor of pediatrics at the University of Tennessee College of Medicine, specialist certified by the American Board of Pediatrics Inc., member of the American Academy of Pediatrics, chief, department of pediatrics, Baptist Memorial Hospital and the John Gaston Hospital, visiting pediatrician to the Crippled Children's Hospital School, died in the Methodist Hospital November 3, aged 69.

**Stillwell Corson Burns**, Philadelphia, Medico-Chirurgical College of Philadelphia, 1898, fellow of the American College of Surgeons, formerly associate professor of surgery at the Medico-Chirurgical College, Graduate School of Medicine, University of Pennsylvania, a major in the U S Army during World War I, served as surgeon in the Graduate Hospital of the University of Pennsylvania for twenty-five years, chief surgeon for the Baldwin Locomotive Works, died November 1, aged 69, of carcinoma.

**Hiram Rand Corson**, Issaquah, Wash., Medical School of Maine, Portland, 1876, formerly physician to the State Soldiers Home in Orting, died September 18, aged 95, of arteriosclerosis and mesenteric thrombosis.

**Leon Charles Cote** ☉ Newburgh N Y Albany Medical College, Albany, N Y, 1917, a captain in the medical corps of the U S Army, serving overseas during World War I, served as president of the Newburgh Bay Medical Society, on the courtesy staff of the Highland Hospital, Beacon, on the staffs of the Wallkill State Prison Hospital, Wallkill, Cornwall Hospital, Cornwall and the Municipal Sanatorium, Otisville, died September 27, aged 57.

**Edward McClelland Cowell**, Athens, Pa Chicago Homeopathic Medical College, 1885, a captain in the medical corps of the U S Army during World War I, served on the staff of the Tioga County General Hospital, Waverly, N Y, died in Waverly, N Y, September 1, aged 80, of coronary occlusion.

**Orlando Aaron Rogers Donnelly**, Chicago, Bennett Medical College, Chicago, 1913, served as a captain in the medical corps of the U S Army during World War I, for many years connected with the city health department, died in the Veterans Administration Facility Hines, September 6, aged 65, of carcinoma of the sigmoid colon.

**Edwin William Dyar**, Ossian, Ind Medical College of Indiana Indianapolis, 1904, member of the Indiana State Medical Association, vice president and formerly president of the Ossian Bank, for many years on the staff of the Lutheran Hospital, Fort Wayne, died September 11, aged 64, of hypostatic pneumonia.

**John Adair Elliott**, Chicago Jenner Medical College Chicago, 1908, died in St Francis Hospital, Evanston, Ill, September 26, aged 66, of bronchial asthma and myocardial insufficiency.

**Evan Alexander Erwin**, Laurinburg N C Medical College of the State of South Carolina Charleston, 1912, member of the Medical Society of the State of North Carolina, secretary of the Scotland County Medical Society, served as county health officer, died September 20, aged 59, of carcinoma.

**Herbert Kimball Faulkner**, Keene, N H Harvard Medical School, Boston, 1885, member of the New Hampshire Medical Society, formerly surgeon and trustee to the Elliot Community Hospital, served as trustee to the Keene Public Library, had been director of Faulkner and Colony Mills, the Cheshire National Bank and the New Hampshire Fire Insurance Company, died September 15, aged 85, of arteriosclerosis.

**D Harold Finch**, Laramie Wyo Jefferson Medical College of Philadelphia 1917, died in Provo, Utah, September 4, aged 55, of hypertension and arteriosclerosis.

**Eliezer Israel Fogel** ☉ Cincinnati Ohio-Miami Medical College of the University of Cincinnati 1909, served during World War I on the staff of the Jewish Hospital where he died September 11, aged 57, of coronary occlusion.

**James Lyle Fortune**, Terre Haute, Ind, Medical College of Indiana, Indianapolis, 1903, formerly county coroner, examining physician for the Redstone arsenal in Huntsville Ala.



examining physician for the Shriners' Hospital for Crippled Children, St Louis, died in St Anthony's Hospital September 26, aged 64, of cerebral hemorrhage

**Arthur Edmund Gulster** • Chicago, the Hahnemann Medical College and Hospital, Chicago, 1910, on the staff of the Swedish Covenant Hospital, where he died September 14 aged 57, of coronary thrombosis

**Harry E Grishaw**, Tipton, Ind Central College of Physicians and Surgeons, Indianapolis, 1897, member of the Indiana State Medical Association, health officer of Tipton County, on the staff of the Mercy Hospital, Elkhood died September 28, aged 71, of chronic nephritis and cardiac insufficiency

**John Edge Maines** • Lake Butler, Fla., Atlanta College of Physicians and Surgeons, 1905 died August 21, aged 68, of coronary occlusion

**William Jackson Mason**, Lawton, Okla. Beaumont Hospital Medical College, St Louis, 1894, on the staff of the Angus Hospital where he died July 13, aged 78, of carcinoma of the liver

**Robert Keating McConeghy**, Coudersport, Pa., Jefferson Medical College of Philadelphia, 1908, past president of the Potter County Medical Society served as coroner of Potter County for one term on the staff of the Coudersport General Hospital, died in the Pennsylvania State Tuberculosis Sanatorium number 2, Cresson, July 27, aged 60 of pulmonary tuberculosis

**Morris Spencer McGuire**, Boonville, Mo., Missouri Medical College, St Louis, 1895 University of Missouri School of Medicine Columbia, 1895 on the staff of St Joseph's Hospital, where he died August 31 aged 69, of myocarditis and angina pectoris

**William Thomas Meeks**, Blairsville, Ga., Atlanta Medical College, 1915 died July 10, aged 69, of coronary thrombosis

**Andrew Gazik Opinsky**, New Kensington Pa., Medical College of Virginia, Richmond 1910, member of the Medical Society of the State of Pennsylvania, contract surgeon for the U S Army, served as camp surgeon for the Civilian Conservation Corps camps died July 30, aged 63, of coronary thrombosis

**James Willis Parker**, Grand Blanc, Mich University of Michigan Department of Medicine and Surgery, Ann Arbor, 1898 a member of the board of education for many years, on the staff of the Goodrich General Hospital, Goodrich, died in Cadillac August 24, aged 72 of coronary occlusion

**Charles Hurd Ross**, Alliance Ohio, Columbus Medical College 1892 member of the staff of the Alliance City Hospital died August 11 aged 76 of plasma cell myeloma

**Peter Maurice Ross**, Lake Beulah, Wis Milwaukee Medical College, Milwaukee, 1898, served on the staffs of St Joseph's and St Mary's hospitals in Milwaukee died August 24, aged 72 of coronary occlusion

**Florian A Ruest**, Pawtucket R I, School of Medicine and Surgery, Faculty of Medicine of the University of Laval at Montreal, Que Canada, 1896 member of the New England Obstetrical and Gynecological Society and the Rhode Island Medical Society, for many years health officer of Pawtucket formerly on the staff of the Park Place Hospital, medical adviser of l'Union St Jean Baptiste d'Amerique since 1911, died in the Memorial Hospital August 2, aged 75, of uraemia

**Frank Lyon Salisbury** • Russellville, Ohio, Ohio State University College of Medicine, Columbus, 1917 served as a first lieutenant in the medical corps of the U S Army during World War I died August 1, aged 51, of coronary thrombosis

**Howard Frederick Schultz**, Philadelphia, Hahnemann Medical College and Hospital of Philadelphia, 1905, on the courtesy staff of the Abington Memorial Hospital, Abington and the Hahnemann Hospital, died August 27 aged 61 of coronary thrombosis

**Claude Howard Searle**, Chicago, Rush Medical College Chicago, 1898, chairman of the board of directors since 1936 and president from 1917 to 1936 of G D Searle & Company, major in the medical corps of the Illinois National Guard

during World War I, a founder and formerly secretary and president of the American Pharmaceutical Manufacturers Association, serving also as a member of the executive committee, died in the Evanston Hospital, Evanston, Ill, October 22 aged 71, of pneumonia

**Charles Porter Shaffer**, La Verne, Calif., St Louis College of Physicians and Surgeons, 1892, Jefferson Medical College of Philadelphia, 1895 died August 10, aged 81, of carcinoma

**Samuel Sher**, Chicago, College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois 1907, member of the Illinois State Medical Society, served as professor of diseases of the ear, nose and throat Post-Graduate Medical School, formerly on the staff of the Cook County Hospital, on the staffs of Grant and Edgewater hospitals and on the courtesy staff of the Wesley Memorial Hospital, where he died October 25, aged 59, of cerebral hemorrhage and arterial hypertension

**Simon Small**, Boston, Tufts College Medical School, Boston, 1930, died in Lexington, Mass, July 29, aged 39

**Frederick Adams Smith** • Troy, N Y, College of Physicians and Surgeons, New York, 1891, served on the staffs of the Samaritan and the Leonard hospitals died August 7 aged 76, of carcinoma of the adrenal gland

**Charles Ivar Spannare**, Los Angeles, Bennett Medical College, Chicago, 1910, died in the Los Angeles County Hospital July 1, aged 62, of myocardial infarction and acute left ventricular failure

**William Harold Spinks**, Washington, D C, Washington Homeopathic Medical College, 1894 died in the Gallinger Hospital August 19, aged 68 of malignant hypernephroma of the right kidney

**Claud Milton Stewart**, Lufkin, Texas Meharry Medical College, Nashville, Tenn, 1928, died July 18, aged 46

**George W Stratton** • Marysville, Calif., Missouri Medical College St Louis, 1888, died August 29, aged 79

**Francis Hall Sullivan**, Miami, Mo Marion-Sims College of Medicine, St Louis, 1898, member of the Missouri State Medical Association, died August 14, aged 72 of cerebral hemorrhage

**James Henry Talboy**, Boquette, Republic of Panama, State University of Iowa College of Medicine, Iowa City, 1884 died August 12, aged 82, of encephalomalacia

**Ralph Tousey**, Seattle, Columbia University College of Physicians and Surgeons New York, 1898, died September 25, aged 70

**Alexander Loudin Turner**, Detroit, University of Michigan Department of Medicine and Surgery, Ann Arbor, 1912 member of the Michigan State Medical Society, served on the staffs of the Grace and Woman's hospitals died in Ravenna Ohio August 12, aged 61, of coronary thrombosis

**John Samuel Whitson**, Enderlin, N D, Rush Medical College Chicago, 1895, died August 6, aged 76 of arterio sclerosis

**Ossie Frank Wilmeth**, Oakland Calif Lincoln Medical College, Eclectic, Lincoln, Neb, 1916, member of the California Medical Association died in the Providence Hospital August 26, aged 54, of coronary thrombosis

**Fredericka Caroline Zeller**, Peoria, Ill, Northwestern University Woman's Medical School, Chicago, 1894, died in the Methodist Hospital August 28, aged 80, of perforated appendicitis

#### KILLED IN ACTION

**Lester Cecil O Neal** • Andalusia, Ala Louisiana State University School of Medicine, New Orleans 1934 commissioned a captain in the U S Army (National Guard) on June 29 1940, began active duty as a major on Nov 25, 1940 killed in action in Italy Nov 7 1943 aged 36



MAJOR LESTER C O'NEAL, U S A  
(National Guard) 1906-1943



## Correspondence

### DISAGREEMENT ON SILICOSIS DUE TO WHEAT DUST

To the Editor—"A Case of Silicosis Caused by Wheat Dust" by Heatley, Kahn and Rex of Toledo, Ohio, published in THE JOURNAL, April 1 is without scientific merit and should not have been accepted for publication.

A claim for silicosis compensation has been presented to the Ohio Industrial Commission on behalf of the patient whose condition is described in the article mentioned. The commissioners who are not physicians, cannot help being impressed by the fact that a medical journal has accepted for publication an article which purports to prove that silicosis can be caused by exposure to wheat dust.

I submit some of the more obvious and significant points on which I believe the article is subject to criticism.

1 The occupational history is incomplete and does not exclude the possibility of silica exposures other than the one which is alleged by the authors.

2 The first of two x-ray films of the chest is reported to show mottling in the left lung but there is no mention of mottling or any other type of shadow indicating parenchymatous change in the right lung. In the description of the second x-ray film, made two years later, there is no mention of any type of mottling or nodulation in either lung nor do the published reproductions of these films show any. The only obvious findings described are in the hilar shadows and linear markings. Authorities are agreed that a diagnosis of silicosis cannot be based on exaggerated linear markings and increased hilar shadows alone, yet the authors report "a roentgenogram typical of advanced silicosis."

3 The authors give no dust counts. They state that 20 per cent of the dust analyzed was between 1 and 44 microns in particle size. They do not state how much of it was below 10 microns, which is recognized as the upper limit of size of silica particles which are capable of producing disease.

4 The dust which the authors analyzed is said to have come from a railroad car and a tunnel, but they do not state whether it came from the atmosphere breathed by the workmen or was scraped up from the floors.

5 A chemical analysis is submitted showing that this dust contained certain percentages of "silica." Chemical analysis does not distinguish between free silica and silicates. No petrographic examination or x-ray diffraction examination is reported. The authors, therefore have not proved the presence of silicon dioxide in the dust analyzed.

6 The authors report that the second examination of the patient, after a two year interval showed diminished vital capacity and increased emphysema, which is inferred to be the immediate cause of the patient's disability. They give no vital capacity measurements and do not mention any of the clinical or x-ray data on which their diagnosis of emphysema is based. It is the opinion of Gardner and other authorities that emphysema does not develop as a complication of silicosis until the silicosis has reached an advanced stage with extensive conglomeration of the nodular shadows.

7 The authors state that a comparison of the two x-ray films showed that the heart shadow contour had changed as a result of the changed lung condition. They do not describe the nature of this change nor do the reproductions of the x-ray films show it. The only type of heart disease which might be induced either by emphysema or by advanced silicosis is cor

pulmonale. This is a difficult clinical diagnosis to make and probably no experienced cardiologist would attempt to make it without the help of an electrocardiogram. No electrocardiogram was reported in this case.

In conclusion it is my contention that the authors have submitted no proof that their patient either had silicosis or had been exposed to silicon dioxide present in wheat dust.

RAYMOND C. MCKAY, M.D., Cleveland  
Member Ohio Board of Silicosis Retreats

### NOMENCLATURE OF PAPPATACI OR PAPATACI FEVER

To the Editor—May I make a few observations regarding the paper of Sabin Philip and Paul in THE JOURNAL July 1 concerning the nomenclature of Papataci fever. As the authors in footnote 2 on page 603 state the name of the vector is *Phlebotomus papatasi* Scolopi. Papa = he cats, tas = silently, a derivative from the Italian (see also Galli Valerio C. Bact. 063:226).

As can readily be seen there is no justification for using a double p. The disease was written with a double p by the first describer (Doerr), but he stated that he used the double p for "reasons of priority" an illogical point of view because the etymologic derivation and the name of the vector undoubtedly speak in favor of one p.

Perhaps some readers will be interested in two other synonyms of the disease. They are soldiers' fever (because the invading Austrian troops in Bosnia were stricken but not the native population) and 'dog's disease' used in Dalmatia.

DR. J. SCHWARZ, Valdivia, Chile  
Pathologist Regional Hospital

## Bureau of Legal Medicine and Legislation

### MEDICOLEGAL ABSTRACTS

**Narcotics. Validity of Opium Poppy Control Act as Applied to Grower of Poppy Seed for Food Purposes.**—The Federal Opium Poppy Control Act of 1942 (56 Stat. 1045, 21 U. S. C. A., sec. 188 et seq.) prohibits and imposes a penalty for the production of opium poppies except when done by virtue of a license issued by the Secretary of the Treasury and defines the term "opium poppy" to include the plant *Papaver somniferum* and any part of any such plant. Certain growers in California of the blue seeded poppy of the species known botanically as *Papaver somniferum* who cultivated these poppies for their seed, an edible food product, apparently were unable to obtain a license to produce the poppy species in question for food purposes. They then brought suit in the district court, N. D. California, N. D., to enjoin the Bureau of Narcotics of the Department of the Treasury of the United States and the United States government officials charged with the enforcement of the act from interfering in any way with the growing and production of their crop of poppies. Admittedly while the seeds of this species of poppy can be used as an edible food product, other parts of the plant are a source of opium and opium derivatives including morphine the fluid obtained through incisions cut in the pod yielding what is called the raw opium. Nevertheless the growers contended that the

Opium Poppy Control Act as applied to them is unconstitutional because it is an exercise by the United States of regulatory powers over the production of an agricultural commodity, the poppy seed within a state and that such powers are reserved exclusively to the states by the Tenth Amendment to the Constitution.

The Opium Poppy Control Act said the district court does not purport to regulate the production of an agricultural crop. The act is directed to the growth of opium yielding poppy plants within the United States as the source not of an edible food product but rather of raw opium. Its effect on the production of the poppy seed is incidental only to its operation on a plant that produces both a narcotic drug and an edible seed. The validity of the act does not depend on a finding of constitutional authority in the federal Congress to regulate a food supply but on the power of Congress to regulate the supply source of raw opium. The primary derivation of congressional authority to exercise control by federal legislation over the cultivation of the opium poppy is stated in the declared purpose of the act here in question:

(1) to discharge more effectively the obligations of the United States under the International Opium Convention of 1912 and the Convention for Limiting the Manufacture and Regulating the Distribution of Narcotic Drugs of 1931.

The prime objective of the International Opium Convention of 1912 was to eradicate the opium evil and one of the methods therein agreed to to accomplish that end was through the exercise of control over the production and distribution of raw opium, defined in chapter I of the convention as

the spontaneously coagulated sap obtained from capsules of the opium poppy (*Papaver somniferum*) and which shall not have been subjected to any but the processes necessary to the picking and the transportation thereof.

The later Convention for Limiting the Manufacture and Regulating the Distribution of Narcotic Drugs of 1931 (Treaty Series No. 863, 48 Stat. 1543) to which the United States was signatory was in furtherance of the same objective as the International Opium Convention of 1912—the eradication of the drug evil by rendering effective by international agreement the limitation of the manufacture of narcotic drugs to the world's legitimate requirements for medical and scientific purposes and by regulating their distribution.

The competence of the United States continued the court to enter into treaty stipulations with foreign powers designed to establish through appropriate legislation an internationally effective system of control over the production and distribution of habit forming drugs cannot be questioned, since the obligations the government there incurred were lawfully undertaken in the proper exercise of its treaty making power. And Congress is constitutionally empowered to enact whatever legislation is necessary and proper for carrying into execution the treaty making power of the United States. *Vealey v. Henkel*, 180 U. S. 109, 21 S. Ct. 302, 45 L. Ed. 448. By the terms of the International Opium Convention of 1912 the United States obligated itself to control the production and distribution of raw opium. The provisions of the Opium Poppy Control Act express the determination of Congress that effective control of opium production and distribution necessitates legislation limiting the proximate source of yield of the raw opium—the opium poppy—whatever the purpose for which its cultivation is undertaken.

The constitutionality of the measures thus chosen by Congress to give efficacy to the treaty stipulations of the convention is not dependent on the wisdom or success of the choice. Nor is it significant that the two conventions contain no stipulation expressly committing the signatory powers to the obligation of exercising control over the cultivation of the opium poppy. The power of Congress to enact such legislation as is

necessary or proper to carry into execution powers vested by the Constitution in the United States, of which the treaty making power is one, includes the right to employ any legislative measures appropriately adapted to the effective exercise of those powers. So long as a rationally sound basis exists for the congressional determination that particular legislation is appropriately related to the discharge of constitutional powers, the validity of such legislation is unassailable.

It was apparent to the court that efficacious control over the production and distribution of raw opium can well depend on the limitation of the cultivation of the opium poppy within the United States to legitimate medical and scientific needs only. The appropriate relationship, said the court, of the means adopted by Congress to the ends thereby sought to be attained is evident. The opium poppy is the immediate source from which the raw opium is obtained, its cultivation may be undertaken without difficulty, without detection and for illicit purposes even under the guise of legitimate pretenses, the process of extracting the raw opium from the opium poppy is a simple one, the growth of the opium poppy, wherever undertaken, can reasonably be said to afford attractiveness to those seeking a source of opium supply either for the satisfaction of their own cravings or for the profits offered by the contraband market, and this attractiveness can be expected to increase as suppression of the drug evil becomes progressively more effective and other sources of drug supply become more scarce. In view of these considerations alone, this court is satisfied with the appropriate relativity of measures limiting the cultivation of the opium poppy to the objectives of the treaty stipulation to control the production and distribution of raw opium.

The court accordingly held that the Opium Control Act of 1942 was constitutional and denied injunctions to restrain enforcement of the Act—*Stutz v. Bureau of Narcotics of Department of Treasury of United States*, *Schuman v. Samuels*, 361 Supp. 810 (Calif., 1944).

## Medical Examinations and Licensure

### COMING EXAMINATIONS AND MEETINGS

#### BOARDS OF MEDICAL EXAMINERS BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Examinations of boards of medical examiners and boards of examiners in the basic sciences were published in *THE JOURNAL* Nov. 18, page 791.

#### EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY New York June 8-9 Final date for filing application is March 12 Sec. Dr. George M. Lewis 66 E. 66th St. New York 21

AMERICAN BOARD OF INTERNAL MEDICINE Written Feb. 19 Final date for filing application is Dec. 15 Asst. Sec. Dr. W. A. Werrell 1301 University Ave. Madison 5 Wis.

AMERICAN BOARD OF NEUROLOGICAL SURGERY Spring Final date for filing application is Feb. 1 Sec. Dr. Paul C. Bucy 912 S. Wood St. Chicago 12

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY Written Part I Various centers Feb. 3 Sec. Dr. Paul Titus 1015 Highland Bldg. Pittsburgh 6

AMERICAN BOARD OF OPHTHALMOLOGY New York June Chicago October Final date for filing application is Dec. 1 Sec. Dr. S. Judd Beach 36 Erie Road Cape Cottage Maine

AMERICAN BOARD OF OTOLARYNGOLOGY New York June 5 S. Chicago Oct. 6 Sec. Dr. Dean M. Lierle University Hospital Iowa City Ia.

AMERICAN BOARD OF PEDIATRICS Oral New York April 14-15 Final date for filing application is Dec. 15 Chicago May 19-20 Final date for filing application is Jan. 19 Sec. Dr. C. A. Aldrich 115 1/2 First Ave. S.W. Rochester Minn.

AMERICAN BOARD OF RADIOLOGY Oral New York June 3 Final date for filing application is May 1 Sec. Dr. B. R. Kirklin 102110 Second Ave. S.W. Rochester Minn.

## Current Medical Literature

### AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1954 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (\*) are abstracted below.

#### American J Obstetrics and Gynecology, St Louis

48 299-446 (Sept.) 1944 Partial Index

- Consideration of Therapeutic Abortion S A Cosgrove and Patricia A Carter—p 299  
Relation of Basal Metabolic Gm During Pregnancy to Nonpregnant Basal Metabolism I W Sontag E L Reynolds and Virginia Forbet—p 315  
Measurement of Cyclic Variations in Quantity of Cervical Mucus and Its Correlation with Basal Temperature E Vieregger and W T Pommerenke—p 321  
Management of Delivery in Pregnancy Complicated by Serious Rheumatic Heart Disease C L Mendelson—p 329  
Bacteriologic and Clinical Aspects of Gonorrhea in Female A Coim and I Grunstein—p 339  
Effect of Travel on Incidence of Abortion A W Diddle—p 354  
Some Acquired Bony Abnormalities Influencing Conduct of Labor with Reports of Recent Cases A W Voegelin and M L McCall—p 361  
\*Character of Vaginal Delivery Following Cesarean Section Katherine Kuder and C T Dotter—p 371  
Subclinical Postpartum Salpingitis and One Child Sterility Pathologic Study B Black-Schaffer—p 374  
Interstitial Pregnancy Report of Case of Full Term Gestation M W Grusetz and S H Polayes—p 379  
Local Chemotherapy in Prophylaxis of Mastitis B R Austin—p 387  
Chorea Gravidarum Report of Case W A Ruch—p 392  
Pregnancy and Diabetes A H Bill and F M Posey Jr—p 405  
Theca Cell Tumors of Ovary J I McGoldrick and W A Lapp—p 409

**Vaginal Delivery Following Cesarean Section**—Kuder and Dotter point out that there is a difference of opinion concerning the nature of the first vaginal delivery occurring in a patient who has had a cesarean section. The question is whether or not the labor is comparable to that of a multipara or a primipara, especially in regard to the total duration of labor and the course of the first stage of labor. This study comprises a review of 34356 pregnancies occurring in the Woman's Clinic of the New York Hospital. Of this total 496 patients had a previous cesarean section. In this group 109 patients were delivered of a full term or premature infant vaginally without ever having had a vaginal delivery preceding the first cesarean section. It was found that the average duration of labor of the first vaginal delivery in a patient who was delivered by cesarean section in her first pregnancy is identical with that in a primipara.

**Postpartum Salpingitis and One Child Sterility**—Black-Schaffer presents pathologic studies consisting of bilateral tubal segments removed in the course of sterilization from 67 patients. Of this number 50 were obtained post partum following normal delivery and the remaining 17, used as controls, from patients who had undergone cesarean section. The chief indications for sterilization were, in the order of their frequency, multiparity, severe toxemias of pregnancy and heart disease. All the patients with 1 exception, were operated on at some time between the second and the twelfth postpartum day. Bilateral tubal segments were examined microscopically. The 17 cesarean section pairs (controls) showed no pathologic lesions. Of the 50 postpartum pairs 19 were the site of a mild acute salpingitis. In no case was the salpingitis clinically recognized. It is suggested that this hitherto not demonstrated but suspected puerperal salpingitis may in some patients be the cause of tubal obstruction with resultant reduction of fertility or even sterility.

**Chorea Gravidarum**—Ruch presents the history of a woman aged 20 in whom symptoms of chorea began during the second month of pregnancy. Despite rest in bed a high vitamin diet and sedation the symptoms continued and gradually increased

until during the sixth month of pregnancy, they suddenly became quite severe. Cesarean section was performed. The contractions had practically disappeared by the time she left the hospital two weeks after operation. The appearance of the symptoms during the first trimester of pregnancy and the lack of organic disturbances seemed to rule out toxemia as the etiologic factor. The author thinks that fatigue was a strong influence and that either the attack of measles or an unsuspected mild rheumatic fever in childhood was primarily responsible. The early onset, the intermittent low grade fever and the attack of acute arthritis after recovery from the operation support this view.

#### American Journal of Surgery, New York

65 303-440 (Sept.) 1944

- Tumors of Urogenital Tract in the Young C G Bandler and I K Roen—p 306  
Heterogenous Skin Grafts by Coagulum Contact Method H I Harris—p 315  
Importance of Latent Hepatic Disease A O Wilensky—p 321  
Cryptorchidism A H Iason—p 355  
Endocrine Factors in Mechanism of Toxemia of Pregnancy I H Bauer—p 361  
Critical Analysis of Mastectomy and Free Transplantation of Nipple in Mammoplasty J W Mahline—p 364  
Ultraviolet Blood Irradiation Therapy (Knott Technique) in Nonhealing Wounds G Wiley—p 368  
Use of Foreign Body Locator (Berman) in Industrial Practice M Parkes—p 375  
Treatment of Inflammatory Urethral Strictures R Lich Jr—p 381  
Idiopathic Sinus and Cysts Recommended Method of Treatment I Peterson and R H Ames—p 384  
\*Use of Tyrothricin in Treatment of Ulcers of Skin L M Rankin—p 391  
Sulfonamides in Appendicitis Review of 412 Consecutive Cases and Analysis of Fatalities L R Kaufman and W I Mersheimer—p 393  
Gastric Lesions High on Lesser Curvature M S Rosenblatt—p 404  
Treatment of Fractures Application of Principle of Rest M M Simon—p 406

**Heterogenous Skin Grafts by Coagulum Contact Method**—Harris reports that a girl aged 12 one side of whose body including the entire upper and lower extremity had been burned completely was in an extremely poor condition after four months of ineffective treatment. Since she had no skin to spare a graft was taken from her father. The results of the grafting were excellent the take was perfect. The only objectionable feature was the fact that blood had to be taken from the patient and thus she resented because of the pain so that the author was hesitant to take even 20 cc of blood for another graft. At a second graft it was decided to use the plasma and cell extract as well as the skin from the father. The procedure was done and two drums full of skin, the same size as the first one (10 by 15 cm) were taken and applied to the pelvis and buttock. These grafts also showed a complete take. Since the father could not donate any more skin it was decided to try a heterogenous isograft with a stock blood plasma and cell extract. The results of this also were excellent. The author reports 8 other cases. Sano removes the graft and places it on a piece of gauze and then paints on the cell extract. The author paints the cell extract on the graft while it is still on the drum when the Padgett machines are used. Painting the cell extract on the graft while still on the drum might be advantageous because the fluid has a better opportunity to fill all the interstices. After it is removed from the drum the graft shrinks but the entire surface of the graft will have been covered, with the result that it has a better chance of agglutinating to the entire surface. Complete hemostasis must be accomplished in all cases before the grafts are applied.

**Tyrothricin in Ulcers of Skin**—Rankin describes 6 cases of old chronic ulcers in which tyrothricin was used. Tyrothricin consists of gramicidin and tyrocidine. Reports show that it is of value in the treatment of mastoiditis empyema suppurative arthritis and deep wound infections. While investigators mention the action of tyrothricin on the bacteria in the ulcer no mention has been made of one property that the author noticed in 5 of the 6 patients treated namely tissue stimulation. Tyrothricin did not cause toxic symptoms in the 6 patients it was a

good antibactericidal agent when applied locally it caused no pain or discomfort when used locally in the proportion of 0.25 cc to 99.75 cc of water. Excellent results were obtained in 5 of the 6 patients.

### American Review of Tuberculosis, New York

50 185-266 (Sept.) 1944

- Evolution of Rest Treatment of Pulmonary Tuberculosis J H Pratt—p 185  
Evaluation of Chemotherapeutic Agents in Clinical Tuberculosis Suggested Procedure H C Hinshaw and W H Feldman—p 202  
Vass Chest Roentgenography and Admissions to Olive View Sanatorium J Goorwitch—p 214  
Basal Metabolism in Pulmonary Tuberculosis G C Leiner—p 223  
Nutritional Studies in Tuberculosis III. Thiamine (Vitamin B<sub>1</sub>) Deficiency and Peripheral Neuritis J E Furber and D K Miller—p 229  
Cardiorespiratory Testing in Tuberculosis Preliminary Report K A Harden H M Payne Maurine P Weaver and J R Laurey—p 234  
Tomorrow's Tuberculosis Associations W P Shepard—p 244  
Perspectives and Trends in Tuberculosis H S Willi—p 251

### Anesthesiology, New York

5 441-550 (Sept.) 1944

- Undergraduate Medical Education and Anesthesiology R B Allen—p 441  
Benefits and Hazards of Intubational Anesthesia K M Heard—p 446  
Continuous Drop Method for Subarachnoid Analgesia Preliminary Report Julia G Arrowood and I F Foides—p 465  
Some General Considerations in Evaluating Local Anesthetic Solutions in Patients M L Tainter and L Winter—p 470  
Stellate (Cathion) Block Definite Anterolateral Approach I P Volpitta and W A Risteen—p 491  
Anesthesia VII Study of Certain Physical Properties of Iso-propenyl Vinyl Ether C J Carr Dorothy Kuller and J C Krantz Jr—p 495  
Intercostal Block with Lung Acting Anesthetic in Upper Abdominal Operations S Belinkoff—p 500  
New Concept of Morphine Analgesia D Shugliter—p 508  
Experiences with Pentothal Sodium Anesthesia in War Casualties S I Lieberman—p 517

### Annals of Internal Medicine, Lancaster, Pa

21 367-564 (Sept.) 1944

- Traumatic Neuroses in Court H W Smith and H C Solomon—p 367  
Dietary Factor in Etiology of Pernicious Anemia I M Askes—p 402  
Psychotherapy S Katzenelbogen—p 412  
Impending Myocardial Infarction I Waitzkin—p 421  
Clinicopathologic Study of 100 Cases of Acute and Chronic Gall bladder Disease W Johnson B E Malstrom and B W Volk—p 431  
Subclinical Vitamin Deficiency V Assay of Subclinical Thiamine Deficiency Mfred Carlsen Hulse N Weissman F Stotz M Clinton and J W Ferrebee—p 440  
Hemiparesis in Tuberculosis with Differential Discussion of Other Causes L J Moorman—p 447  
Direct Measurements of Effects of Bromides Sodium Amytal and of Caffeine in Man E Jacobson—p 455  
Some Clinical Characteristics of Mumps and Effect of Belladonna in Treatment Study Made at Station Hospital Fort George G Meade Maryland H W Potter and L H Bronstein—p 469

**Impending Myocardial Infarction**—According to Waitzkin acute myocardial infarction is preceded by premonitory symptoms in a considerable percentage of cases. He found that of 61 consecutive cases of acute infarction treated in the past two years 17 showed premonitory symptoms. The symptoms have the following characteristics: 1 There may be one or more episodes of spontaneous prolonged cardiac pain mild or severe with or without a preceding history of coronary artery disease. 2 Cardiac pain of short duration, on customary or no exertion suddenly appears where none existed before. 3 In patients with preexisting angina pectoris cardiac pain appears on rapidly decreasing amounts of exertion or at rest. In considering symptoms suspected as premonitory it must be recognized that myocardial infarction does not inevitably follow them but the strong possibility that it may should lead to suspicion and therapeutic precautions.

**Clinical Characteristics of Mumps, and Effect of Belladonna in Treatment**—Potter and Bronstein review 124 cases of mumps. This study was originally undertaken in an effort to ascertain the value of treating such patients with belladonna. The use of this drug had been suggested to shorten the course of the disease and to decrease the incidence of complications.

On admission the soldier was given  $\frac{1}{400}$  grain (0.65 mg) of atropine sulfate and then 1 cc of the tincture of belladonna by mouth every two hours, until atropinization, as evidenced by dilatation of the pupil and/or dryness of the throat, was produced. Subsequent medication was given in doses to keep these changes constant either until the patient was cured or until gastrointestinal discomfort made it necessary to discontinue the drug. Belladonna was used in treating 42 of these cases without any effect on the duration of illness, incidence of complications, duration of orchitis or comfort of the patient. The distinction between rural and urban origin of the soldier is no longer as definite as it was in previously reported series of cases, probably because of decreased isolation of population groups. Most of the men developed mumps within their first year of service and possible exposure and not in the first two months as reported in the first world war. Early hospitalization does not shorten the duration of the disease.

### Archives of Dermatology and Syphilology, Chicago

50 151-230 (Sept.) 1944

- Erysipelothrix Rhinopneumoniae Infection in Swine and in Human Being Comparative Study of Cutaneous Lesions J A Knudsen—p 151  
Clinical Manifestations of Vitamin Deficiencies as Observed in Federated Malay States P Fasal—p 160  
Epidermolysis Bullosa J I Mooney—p 167  
\*Dermatophytosis in Industry S M Leck I Botwinick and L Schwartz—p 170  
Multiple Painful and Painless Glomus Tumor A H Slepin—p 179  
Connective Tissue Nevus K Steiner—p 183  
\*Dyskeratosis Congenita with Pigmentation Dystrophia Unguium and Leukoplakia Oris (Cole and Others) Report of Cases of 2 Brothers with Improvement in Leukoplakic Patches in 1 with Androgenic Medication J Garb and C Ruben—p 191  
\*Early Syphilis Masked and Delayed by Penicillin in Treatment of Gonorrhea Bertha Shiffr and S J Zakon—p 200

**Dermatophytosis in Industry**—Peck and his associates examined for dermatophytosis 2,123 workers in two munitions plants, three plants processing steel and other metal parts and one plant making glass products. Two of the plants were revisited at different seasons. On clinical grounds alone results for the 2,123 workers were classified as 27.79 per cent positive, 33.63 per cent doubtful and 38.57 per cent negative. Cultural studies revealed that some patients in the clinically doubtful group had true dermatophytosis. There was no significant difference in sex incidence. When the personnel of the same plants was examined at different seasons the number of clinically negative workers rose from 13 to 19 per cent in the summer to 54 per cent in the winter. *Trichophyton gypsum* was the pathogenic fungus most often recovered, *Trichophyton purpureum* was next in frequency and *Trichophyton inguinale* was recovered from 1 case. All of the cultures of *T. purpureum* were recovered in one locality. Shower room flooring of concrete or pine wood is a possible but not likely source of fungous infections of the feet. Copper impregnated concrete flooring was found to be of no value in the prevention of the spread of fungous infections of the feet. *Trichophyton* tests were made on 776 workers. Of these 42.53 per cent had positive reactions. Of the 558 men tested, 52 per cent had positive *trichophyton* tests, of 218 women tested 29.96 per cent had positive *trichophyton* tests. Lower incidence in women of a demonstrable allergy to fungi and/or their products may explain why women are less affected by dermatophytosis of the feet than are men since it may be responsible for less subjective symptoms. The *trichophyton* test is more often positive in patients with clinically active dermatophytosis of the feet than in those showing no evidence of the disease. There is no indication that the presence of an allergy to fungi and/or their products bears any relationship to the acquisition of an allergic contact dermatitis. Dermatophytosis and its allergic manifestations are not important factors in lost time among industrial workers.

**Dyskeratosis Congenita, Dystrophia Unguium and Leukoplakia Oris**—Garb and Ruben report the histories of 2 brothers with dyskeratosis congenita with pigmentation, dystrophia unguium and leukoplakia oris, a rare dermatosis. This syndrome has been described by Cole, Rauschkolb and Toomey who reported 1 case and discussed 2 which had been observed by Engman. All 5 cases have in common pigmentation, leukoplakia oris and dystrophy of the finger nails and toe nails. They also have a change in the skin of the hands resembling acroder-

matitis chronica atrophicans. The cases seen by the authors differed from those of Cole, Rauschkolb and Toomey and Engman in the character of pigmentation, which consisted of rhomboid-like purplish spaces enclosing normal skin, in contrast to the whitish raised papules with a fine reddish base in the patient of Cole and his associates and to the 1 mm spots surrounded by pigment arrayed in a peculiar network in Engman's case. The lesions of the mouth and the nails were similar to those of the other 3 cases except that the leukoplakic lesions in the older brother were more extensive and were complicated by bullae and ulcerations of the commissures of the lips. His nails were more dystrophic than those of his younger brother and the other 3 patients. The brothers had additional features, the most important being mental retardation. There was evidence of vitamin B complex deficiency in all 5 cases so far reported. This was manifested chiefly by leukoplakia, dystrophy of the nails and in the first of the reported cases by intestinal hypomotility. This patient was treated at first with testosterone propionate, to which the leukoplakic patches responded well, undergoing pronounced regression in three weeks, and recently with large doses of vitamin B complex.

**Early Syphilis Masked by Penicillin Used for Gonorrhea**—Shafer and Zakon point out that penicillin is the first therapeutic agent to be effective in the treatment of both gonorrhea and syphilis. However, the difference in the apparently curative doses of penicillin in the treatment of these two diseases presents a grave problem in that early syphilis may be masked and delayed by the use of doses of penicillin which are curative for gonorrhea but which are totally inadequate for syphilis. This problem is illustrated with a case report.

### Archives of Surgery, Chicago

49 75-146 (Aug) 1944

- Treatment of Rhinorrhea and Otorrhea W E Dandy—p 75  
Plasma Cell Mastitis. Report of 5 Additional Cases W H Parsons J C Henthorne and R L Clark Jr—p 86  
Roentgen Features of Chronic Tuberculous Peritonitis J J McCort—p 91  
Effect of Massive Experimental Hemorrhage on Hepatic Function in Dogs C Ireneus Jr and C R Puestow—p 100  
\*Aseptic Necrosis of Head of Femur Following Traumatic Dislocation of Hip S Kleinberg—p 104  
Review of Urologic Surgery A J Scholl and others—p 109

**Plasma Cell Mastitis**—Plasma cell mastitis of Adair is a relatively uncommon disease. It is important because of its clinical resemblance to carcinoma of the breast. The resemblance is so close that in at least half of the recorded cases primary radical mastectomy was performed on the assumption that the condition was malignant. The 5 specimens reported in this communication were collected by Parsons and his collaborators from a total of 1,500 specimens from female breasts studied during the past six and a half years from the services of the Vicksburg Hospital and from other sources in Mississippi. The clinical features of these cases duplicate those common to most of the other recorded cases. In case 1 the resemblance to carcinoma of the breast was embarrassingly close. In case 2 the lesion was more suggestive of an inflammatory process, although it was only moderately tender, and the nipple was retracted. Some features of this disease have not been reported before, including recurrence of the lesion, which was observed in cases 2 and 3, and diffuse comedomastitis, which coexisted in portions of the mammary glands in cases 1 and 5. In case 2 the tonsils were badly diseased and the speculation is advanced that the focal infection may have contributed to the development of the mastitis, because in another case of indolent mastitis trouble with the breast continued until tonsillectomy was carried out, after which, without other therapy, the mastitis promptly subsided. The first patient went through a normal pregnancy in the same year in which her breast was removed without the development of mastitis in the remaining breast. The second patient had been castrated five years before the onset of symptoms referable to the breast and the course of the plasma cell mastitis covered three years, which is an unusually prolonged time for this condition. The apparent difference in the endocrine constitution in the 2 cases seems worthy of comment. The condition is a periductal inflammatory reaction caused by extravasation of material from the ducts into the periductal fibrous tissue and is a true clinical entity.

**Aseptic Necrosis of Head of Femur**—Kleinberg calls attention to the possibility of traumatic dislocation of the hip occurring without rupture of the ligamentum teres. He reports a typical case of aseptic necrosis and deformity of the head of the femur with its ligamentum teres intact and thoroughly vascularized, the pathologic condition having arisen from a traumatic interruption of the blood supply of the femoral head coming through the capsule of the hip joint. From experience in operations on the hip joint in which the femoral head is deliberately dislocated from the acetabulum the author has learned that, whereas most of the time the ligament is torn if manipulations have not been sudden or violent the head can be pried out of the acetabulum without rupturing the ligament. It is possible, therefore, to visualize a traumatic dislocation of the hip without rupture of the ligamentum teres. That must have been true in the case here reported. The force producing the dislocation tore the capsule and its blood vessels, thereby depriving the femoral head of a large source of its blood supply. As a result there ensued an aseptic necrosis with collapse of the bony structure arising from too early weight bearing. One might assume that the ligamentum teres had been torn but that the fragments had fortuitously come accurately and intimately in contact after the reduction and had reunited. But in such an event, which is extremely unlikely there would remain some scars of healing, and none were visible. The normal ligamentum teres in the reported case proves that rupture of the ligament is not a constant occurrence in a traumatic dislocation and that typical aseptic necrosis of the femoral head may occur even though its blood supply through the ligamentum teres has not been disturbed.

### Arizona Medicine, Phoenix

1 165-228 (July) 1944

- Peptic Ulcer P J Cunnane—p 183  
X-ray Findings in Silicosis. Supplementary Report of Subcommittee on Industrial Health Arizona State Medical Association W W Watkins—p 187  
Vital Capacity in Silicosis W L Minear—p 190  
\*Sulfonamides in Treatment of Chronic Bronchial Infections W H Oatway Jr—p 194  
Peptogenic Ulcer in Meckel's Diverticulum Case Report Z B Noon—p 197  
Cystic Diseases of Lung E C Reed—p 200

**Sulfonamides in Chronic Bronchial Infections**—The report is concerned with the use of sulfadiazine, sulfamerazine and sulfathiazole in 48 cases with purulent bronchial secretion. The diagnosis was chronic bronchitis in 11 cases, bronchial asthma with bronchitis in 11 cases and bronchiectasis in 16 cases. The author is concerned chiefly with the 16 cases of bronchiectasis. The symptoms had persisted for from one to twenty-five years. The daily volume of sputum varied between 20 and 800 cc. Administration of sulfonamides by mouth has been found regularly effective in all cases of simple, uncomplicated bronchiectasis. The sputum was reduced in all cases. The average was a 62 per cent decrease. In the presence of atelectasis and putrid secretions the sulfonamides were much less efficient than in simple bronchiectasis. Tolerance has been about as expected except in cases known to be clinically allergic. There is no reason to believe that the lesion structure of bronchiectasis will change, though progress may be prevented by sulfonamide treatment. It is recommended that sulfonamides be used in nonsurgical cases and for preoperative therapy. It should be combined with postural drainage, bronchoscopic aspiration, climatotherapy and treatment of the sinuses.

### Bulletin of Johns Hopkins Hospital, Baltimore

75 1-72 (July) 1944

- Comparison of Bacteriostatic Activities of Some of Newer Sulfonamide Compounds Eleanor A Bliss and Helen C Deitz—p 1  
Experimental Shock. II. Effects of Acute Plasmapheresis in Healthy Dogs P B Price W Metcalf W P Longmire C R Hanlon and H V Rizzoli—p 14  
Tryptophan Derivatives in Urine of Pyridoxine Deficient Swine G E Cartwright M M Wintrobe Patricia Jones Marjorie Lauritsen and S Humphreys—p 35  
Diagnosis of Influenza Virus Infections by Agglutination Inhibition Test T W Farmer and G A Streeter with technical assistance of Helen C Deitz—p 48  
Cold Hemagglutination in Primary Atypical Pneumonia G A Streeter T W Farmer and G S Haye—p 60

## Canadian Medical Association Journal, Montreal

51 195-292 (Sept) 1944

- Returning Serviceman and His Problems J C Meakins—p 195  
 Reintegration of War Veteran in Industry D E Cameron—p 202  
 \*Intravenous Pectin Solution in Prophylaxis and Treatment of Shock R D McClure K W Warren and L S Fallis—p 206  
 \*Results of Surgical Treatment of Sciatica Due to Herniation of Intervertebral Disk in Canadian Soldiers Overseas F H Botterell W S Keith and O W Stewart—p 210  
 Sulfadiazine Prophylaxis in Nasopharyngitis and Scarlet Fever J D Keith A Ross and R K Thomson—p 214  
 Theoretical and Experimental Aspects of Surgical Refrigeration F M Allen—p 220  
 General Practice A Specialty J L Little—p 227  
 \*Absorption of Sulfathiazole from Wounds R A Waud—p 229  
 Some Distinctions Between Health Services and Care of Sick H Emerson—p 234  
 Cold Agglutinins and Pneumonia C B Rich M V Rae and C J McGee—p 239  
 Sudden Deafness A L Yates—p 240  
 Sulfonamides and Acute Ear Infections H W Schwartz—p 245  
 Miscellaneous of Anesthesia Bugbears G D Stanley—p 249  
 Symmetrical Lividity of Soles F Kalz and Helen Friedman—p 252  
 External Abdominal Hernia F W Schroeder—p 253  
 Gonorrheal Iridocyclitis Treated by Penicillin with Report of Case A J Elliot—p 257  
 Carcinoid Tumor of Ileum with Metastases in Mesenteric Lymph Nodes W O Stevenson and A J Blanchard—p 259

**Intravenous Pectin Solution in Shock**—McClure and his associates report experiences with pectin solution in treating 275 patients who received the solution prophylactically during some major surgical procedure on the gastrointestinal tract. There were 6 total gastrectomies, 85 partial gastrectomies, 2 pancreatectomies, 1 colectomy, 11 abdominoperitoneal resections of the rectum, 14 anterior resections of the rectum and 11 Mickulicz and 12 primary resections of the colon. The remaining cases included 11 radical mastectomies, 11 neurosurgical procedures, 19 operations on traumatic and postoperative shock victims, 14 biliary tract operations and 69 miscellaneous operations. All pectin solutions were prepared by Hartman and Schelling who emphasize the care which must be observed in the preparation and standardization of pectin solutions. Each batch must be tested separately for its osmotic pressure, viscosity and specific gravity. The pH must be adjusted carefully to 7.0. In most instances pectin solution was administered as a single infusion concurrent with the operation. In a few cases it was given in two divided doses. The amount varied between 200 and 1,600 cc of 1 per cent solution, the most frequent dose being 800 cc. The authors conclude that pectin though inferior to blood or plasma appears to be of more value than glucose or saline solution in the prophylaxis of shock in extensive surgical procedures. Pectin is nontoxic and nonantigenic in the quantity of 1,000 to 1,500 cc usually required to maintain blood pressure in the presence of shock producing conditions. Untoward results appeared only after the intravenous injection of amounts in excess of 4,000 cc.

**Surgical Treatment of Sciatica Due to Herniation of Intervertebral Disk**—Botterell and his associates begin with a period of conservative treatment, with complete rest in bed for three weeks. If there is no improvement or if the improvement is short of enabling patients to reengage in their former duties or duties of a less strenuous character, operation may then be considered expedient. A longer period of rest in bed may be prescribed before any decision to operate is made if the improvement is moderate and continuing. Operation is not undertaken, however, if there are any other physical defects or unstable emotional or mental reactions which would make doubtful return to duty following operation. The exceptions to this policy are those whose pain is unusually severe and is not relieved by bed rest alone and those for whom operation is done to stop the rapid progression of muscular atrophy and patients with paresis of the bladder or bowel. Following operation the patient is kept in bed for from two to three weeks. His reconditioning begins in the form of tension exercises during the last few days in bed. A few days later restricted physical exercises are started and he progresses through an increasing range of activity. Fifty-one Canadian soldiers have been studied since operation. Twenty-nine have returned to full duty and 14 to sedentary duty. Eight were unfit for military duties.

**Absorption of Sulfathiazole from Wounds**—Waud aimed to determine the rate and depth of diffusion of sulfathiazole into the underlying tissue when applied to wounds. The influence of various bases (water miscible and fatty) on diffusion into the tissues also was studied. Rabbits were used in all experiments. Estimations of the concentration of sulfathiazole were made at different levels below the floor of the wounds and at different periods following the application of different concentrations of the drug. It was found that the higher the percentage of the drug in the base the greater was the concentration obtained in the tissues. The concentration obtained in tissues beyond 2 to 3 mm below the surface of the wound is much less than that ordinarily reached when sulfathiazole is given by mouth. This may not be sufficient to prevent the spread of infection and may justify the systemic administration of the drug. The level of sulfathiazole obtained in the blood when the drug is applied locally approximates that of the tissues situated at a level anywhere between 3 and 7 mm below the surface of the wound. The delivery of sulfathiazole out of a water soluble base or an oil in water emulsion takes place quite readily. When incorporated in a fatty or paraffin base and applied to an open wound, little of the drug reaches the tissues. When suspended in a liquid oil, the sulfonamide falls out and is deposited in almost the pure state on the surface of the wound or dressing.

## Cancer Research, Baltimore

4 529-600 (Sept) 1944

- Chromosome Size in Normal Rat Organs in Relation to B Vitamin Ribonucleic Acid and Nuclear Volume J J Biesele—p 529  
 Size and Synthetic Activity of Chromosomes of Two Rat Neoplasms J J Biesele—p 540  
 Comparative Glycolytic and Respiratory Metabolism of Homologous Normal Benign and Malignant Rabbit Tissues with Particular Reference to Benign Virus Papilloma (Shope) and Transplanted Cancer Derived Therefrom (the V2 Carcinoma) J G Kidd R J Winkler and D Burk—p 547  
 Multiple Primary Malignant Tumors and Susceptibility to Cancer S Warren and T Eberreich—p 554  
 Cancer of Liver in Negro in Africa and in America E L Kennaway—p 571  
 Observations on Mouse Tumors Cultivated in Yolk Sac of Embryonic Chick T R Heimann and J J Littner—p 578

## Endocrinology, Springfield, Ill

35 139-228 (Sept) 1944

- Effect of Stilbestrol on Experimental Streptococcal Infection in Mice C E Foley and W L Aycock—p 139  
 Pituitary Responses of Mature Male Rats to Oxidative Inactivation Product of Esthione O W Smith—p 146  
 Thyroid and Metathyroid Diabetes B A Haussay—p 158  
 Influence of Reproductive Hormones on Growth in Ovariectomized and Normal Female Rats R Bogert J T Lasley and D T Mayer—p 171  
 Testicular Response to Androgen in Light Stimulated Starling J W Burger—p 182  
 Effect of Thiamine Deficiency and Controlled Inanition on Ovarian Function V A Drill and Marie W Burrill—p 187

## Florida Medical Association Journal, Jacksonville

31 41-84 (Aug) 1944

- Torsion of Omentum R R Killinger—p 61  
 Guillain Barre Syndrome: Brief Review of Literature and Presentation of Case S Wright and J Jewett—p 64

31 85-128 (Sept) 1944

- Primary Atypical Pneumonia: Analysis of 140 Cases M B Guthrie and R Reeser Jr—p 101  
 Pulmonary Congestion and Edema in Cardiac Failure W C Blake—p 104

## Illinois Medical Journal, Chicago

86 81-128 (Aug) 1944

- Test of Labor W C Danforth—p 90  
 Reconditioning Program for Disabled Soldiers H C Lueth—p 93  
 Filariasis: Public Health Aspects and Prognosis J W Firoved—p 97  
 Diagnosis and Treatment of Anorectal Diseases in Station Hospital E H Quandt—p 99  
 Reponsibility of Physician in Industrial Practice C D Selby—p 117

86 129-180 (Sept) 1944

- Care of Cleft Lip and Palate in Babies L W Schultz—p 138  
 Treatment of Varicosities Involving Internal Saphenous Vein J T Grant—p 159  
 Colic Due to Crystalluria S W Raymond—p 162  
 Medical Management of Jaundice F Steigmann and H Popper—p 164  
 Recent Data on Health Hazards in War Industries W J McConnell—p 170



## Journal of Clin Endocrinology, Springfield, Ill

4 287-356 (July) 1944

- \*Pork Adrenal Cortex Extract Effect on Carbohydrate Metabolism and Work Capacity in Addison's Disease C M MacBryde and F A de la Balze—p 287
- Growth and Treatment of Dwarfs and Grunts Leona M Bayer—p 297
- Sexual Infantilism in Females Causes Diagnosis and Treatment I Wilkins and W Fleischmann—p 306
- Perineal Absorption of Progesterone and Androhydroxyprogesterone II Clinical Evaluation R B Greenblatt—p 321
- Evaluation of Method for Measuring and Survey of Urinary Excretion of Weakly Phenolic Ketone Fstrone in Endocrine Disorders L C Reifstein Jr and Eleanor T Dempsey—p 326
- Embryology of Sexual Structure and Hermaphroditism R R Greene—p 335

**Pork Adrenal Cortex Extract in Addison's Disease**—MacBryde and de la Balze describe studies with pork adrenal cortex extract for Addison's disease. This extract has for the first time provided a means of restoring the carbohydrate metabolism to normal. The authors made studies on 7 patients with Addison's disease, which reveal that pork adrenal cortex extract has a direct action on carbohydrate metabolism and that this action is greater than that of beef adrenal cortex extract. One cc of the pork extract (in oil) represents approximately the same survival growth potency (40 rat units) as 10 cc of beef extract (aqueous). When given intramuscularly in these proportions, usually in doses of 2 cc and 20 cc respectively the pork extract tends to correct the blood sugar abnormalities of Addison's disease while beef extract exerts comparatively little such effect. In 7 patients with Addison's disease the pork adrenal cortex extract produced (1) increased absorption of glucose from the gastrointestinal tract, (2) prevention of hypoglycemia after food or glucose intake or as the result of prolonged fasting (this apparently is accomplished by increasing the glucose output from the liver), (3) increased utilization of glucose by the tissues as indicated by higher capillary and lower venous blood sugar and greater arteriovenous differences, (4) increased muscular work capacity and (5) adequate control of salt and water metabolism as well as of carbohydrate metabolism when given in small doses daily. The greater proportional effect of pork adrenal cortex extract is apparently due to its higher content of the steroids having an O or OH on C<sub>11</sub> such as corticosterone and 17-hydroxy-11-dehydrocorticosterone (Kendall's compound E). The extract seems not only to mobilize glycogen from the liver but also to increase the utilization of glucose by the muscles. This is contradictory to the conclusions of some workers who have interpreted the higher blood sugars produced in animals by cortex extracts as evidence of decreased carbohydrate oxidation. The results obtained by the authors favor these conclusions. Rather than exerting anti-insulin activity, physiologic amounts of the cortical carbohydrate hormone work synergistically with insulin to promote carbohydrate utilization; the cortical hormone causes release of glucose from the liver, the higher blood sugar then causes increased insulin secretion, which results in greater arteriovenous difference in the blood sugar in consequence of greater utilization by the muscles.

## Journal of Immunology, Baltimore

49 129-192 (Sept) 1944

- Sulfathiazole Acetaldehyde Sodium Disulfite in Experimental Group C Streptococcal Infections T T Foley, Jeanne A Epstein and S W Lee—p 129
- Semliki Forest Virus I Isolation and Pathogenic Properties K C Smithburn and A J Haddow—p 141
- Id II Immunologic Studies with Specific Antiviral Sera and Sera from Humans and Wild Animals K C Smithburn, A T Mihailoff and A J Haddow—p 159
- Influence of Age on Susceptibility of Mice to Infection with Certain Neurotropic Viruses E H Lennette and H Koprowski—p 175

## Journal of Nervous and Mental Disease, New York

100 229-342 (Sept) 1944

- Studies on Virus Nature of Infectious Agent Obtained from Four Strains of Neurotropic Alpha Streptococci E C Rosenow—p 229
- Principle of Compensation of Nervous Function W Riese—p 261
- Variations in Structure of Motor Nerve Endings in Skeletal Muscle of Rabbits W B Dublin—p 275
- Sleep Paralysis with Report of 2 Cases P Chodoff—p 278
- Indexing of Psychiatric Records for Clinical Use and Research F J Doty—p 282
- Longevity Changes Characterizing Transition from Civilian to Military Life C B Chow—p 289

## Medicine, Baltimore

23 215-280 (Sept) 1944

- Hemoglobin Plasma Protein and Cell Protein Their Interchange and Construction in Emergencies G H Whipple and S C Madden—p 215
- \*Pathogenesis of Cushing's Syndrome P Hembeker—p 22
- Aerobic Nonhemolytic Streptococci Critical Review of Their Characteristics and Pathogenicity with Special Reference to Human Mouth and to Subacute Bacterial Endocarditis T Roeburn—p 249

**Pathogenesis of Cushing's Syndrome**—Hembeker presents clinical studies in 6 cases of Cushing's syndrome as well as experiments on dogs. In 5 of the cases the hypothalamus was available for study. Hyalinization of basophil cells was found in all 5. In 4 changes in the hypothalamic nuclei particularly the paraventricular nuclei, were noted. In none of these 4 was an adrenal tumor present. In the fifth case in which a malignant adrenal tumor was found at necropsy no hypothalamic lesion was present. In the sixth case an adrenal tumor was removed at operation but the brain was not available for study. Dogs with an experimental lesion of the hypothalamus involving areas similar to those found involved in 4 cases exhibiting Cushing's syndrome show definite loss of basophil cells, with degenerative changes in the remaining basophil cells in the hypophysis. In such animals changes occur in the thyroid, in the gonads and in the islets of the pancreas of a type which serves to explain many of the symptoms of Cushing's syndrome. Experimental evidence is offered to show that at least two of the primary lesions could be expected to cause a disturbance of lipid metabolism characterized by an accumulation of fat and cholesterol in the adipose tissue of certain regions of the body. In dogs with complete or partial bilateral destruction of the caudal portions of the paraventricular nuclei there is just such an infiltration of fat and cholesterol into tissues such as the skin, the muscles, the liver and the walls of the blood vessels as occurs in persons exhibiting Cushing's syndrome. The author thinks that the conclusion now seems permissible that either an adrenal tumor or hypofunction of the paraventricular hypothalamic nuclei may be primary causes of the basophil degeneration which in turn is the immediate cause of many of the typical findings of Cushing's syndrome. Evidence is presented to suggest that the hypothalamic dysfunction may lead to hyalinization of the basophil cells through an increased effectiveness of the hormone secreted by the adrenal cortex. In this way a common pathway for influencing the hypophysis is found for the various primary disturbances which lead to Cushing's syndrome.

## New England Journal of Medicine, Boston

231 243-376 (Sept 7) 1944

- Paget's Disease Its Pathologic Physiology and Importance of This in Complications Arising from Fracture and Immobilization I C Reifstein Jr and I Albright—p 343
- Eosinophilic Infiltration of Lungs (Loeffler's Syndrome) S H Jones and C H Souders—p 356
- Iodine Sodium Therapy in Experimental Wounds Disease D I Augustine, D Weinman and John McAllister—p 355
- Thoracic Surgery J W Strieder—p 360

**Paget's Disease**—Reifstein and Albright call attention to the occurrence of acute atrophy of bone as a complication of Paget's disease. The bone lesions of Paget's disease are not generalized but spotty in their distribution. This fact alone is strong evidence against the disturbance being on an endocrinologic or metabolic basis. The initial lesion of Paget's disease is bone destruction, the cause of this being entirely obscure. The resultant weakness of the involved bones renders them less resistant to stresses and strains, and this leads to a stimulation of the osteoblasts and an overproduction of bone. In the skull where there are fewer stresses and strains one frequently encounters bone destruction divorced from the overproduction of bone (so called acute Paget's disease of the skull). The repair of bone by the osteoblasts is never completed, since the localized initial disorder causing bone destruction apparently persists. There results alternating destruction and repair of bone, which eventually leads to the pathognomonic mosaic structure. This mosaic appearance is due to the irregular cement lines each one of which demarcates a place where bone

destruction temporarily ceased and bone repair began. The increased bone destruction and bone repair seen in Paget's disease are closely similar to those seen throughout the skeleton in the osteitis fibrosa generalisata of hyperparathyroidism. There is one important difference in osteitis fibrosa generalisata that bone is destroyed which can best be spared, in Paget's disease bone is destroyed without regard to structure. If a bone containing Paget's disease is immobilized, as after a fracture, the lack of stress and strain, in all probability abetted by the alarm reaction of Selye, curbs the overactivity of the osteoblasts, and the serum phosphatase level, an index of bone formation, falls. The initial disturbance causing bone destruction persists. There results imbalance between bone destruction and bone formation. The increased calcium and phosphorus coming from the bone leads to hypercalciuria and hyperphosphaturia. The capacity of the kidney to excrete calcium may be overtaxed, with a resulting hypercalcemia, if fluids are not forced, if the diet is not kept low in calcium and if immobilization is not kept at a minimum, a so-called chemical death from hypercalcemia may supervene. The authors describe studies on 2 patients with Paget's disease who sustained fractures. The aforementioned chain of events up to and including the hypercalcemic stage took place in these cases.

#### 231 377-404 (Sept 14) 1944

Psychiatric Casualties of War and Their Treatment W. Overholser —p. 377

Potassium Bicarbonate Adjunct to Chemotherapy in Pneumonia Complicating Cardiac Decompensation, Preliminary Report J. Ohlmy and W. Q. Wolfson —p. 381

Fulminating Meningococcemia: Demonstration of Intracellular and Extracellular Meningococci in Direct Smears of Blood W. P. Boger —p. 385

Thoracic Surgery (concluded) J. W. Strieder —p. 388

**Potassium Bicarbonate and Sulfonamides in Pneumonia**—Ohlmy and Wolfson utilized the diuretic effect of potassium and the alkalinizing effect of its bicarbonate in treating patients with severe heart damage who were receiving sulfadiazine for pneumonia. They found that patients so treated drink somewhat more liquid than do those given sodium bicarbonate, but they excrete almost twice as much urine and eliminate over 250 cc more of retained fluid each day. By promoting excretion of retained water and sodium potassium facilitates the reestablishment of cardiac composition. The authors give potassium bicarbonate to all patients whose cardiovascular status is classified as grade 3 or 4 whenever they receive sulfonamides. Its use is being extended to milder cases as prophylaxis against decompensation. Ten Gm is given with the initial dose of sulfonamide and 25 Gm every four hours thereafter until twenty-four hours after discontinuance of chemotherapy. Although apparently of low toxicity, potassium bicarbonate is not used when severe renal impairment or adrenocortical insufficiency is suspected.

**Fulminating Meningococcemia**—Boger observed meningococci by direct examination of the peripheral blood smear in a case of fulminating meningococcemia that may also have been a case of the Waterhouse-Friderichsen syndrome. A woman aged 27 had been perfectly well until eight hours before admission when she appeared to have influenza. Four hours later when a blood specimen was taken, several petechiae were noted on the forearm. The following morning the patient complained of severe pains in the muscles and joints and presented a generalized purpuric rash. A blood specimen was taken for culture and examination and at the same time 10 Gm of sodium sulfadiazine was given intravenously. The temperature was 103 F, the pulse rate 110 and the respiratory rate 24. The white cell count revealed 99 per cent neutrophils. Some of the polymorphonuclear cells were found to contain phagocytized gram negative diplococci. Extracellular organisms were also observed. At noon the patient was given a 500 cc transfusion. Antimeningococcus serum was not available. Four cc of adrenal cortex extract was given intramuscularly. The purpuric spots enlarged and new petechiae appeared. That evening intracutaneous extravasations too large to be covered by the outspread hand were present over the thorax and the extremities, and extravasations of smaller size were present on the face. The patient could not be roused. She gradually went into a state of vasomotor collapse and died. Permission for necropsy was

not granted so that doubt remains whether there were adrenal hemorrhages. The diplococci seen in the blood smears were cultured from the blood stream and found to be meningococci. The Waterhouse-Friderichsen syndrome is an overwhelming septicemia that produces purpuric subcutaneous extravasations and bilateral adrenal hemorrhages. Although meningococcal infections usually produce this syndrome, overwhelming sepsis due to other organisms occasionally gives rise to similar adrenal hemorrhages. Not all patients who die with the clinical picture of the Waterhouse-Friderichsen syndrome present adrenal hemorrhages. Hence it seems ambiguous to use the term 'recovery' in speaking of the Waterhouse-Friderichsen syndrome, since the adrenal hemorrhages can be inferred only if the patient recovers. Clinically the term "fulminating meningococcemia" seems preferable to "Waterhouse-Friderichsen syndrome" and the latter should be restricted to pathologic discussions.

#### New York State Journal of Medicine, New York

44 1839-1950 (Sept 1) 1944

Treatment of Infection with Particular Reference to Peritoneum S. C. Harvey —p. 1853

\*Role of Penicillin in Treatment of Compound Fractures G. K. Carpenter and K. F. Mech —p. 1886

\*Prophylaxis and Therapeutics of Clostridial Infections (Gas Gangrene) A. H. Dowdy, R. L. Sewell and J. G. Vincent —p. 1890

History of Drinking Habit in 400 Inmates of Penal Institution with Special Consideration of Personality and Prognosis P. Wenger —p. 1898

Voice and Breathing Disabilities Following Thyroid Surgery C. C. Heyd —p. 1905

Human Tooth Injuries O. C. Hudson —p. 1910

**Penicillin in Compound Fractures**—Carpenter and Mech state that the compound fracture is the major problem in the orthopedic casualties returned to this country. Efficient first aid, plasma, blood transfusions, the sulfonamides and the open wound treatment have served to minimize infection and mortality. Penicillin is a more effectual antibacterial agent than the sulfonamides in both the prevention and the cure of infection. It has likewise proved valuable in the prevention of reinfection following reconstructive operative procedures. This factor has made it possible to perform major surgery sooner after complete wound healing than had been the case with the use of the sulfonamides. Penicillin therapy must be recognized and accepted as an adjunct only in the management of a surgical problem. Penicillin cannot replace a well planned surgical program. Penicillin assumes the role of only an effective antibacterial agent in the treatment of compound fractures.

**Clostridial Infections (Gas Gangrene)**—Dowdy and his associates investigated gas gangrene in more than 1,400 dogs in which the disease was experimentally produced. A variety of agents have been tested, such as roentgen therapy, subcutaneous and intramuscular oxygen, sulfadiazine, sulfathiazole, sulfanilamide, penicillin and pentavalent antitoxin. The infectious agents were virulent cultures of *Clostridium perfringens*, *Clostridium septicum*, *Clostridium novyi* (two strains) and *Clostridium sordelli*, employed either singly or in combination. The combined clostridial inoculums, in addition, contained a strain of *Staphylococcus aureus*. Experimentally, sulfadiazine has proved to be extremely efficacious in its prophylactic use against *Cl. perfringens*, *Cl. septicum* and *Cl. sordelli* infections in dogs when the disease is produced by individual pure cultures and when produced by a mixed culture of these same organisms contaminated by *Staph. aureus*. None of the sulfonamides were found to be effective against the disease when produced by *Cl. novyi*. Therapeutically sulfadiazine is far less effective, but from their limited clinical use of this drug the authors feel that it has been of value. Experimentally penicillin and pentavalent gas gangrene antitoxin are both powerful therapeutic agents. The latter is the more valuable of the two if used late in the disease because of its toxin neutralizing effect. Antitoxin must be used in large amounts and the entire dose given within a relatively few hours. The possibility of an anaphylactoid reaction must be borne in mind. The patient should be tested for sensitivity and if he is sensitive desensitization should be carried

out During the period of desensitization, sulfadiazine or penicillin should be used, preferably the latter. The authors found no contraindication to combined therapy with all three of the agents discussed. Rather, they have an additive effect.

### Northwest Medicine, Seattle

43 219-241 (Aug) 1944

- Alarming Increase in Incidence of Foreign Bodies in Tracheobronchial Tree B L Titus—p 222  
Thyroiditis A J Bowles—p 225  
Oblique Fractures of Both Bones of Lower Leg L H Edmonds—p 227  
Carbon Tetrachloride Poisoning T E P Gocher—p 228  
Facial Deformity and Change in Personality Following Corrective Surgery C M Mackenzie—p 230  
Absence of Daily Rhythm of Growth of Malignant Neoplasms W B Dublin—p 232

43 243-270 (Sept) 1944

- Group Psychotherapy in Military Medicine F J Hamilton—p 247  
Evaluation of Ectopic Pregnancy W J Reich and H E Silverman—p 252  
Photocentgen Surveys of Industrial Workers in Washington L M Farner and E H Laws—p 255  
Sedimentation Rate as We See It in Laboratory A VanDell—p 256  
Impalement of Rectum Case Report L R Hutchins—p 258  
Swallowed Lead Bullet T W Houk—p 259  
Medical Etymology H H Kretzler—p 260

### Oklahoma State Medical Assn Jour, Oklahoma City

37 339-384 (Aug) 1944

- Analysis of Modern Treatment of Severe Burns C K Drinker—p 339  
Public Health Aspects of Infantile Paralysis G F Mathews—p 346  
Significance of Abnormal Spinal Fluid Findings in the Diagnosis and Treatment of Neurosyphilis W E Graham—p 349

37 385-434 (Sept) 1944

- Modern Concepts in Treatment of Syphilis C B Taylor—p 385  
Ruptured Intervertebral Disk A H Ungerman—p 388  
Rheumatic Fever C H Hall—p 391  
Some Laboratory Phases of Clinical Diagnosis I H Nelson—p 394

### Public Health Reports, Washington, D C

59 1131-1162 (Sept 1) 1944

- \*Influenza Epidemic of Winter of 1943-44 in United States Preliminary Summary Dorothy F Holland and S D Collins—p 1131

**Influenza Epidemic in Winter of 1943-1944**—Holland and Collins report an outbreak of a mild type of influenza which started in Minnesota and the Great Lakes region about the middle of November 1943. From the North Central region the epidemic spread eastward to New England, the Middle Atlantic states, Kentucky, Virginia, West Virginia, Delaware and Maryland, outbreaks being reported subsequently in the Mountain and Pacific states, the Southeast (Central and Atlantic) and, finally, the West South Central states. The Army as well as the civilian population experienced the epidemic. The tendency of influenza to occur in pandemic form "in cycles with intervals of several decades" led to concern that the 1943 outbreak might assume the characteristics of the 1918 pandemic. This apprehension was increased by the fact that in November, when the first indications of an outbreak were observed in this country, influenza had already attained epidemic proportions in England and Wales. However, the sharp rise in influenza deaths in the 126 large cities of England and Wales in November and December was found to be due not to the virulence of the causative organism but to a high case incidence. The subsequent course of the outbreak in the United States as well as the experience of other countries gives no evidence of a recurrence of the severe type of influenza observed in the 1918 pandemic. Characteristic features of the disease were the sudden onset, moderate prostration fever and general pains, followed by great weakness. The duration was between three and five days. The laboratory evidence indicates that the outbreak was probably largely due to influenza virus A. The death rate from all causes during an influenza epidemic is an especially significant measure of its severity, the excess mortality relative to that in a nonepidemic period representing deaths associated with the epidemic. They found that for a group of ninety large cities the mortality from all causes in excess of the normal expectancy during the eleven weeks from Nov 21, 1943 to Feb 5, 1944 amounted to 50 per hundred thousand of population. This

figure may be compared with total excess rates from all causes for a group of thirty-five large cities of 65 per hundred thousand for the epidemic of 1928-1929, 48 for that of 1926, 50 for that of 1923, 34 for that of 1922, 125 for the epidemic of 1920 and 598 for the pandemic of 1918-1919. Thus the current outbreak was larger than any epidemic since 1928-1929 but caused only about 8 per cent as many excess deaths in the United States as the 1918 pandemic. An interesting feature of the epidemic in England and Wales was the action taken to relieve the acute shortage of civilian medical personnel. An arrangement was made for the deferment from induction into the services of some 300 junior house physicians. In addition, the Royal Army Medical Corps made available hundreds of army doctors to assist in the care of influenza cases among civilians, representing the first instance of such cooperation between military and civilian medical personnel.

### Radiology, Syracuse, N Y

43 213-318 (Sept) 1944

- \*Adenoma of Bronchus Clinical and Roentgenologic Study with Report of 7 Cases T Lowry and L G Rigler—p 213  
Iodinated Organic Compounds as Contrast Media for Radiographic Diagnosis III Experimental and Clinical Myelography with Ethyl Iodophenylundecylate (Pantopaque) T B Steinhausen C E Dunigan J B Furst J T Plati S W Smith A P Darling and E C Wolcott Jr with S L Warren and W H Strain—p 230  
Id IV Pantopaque Myelography G H Ramsey J D French and W H Strain—p 236  
Myelography with Pantopaque and New Technique for Its Removal W G Scott and L T Inrrow—p 241  
Radiation Therapy of Lymphoid Tissue in Nasopharynx and Pharynx H H Ashbury—p 250  
Roentgen Treatment of Lymphoid Tissue in Nasopharynx S J Hawley—p 254  
Quantitative Study of Effect of Temperature on Sensitivities of X-Ray Screens and Films R H Morgan—p 256  
Roentgen Diagnosis of Hypertrophic Pyloric Stenosis in Infants H W Hefke—p 267  
Castration for Advanced Malignant Growth A Short Historical Review with Case Report W E Howes—p 272  
Leukemia in Radiologists H C March—p 275  
Leukemia in Mice Following Exposure to X Rays P S Henshaw—p 279  
Industrial Radiation Hazards C B Braestrup—p 286

**Adenoma of Bronchus**—Bronchial adenoma is a true tumor and the associated bronchiectasis, rather than being the cause of the growth, results from the long-standing obstruction of a bronchus. The most generally held view is that bronchial adenomas arise from the duct epithelium of the bronchial mucous glands. The adenoma is a smooth, round or oval, pinkish tumor. The intrabronchial growth is frequently polypoid and may be pedunculated. In some instances, however, it is flat, sessile and attached by a broad base. There is often extension through the bronchial wall, with formation of an extrabronchial mass which may be larger than the intrabronchial portion. Although adenoma of the bronchus almost always remains benign as far as lethal metastasis is concerned, its effects on the lung are extremely serious and in many instances ultimately cause death. The tumor grows slowly and gradually occludes the bronchus. During this process repeated infections occur distal to the obstruction, and sooner or later the portion of lung involved is destroyed by recurring suppuration. Bronchiectasis is regularly produced and more acute infectious processes such as suppurative pneumonia, pulmonary abscess and empyema may occur and eventually prove fatal. A diagnosis of bronchial adenoma is usually easily established by roentgenologic and bronchoscopic examination, once the condition is suspected. The chief reason for differentiating between bronchial adenoma and bronchiogenic cancer is that adenoma of the bronchus has a prognosis quite different from that of cancer and therefore permits the employment of a more conservative plan of therapy in properly selected cases when radical resection would be attended by a great risk. Seven cases are presented to illustrate (a) the typical clinical features of intrabronchial adenoma (b) bronchial adenoma with an extrabronchial mass, (c) the various types of roentgen examination used in the diagnosis, (d) the value of body section roentgenography in the delineation of the tumor and in following the effects of treatment and (e) the results of various types of therapy in the several cases namely no treatment, local extirpation and pulmonary resection.

## Surgery, Gynecology and Obstetrics, Chicago

79 225-336 (Sept.) 1944

- \*Fractures of Carpal Scaphoid in Canadian Army: Review and Commentary. J. C. Dickson and J. G. Shannon—p. 225
- Calcium Changes in Acute Pancreatic Necrosis. H. A. Edmondson and C. I. Berne—p. 240
- Experimental Studies in Peripheral Nerve Surgery. I. Effect of Sulfonamide Drugs on Experimental Gunshot Wounds Involving Peripheral Nerves. L. Davis, G. Perret and W. Carroll—p. 245
- Id. II. Effect of Sulfonamide Drugs on Regeneration of Peripheral Nerves. I. Davis, F. Hiller, G. Perret and W. Carroll—p. 250
- Periosteal Dislocation of Carpal Bones and Dislocation of Lunette Bone. W. R. MacAusland—p. 256
- Injuries of Vertex of Skull with Special Reference to Paracentral Lobules of Brain. J. R. Green and F. Odberg—p. 267
- Vaginal Hysterectomy: Evaluation of Gelfhorn-Emmert Modification of Dickinson Technique in 600 Cases. F. V. Emmert—p. 277
- Surgical Experiences with Abdominal Wounds in North African Campaign. E. L. Rohlf and J. M. Snyder—p. 286
- \*Vagotomy in Therapy of Peptic Ulcer. V. A. Weinstein, R. Colp, I. Hollander and E. E. Jernern—p. 297
- \*Surgical Treatment of Corrosive Gastritis. K. A. Meyer and F. Steigmann—p. 306
- Hook Traction Under Zygomatic Arch in Cervical Spine Injuries. W. T. Peyton, H. B. Hill and L. A. French—p. 311
- \*Posterior Mediastinal Gorter. J. M. Mora, H. J. Isaacs, S. H. Spencer and L. Edidin—p. 314
- Cosmetic Method of Operating on Varicose Veins. B. Hejduk—p. 318
- Sulfonamides as Adjunct to Treatment of Compound Fractures. G. V. Foster—p. 323
- Clinical and Laboratory Evaluation of Action of Sulfonamide Ointments. J. R. Cochran—p. 326

**Fractures of Carpal Scaphoid**—Dickson and Shannon present the results of a study of 257 cases of fractured carpal scaphoids occurring in approximately three years in the Canadian army overseas. The most common fracture is a transverse one through the body of the bone, usually occurring at the waist or the center of the body. The statistical analysis of the 257 cases shows that 196 involved the waist of the scaphoid, 38 involved the proximal pole and 23 involved the tubercle. The most important problem of fracture of the scaphoid is early diagnosis. The authors analyze the results of treatment with regard to the time of diagnosis. Fractured scaphoid diagnosed early and properly treated will almost invariably unite. By proper treatment is meant reduction of displacement, if present, and uninterrupted immobilization with the wrist in extension and radial deviation until union occurs. It is probably true that a fractured scaphoid never unites if left untreated. Will such fracture if left untreated invariably lead to a painful wrist in later life? Some patients carry on for long periods with only a minimum of discomfort. Some are symptom free for a long period, and when injured a second time their symptoms are relieved by a short period of immobilization. That some of them develop disability in later life is undoubtedly true. How to obtain union consistently in these late diagnosed fractures within a reasonable time is still an unsolved problem. Immobilization was often unsuccessful in the cases presented in this report. The criticism might be made that the immobilization was not carried on long enough. There is danger of persisting in this form of treatment too long without evidence of progress toward union. Complete or partial excision is of no use in these fractures. Union may be obtained by a grafting operation, but this is difficult. The late fracture with degenerative arthritis is an arthritis problem and must be treated as such. Union of the fracture will not relieve the symptoms, and palliative treatment is all that can be offered, fusion of the wrist being the last resort and warranted only by severe disability. The patient with a fractured scaphoid may be able to carry on his occupation during the long period of treatment. Often, however, this is impossible and there is serious economic loss.

**Vagotomy in Peptic Ulcer**—Weinstein and his collaborators report 6 clinical cases in which vagotomy was performed either alone or in conjunction with some other operative procedure. Most of these cases had not responded to ordinary measures. In 3 cases the lesion was a gastrojejunal ulcer following partial gastrectomy, in 2 it was a duodenal ulcer, and in 1 there existed severe functional complaints without demonstrable organic lesion. In only 2 cases was complete vagotomy attempted, but in neither of these was it achieved. The validity of the insulin test as an index of persistent vagal innervation

was upheld by the studies in these cases. In none of the cases was evidence of beneficial therapeutic effect obtained. Gastric vagotomy alone cannot be recommended as a therapeutic procedure.

**Corrosive Gastritis**—Meyer and Steigmann state that the surgeon usually sees these patients when they begin to suffer from the sequelae of corrosive gastritis. These sequelae are manifested by symptoms of pyloric obstruction. Since they may not be evident until many months following the intake of a corrosive substance, the patients often do not associate their present symptoms with the past mishap. Therefore the patient should be asked directly as to a possible intake of a corrosive substance. The history is of great importance in corrosive gastritis, because except for the history of ingestion of a corrosive substance there is rarely any other way by which it can be diagnosed before operation. In many instances the diagnosis may not be made by the surgeon even at operation if he is not aware of such a condition. It is important to differentiate between corrosive gastritis and carcinoma not only from the point of view of prognosis but also from the point of view of treatment as corrosive gastritis requires different preparation and operation. In many cases of corrosive gastritis two stage operations may be necessary, i. e. primary jejunostomy and secondary gastroenterostomy at a later date, while in carcinoma this is rarely advisable. The patient with corrosive gastritis does not present an emergency case and all possible measures should be taken to build him up before surgery is undertaken. Gastroenterostomy rather than resection may be done, as the dangers of secondary gastrojejunostomy ulceration are minimal since there is no free acidity. Patients with corrosive gastritis have to be prepared carefully and for a long time, if necessary, by jejunostomy feedings, for the final operation on the stomach. In some cases with very small fundic pouches "sham feedings" have to be given in order to distend this portion sufficiently to permit the gastroenterostomy. The authors present representative histories of 4 patients with corrosive gastritis seen at the Cook County Hospital.

**Posterior Mediastinal Gorter**—Partially intrathoracic gorters occur relatively often. Completely intrathoracic gorters are much rarer. The rarest of the intrathoracic gorters is the type found in the posterior mediastinum. Only 6 such cases have been previously recorded. The case here reported by Mora and his associates is the seventh to be recorded. A woman aged 55 was admitted to the hospital in November 1942 complaining of increasing weakness, nervousness, palpitation and weight loss. She had not been feeling well for about eight years, having noted increasing fatigue on slight exertion, profuse perspiration, heat intolerance and tremor of the fingers. From time to time she would have bouts of nervousness, weakness, irritability and palpitation. She had been studied by several doctors, all of whom found on x-ray examination of the chest a large shadow occupying the right upper lung field. She was advised to do nothing about this mass. Examination by the authors disclosed tremor of the fingers, basal metabolic readings between +45 and +51 and a large globular mass occupying the right upper thoracic cavity, on lateral views this mass was seen to lie in the posterior mediastinum. The diagnosis at this time was thyrotoxicosis, and the mass was believed to be a large intrathoracic gorter. At operation the neck was opened through the usual collar incision and the strap muscles were separated. Preliminary exploration revealed no thyroid tissue in the neck. On further dissection a small cystic lobe was found on the left, just at the superior thoracic aperture. This was easily removed. On the right, a thin attenuated pole was found just below the level of the first rib, this was secured and divided between ligatures. On further exploration a large mass was encountered posteriorly, lying entirely within the thoracic cage. On careful finger dissection, hugging the margins of the mass and with gentle traction upward, the tumor was gradually freed. A hemostat was then plunged into the mass, and the liquid and jelly-like contents were removed by suction. This procedure permitted narrowing of the transverse diameters of the thoracic gorter, following which it was easy to deliver the entire mass. The patient was discharged in good condition on the tenth postoperative day. One year after operation the basal metabolic rate was +6.

## FOREIGN

An asterisk (\*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

## British Journal of Ophthalmology, London

28 429-480 (Sept.) 1944

Contribution to Study of Anophthalmia, with Description of Case  
T Rogalski—p 429

\*Study of 84 Cases of Delayed Mustard Gas Keratitis Treated with  
Contact Lenses Ida Mann—p 441

Note on Rosettes Nature and Nomenclature of Gloma Retinae  
E Wolff—p 448

Virus Ophthalmia Neonatorum A Sorsby Elizabeth E Hoffa and  
Elizabeth N Young—p 451

Incomplete Avulsion of Eye Report of Case I C Nicholson  
—p 458

Gas Mask Wafer for Presbyopia W O G Taylor—p 461

**Delayed Mustard Gas Keratitis**—Since 1937, when the condition of delayed mustard gas keratitis was first beginning to be recognized, Mann has examined a relatively large number of cases. 84 have passed through the contact lens clinic at Moorfields. All the patients gave a history of exposure to mustard gas in 1917 or 1918. The diagnosis was made on the history and on the finding of the typical mustard gas scars with corneal degeneration, varicose conjunctival and corneal vessels and avascular scars on the interpalpebral conjunctiva. The patient does not generally connect the delayed keratitis with the exposure to gas. Most of them did not notice anything until the ulceration stage began. Only 8 of the patients stated that the sight of one or both eyes had never been so good as before the gassing and that they had had some sort of eye trouble ever since. The recurring ulcers heal but tend to leave faceted scars, which gradually diminish visual acuity. Repeated attacks and a slowly deteriorating visual acuity, relieved by wearing contact lenses, is typical of roughly 46 per cent of the cases. What their subsequent fate will be is not yet known. That wearing contact lenses does not entirely prevent breakdown and further deterioration of sight seems certain, but it is equally certain that in a number of cases retention of visual acuity and continuance in work has been made possible for many years. Patients with mustard gas lesions usually have very good tolerance for contact lenses, both on account of the relative insensitivity of their corneas and on account of the vast improvement in visual acuity, which acts as a spur to success. Thirty-nine of the 84 patients wear the lenses with comfort during the working day. Of these 39 patients 20 have had relapses since wearing the lenses. Thirteen of these have had far fewer relapses than before wearing the lenses. Small shallow ulcers heal fairly quickly with mild mydriatics and heat. Deeper ulcers, discharging cholesterol and fatty debris from the base, take longer to heal and may require tarsorrhaphy. Superficial plaques, raised from the surface, of degenerative material may mechanically interfere with the wearing of a contact lens and should be scraped off.

## British Journal of Urology, London

16 35-80 (June) 1944

Diagnosis and Treatment of Infections of Male Genital Organs Other  
Than Tuberculosis and Gonorrhea J C Ainsworth Davis—p 35

Notes on Topography of Congenital Kidney Malformations T Zondek  
—p 41

## British Medical Journal, London

2 233-262 (Aug 19) 1944

\*Scurvy Survey of 53 Cases R B McMillan and J C Inglis  
—p 233

Urterial Reactions and Desensitization in Allergic Recipients After  
Serum Transfusions Kate Maunsell—p 236

\*Incidence of Bleeding Gums Among R A F Personnel and the Value  
of Ascorbic Acid in Treatment W P Stamm T F Macrae and  
S Yudkin—p 239

Incidence of Gingivitis in Royal Air Force G A Smart—p 242

Rupture of Aortic Aneurysm into Duodenum J E Morrison—p 244

**Scurvy**—McMillan and Inglis review observations on 53 patients with scurvy. There were 48 men and 5 women. The patients ranged in age from 41 to 82 years. 43 were over 65. The disease observed was typical bachelor's scurvy. There were three root causes. First and most important was ignorance, mainly in men of the need for potatoes and vegetables

in the diet. Second was apathy leading to neglect of the same items because they required preparation and cooking. Third was poverty, making it impossible to buy an adequate diet or live anywhere but in the worst type of lodging with poor cooking facilities. The first factor was not so significant in peacetime, as many countered it by eating fruit. Wartime scarcity of fruit without a compensatory increase in the intake of potatoes and vegetables resulted in such persons developing scurvy. It is suggested that as long as the scarcity of fruit exists the concessions at present enjoyed by children and expectant mothers should be extended to the elderly. Clinically the only unusual complaint was lumbago which probably was the result of small deep hemorrhages in the muscles of the back. Although in no patient was the blood picture completely normal in some it was nearly so, and agreement is reached with the opinions of others that (a) anemia and scurvy need not coexist in man (b) when they do coexist the anemia often bears no relation to the extent of the hemorrhages or the plasma ascorbic acid content and (c) the anemia is varied in morphologic type being mainly normocytic. The authors suggest that the anemia of scurvy is due to a complex deficiency, with vitamin C acting only as an adjuvant.

**Bleeding Gums and Ascorbic Acid**—Stamm and his associates investigated the incidence of bleeding gums in the Royal Air Force and aimed to assess the value of ascorbic acid in the treatment of this condition. All personnel available were examined, except those already taking ascorbic acid, those being treated for acute ulcerative gingivostomatitis and those with no teeth. All those included in this experiment had been living on service rations for six months or more. The gums of the lower jaw were examined for bleeding after digital massage. Alternate members of the group with bleeding gums were given ascorbic acid tablets and dummy tablets flavored with tartaric acid. The dose of ascorbic acid was 200 mg daily for seven days, followed by 100 mg daily for fourteen days, the dummy tablets were similar in appearance and taste and were given in similar numbers. At the end of the experimental period all subjects given ascorbic acid and dummy tablets were reexamined. The original notes were not available to the examiner so that he could not be influenced by his previous observations or by a knowledge of which tablets had been given. The ascorbic acid content of the food served to the airmen in the messes was determined by the dichlorophenol-indophenol technique. The average amount of ascorbic acid present in the food served to airmen was 25.8 mg per man daily during October and November 1941 and 16.8 mg during March 1942. On examination of 2,962 personnel, 588 (19.8 per cent) were found to have some degree of bleeding of the gums, a similar incidence being found in the autumn and spring and at each of the stations. No greater improvement in the gum conditions was obtained by treatment with ascorbic acid than with control tablets. Observation of 600 personnel over a six weeks period showed that there was a large normal variation in the degree of bleeding of the gums, irrespective of treatment. Those having "sponginess" as well as bleeding of the gums showed no greater improvement with ascorbic acid treatment than with dummy tablets. Patients' personal opinions as to the efficacy of treatment bore no relation to the objective signs.

2 263-296 (Aug 26) 1944

Psychologic Medicine and the Family Doctor R D Gillespie—p 263

\*Episode of "Homologous Serum Jaundice" W H Bradley J F  
Loutit and Kate Maunsell—p 268

Late Results of Closed Intrapleural Pneumolysis P W Edwards,  
A C Penman and J Logan—p 270

High Tone Deafness in School Children Simulating Mental Defect  
Mary D Sheridan—p 272

Explosive Outbreak of Hemolytic Streptococcal Tonsillitis on an  
R A F Station T S Wilson—p 275

Treatment of Rheumatoid Arthritis with Bismuth A H Douthwaite  
—p 276

**Homologous Serum Jaundice**—According to Bradley and his associates the occurrence of jaundice in man after the administration of human blood products is now a well recognized phenomenon. The jaundice which is of hepatic origin is readily distinguished from the hemolytic icterus which may arise immediately after transfusion with incompatible blood or out of date stored blood. Clinically it is similar to if not



indistinguishable from, epidemic hepatitis (catarrhal jaundice), but the incubation period is unusually long—commonly from two to three months, in contradistinction to the twenty to forty day period in epidemic hepatitis. A high incidence of this jaundice has been observed among 71 subjects during the course of an investigation into allergic reactions to human serum. All these subjects received pooled human serum from a single batch (No 034). Subsequently icterogenicity was confirmed by the results of the deliberate administration of this batch to 4 volunteer patients with rheumatoid arthritis in whom it was desired to produce jaundice for therapeutic reasons. Forty-seven subjects received intradermal skin tests with batch 034. Nine subjects received intradermal skin tests and serum transfusions with batch 034. Nineteen received skin tests or transfusions or both with batch 034 and, in addition, tests or transfusions with other human material. Of these, 7 were allergic subjects, 8 were nonallergic controls and 4 were the patients with rheumatoid arthritis. All except 2 subjects were followed up for at least one hundred and fifty days after exposure. Of the 47 patients who had received batch 034 only as skin tests, 26 developed jaundice. Similarly, of the 9 who had batch 034 only as skin tests and transfusions 5 developed jaundice. Of the 19 patients who received other materials as well as batch 034, 11 developed jaundice. The authors point out that the cases of jaundice in the present series had been regarded as "catarrhal jaundice" and the association with the administration of blood products was at first not recognized. The diagnosis of homologous serum jaundice was established only by the follow-up. Jaundice occurred in 57 per cent of the persons exposed. The dose of homologous serum administered varied from 0.1 to 1,200 cc. The severity of the disease was not related to the dosage of serum given or to the route of administration.

### Journal of Endocrinology, London

4 1-102 (July) 1944

- Artificial Induction of Lactation in Bovine by Subcutaneous Implantation of Synthetic Estrogen Tablets. S. J. Folley and F. H. Malpress—p. 1.  
Fracture of Pelvic Bones in Bovines Implanted with Tablets of Synthetic Estrogens. A. T. Cowie—p. 19.  
Artificial Induction of Lactation in Bovines by Oral Administration of Synthetic Estrogens. S. J. Folley and F. H. Malpress—p. 23.  
Chemical Composition of Bovine Mammary Secretions Induced by Subcutaneous Implantation or Oral Administration of Synthetic Estrogens. S. J. Folley and F. H. Malpress—p. 37.  
Experiments on Use of Tablets Containing 50 per Cent Hexoestrol for Artificial Induction of Lactation in Bovine. S. J. Folley, D. L. Stewart and F. G. Young—p. 43.  
Estrogen Treatment of Cattle Induced Lactation and Other Effects. J. Hammond Jr. and I. T. Day—p. 53.  
Estrogen Excretion in Milk from Estrogenized Cattle. W. Lawson, S. W. Stroud and P. C. Williams—p. 83.  
Induction of Lactation in Heifers by Single Injection of Esters of Diethylstilbestrol. A. S. Parkes and R. E. Glover—p. 90.

### Lancet, London

2 231-264 (Aug 19) 1944

- Year of Military Medicine in India. A. W. D. Leishman and A. R. Kelsall—p. 231.  
Wounds of Joints. H. Fruchaud—p. 235.  
\*Acridines in Septic Wounds. Use of 5-Aminoacridine. H. R. G. Poate—p. 238.  
Talocalcaneal Articulation. T. W. Jones—p. 241.  
Air Embolism in Criminal Abortion. D. Teare—p. 242.  
Estimation of Thiouracil in Urine. A. B. Anderson—p. 242.  
Orthopedic Anesthetics. B. G. B. Lucas and I. A. G. L. Dick—p. 243.  
Primary Tuberculous Infection in Nurses. Manifestations and Prognosis. M. Daniels—p. 244.

**Acridines in Septic Wounds.**—According to Poate 5-aminoacridine is stainless, is stable in solution, has a  $pH$  of 6 and is innocuous to human tissues in 1:1,000 solution. In an Australian general hospital 5-aminoacridine was chiefly used but 2:7-diaminoacridine was also tested. The latter was not favored in the wards because of its staining propensity. Both these acridines were applied as powders (alone or with sulfanilamide) and in solutions of varying strength, but finally 1:1,000 became the standard concentration. When there was a pyocyanous infection 2 per cent acetic acid was added. To get the best results all sequestrums and sloughs must be removed, drainage of deep wounds must be efficient, immobilization of fractures must be adequate and the patient's hemoglobin must be kept as near normal as possible. Closed plaster treatment

was abandoned. The effect of the two acridines was that the wounds soon became surgically clean, healthy granulations promoted rapid healing. All purulent discharge ceased within a few days, thus relieving the patient of a continuous drain on his tissue proteins. As a result, transfusions were no longer necessary, appetite returned and patients put on weight. In no case treated by these two acridines was there a gravitational abscess, secondary hemorrhage or cellulitis. The authors review clinical experiences with 5-aminoacridine and 2:7-diaminoacridine in 120 cases, including 24 suppurating gunshot wounds of bone. The results have been very good. In all but 5 cases sepsis was immediately controlled. For general use in wards 5-aminoacridine is preferred because it does not stain fabrics and tissues. Where there is gross established sepsis, the wound may be irrigated with an aqueous solution of 5-aminoacridine (1:1,000) through Carrel tubes. For other purposes an emulsion may be made, or acridine in powder form may be mixed with sulfanilamide (1:10 to 1:40). Recent wounds associated with compound fractures have been treated with this powder after debridement and then closed by primary suture. 5-aminoacridine seems to be particularly effective against hemolytic staphylococci and appears to favor bone repair.

### Arch. Urug. de Med., Cir. y Especialid., Montevideo

24 305-420 (April) 1944. Partial Index

- Röntgen Study of Intestinal Tuberculosis. A. Rodriguez—p. 305.  
Excision of Cancer of Thoracic Esophagus. V. Armand Ugon, J. M. A. Leguisamo and R. Armand Ugon—p. 363.  
\*Rh Factor. D. Invernizzi—p. 396.

**Rh Factor.**—Invernizzi states that the percentage of positive distribution of the Rh factor is greater in mestizo people, Indians and colored people than in white people. The proportion is from 93 to 99 per cent in the former and 85 per cent in the latter. The presence of the Rh factor in the erythrocytes is determined by the reaction of 0.01 cc. of a 2 per cent solution of erythrocytes in isotonic solution of sodium chloride containing 0.02 cc. of anti-Rh serum, after contact of both constituents in a test tube for one hour in the water bath at a temperature of 37°C. Fresh blood is used because of the fact that the Rh factor is easily destroyed in the erythrocytes. A positive macroscopic reaction is shown by rugosities in the border of the globular sediment in the test tube. Moderate positive reaction with moderate agglutination is observed microscopically. Specimens of well known positive Rh and negative Rh blood are used as control tests. Repeated transfusion of blood from Rh positive donors to Rh negative individuals may provoke anti-Rh agglutinins in the blood of the latter. A test is performed after repeated transfusions for ascertaining the presence of isoimmunization or lack of it before further transfusion. The danger of post-transfusional reactions is acute in pregnant women who may have developed a condition of isoimmunization through the presence of the Rh factor in the blood of the fetus. The hydropic, acute icteric and congenital anemic forms of erythroblastosis fetalis are due to the presence of the Rh factor in the infant's blood. The condition may be found in one of two twins and not in the other in cases of heterozygotic transmission of the Rh factor by the father. The author advises use of negative Rh blood for transfusion to infants with any type of erythroblastosis fetalis, as well as to mothers of erythroblastic infants and when repeated blood transfusions are given. Plasma should be used in emergencies.

### Revista Clínica Española, Madrid

12 363-444 (March 30) 1944. Partial Index

- \*Pernicious Anemia and Hepatic Cirrhosis. M. R. Castex, E. S. Mazzei and J. Remolar—p. 378.  
New Aspects in Therapy of True Anthrax. M. Gomez Fresno—p. 426.

**Pernicious Anemia and Hepatic Cirrhosis.**—Castex and his collaborators describe two types of macrocytic hyperchromic anemia complicating liver cirrhosis. One type is that of pernicious-like anemia. It is a frequent complication of liver cirrhosis and disappears on liver therapy. The second type is a true pernicious megaloblastic anemia of the Biermer-Addison type. It is a rare complication of liver cirrhosis and does not respond to liver therapy. It has an acute course and fatal prognosis.



## Book Notices

**X Ray Examination of the Stomach** A Description of the Roentgenologic Anatomy Physiology and Pathology of the Esophagus Stomach and Duodenum By Frederic E Templeton MD Head of the Department of Roentgenology the Cleveland Clinic Cloth Price \$10 Pp 116 with 297 illustrations Chicago University of Chicago Press London Cambridge University Press 1944

The time devoted to the x-ray examination in diseases of the digestive tract often seems to be in inverse ratio to the importance of the procedure. In this admirable book the technique of a detailed, painstaking search for abnormalities of the esophagus stomach and duodenum, done with full consideration for the serious consequences which may result from the interpretation of the findings, is portrayed. This is a monograph representing essentially the experience of the author and his colleagues at the University of Chicago, but there are numerous quotations from the literature, and the bibliography is extensive. The most valuable portion of the book is the detailed description of the methods of x-ray examination of the upper digestive tract, with particular attention to the "filming fluoroscope." The technique of fluoroscopy is well described and illustrated by means of films exposed under fluoroscopic guidance. The descriptions of the normal variations of these structures and most especially of the physiology and pathology of the esophagus are especially instructive. The grouping together of the abnormalities of the esophagus, stomach and duodenum under such headings as inflammations, ulcer and neoplasm rather than treating each individually is somewhat forced, as the x-ray manifestations of the pathologic conditions of these organs are not especially similar. Likewise the placement of the section on differential diagnosis at the end of the book far removed from the original descriptions makes for some repetition. The illustrations are abundant, well chosen and well reproduced. Few exceptions can be taken to the author's conclusions. The designation of the term "phytobezoar" rather than "trichobezoar" for a hair ball is obviously an oversight. The contributions of Lewis Gregory Cole to the x-ray examination of the digestive tract are insufficiently stressed. The book suffers from the author's lack of sufficient experience or reluctance to offer an opinion when he has not had personal contact with a method or a problem. These criticisms are minor. The book as a whole is one of the finest contributions to roentgenologic diagnosis in the past decade and should be read assiduously by every physician who has interest in the diseases of the upper digestive tract.

**Conference on Tuberculosis Isolation** Sponsored by the California State Department of Public Health Held at Los Angeles March 20 1943 [Editor Edward Kupka MD] Paper Various pagination 105 angles [n d]

This mimeographed, paper bound release is a virtually complete summary of the conclusions of the Conference on Tuberculosis Isolation sponsored by the California State Department of Public Health at Los Angeles on March 20, 1943. It is an effort to mobilize public opinion in support of the legal requirement not common in many states providing for enforced isolation of tuberculous patients with open lesions who fail or refuse to heed their responsibilities for preventing the spread of infection. Experience in Los Angeles County and the opinions of health officers, judges sanatorium personnel and representatives of the state attorney general's office are set forth at length. This report should be valuable to tuberculosis control officers and, to a lesser extent, should be of interest to the voluntary tuberculosis associations.

**First Hospitals in Tulsa** By Fred S Clinton MD FACS Reprinted from The Chronicles of Oklahoma Vol XXII Number 1 1944 Paper Pp 28 with illustrations Oklahoma City 1944

The author has preserved for the Chronicles of Oklahoma the story of the first hospitals in Tulsa, beginning in 1900 when the city had a population of only 1390. It is principally a story of three hospitals in whose establishment and development the author had an active and directing part. The first was organized in 1900 a six room isolation cottage necessitated by the occurrence of a smallpox epidemic. Six years later the Tulsa Hospital Association was formed and a general hospital established which also brought to this community the first training

school for student nurses. The third hospital included in this historical account the Oklahoma Hospital was chartered Dec 11 1915. Other early hospitals are also mentioned with the hope that other writers of local history will at some future time furnish an extended account of the contributions and services of these institutions.

In writing this article the author has drawn from his own experiences and records and has also introduced documentary evidence of many of the events of this early hospital period. His work is of interest not only from a historical point of view but as a record of hospital problems and needs that occur in a new and growing community.

**Dust Hazards in Australian Foundries** By A A Ross B Sc and N H Shaw B Sc Technical Report No 1 Industrial Welfare Division Department of Labour and National Service Commonwealth of Australia Paper Pp 45 Melbourne 1943

This pamphlet gives the results of a study of the dust hazards in the various processes in Australian foundries sets up standards of permissible dust limits as determined by the Owens jet dust counter and makes recommendations for control in those operations found to have an unsafe concentration of dust. The review of the literature is merely that supporting the occurrence of pathologic changes in the lungs from exposure to industrial dusts. The authors discuss the recognized limitations of the Owens jet dust counter as compared to the Greenburg-Smith impinger. They apparently reached the conclusion that the practicality of the former outweighed whatever inaccuracies it may have after studying atmospheric conditions with both around the various foundry processes. They state that there was no definite correlation in the findings of the two, however, they do give standards of dust concentration as determined by the Owens jet dust counter which they feel are within safe limits for exposure of the workmen. They arrived at the inevitable conclusion that environmental conditions in Australian foundries as pertaining to dust should be improved.

**Twenty Second Hospital Yearbook 1944** Hospital Purchasing File Directory of Hospital Products Manufacturers Catalogs Editorial Reference Section Twenty second edition Boards Price \$2.50 Pp 91. Chicago Modern Hospital Publishing Co Inc 1944

This is an excellent reference book on hospital buying. It has an extensive directory of hospital products covering 360 pages with supplementary catalogues on clinical and scientific apparatus, general furnishings, food service equipment, laundry facilities and supplies, construction materials and plant equipment. An editorial reference section contains comprehensive check lists and other valuable information essential in the planning of hospital departments and services. The administrative officers and departments of hospitals will find this book a valuable and convenient source of reference. Its usefulness is further enhanced by a complete index of catalogues and advertisements, an alphabetical list of manufacturers and distributors and lists of hospital associations and national agencies serving the hospital and allied fields.

**Handbook of Nursing in Industry** By M Cray Macdonald RN Cloth Price \$2.50 Pp 226 Philadelphia & London W B Saunders Company 1944

This is a textbook of moderate detail dealing with the various functions of the nurse in industry. The descriptions and discussions in the twenty-six chapters include those phases which should be included in a well rounded program. Special attention is called to the modifications of a program in a bank, department store, restaurant and a mill village. The philosophy and practical experience of the author add materially to the stature of the book. It should find wide use in the added emphasis that is being given to industrial health education for nurses both graduate and undergraduate.

**Red Lights on the Horizon** By H Ameroy Hartwell Boards Price \$1 Pp 22 Illustrations by Gladys Richerick Boston Bruce Humphries Inc 1944

Here is a new poem by Dr Hartwell calling attention to the early signs and symptoms of disease. Whether or not this is the best technique to cause patients to see their physicians for early diagnosis is a matter of considerable doubt. Nevertheless the author must have had a good deal of pleasure in writing the poem.

## Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS BUT THESE WILL BE OMITTED ON REQUEST.

### DEFECTIVE SPEECH AND POSSIBLE LEFT HANDEDNESS

**To the Editor**—A 5 year old girl who appears to be normal in every other respect has a tendency toward left handedness and defective articulation. The flow of speech is smooth but she substitutes y for i, d for sch or g and w for r. Thus Mary had a little lamb becomes in her rendition 'Mawy had a yitta yamb the red school bus becomes the wed dool bus' and a green choir becomes a "deen" one. I once heard a professor of physiology who was afflicted with stammering attribute his difficulty to his being left handed but compelled to use his right hand thus interfering with the speech center of Broca. When the child under consideration is eating she is seen to carry the fork sometimes in her left hand sometimes in her right. Because of the observed tendency for her to use her left hand would it be advisable as a preliminary to attempting to correct her defective articulation, to encourage her to use her left hand as the dominant one? Any other suggestions as to methods of correcting her speech will be appreciated.

M. D., Alaska

**ANSWER**—It is not unusual for children of 5 to demonstrate this type of defect. Some children, although normal in other respects, are slow in learning the language skills—perhaps because of a slower maturation of the language centers of the cerebrum. They will often, as the child in question apparently does, substitute simple speech sounds for the more complex or sounds made at the front of the mouth for sounds made farther back. (Sight plays an important role in the acquisition of speech and the child usually learns first the sounds whose essential movements can be easily seen and imitated, for example p, b, m, w. Conversely, he learns last the sounds whose essential movements are made farther back in the mouth and cannot be easily seen, such as r, k, g, ng.)

The tendency to ambidexterity may or may not be significant. It would be best to make no attempt to establish the dominance of one hand. Given time the child will no doubt do this herself. In regard to correcting the speech defect, a daily period of speech drill is recommended. The defective sounds should be isolated and pronounced alone until the child can produce them correctly. Later they can be incorporated into simple sound combinations and eventually into familiar words and phrases.

### THYROID OR PITUITARY DEFICIENCY

**To the Editor**—A girl of 18 is overweight and losing her menses there is almost no flow and occasionally she skips a month. The basal metabolic rate is -23. If this case is one of pituitary origin is there any treatment and cure? She will receive some thyroid medication. Is it true that in a pituitary case cancerous changes always develop later in the abdomen or pelvis?

M. D., New Jersey

**ANSWER**—It is difficult to decide whether irregular and scanty menstruation, obesity and a low basal metabolism are due to thyroid deficiency or pituitary disorder without having other information. Usually the determination of serum cholesterol would be helpful, since in thyroid deficiency not under thyroid treatment the cholesterol will be well above normal levels but in pituitary deficiency cholesterol is below the normal upper limits. It may be wise to try thyroid cautiously with basal metabolism check, to use a carefully limited diet to control the weight and gonadotropic pituitary or pregnant mare's serum concentrate may be tried subsequently if this does not show a distinct tendency to correction of the difficulty.

There is no known reason to suspect that pelvic or abdominal malignant disease would follow in case this is a pituitary deficiency.

### FOUL TASTE IN MOUTH DURING PREGNANCY

**To the Editor**—Two years ago I rendered obstetric care to a patient who developed an intense foul taste in the throat in the third month of gestation and this persisted until a day after delivery. Careful investigation of the sinuses, nose, mouth and throat proved negative. The patient is again pregnant and after six weeks gestation has this same intense foul taste. Medication has not alleviated it. I would appreciate an opinion.

M. D., New York

**ANSWER**—The search for an organic cause of the poor taste in the mouth should include a careful examination of the teeth. Decay in a tooth is often the focus of a bad taste. If no cause is found a mouth wash of dilute hydrogen peroxide or 5 per cent potassium chlorate may help to control the discomfort. In rare instances the cause may be psychic in origin and little can be done toward its therapy.

### OSTEOCHONDROSIS OF NAVICULAR (KÖHLER'S)

**To the Editor**—A girl aged 2 years in good health, began to stumble, fall and walk unsteadily with a limp in the left leg. Complete investigation revealed no abnormalities excepting x-ray finding of irregularity and condensation of the left navicular consistent with the diagnosis of osteochondrosis or Köhler's disease. Could you advise concerning current opinion as to etiology, therapy and prognosis?

Jack H. Tabor, M.D., Dailey, W. Yo

**ANSWER**—In the large majority of cases of Köhler's disease, or osteochondrosis, of the navicular bone, there is little pain or disability. A thorough search should be made to determine if there is any other existing condition which could account for the stumbling, unsteady walk and limp. The treatment of Köhler's disease is simple surgery should not be done. About all that one can do is provide a little support in the shoe to hold up the longitudinal arch. Saddler's felt or piano felt pasted in the shoe is as good as anything.

### TESTING FOR ALLERGY TO CATGUT

**To the Editor**—I have come across several patients whom I have suspected of being sensitive to catgut. With the help of the allergy department I made up solutions of plain and chromic catgut in the following manner: I allowed a strand of each type of catgut to soak in absolute alcohol in the proportions of 10 to 1 for forty-eight hours. The allergist then made me several dilutions of 1:100, 1:10 and full strength using Coca's solution as a diluent. I tested several patients with these solutions and obtained 2 plus reactions in several. However on further control testing I found that the absolute alcohol itself causes a similar reaction. New solutions were then made up by soaking the catgut in Coca's solution for several days without the alcohol and so far all my intradermal tests have been negative. Would you kindly tell me if an adequately potent extract of catgut can be obtained by the latter method of using just Coca's solution?

M. D., North Carolina

**ANSWER**—Catgut is specially prepared tendinous tissue. This is not soluble in water or neutral saline solution. Allergy to catgut, therefore, is presumably due to the presence of minimal amounts of soluble proteins in improperly prepared catgut. To obtain a solution of this material the catgut might be scraped with a razor blade or sharp edge of a broken piece of glass. The finer the shavings, the more likely soluble material may be obtained. The fine shavings may then be soaked in 0.2 per cent sodium carbonate for several hours or over night. A mechanical shaker or grinding in a mortar will help. After filtering, the solution should be neutralized with diluted hydrochloric or acetic acid to a pH of about 7.0. It may be necessary to keep the material slightly alkaline, i.e., about 7.4, in order to avoid precipitation of the protein obtained by extraction. Therefore only a small portion of the solution should be neutralized at first to determine the pH at which precipitation begins. The rest of the solution should be neutralized to a point where no precipitation will occur.

Phenol is then added as a preservative to a concentration of 0.5 per cent. After this the material is filtered through a Seitz or Berkefeld filter for sterility. The material must then be tried on a half dozen normal patients to make sure that it is not a primary irritant which will produce false positive reactions when 0.02 cc is injected intradermally. If it proves to be irritating it should be diluted with isotonic solution of sodium chloride to make a 1:10 or 1:100 dilution as necessary, to avoid any primary irritating properties.

### LEUKOPENIC INDEX IN ALLERGY

**To the Editor**—I have only recently read Dr. L. P. Gay's article about the leukopenic index in *The Journal* of March 21, 1936. Please inform me if subsequent events have shown the leukopenic index method to have as much practical value as was hoped for. If so is there any later helpful article available on the subject that gives further information on the method?

R. D. Holt Jr., M.D., Meridian, Texas

**ANSWER**—The technique, pitfalls and value of the "leukopenic index" in allergy are adequately discussed by the late Dr. Warren T. Vaughan in his book "Practice of Allergy," St. Louis, C. V. Mosby Company, 1939. Vaughan first suggested the leukopenic index as a method of study of food allergy. It is a modification of part of the liver function test suggested by Widal and his co-workers. In his discussion (chapter XXII, pp. 228-244) Vaughan gives the technique in minute detail, emphasizing the care required and the many possibilities for error. He also mentions, though briefly, those workers who found the leukopenic index unreliable and of no clinical value (Loveless et al., Brown et al., Hill et al.). His final sentence in this discussion, written in 1939 is as follows: "We must conclude that the leukopenic index is still in the experimental stage and cannot be discussed at this time as a routine diagnostic procedure in allergy." Most allergists would agree that this sentence today in 1944 is a fair summary of the degree of usefulness of the leukopenic index. Fewer allergists make use of it today than six years ago.

# The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL 126, No 14

CHICAGO, ILLINOIS  
COPYRIGHT 1944 BY AMERICAN MEDICAL ASSOCIATION

DECEMBER 2, 1944

## SOME AIMS OF AN ANESTHESIOLOGIST

CHAIRMAN'S ADDRESS

PAUL M WOOD, M D  
NEW YORK

Full and permanent recognition of the anesthesiologist as a practicing physician depends on the accomplishment of several major aims. Among these are an adequate supply of physicians competent to render complete service in anesthesiology to every patient, establishment of adequate education in this subject in all medical schools, dissemination of accurate information about the specialty, assumption of full responsibility by the anesthesiologist as a physician and the development of economic security for the practitioner.

The armed forces realize the value of the physician in this special practice. They have established special teaching centers where medical officers are being instructed to become the directors and teachers in the larger units.

Is there a place for anesthesiologists in the postwar plan? In 1941, of 5,700 hospitals reporting anesthesia services, only 2,750 had a physician in charge. If all doctors received basic instruction in this field, that situation would not exist.

The American Board of Anesthesiology has certified 233 physicians in the specialty. The American Society of Anesthetists has certified more than 200 of its 1,700 members as Fellows in Anesthesiology. It is self evident that there is an immense postwar opportunity in this field, which is definitely undermanned at present.

Basic teaching of the subject in all approved medical schools must be established. At present there are a few excellent active required junior and senior medical student courses being given. Others are listed but are inactive, and many schools do not provide courses in this subject. In war curriculums few interns receive sufficient clinical experience and still fewer any personally supervised instruction in this specialty. More approved residencies must be established in this field if the major aim of the anesthesiologist is to be realized. In order to obtain the proper educational facilities for this specialty, a genuine demand must be aroused. This can be done by individual and organized efforts to inform the medical, hospital and lay public of the many important and varied services available by the qualified anesthesiologist. Every medical graduate should receive sufficient basic instruction so that he may intelligently deal with problems in anesthesia. Such instruction is

required for all medical students in England and Canada. This would eliminate the necessity of many hospitals having to rely entirely on a limited technical anesthesia service.

For economic reasons hospital managements have been too satisfied with the mere technical service of nonmedical employees. This deprives the patients of many valuable services. The nonmedical anesthetist who may have technical ability cannot practice medicine and thus cannot perform many of the duties of the anesthesiologist. Nominal supervision by a physician the graduate of a medical school giving no instruction in the basic principles of anesthesiology and of an internship giving meager clinical experience is a farce and a subterfuge. The anesthesiologist must be competent to direct, conduct and teach anesthesia in all its forms, including inhalation therapy and resuscitation. He must assume and accept full responsibility and maintain his professional integrity. There must be an intimate personal relationship between patient and anesthesiologist in the interest of safety, efficiency and responsibility.

The assumption of full responsibility and the maintenance of the personal relationship of doctor and patient require a type of remuneration in keeping with the private practice of medicine. The current practice of physician anesthesiologists accepting salaried positions with hospitals tends to impair the personal relationship and divide or remove responsibility. The status of the physician may then be reduced to that of a hospital employee, with loss of prestige, incentive to better work and freedom of action. His judgment may be regulated by economic rather than by medical concepts. Responsibility is of the utmost importance in medical practice. Those who shirk responsibility should not expect to enjoy the privileges, respect or rewards of the medical profession.

It is to be regretted that the federal government, in its effort to secure greater economic benefits for all, did not include this specialty in its postwar planning board. Efforts must be continued to secure proper representation there, so that relocation and logical distribution of qualified anesthesiologists may be assured. With the sociologic trend to greater social security, the status of the specialty has been placed in jeopardy. It is acknowledged that hospital service plans have benefited both the lay public and the physician. Hospital service and medical service are distinct and should so remain.

Organized anesthesiology can assist its members by its postwar planning committees, by establishing fellowships, research facilities, libraries and postgraduate refresher courses. It can establish and develop cooperation with the various educational, medical, surgical and hospital groups. It should be relentless in demand-

Read before the Section on Anesthesiology at the Ninety-Fourth Annual Session of the American Medical Association, Chicago, June 15, 1944.

ing adequate instruction in anesthesiology for every physician and suitable postgraduate instruction for the specialist. This education must extend from medical student days, through internship and residency. Organized anesthesiology must inform the medical, hospital and lay public that in striving for these aims its final goal is to provide competent, safe and efficient service in anesthesiology for every patient.

131 Riverside Drive

## DIAGNOSIS OF HERNIATION OF LUMBAR INTERVERTEBRAL DISKS BY NEUROLOGIC SIGNS

J. JAY KEEGAN, MD

OMAHA

A new concept of neurologic manifestations of herniation of lumbar intervertebral disks has been presented in two preceding publications<sup>1</sup> which clarify the clinical interpretation of this condition. The practical application of this knowledge is important in the general practice of medicine and a brief review with additional information is herewith presented.

Since the initial stimulating publication in 1934 by Mixter and Barr,<sup>2</sup> who demonstrated herniation of intervertebral disk by intraspinal injection of iodized oil and surgical exploration, there have been many contributions to the subject with increasing emphasis on the frequency of the lesion and localization by means of neurologic signs. There remained, however, lack of clear definition of the symptoms and signs of single nerve root compression by the common herniation of the nucleus pulposus of a lower lumbar disk. The symptoms caused by this herniation are those which in the past have been called "lumbago" and "sciatica," terms which now are recognized to have little meaning except general location of the pain.

Careful study of the history in cases of proved herniated disk rather constantly elicits the story of preceding episodes of "lame back," with or without a sudden "slip" sensation under stooping lifting strain. These attacks now are recognized to represent beginning softening and loosening of the nucleus pulposus within the disk, with posterior shift and stretch of the enclosing ligament (fig 1). The patient has pain located in the lower lumbar region, usually not lateralized, although he may list to favor one side, and he cannot straighten his back well because of the pain.

Theoretically, this early posterior displacement of the nucleus pulposus within the disk should be replaceable by proper manipulation, as it has not yet herniated in sufficient degree to be fixed in its position. Actually, many of these nucleus pulposus dislocations have been replaced by various maneuvers under the guise of doing something else. The orthopedic surgeons have massaged and manipulated for "strained ligaments and myofascitis," neurologists have "stretched the sciatic nerve" and osteopaths and chiropractors have "replaced dislocated vertebrae" and "released pinched nerves," with some element of success in all measures. The reason for

success in cases of herniated disk has been the occasional accidental replacement of the nucleus pulposus to its normal central position or the subsidence of acute inflammatory swelling and size of the herniation with passage of time.

A general physician, Dr. A. W. Abts,<sup>3</sup> recently reported to me, half apologetically, that "he was relieving by manipulation the great majority of patients who came to him with very sudden acute disabling low back pain which caused them to assume a trunk-thigh flexion deformity favoring the affected side. Pain is characteristically localized over the lower lumbar area and the symptoms are produced often by very slight provocation, such as stooping to pick up an article from the floor or stooping of any kind. The manipulation is done with the patient lying on his back, both legs extended (fig 2). The first maneuver is to flex the leg acutely on the thigh and the thigh on the abdomen, at first cautiously a few times on the least affected side, then more suddenly and forcibly. The second maneuver is forceful full extension of the leg by combined kick of the patient and pull with the operator's hand on the ankle. This procedure then is repeated on the more affected side, repeating one to ten times as seems needed by report of relief by the patient. This is noted by the ease with which the patient can extend the leg on the table or can be determined more certainly by having the patient stand, when he can walk erect and is able to bend forward without pain. No support is needed for the patient who is treated the same day of the onset of symptoms, and he may resume work. The patient who is treated a few days after the onset has overlapping adhesive tape applied to the lower lumbar region and is advised against his usual activity for three or four days. This manipulation is not original, but the source by reference cannot be found at the present time." This manipulation would first open the posterior disk border, favoring restoration of the nucleus, and the sudden longitudinal jerk would widen the entire disk and tend to suck the partly herniated nucleus back to its normal central position. Other maneuvers might work as well, particularly if muscle relaxation were obtained by anesthesia. But manipulative treatment should be predicated on the assumption that the great majority of these sudden back "slips" with following lameness are posterior displacement of the nucleus pulposus and not other somewhat hypothetical pathologic conditions.

True herniation of the nucleus pulposus occurs when the enclosing annulus is ruptured and sufficient amount of fibrocartilage escapes through the opening beneath the posterior longitudinal ligament to produce an intraspinal tumor and pressure on a nerve root (fig 3). This rupture may occur suddenly or gradually, the distinguishing sign being the appearance of definite unilateral nerve root compression symptoms, usually described by the patient as aching in the "hip" or superior midgluteal region and variable sharper pain radiating down the posterior thigh and calf, so-called "sciatic" pain.

Several factors are involved in this common nerve root compression by an intervertebral disk herniation. The rather constant location of the herniation on the posterior surface of the disk to one side of the midline, directly beneath an emerging nerve root leads to early compression of a single nerve root. In most persons the spinal canal is considerably flattened or narrowed at the lumbosacral junction, which leads to earlier com-

From the Department of Surgery, Service of Neurological Surgery, University of Nebraska College of Medicine.

1. Keegan J. Jay. Dermatomyalgia Associated with Herniation of Intervertebral Disk. *Arch Neurol & Psychiat* 50: 67 (July) 1943.  
Neurosurgical Interpretation of Dermatomyalgia with Herniation of Lumbar Intervertebral Disk. *J Bone & Joint Surg* 26: 238 (April) 1944.

2. Mixter W. J. and Barr J. S. Rupture of the Intervertebral Disk with Involvement of the Spinal Cord. *New England J Med* 211: 210 (Aug 2) 1934.

3. Abts A. W. Manipulation for Acute Lame Back. personal communication to the author.

pression here of the nerve root against the overlying ligamentum flavum and lamina. Some persons have a much larger spinal canal than others and may have many episodes of low back trouble without definite nerve root symptoms, as displacement of an unrestricted overlying nerve root is not likely to cause much nerve root pain. The nerve root is fixed laterally as it enters the intervertebral canal, and there is a tendency for the somewhat medial herniation to compress the nerve root in the narrow lateral angle of the spinal canal beneath a special lateral portion of the ligamentum flavum.

This part of the ligamentum flavum deserves a separate description and name, for it is not a part of the true ligamentum flavum between laminae but a deeper very dense ligament extending between the base of articular processes. In surgical exploration for herniation of the fifth lumbar disk (fig 4) this ligament appears as a

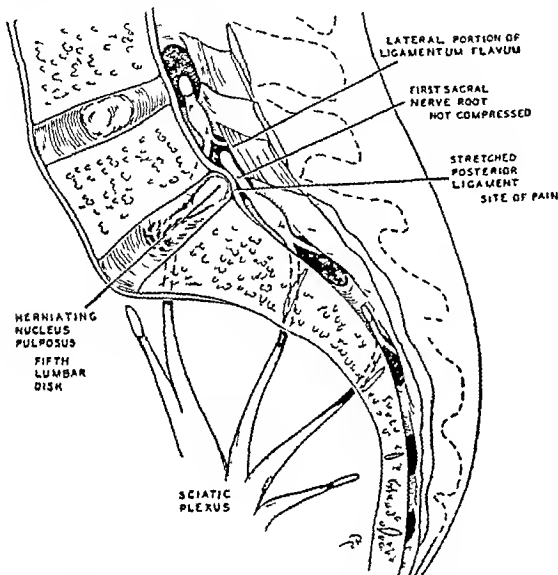


Fig. 1—Early herniation of nucleus pulposus of fifth lumbar disk giving rise to low back pain without nerve root radiation

deep lateral longitudinal band after the ligamentum flavum attached to the first sacral lamina has been removed. This deep ligament, with suggested name of "interarticular ligament," must be removed before adequate lateral exposure and decompression of the nerve root and herniation can be obtained.

The first and commonest complaint from nerve root compression by herniation of a lumbar intervertebral disk is pain in the "hip," the patient pressing deeply in the superior midgluteal region over the sacroiliac ligament or hip joint. This common location of pain in low back syndromes has had various interpretations the oldest being sacroiliac strain which now is recognized to occur very rarely. It has been called the superior gluteal nerve syndrome, although this nerve is entirely motor. Late myofascitis of the sacrospinalis and gluteal muscle attachments has been a popular diagnosis, or the piriformis and tensor fasciae latae muscles have been blamed. These rather hypothetical explanations have not been very well proved and have not well explained the later radiation of pain down the leg, for which the assumption of reflex pain or sciatic neuritis had to be added. In view of our present knowledge of the sequence in herniation of an intervertebral disk the most logical explanation for this "hip" or superior midgluteal pain is the first sensory contact of the posterior

primary division of the compressed nerve root against the overlying ligamentum flavum. The sensory distribution of this nerve division is to the gluteal area subjectively involved. The motor portion of the root lies anteriorly against the herniation while the central part of the root is formed by sensory fibers for the anterior primary division to the leg (fig 3).

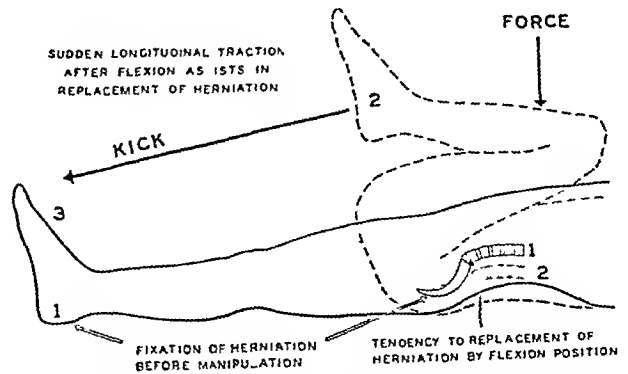


Fig. 2—Manipulation for reduction of early herniation of the nucleus pulposus of a lower lumbar intervertebral disk (used by Dr. Abts)

Greater compression of the nerve root involves the anterior primary division which joins four other roots to form the great sciatic nerve and supply sensation to the lower extremity (fig 5). It should be emphasized that each of the five roots forming the sciatic nerve represents a segmental sensory and motor distribution which is arranged in serial order as the dermatomes of the trunk. The difficulty in the leg is that this order of distribution is obscured by the extension and rotation of the leg in limb bud development and the fusion of the nerve roots in the sciatic plexus which makes single

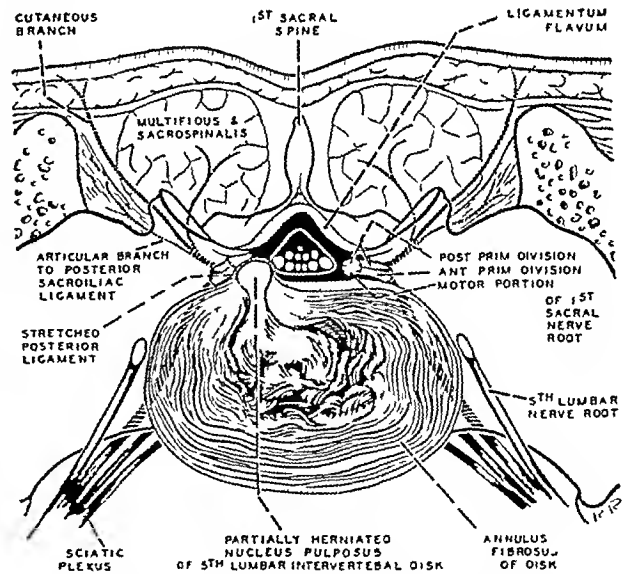


Fig. 3—Partial herniation of nucleus pulposus of intervertebral disk with rupture of annulus fibrosus stretch of posterior longitudinal ligament and compression of single nerve root causing low back and nerve root pain

root dissection to areas of skin and muscle impossible. This has led to confusion and a tendency to think and speak in terms of peripheral nerves instead of nerve roots to the extremity.

The great sciatic nerve, supposedly involved in "sciatica" or "sciatic neuritis" supplies sensation to a



large area of the lower extremity which includes the entire foot and most of the leg below the knee (fig 6). It is not likely that a true sciatic neuritis would select only one portion of this nerve and cause pain which is distributed only down the back of the thigh and calf and lateral ankle and foot as is the usual location in so-called

The pin scratch then is passed lightly from this area around the leg or foot until the patient reports by signal a definitely sharper area, which point is marked with ink. By repeating this procedure up and down the lower extremity a definite and constant dermatome pattern will be outlined by the patient, usually corresponding to one root of the dermatome chart presented in figure 7. The patient's almost startled response to increased pain at the border line is striking, even when there may be some question of difference when the pin is stroked independently in the different areas. The border reaction almost seems like hyperalgesia, but passing the pin in the opposite direction from the normal to the hypalgesic zone rarely elicits any increased pain reaction at the transition line. When the patient is asked to describe the difference in sensation in the hypalgesic and normal zones he usually states that, while the pin feels sharp in the hypalgesic zone, it is not disagreeably painful as in the normal zone. This is a fine degree of difference, although very definite to the patient, and necessitates careful control of very light pin point pressure, varying somewhat with thickness of skin and with individual patients who react differently to pain sensation. By this method, in over 80 per cent of cases with unilateral "low back and sciatic" pain suggestive of herniation of an intervertebral disk a characteristic dermatome strip of hypalgesia, in part or in full, can be outlined for one of the lower lumbar or first sacral nerve roots. This is diagnostic of direct single nerve root involvement, regardless of the cause, and is in disagreement with the dictum of Foerster<sup>5</sup> that "division of a single nerve root produces no loss of sensibility," and with both Foerster's and Head's<sup>6</sup> charts of the dermatomes of man. Confirmatory findings of continuous segmental innervation in the lower extremity have been noted by Richter and Woodruff, with lumbar sympathetic ganglionectomy and by Inman and Saunders<sup>8</sup> from the "scleroto-

mes" in deep tissue pain reaction. The nerve root most commonly compressed by a herniation of an intervertebral disk is the first sacral root by the fifth lumbar disk. There is varying opinion as to this frequency, most reports of large series of proved cases placing the figure over 50 per cent. In my series of 243 lumbar dermatome hypalgesia cases 145, or 59.7 per cent, were of first sacral nerve root distribution, 74 of them proved by operation, in comparison to 66 cases, or only 27.1 per cent, of the fifth lum-

5 Foerster O. The Dermatomes of Man. *Brain* 56:1 (March) 1933.  
6 Head H. and others. *Studies in Neurology*. London: Oxford University Press, 1920.  
7 Richter C. P. and Woodruff B. G. Changes Produced by Sympathectomy in the Electrical Resistance of the Skin. *Surgery* 10:957 (Dec) 1941.  
8 Inman V. T. and Saunders J. B. M. Referred Pain from Skeletal Structures. *J. Nerv. & Ment. Dis.* 99:660 (May) 1944.

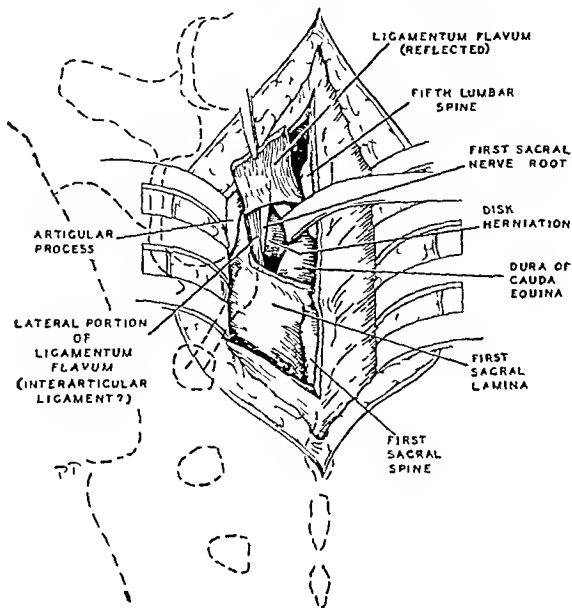
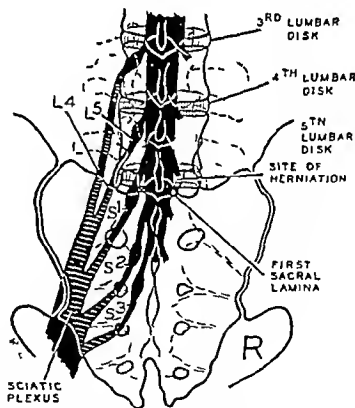


Fig 4—Surgical view of fifth lumbar disk herniation to show special lateral portion of ligamentum flavum. The first sacral nerve root lies beneath this ligament.

"sciatica." This distribution rather accurately is that of the first sacral nerve root, as proved in 72 cases of operation for herniated fifth lumbar intervertebral disk, reported in previous articles<sup>1</sup> and shown in figure 7 of this paper. The pain of fifth lumbar nerve root involvement, if a careful history is obtained, is found located by the patient more lateral on the thigh and leg, to the front of the ankle and the top of the foot and middle toes. Fourth lumbar nerve root pain is located definitely anterolateral on the thigh, over the knee cap and down the medial tibia to the great toe. Third lumbar root pain is to the anterior thigh and medial knee region. Occasional subjective numb or "asleep" sensation in these patients will be located even more accurately in the single nerve root distribution. Thus it is seen that a careful history alone will give fair indication of the single nerve root involved in compression by herniation of a lumbar intervertebral disk. This fairly reliable segmental distribution of pain has been reported by Kellgren<sup>4</sup> by injection of interspinous ligaments and from this a dermatome chart drawn.

More accurate nerve root identification can be determined by careful outlining of the nerve root areas of slightly reduced sensation, called dermatome hypalgesia, for each nerve root. This testing is not difficult, it is done by simple light pin scratch or prick which the patient identifies as differing degrees of sharpness, not numbness. First the dermatome area suspected by the pain distribution is tested and compared with the similar area on the other leg and with other areas on the same leg usually best in the calf or on the foot. A report of "not quite so sharp" identifies the hypalgesic area



DRAWING OVER ROENTGENOGRAM TO SHOW RELATION OF NERVE ROOTS TO LOWER LUMBAR DISKS

Fig 5—Drawing over a roentgenogram to show the relation of the five nerve roots of the great sciatic nerve to intervertebral disks and vertebrae.

4 Kellgren J. H. On the Distribution of Pain Arising from Deep Somatic Structures with Charts of Segmental Pain Areas. *Clin. Sci.* 4:33 (June) 1939.



bar root, 26 cases, or 107 per cent, of the fourth lumbar root and 5 cases, or 21 per cent, of the third lumbar root, as shown in the table. This great predominance of the first sacral nerve root syndrome is in agreement with the observation both by patients and by physicians that the commonest location of pain called

"sciatic" is down the posterior thigh and calf to the lateral ankle and foot, which accurately describes the first sacral nerve root distribution (fig 7).

Since the first sacral nerve root is so commonly affected in herniation of the fifth lumbar intervertebral disk, it is well to keep in mind some anatomic points of this region, which explain many peculiarities of this involvement (fig 5). The first sacral nerve root is rather long in its extradural course within the spinal canal, measuring 3 to 4 centimeters in length. It leaves the main dural canal above the fifth lumbar disk and courses well lateral in the flattened spinal canal of the first sacral region. The sensory ganglion of the root lies beneath the first sacral lamina below the disk, and hence herniation compresses the nerve root proximal to the sensory ganglion and distal to the motor gan-

Fig 6—Peripheral sensory distribution of the great sciatic and small sciatic nerves in the lower extremity (Gray's Anatomy)

glion cells in the spinal cord. This fact is significant in regeneration of root fibers after root destruction by compression. Motor regeneration may be expected to occur unless an obstructive nerve root fibrosis has developed, but sensory regeneration may not occur, as this interruption is proximal to the ganglion and cannot be guided by nerve sheath after it enters the spinal cord.<sup>9</sup> An excellent example of this was in a case with large fifth disk herniation which compressed three nerve roots and caused wide sensory loss and foot drop. Eighteen months after the herniation had been removed and the nerve roots decompressed there was complete return of motor function in the foot but only partial recovery of sensation. At operation a completely compressed or dead nerve root can be identified by the absence of motor response in the leg to stimulation by pinching or the faradic current.

Another anatomic peculiarity of nerve root compression by herniation of lumbar disks is the absence of so-called trophic manifestations in the distribution of the root, as occurs when peripheral nerves are subject to chronic irritation. There is no hyperalgesia, no burning sensation, no alteration of circulation or temperature, no disturbance of sweating. It is fairly well established that these phenomena, commonly called trophic or causalgic, are related to sympathetic innervation and can be relieved in considerable degree by sympathectomy.<sup>10</sup>

There is no outflow of preganglionic sympathetic fibers in the spinal roots below the second lumbar root level<sup>11</sup> (fig 8), hence the common compression of these roots by herniation of lower lumbar intervertebral disks does not affect sympathetic innervation in their distribution. For this reason the diagnostic reduction of electrical conductivity on the skin of interrupted peripheral nerves, which is largely dependent on sympathetic loss of sweating in the area, is not applicable to nerve root lesions from herniation of lumbar intervertebral disks.

The lumbosacral articulation in man is a very variable and poorly constructed region for support of the trunk with heavy lifting strain. The lumbosacral spine is set at a 20 to 80 degree angle on the tilted sacrum, and the fifth lumbar and first sacral vertebrae are subject to common

Distribution of Cases with Dermatome Hypalgesia

| Dermatome     | No of Cases | Per Cent | Verified by Operation |
|---------------|-------------|----------|-----------------------|
| Third lumbar  | 5           | 2.1      | 0                     |
| Fourth lumbar | 26          | 10.7     | 12                    |
| Fifth lumbar  | 66          | 27.1     | 28                    |
| First sacral  | 145         | 59.7     | 74                    |
| Second sacral | 1           | 0.4      | 1                     |
| Total         | 243         | 100.0    | 115                   |

anatomic defects such as bifid spines and transitional types of vertebrae, with large and at times articulated transverse processes, variably faced articular facets, and occasional defective pedicles of the laminal arch, leading to spondylolisthesis. Because of these many structural variations and weaknesses, much lumbosacral pain has been attributed to them and spine fusion operations done for better stabilization, without careful consideration

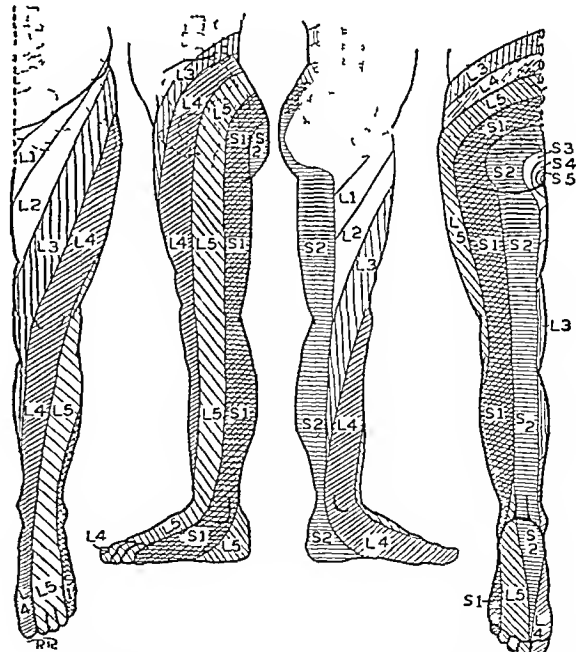


Fig 7—Composite dermatome chart of the lower extremity determined by outlining the area of hypalgesia from herniated disk compression of a single nerve root.

of the diagnosis of the common herniation of the fifth or fourth lumbar disks. When unilateral nerve root pain, reflex loss and dermatome hypalgesia appear as

9 Young J Z. The Functional Repair of Nervous Tissue. Physiol Rev 22:318 (Oct) 1942.

10 Livingston W K. Pain Mechanisms. A Physiologic Interpretation of Causalgia and Its Related States. New York: Macmillan Company, 1943.

11 Foerster O. Operativ experimentelle Erfahrungen beim Menschen über den Einfluss des Nervensystems auf den Kreislauf. Ztschr f d ges Neurol u Psychiat 167:439 1939.

the main feature of the complaint, it is necessary to relate the pathologic condition directly to an involved nerve root on that side. This is particularly true when the back pain has disappeared, owing to complete herniation of the nucleus pulposus through the posterior longitudinal ligament, as often occurs in late cases (fig 9). When the first sacral nerve root syndrome appears, with loss of ankle jerk, it is impossible to

root at operation, section of the sensory portion of this nerve root may be warranted to relieve the pain satisfactorily.

Third lumbar nerve root involvement is not often associated with herniated intervertebral disk but is more likely to be involved in the common lateral hypertrophic bone disease of this region, old fracture dislocation interference or metastatic cancer from the prostate.

The second sacral nerve root can be involved over a sixth lumbar disk when there are six well formed lumbar vertebrae, or by wide herniation of other disks which compress medial nerves of the cauda equina. An occasional variation occurs in the position of nerve roots, usually associated with anatomic abnormality in the form or sequence of cervical or thoracic vertebrae which places the sciatic nerve roots one vertebra higher than the rule and hence might place the second sacral nerve root, by dermatome pattern, over the fifth lumbar disk.

The treatment of herniation of an intervertebral disk should be conservative until recurring serious disability or continuing intolerable pain make surgical intervention seem necessary. If the interpretation is correct that most low back and sciatic pain is due to varying stages of intervertebral lumbar disk herniation, few persons escape some episode of this nature and in the past the great majority of them have recovered without disk surgery. However, ultraconservatism should not be practiced when satisfactory progress is not being made after a few weeks of bed rest, traction, cast, brace or belt, or when a clear diagnosis of large complete herniation of the nucleus pulposus can be made (fig 9) based on continuing nerve root pain at rest. With our present knowledge and surgical technique of herniated disk it is possible to relieve this patient immediately of his leg pain and enable him to walk out of the hospital in comfort two weeks or less from the operation, without back support and able to resume work two to six weeks later. There is no great risk to the operation, as the disk herniation can be removed by retraction of the sacrospinalis muscle and removal of the liga-

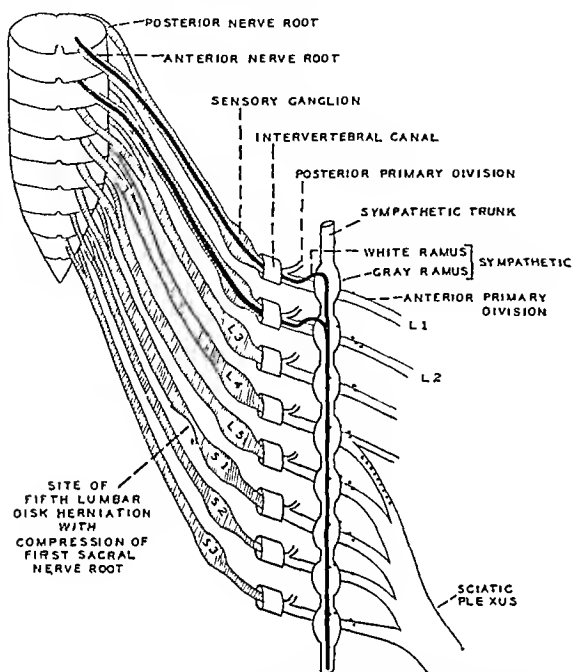


Fig 8—Diagrammatic representation of sympathetic outflow from the human spinal cord in the lumbosacral region. Note that compression of nerve root by lower lumbar disk herniation does not involve sympathetic fibers to the lower extremity. (Modified from Foerster.)

attribute this to any extraspinal bone pathology, as the first sacral nerve root is entirely intraspinal until it enters the first sacral foramen of the sacrum.

Fifth lumbar nerve root compression commonly is caused by herniation of the fourth lumbar disk, although at times it may be compressed more laterally by a wide herniation of the fifth lumbar disk or hypertrophic bone thickening around an old degenerated and narrowed fifth lumbar disk. The fifth nerve root is not contacted by an enlarged fifth lumbar transverse process. Differential diagnosis of this nerve root involvement is difficult, both because of the several factors involved and because of the greater difficulty in outlining the dermatome hypalgesia of this root, with no characteristic reflex loss.

Fourth lumbar nerve root compression by herniated disk occurs infrequently, found in 10.7 per cent of my series of 243 cases, as shown in the table. It seems to occur more often in an older age group, around 50 years, whereas the first sacral nerve root syndrome is more common in the late thirties and the fifth lumbar nerve root syndrome in the forties, with exceptions in all groups. The fourth lumbar nerve root may become involved in the intervertebral canal from lateral herniation of the fourth disk, where the pathologic condition may be missed at operation. In such a case with the characteristic fourth root syndrome of dermatome pain and hypalgesia, absent knee jerk and failure of the leg muscles to jerk on pinching the fourth lumbar nerve

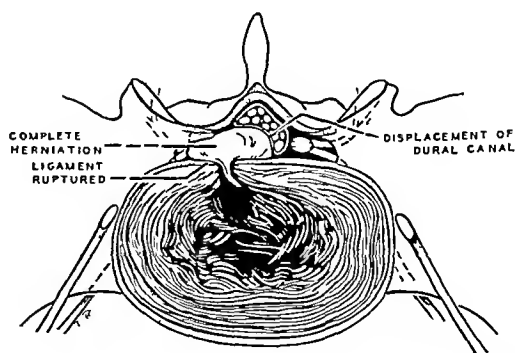


Fig 9—Complete herniation of nucleus pulposus with rupture of posterior longitudinal ligament. This herniation is not reducible and is diagnosed by disappearance of low back pain and increase of nerve root pain at rest.

mentum flavum on only one side of the spine (fig 4). Usually some bordering lamina is removed for better exposure and adequate decompression of the nerve root. This does not significantly alter the supporting structure of the back, in fact, the scar tissue of healing may serve for better fixation of an unstable back. The main part of the disk or annulus remains in place. However, a person, usually in his late thirties who

has developed herniation of a lumbar intervertebral disk should recognize that he has reached middle age and should always protect his back from heavy stooping lifting strain. This advice applies whether he has developed herniated disk or not. The operation should not be expected to give rejuvenation or restore a pathologic disk to normal.

#### SUMMARY

The terms "lumbago" and "sciatica" have little meaning except to indicate the general location of pain.

The early stage of lumbar intervertebral disk herniation is not distinguishable from other pathologic conditions supposed to cause low back pain.

Posterior displacement or partial herniation of the nucleus pulposus within the disk often is reducible by manipulation.

More extensive herniation of the nucleus pulposus is not reducible and causes unilateral pressure on a nerve root within the spinal canal, with pain radiating in that nerve root distribution.

The nerve root is compressed beneath a special lateral portion of the ligamentum flavum (interarticular ligament?).

The most constant location of nerve root pain in the "hip" or midgluteal region is explained by the first sensory contact of the posterior primary division of the root against the ligamentum flavum.

The pain of true "sciatic neuritis" should be located in the entire distribution of the great sciatic nerve and not limited to the posterior thigh and calf and lateral ankle and foot. This common location of so-called "sciatic" pain represents first sacral nerve root distribution.

The location of pain of fifth, fourth or third lumbar nerve root compression can be distinguished from first sacral nerve root pain if a careful history is obtained.

More accurate identification of nerve root involvement can be obtained by careful outlining of areas of slightly reduced pain sensation or dermatome hypalgesia.

Recognition of the commonest first sacral nerve root syndrome with herniation of the fifth lumbar intervertebral disk removes most other pathologic findings as a possible cause of this syndrome.

Motor regeneration of compressed intraspinal nerve roots would be expected to occur more completely than sensory regeneration because of the location of the compression proximal to the sensory ganglion.

The absence of trophic or sympathetic phenomena with lower lumbar nerve root compression is explained by the absence of sympathetic fibers in these roots below the second lumbar root level in man.

Signs of organic loss of nerve root function, by the finding of sensory or reflex loss, necessitates the location of causative pathologic changes directly on that nerve root and does not permit the interpretation of reflex pain from some distant region.

Treatment of herniation of an intervertebral disk should be conservative until seriously disabling and persisting or recurring pain gives indication that a fixed herniation is present.

The operation for herniation of a lumbar intervertebral disk is comparatively safe and does not weaken the supporting structure or function of the back.

Relief by operation should not be postponed an unreasonable length of time for the nerve root pain is immediately relieved and the patient able to be back on his feet in comfort in less than two weeks.

1234 Medical Arts Building

## PHYSICAL FITNESS TESTS FOR CONVALESCENTS

PETER V. KARPOVICH, M.D.

RANDOLPH FIELD, TEXAS

LIEUTENANT COLONEL MERRITT P. STARR

MEDICAL CORPS, ARMY OF THE UNITED STATES

AND

CAPTAIN RAYMOND A. WEISS

AIR CORPS, ARMY OF THE UNITED STATES

The Air Surgeon directed the activation of a convalescent training program for patients in Army Air Forces hospitals in December 1942.<sup>1</sup> The general objective was to use the hospital days of every clinically available patient for military education and for complete physical rehabilitation, so that on discharge the soldier would have additional training and be prepared physically for full military activity without danger of relapse and without any substandard duty. The hospitalization required by his illness would thus become also a physical and mental educational period. The introduction of physical training in the convalescent training program of the Army Air Forces hospitals produced a revolutionary change in the management of patients.<sup>2</sup> Whereas heretofore the convalescents merely vegetated in idleness, efforts are now made to maintain and even increase the degree of their physical fitness. Practical questions soon arose. When was it safe and beneficial for patients hospitalized for acute infectious diseases to take part in the physical training program and when were they ready for discharge from the hospital to full activity? To answer these questions the present study was undertaken. It was conducted between Jan 10 and May 15, 1944 on 417 aviation cadets and students who were patients of the Medical Service in the AAF Regional Hospital, San Antonio Aviation Cadet Center, recovering from primary atypical pneumonia, influenza, nasopharyngitis, tonsillitis and other upper respiratory infections.

#### CLINICAL PHYSICAL FITNESS TESTS

Since the convalescent physical training program is divided into ward and outdoor programs, it was considered desirable to devise three tests for (1) participation in the ward program, (2) participation in the outdoor program and (3) discharge from the hospital to active duty. These tests were to be used by the medical officer, in much the same way as laboratory tests, to aid him in deciding when the patient is fit to participate in the ward and outdoor physical training programs and when he is fit for full military duty. Physical training for convalescents is divided into three programs: red, blue and green. This is done in order to insure gradual progression in the intensity of exercise and the amount of work done.

(a) The red program consists of mild calisthenics given in the ward for ten minutes twice a day.

(b) The blue program consists of calisthenics, games and a moderate amount of running, combatives and guerrilla

From the Laboratory of Physical Fitness, AAF School of Aviation Medicine, Randolph Field, Texas (Dr. Karpovich and Captain Weiss).

Lieutenant Colonel Starr is Chief of Medical Service, AAF Regional Hospital, San Antonio Aviation Cadet Center, San Antonio, Texas.

Assistance in conducting this investigation was given by Lieut. Edwin C. Womble, M.C., and Private Mary J. Talaska of the AAF Regional Hospital, San Antonio Aviation Cadet Center, San Antonio, Texas.

<sup>1</sup> Rush, H. A. Army Air Corps New Convalescent Program, J. Indiana M. A. 36:127 (March) 1943.

<sup>2</sup> Air Surgeon's Convalescent Program, editorial, J. A. M. A. 125:561 (June 24) 1944.

exercises. It is scheduled outdoors twice daily, one period being thirty minutes and the other forty-five minutes.

(c) The green program includes all the activities of the blue one, to which wind sprints and cross country running are added. It is given twice daily, each period being forty-five minutes.

This daily exercise program is the active factor in conditioning the patient for return to duty. The physical fitness tests determine the progress of the patient toward this goal.

The tests used in the present study were called the red test, the progressive test and the discharge test. During the first part of this study the red and progressive tests were given by members of the investigating staff, but later these tests were administered by the nurses in their respective wards. The nurses learned the technic of the tests quickly and conducted them efficiently. The time consumed did not interfere with their other duties. The discharge test was given by the physical training instructors assigned to the convalescent training program.

**The Red Test**—The red test was used to determine when the patients could participate in the red program. In the construction of this test the simplest possible form was used. The test consisted in stepping up and

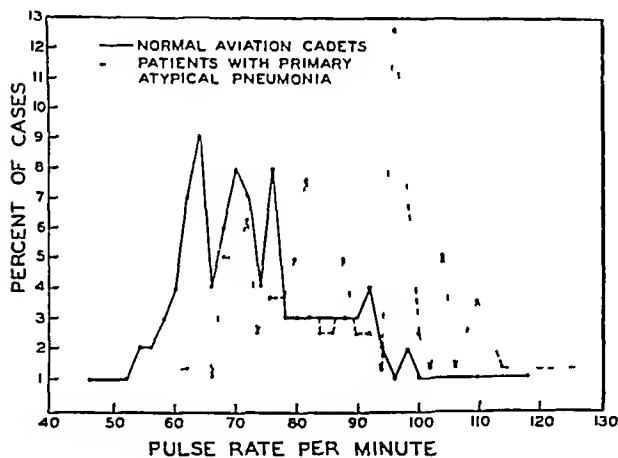


Chart 1—Pulse rate one minute after red test

down<sup>3</sup> as in the Harvard step-up test<sup>4</sup> on a 20 inch box, twelve times in thirty seconds. The sitting pulse rate was taken for thirty seconds, beginning one minute after exercise. Pulse rates of less than 100 per minute were considered passing. After a patient passed the red test he was automatically placed on the red program. If he failed, he was retested on succeeding days until he either passed or was finally placed on the red program without passing, if the ward officer felt that the patient would not be harmed by additional physical activity.

In devising the red test, three factors were considered: (1) rise in metabolism, (2) change in pulse rate and (3) degree of muscular coordination. Although it is logical to suppose that the reserve of physical endurance of a hospitalized patient is lowered yet during the testing it soon became obvious that the reserve

was greater than the demand imposed by the red test. This supposition was substantiated on numerous occasions when patients passed a five minute step-up test on the same day or the day after the red test was passed. However, the work accomplished during the red test is approximately equivalent to work done in brisk walking up to the third story of an ordinary building and down again in thirty seconds. It is hard to believe that many medical men would be willing to give more intensive exercise to patients who have just passed the acute stage of illness. As a matter of fact, at the beginning of this study suggestions were made to use only five steps, a decision was made on ten steps, the number was later extended to twelve.

In determining the intensity of the red test, the relation between the comparative rates of metabolism during the planned exercises and the proposed test was considered. Although the oxygen consumption during the exercises of the red program was not actually measured, an estimate of the rate of metabolism was made on the basis of research done by other investigators. According to Kennedy<sup>5</sup> the metabolism of all exercises given to the British army varies from five to six and one-half times the basal rate, Missiuro and Perlberg<sup>6</sup> found that the increase in metabolism during Scandinavian gymnastics is four and one-half times the basal. The ward exercises used in the red program are between the British and Scandinavian in intensity. Laboratory determinations showed that the red test increases the metabolic rate eight to ten times over the basal. For this reason it was considered that exercises of lower intensity, such as those in the red program, could be indulged in for even a longer duration, especially since the patient could slow down or stop if he found the exercise too severe for him. Therefore it seemed unnecessary to have a more strenuous test to determine when a patient could enter this program.

In order to establish a criterion for the evaluation of the heart rate reaction, the red test was given to 98 normal aviation cadets from the preflight school and to 78 patients convalescing from primary atypical pneumonia. The frequency distributions of pulse rates one minute after exercise for both groups are given in chart 1.

The curve for the convalescents (chart 1) shows a pronounced shift to the right. Analysis of both curves shows that, if the pulse rate of 94 is taken as the criterion for passing, then 32 per cent of all patients convalescent from primary atypical pneumonia fail to pass the test. Experiments with patients who had a pulse reaction of 96 and 98 showed that they could take ward exercises as easily as the other patients with lower pulse reactions. For this reason, and in order to reduce the possible number of normal people falling into the "pathologic" group, pulse rates of less than 100 per minute were considered passing. By doing so, the number of normal cadets who would have fallen into the "pathologic" group was reduced to 3 per cent.

Stepping in cadence on a box 20 inches in height requires definite muscular coordination. It was observed that patients who had remained in bed continuously for several weeks could not maintain the cadence. Their movements were uncoordinated and their legs were shaky. This lack of coordination in

<sup>3</sup> The subject stands in front of the bench and steps up on it with one foot and then the other then stepping down in the same order he must lead with the same foot on each step.

<sup>4</sup> John on R. E. and Robin on S. Selection of Men for Physical Work in Hot Weather. Report 16. Committee on Medical Research of the Office of Scientific Research and Development. Harvard Fatigue Laboratory. Feb. 15, 1939.

<sup>5</sup> Kennedy, T. F. Report on an Investigation of Energy Expended on the Exercises of the Physical Training Tables for Recruits of All Arms. J. Roy. Army M. Corps 61, 108, 1933.

<sup>6</sup> Missiuro, W. and Perlberg, A. Untersuchungen über den Einfluss der Gymnastik tunde auf den Stoffwechsel. Arbeitsphysiol. 17, 62, 1934.

itself, regardless of the pulse reaction, was sufficient indication that the red test was too strenuous for these patients

**Progressive Test**—The day after the patient passed the red test, with the consent of the ward officer he was given a more strenuous step-up test, called the progressive test, which was used to determine whether a

TABLE 1—Scoring Table for Progressive Test  
Convalescent Training Program

| Duration of Exercise                         | Pulse Rate<br>One Minute After Exercise | Physical Training<br>Classification |
|--|---|-------------------------------------|
| Below 2 minutes                              | Regardless of pulse rate                | Red                                 |
| 2 minutes to 2 minutes 29 seconds            | Below 100                               | Blue                                |
|  | Above 100                               | Red                                 |
| 2 minutes 30 seconds to 3 minutes 29 seconds | Below 110                               | Blue                                |
|  | Above 110                               | Red                                 |
| 3 minutes to 3 minutes 29 seconds            | Below 100                               | Green                               |
|  | 100 to 140                              | Blue                                |
|  | Above 140                               | Red                                 |
| 3 minutes 30 seconds to 4 minutes 29 seconds | Below 110                               | Green                               |
|  | 110 to 170                              | Blue                                |
|  | Above 170                               | Red                                 |
| 4 minutes to 4 minutes 29 seconds            | Below 130                               | Green                               |
|  | Above 130                               | Blue                                |
| 4 minutes 30 seconds to 5 minutes 29 seconds | Below 140                               | Green                               |
|  | Above 140                               | Blue                                |
| 5 minutes                                    | Below 150                               | Green                               |
|  | Above 150                               | Blue                                |

patient was qualified to participate in either the blue or the green program. This test is essentially the Harvard step-up test except that the rate of stepping up is reduced from 30 steps per minute to a slower rate because it was observed that some patients were unable to maintain the faster rate. The test consisted in stepping up on the same 20 inch box and down again at the rate of 24 steps per minute and was continued to the limit of the patient's endurance, but not to exceed five minutes. The sitting pulse rate was taken for a period of thirty seconds beginning one minute after exercise. If, during exercise, the patient showed pronounced symptoms of fatigue he was stopped by the nurse and the pulse rate was taken as usual. By way of comparison this test, when completed, required ten times as much work as the red test and is equivalent to walking up to the twenty-first floor of a skyscraper (allowing ten feet per floor) and down again in five minutes.

An attempt was made to assign patients to the blue or green physical training programs on the basis of this test. The following criteria were used: (1) duration of the exercise, (2) pulse rate one minute after exercise, (3) muscular coordination of the patient during stepping up and (4) amount of dyspnea.

The progressive test was given to 100 normal aviation cadets and it was observed that pulse responses resembled those obtained in the Harvard step-up test. For this reason the modified Harvard scoring table (table 1), based on pulse response and duration of exercise, was used in scoring this test also. In accordance with the score made by the patient he remained on the red program or was moved either to the blue or to the green program (table 1). Only 15 out of 250 patients tested did not graduate into the green program the first time they took the progressive test. These 15 were placed in the blue group and passed into the green group within one or two days.

According to the plan of the investigation the progressive test was to be given the day after the red test. However, on some occasions it was given either on the same day or several days after the red test. Results indicate that within five days after passing the red test 83 per cent of the patients passed into the green

test and 92 per cent passed into either the blue or the green physical training programs. These figures should not be interpreted as an indication of the maximum percentage of the patients who could have passed the test because not all of them were tested on these days either because of administrative lag or because the ward officers did not think the patients were ready to be tested. The fact that so few men failed to enter the green physical training program even when it was taken as early as the second day after the red test was passed suggests that the amount of work done in the red test could have been increased and that fears regarding the possible harmful effect of the present red test were unfounded.

**Discharge Test**—Before this investigation started the Medical Service of the hospital was using the regular Harvard step-up test<sup>3</sup> to determine when patients were physically fit to be discharged from the hospital to full military duty. Patients who received a score of 75 or more were discharged. Those who made lower scores were kept on the green program until they could pass the test.

Although the Harvard test has a low correlation with the AAF Physical Fitness test<sup>7</sup> it was used for the reason of expediency. The weather during the period of investigation was unsettled and it was impossible to schedule the shuttle run required in the AAF Physical Fitness test. However, a follow-up of 271 patients discharged with the Harvard score of 75 was made by the physical director of the hospital and it was found that none of the patients relapsed and that they were able to carry on full military training involving strenuous physical exertion.

**Results**—An attempt was made to find the relationship between the duration of fever, the time of entering the red and green programs and passing the Harvard test, and the length of hospitalization. For this purpose the data on patients convalescing from primary atypical pneumonia are presented in chart 2.

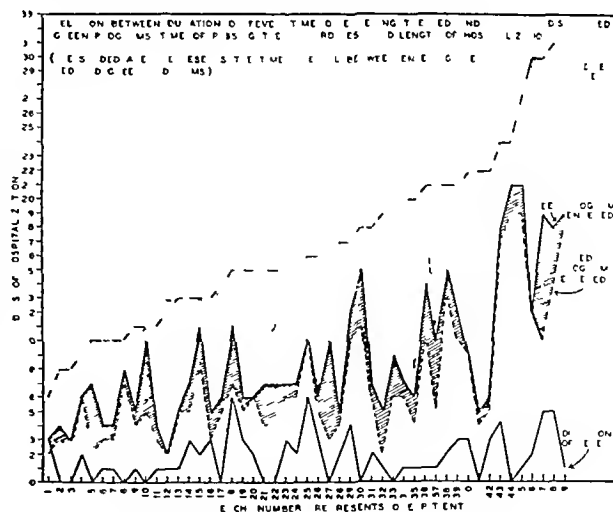


Chart 2—Study of primary atypical pneumonia

Each number on the abscissa represents a patient. Cases are arranged according to the length of hospitalization. Only patients who took all tests are included. This chart shows that there is no relationship between the duration of fever and the length of hospitalization. It also reveals that the earlier the patient was given the

7 The AAF Physical Fitness test consists of sit ups, pull ups, and a 1700 yard shuttle run.

red test, the earlier he was able to enter the green physical training program (see the solid area, chart 2). Yet on many occasions the Harvard test was delayed for a number of days because, in the opinion of the ward officer, the patient was not ready for the test. This indicates a discrepancy between the clinical opinion and the actual physical fitness of the patient as revealed by the test. These statements regarding pneumonia cases are applicable to patients convalescing from the other diseases mentioned in this report (table 2).

Some of the medical officers thought that testing and exercising might increase the sedimentation rate and as a result, cause a relapse, or that the lung conditions in the case of respiratory diseases might be aggravated. It is outside the scope of this study to investigate this

TABLE 2—Statistical Data on Progress in Convalescence in Various Diseases

|                           | Primary<br>atypical<br>Pneu-<br>monia<br>Mean | Naso-<br>pharyn-<br>gitis<br>Mean | Influenza<br>Mean | Upper<br>Respiratory<br>Infection<br>Mean | Tonsillitis<br>Mean |
|---------------------------|---|-----------------------------------|-------------------|---|---------------------|
| Days of fever             | 2.2   | 2.6                               | 2.5               | 3.1                                       | 2.5                 |
| Day red program entered   | 7.1   | 5.0                               | 6.9               | 4.8                                       | 4.4                 |
| Day green program entered | 9.3   | 6.5                               | 8.3               | 6.5                                       | 5.4                 |
| Day Harvard test passed   | 13.8  | 9.0                               | 11.8              | 8.7                                       | 7.7                 |
| Day of discharge          | 17.4  | 11.3                              | 14.2              | 9.9                                       | 8.8                 |
| Number of cases           | 71  | 128                               | 10                | 13  | 34                  |

TABLE 3—Relationship Between the Sedimentation Rate of Red Blood Corpuscles and Physical Fitness

| Diagnosis                   | Sub-<br>ject<br>Num-<br>ber | Day of Hospitalization          |   |                                     |                                       |                                |                 |
|-----------------------------|-----------------------------|---------------------------------|---|-------------------------------------|---------------------------------------|--------------------------------|-----------------|
|                             |                             | Sedi-<br>men-<br>tation<br>Rate | Sedi-<br>men-<br>tation<br>Rate<br>Tested | Red<br>Pro-<br>gram<br>En-<br>tered | Green<br>Pro-<br>gram<br>En-<br>tered | Har-<br>vard<br>Test<br>Passed | Dis-<br>charged |
| Primary atypical pneumonia  | 1                           | 29                              | 2   | 2                                   | —                                     | 12                             | 22              |
|                             | 2                           | 33                              | 2   | 2                                   | 3                                     | 7                              | 8               |
|                             | 3                           | 38                              | 2   | 2                                   | 3                                     | 9                              | 12              |
|                             | 4                           | 55                              | 5   | 5                                   | —                                     | 16                             | 17              |
| Influenza                   | 5                           | 27                              | 9   | 10                                  | 13                                    | 15                             | 15              |
| Upper respiratory infection | 6                           | 24                              | 3   | 3                                   | 5                                     | 7                              | 7               |
| Nasopharyngitis             | 7                           | 30                              | 4   | 4                                   | 5                                     | 6                              | 7               |
|                             | 8                           | 29                              | 5   | 5                                   | 6                                     | 7                              | 8               |
| Tonsillitis                 | 9                           | 41                              | 5   | —                                   | 5                                     | 6                              | 8               |

relation in detail, but evidence has been obtained to question the basis of this fear.

Examination of table 3 shows that patients with high sedimentation rate successfully not only passed the red test but went on to qualify for the green program and pass the Harvard test. As may be observed from the figures in the "Discharge" column the length of hospitalization for these patients compares favorably with the length of hospitalization for all patients for each disease (table 3). This should not be considered proof that physical exercises must begin regardless of the sedimentation rate. It merely shows that patients with high sedimentation rates can be given exercise without unduly prolonging hospitalization. Further investigation regarding the sedimentation rate is in process and the results will be presented in a separate report.

#### COMMENT

A highly debatable topic is the relationship between x-ray findings of the lungs in the case of primary atypical pneumonia and the time for starting physical exer-

cises. The opinions of the medical officers who were contacted during this investigation varied but the majority seemed to be against "early" exercises. The interpretation of the word "early" also varies a great deal. In the present study neither testing nor participation in the physical training program, notwithstanding positive x-ray findings, caused aggravation of symptoms or subsequent lengthening of hospitalization of the primary atypical pneumonia cases. However, chart 2 shows that there are long intervals of time in some cases between entering the green program and passing the Harvard test. This was usually due to the fear of the medical officer that the Harvard test would be harmful to the patient.

Hyperventilation of the lungs has been recognized as a therapeutic measure for lung atelectasis, and for this reason respiratory gymnastics of various kinds have been suggested. The desired amount of lung ventilation may easily be obtained by means of ward exercises of the proper intensity. This method may have an additional advantage over mere hyperventilation because the blood circulation through the lungs is also augmented.

It should be stated here that by the very nature of this study it was impossible to adhere strictly to a rigid plan. On many occasions the records are incomplete because some of the tests were omitted. The main reason for this was a deep rooted belief in the curative power of rest and a fear of early participation in physical exercises by convalescing patients on the part of both investigators and medical officers. However, with the progress of the present investigation this fear was reduced to a great extent and an earlier assignment of the patients to tests and physical training resulted. Before the present testing program was introduced at the San Antonio Aviation Cadet Center AAF Regional Hospital the average number of days of hospitalization of primary atypical pneumonia patients was 23.25. After the introduction of the testing the average dropped to 17.4 days. This difference is statistically significant, the critical ratio of the difference is 4.57. The objection may be raised that these patients belonged to two different calendar periods. The first group was hospitalized before Jan. 10, 1944 and the second after that date, therefore the virulence of the disease might have been different. It is the opinion of the investigators that improvement was not due solely to calendar difference, because it was observed that the earlier a patient was tested the sooner he was discharged from the hospital.

It is important to remember two factors in applying the results of this investigation: (1) The types of disease studied were of an acute nature and of comparatively short duration, (2) the patients, aviation students and cadets, represent a selected group possessing a high degree of physical fitness. For these reasons the results should be applied with caution to other personnel and to patients convalescing from other types of diseases. It is the opinion of all persons concerned with the active part of the investigation that no wholesale testing for admission to the red program is necessary. Patients recovering from diseases studied in this investigation may be safely placed on ward exercise on the second day of afebrility and then two days later may be placed on the blue or green program. In cases in which the medical officer is in doubt the red and progressive tests should be given to the patient, preferably in the presence of the medical officer.



The ward physical training program should be mild and the outdoor program should have sufficient gradation. With these conditions patients can safely take the whole physical training program. Occasionally muscle soreness may be encountered but this should not be considered as an indication that the program is too severe.

It was observed that men with a high degree of physical fitness retain a high level throughout the disease. This observation supports the emphasis placed by the Army Air Forces on the importance of physical training for its personnel.

For enlisted men in duties not requiring a high degree of physical fitness, the physical fitness tests used in this study should be adjusted accordingly. The discharge test score of 75 and the five minute exercise limit may be too high.

During the present investigation an attempt was made to test the physical fitness of the patients by allowing them to use their own cadence and even rest when they wished. The total time allowed (including rest periods) was five minutes. The number of steps represented the score.

This type of testing was based on the desire to avoid too much "drive" on the part of the patient. It was observed that patients rapidly improved in willingness to perform step ups and were ready to take the Harvard test. This method of testing was discontinued because of the difficulty in standardization but may be useful in dealing with weak patients who need special care and should avoid strain.

#### CONCLUSIONS

1 From an analysis of table 2 it is found that three days after an acute fever of two and a half days' duration an AAF cadet can pass a physical fitness test equivalent to walking up to a height of 20 feet and down again in thirty seconds (approximately to the third floor of an average building).

2 One and a half additional days after fever, the convalescent cadet can pass a physical fitness test equivalent to climbing up 200 feet and coming down in five minutes (approximately to the twenty-first floor).

3 After three more days he can make a score of 75 on the Harvard test for discharge to full military duty.

4 The use of the Harvard test score of 75 is reliable for discharge to full duty, since all of 271 cadets were able to carry on without relapse.

5 Testing and participation in the physical training of the convalescent training program reduced hospitalization somewhat, definitely did not prolong illness and insured adequate physical fitness for return to full military duty.

6 From a small number of cases, results suggest (table 3) that sedimentation rate (Westergren method) of the order of 24 to 55 mm is not a contraindication to full participation in the hospital physical training program.

#### SUMMARY

The clinical physical tests described were used to assist medical officers in classifying AAF cadets convalescing from acute, uncomplicated upper respiratory diseases for participation in a graded physical training program. Participation in the physical training program resulted in a sufficiently high degree of physical fitness for the return of the subjects directly to full military duty when discharged from the hospital.

## THE VALUE OF PERIODIC PELVIC EXAMINATION

IN THE CONTROL OF CANCER OF THE UTERUS

CATHARINE MACFARLANE, M.D.

MARGARET C. STURGIS, M.D.

— AND —

FAITH S. FETTERMAN, M.D.

PHILADELPHIA

One of the most important tasks confronting the medical profession today is to find cancer in an early and curable stage. Two methods are available. One is the method of educating the public with reference to the signs and symptoms of early cancer. The other is the method of periodic examination. The latter method is being tested in the Department of Gynecology of the Woman's Medical College of Pennsylvania.

In the spring of 1938 we undertook to determine the value of periodic pelvic examination in the detection of cancer of the cervix in an early and curable stage and in the detection of inflammatory lesions of the cervix which may predispose to cancer.

By means of appeals to our patients to women's clubs, to nurses' auxiliaries, to social service agencies and to the public at large through the press, 1,319 volunteers were found. These were white women between 30 and 80 years of age. They were married or single, with or without children. They came from every walk of life. They were presumably well. They volunteered to come for examination twice a year for five years as a contribution to medical science.

Each volunteer was given a circular to be submitted to her family doctor. In this circular the purpose of the research was described. It contained statements to the effect that the examining physicians were volunteering their services and that if anything abnormal was discovered a report would be made to the family physician with recommendations for treatment. The cooperation of the family physicians has been most gratifying. As a rule they concurred in our recommendations. Sometimes they did not. Sometimes they asked us to carry out the treatment recommended. Sometimes they referred their patients to gynecologists of their choice. In either event we received a report on the treatment given and the nature of the pathologic changes found.

Record cards were filled in for each volunteer. These contained details of menstrual and marital history and of cancer heredity, if any. A family history of cancer was given by 42 per cent of the volunteers.

Only one serious objection was raised against the plan—namely, the possibility of developing or increasing a cancerphobia. Our experience has shown this objection to be unwarranted. Individual volunteers have repeatedly stated that instead of developing a fear of cancer the examinations have given them a "great sense of security."

Financial support for supplies, secretarial service and the salary of a research worker was furnished by generous grants from the Committee on Scientific Research of the American Medical Association, from the Pennsylvania Division of the Women's Field Army of the American Society for the Control of Cancer,

From the Department of Gynecology, Woman's Medical College of Pennsylvania.

Read before the Section on Obstetrics and Gynecology at the Ninety-Fourth Annual Session of the American Medical Association, Chicago, June 15, 1944.

from the New York Medical Women's Association and from the International Cancer Research Foundation.

The examination was intentionally kept so simple that it could be duplicated by any physician at any cross-roads of this country. It consisted of a careful bimanual examination and a careful inspection of the cervix in a good light.

In the first 2,000 examinations we used the Schiller test (Lugol's solution applied to the vaginal portion

TABLE 1—Visits Made by Volunteers

| Number of Visits | Number of Volunteers |
|------------------|----------------------|
| 1                | 1,319                |
| 2                | 1,164                |
| 3                | 1,103                |
| 4                | 1,043                |
| 5                | 992                  |
| 6                | 941                  |
| 7                | 814                  |
| 8                | 724                  |
| 9                | 592                  |
| 10               | 416                  |
| Total visits     | 9,111                |

of the cervix.) Eventually we gave this up, for we found it just as easy to detect diseased tissue without Lugol's solution as with it. Chrobak's test for friability of tissue was found useful in testing areas of papillary erosion. If the blunt tipped pocket probe pressed gently against the area slid off, we felt pretty sure we were dealing with a benign lesion. If the probe sank in, as it would into butter, a suspicion of malignancy was aroused. At first we performed quite a few biopsies. Later we preferred to recommend excision of the entire eroded area. By this means all of the diseased tissue could be sent to the pathologist and the cervix was restored to a healthy condition.

Up to May 15, 1944 a total of 9,111 pelvic examinations had been made. Some 416 volunteers had come regularly twice a year for five years, while some 545 volunteers had more or less intermittently completed the five year period. Since January 1942 the breasts have been examined also.

In the course of these 9,111 examinations, eighteen cancers of ten different organs were discovered by us or reported to us. Table 2 shows how these are classified.

TABLE 2—Cancers Occurring in a Five Year Research

|                | Discovered | Reported |
|----------------|------------|----------|
| Uterine cervix | 4          |          |
| Uterine body   | 1          | 1        |
| Ovary          | 1          |          |
| Breast         | 0          | 2        |
| Colon          |            | 1        |
| Hip            |            | 1        |
| Hypertrophied  |            | 1        |
| Lymphosarcoma  |            | 1        |
| Pancreas       |            | 1        |
| Parotid gland  | 1          |          |
| Skin           | 1          |          |
|                | 11         | 7        |
| Total cancer   | 18         |          |

In the first examination of the 1,319 volunteers early cancer of the cervix was discovered three times. The details of these cases are as follows:

CASE 1 (volunteer 430)—C. L., single, aged 39, had had one child born spontaneously. She gave no history of cancer heredity. She consulted us in April 1938 on account of right upper quadrant pain. Since we were busily engaged in finding 1,000 women for our research, a pelvic examination was suggested. This revealed a myomatous uterus reaching three

fingerbreadths above the symphysis and a hypertrophied and badly lacerated cervix. The laceration extended to the vaginal vault on the left side. The vaginal surface of the cervix felt coarsely granular. It bled at several points. At one point there was a yellow slough. A blunt tipped probe sank in at the left corner of the external os. Tissue was taken from this area for biopsy. Dr. Geiss of the department of pathology reported "early squamous cell carcinoma."

On April 7, 1938 the patient was given 2,400 mg. hours of radium in the uterine cavity. On April 28 she was given 2,400 mg. hours against the vaginal cervix. Examination in May 1944 showed no signs of recurrence. Volunteer 430 represents thus a six year cure.

CASE 2 (volunteer 174)—Mrs. M., aged 41, came in response to an appeal to a woman's club. She had had one child born spontaneously. Her maternal grandmother had been operated on for cancer of the breast at 75 and had lived to be 85. At the patient's first examination on April 1, 1939 a bilateral laceration of the cervix was found with an extensive area of papillary erosion. This was reported to her family physician who referred her back to us for treatment. One month later she entered the Hospital of the Woman's Medical College. At this time a violently red tuft of papillary tissue was discovered close to the external os. This was about 2 mm. in diameter and about 3 mm. high. It had not been present at the first examination.

The uterus was curetted and the eroded area was removed by a Sturmdorf trachelectomy. Dr. Geiss reported "chronic cervicitis, papillary erosion, early squamous cell carcinoma." The patient was immediately given 1,500 mg. hours of radium in the cervical canal. This was followed by 2,400 mg. hours against the cervix. Examination on May 12, 1944 showed no recurrence. Volunteer 174 thus represents a five year cure.

CASE 3 (volunteer 68)—Mrs. D., aged 34, had had one child born instrumentally. She was brought by her sister, who was a member of our research group. Her family history was negative for carcinoma. Examination on April 29, 1939 showed a bilateral laceration of the cervix with eversion and an extensive area of papillary erosion.

On May 8 a curettage and Sturmdorf trachelectomy were performed in the Hospital of the Woman's Medical College. Dr. Geiss reported that two sections from one corner of the specimen showed squamous cell carcinoma "comparatively early."

On May 15, 1939 2,400 mg. hours of radium was given against the cervix. On June 19 the patient was given 1,650 mg. hours of radium within the uterine cavity. Examination on May 17, 1944 showed no recurrence. Volunteer 68 thus represents a five year cure.

The fact that these three early cancers of the cervix were discovered in areas of papillary erosion and not in healthy, noninflammatory cervixes is significant. It lends support to the theory that cancer tends to develop in these so-called "areas of epithelial restlessness." For this reason we consider the discovery and cure of such lesions to be an important factor in the control of cancer of the uterus.

CASE 4—A fourth early cancer of the cervix was discovered on the eleventh visit of volunteer 527. Mrs. T., aged 65, had had one instrumental delivery and two miscarriages. She gave no history of cancer heredity. At 45 years of age she had had an application of radium for menopausal bleeding. She joined the research group in April 1938 and came regularly twice a year with negative pelvic findings. At her tenth visit in September 1942 she reported a spot of blood on her clothing on one occasion. The smooth atrophic cervix appeared congested and bled a little on bimanual examination. The patient's blood pressure was 210. In the absence of any demonstrable pathologic condition the spot of blood was considered to be due to arteriosclerotic bleeding and the patient was told to return if it happened again.

Five months later, at her eleventh visit in February 1942 she reported no bleeding and no discharge but examination

revealed a smooth red polypoid growth 1 cm in diameter projecting through the external os. This bled on touch. A biopsy showed adenocarcinoma. Radium needles were inserted into the polypoid growth for 1,300 mg hours, and 2,400 mg hours was given in the uterine cavity. Examination on May 3, 1944 showed no recurrence. Volunteer 527 represents a fifteen month cure.

A cancer of the body of the uterus was discovered in volunteer 1140. Mrs. B., a widow aged 65, had been coming to Dr. Fetterman for pelvic examination twice a year for a long time. She was put on the research list. In April 1938 she reported vaginal bleeding. On April 22 a diagnostic curettage was performed. This showed adenocarcinoma. As she was medically handicapped, surgery could not be considered. The patient was given 2,400 mg hours of radium in the uterine cavity followed by 3,000 roentgens. Examination on May 18, 1944 showed no recurrence. Volunteer 1140 represents a six year cure.

Another cancer of the body of the uterus was reported on the seventh visit of volunteer 898, who had what we considered to be a symptomless myoma not requiring treatment. However, following other advice, she had this myomatous uterus removed in March 1942 by supravaginal hysterectomy in an excellent suburban hospital. Their well qualified pathologist reported a small area of adenocarcinoma in the endometrium just

TABLE 3—Benign Lesions of the Pelvis

|                                    | Number |
|------------------------------------|--------|
| Cystic tumors of the ovary         | 40     |
| Inflammatory lesions of the cervix | 461    |
| Mucous polyps of the cervix        | 118    |
| Myomatous tumors of the uterus     | 167    |
| Leukoplakia                        | 3      |
| Papillomas                         | 2      |

above the line of removal. We watch this patient with peculiar interest. At her last visit in January 1944 she gave no evidence of recurrence.

A cystic tumor of the ovary was discovered on the tenth visit of volunteer 176, nothing having been detected six months previously. Operation showed this to be a rapidly growing malignant tumor of the ovary with extension to the pelvic peritoneum. Recurrence was prompt. The course is steadily downhill.

Since January 1942 cancer of the breast was discovered three times on the fourth visit of volunteer 257 and on the seventh visit of volunteer 947 and volunteer 1239. These cases were treated by radical mastectomy.

In addition to the pelvic cancers, a variety of benign lesions of the pelvis were discovered. These are classified as in table 3.

The inflammatory lesions of the cervix varied from a mild endocervicitis to areas of papillary erosion the size of a 50 cent piece (30 mm) or larger.

The relation between childbearing and cervical erosions in the volunteer group was investigated by Dr. Eleanor Scott Mary Putnam Jacoby, fellow in the Department of Gynecology of the Woman's Medical College of Pennsylvania for 1940-1941. She found the incidence of erosions in the parous volunteers to be 28 per cent while in the nulliparous volunteers it was 14 per cent.

In 295 of the inflammatory lesions treatment seemed necessary and was advised. Treatment was carried out in 200 cases. Our preference was for the Sturmdorf trachelectomy. This operation makes it possible to send an intact specimen to the pathologist and, in our

experience was less apt to be followed by recurrence than cauterization or conization. None of the treated cases have been put to the test of labor.

The completion of the five year period for which the research was undertaken finds the examining physicians and the major portion of the volunteer group thoroughly convinced of the value of this procedure. The record of five early cancers of the uterus discovered

TABLE 4—Classification of Inflammatory Lesions of the Cervix

|                | Number |
|----------------|--------|
| Cervicitis     | 38     |
| Endocervicitis | 37     |
| Erosions       |        |
| Simple         | 95     |
| Follicular     | 2      |
| Papillary      | 98     |
| Unspecified    | 170    |
| Total          | 461    |

and cured is certainly gratifying. The elimination of 200 precancerous lesions of the cervix is equally gratifying. The opportunity to see a large number of healthy cervixes has taught the examining physicians to pay more attention to minor deviations from the normal. The education of the volunteers as to the possible significance of certain apparently trifling symptoms has been important. Both volunteers and examiners are ready for "another five year plan."

## SUMMARY

A group of presumably well women between 30 and 80 years of age volunteered to come for pelvic examination twice a year for five years to test the value of periodic pelvic examination in the control of cancer of the uterus. A total of 9,111 examinations have been made. 545 volunteers have completed the five year period.

In the course of these 9,111 examinations four early cancers of the cervix and one early cancer of the uterus were discovered. The patients were adequately treated. They remain well, 2 for six years, 2 for five years and 1 for fifteen months after treatment.

Also in the course of the 9,111 examinations, 461 inflammatory lesions of the cervix were discovered. Two hundred of these have been treated and eliminated.

## CONCLUSIONS

Cancer of the uterine cervix can be detected in an early and curable stage by means of the periodic pelvic examination of presumably well women.

TABLE 5—Treatment Carried Out in Inflammatory Lesions

|                         | Number |
|-------------------------|--------|
| Chemical cautery        | 8      |
| Electric cautery        | 75     |
| Conization              | 27     |
| Amputation              | 9      |
| Sturmdorf trachelectomy | 10     |
| Trachelorrhaphy         | 18     |
| Not specified           | 3      |
| Total treated           | 200    |

Inflammatory lesions of the cervix, which may predispose to cancer, can be detected in about 35 per cent of presumably well women by means of periodic pelvic examination.

The death rate from cancer of the uterus could be materially reduced by the semiannual pelvic examination of married women 30 years of age and over.

136 South Sixteenth Street

## ABSTRACT OF DISCUSSION

DR NORMAN TREVES, New York There is a potential number of slightly over 26 million women to whom the appeal for cancer prevention might be directed. They should become the potential "volunteers" in cancer prevention clinics. Dr Macfarlane and her associates have discovered 18 malignant lesions in 10 different organs during the course of 9,111 examinations. This is about 0.002 per cent. At first glance one would think this figure excessively small, but if the 26 million women over 20 years of age could be examined for the first time one might expect the discovery of as many as 52,278 malignant neoplasms. This would probably represent cases detected early enough to give a high percentage cure rate. Cancer of the cervix, the most common cancer occurring in females, is the most curable if encountered early. Dr Macfarlane and her associates have given up the Schiller test. This procedure now has apparently outlived its usefulness. It was valuable at the time it was instituted, for it called attention to early malignant lesions of the cervix, especially those which our pathologists often report to us as "intraepithelial carcinoma." The educational significance of periodic examinations for apparently trifling symptoms has been well worth while. I am sure that it has given all of the "volunteers" in this cancer prevention clinic a sense of security which they otherwise would not have had. With over 164,000 deaths from cancer in the United States and with probably over half a million patients alive with various malignant conditions, education of both the public and the profession must go speedily forward. The ultimate goal of cancer prevention clinics is to influence individuals to accept periodic cancer health examinations as the best means of reducing the mortality in cancer and allied lesions and many other types of chronic disease. Uterine cancer is so accessible that here at least is an approach to cancer control which requires only fingers to feel and eyes to see. It demands no unusual skill, no special instruments. A gloved hand, a speculum, forceps and good illumination are practically the only essentials for competent examination.

DR AUGUSTA WEBSTER, Chicago A clinic was started at the Women's and Children's Hospital in Chicago under the auspices of the Women's Field Army of the American Society for the Control of Cancer in May of last year. The object of the clinic was to examine persons without symptoms or with mild symptoms, with the intent to discover any evidence of early cancer. Detection alone of suggestive lesions was the objective and biopsies and treatment were left to the patient's private physician. The scope of the Chicago venture has been enlarged to include a general physical examination and routine laboratory procedures, such as urinalysis, blood count and the Wassermann test. The emphasis is therefore placed on general health conservation as well as on detection of early cancer. Many constitutional diseases have been found in the course of our work and a number of lesions have been found which are suggestive of early cancer. All the patients have been referred to their private physicians for treatment. In the first 400 cases we found 5 carcinomas of the breast, 2 carcinomas of the breast axillary, 1 basal cell carcinoma of the scalp, 1 basal cell carcinoma of the face, 1 adenocarcinoma of the fundus and 2 advanced inoperable pelvic cancers. We also found the following possible malignant growths: 2 breast masses, 3 friable polyps, 5 skin lesions, 1 suggestive lesion of the tongue, 1 postmenopausal bleeding, 1 suggestive (ovarian?) mass, 1 case of suggestive gastric symptom and 1 lymphatic leukemia. Such work as described by Dr Macfarlane accomplishes much in the way of health education and health conservation. Many of the discouraging hopelessly late cancers could be avoided if the patients would present themselves for examination at regular intervals and if the doctors would look carefully for early signs and symptoms of cancer.

DR CATHARINE MACFARLANE, Philadelphia I should like to emphasize the importance of the six months interval. When we started on this research we had no idea how often these patients should be examined, but the fact that 1 cancer of the ovary developed in a six months interval, 1 cancer of the cervix developed in a six months interval and since this paper was completed a sarcoma of the endometrium has developed in a six months interval after previous normal examination seems to prove the point that the six months interval is not too short.

## DIAGNOSIS OF ORBITAL TUMORS

ADDRESS OF THE GUEST OF HONOR

WILLIAM L. BENEDICT, M.D.

ROCHESTER, MINN.

Every case of orbital tumor presents a problem in diagnosis. Features concerning the onset and course of signs and symptoms of tumor are the factors which when put together, constitute the basis for distinction from diseases of the orbit that simulate tumor. These factors are open to various interpretations for the significance of any one of them must be regarded in the light of all other factors that can be ascertained. Certain signs are present in some degree in progressive stages of growth of all orbital tumors. For the most part they are anatomic and result from changes of situation and size of the tumor with displacement of the globe and orbital contents. As all orbital tumors are space-taking lesions, the displacement of the eyeball, usually proptosis, is the most common of the early signs and is easily discernible in most cases by inspection alone without use of instruments. Changes in the walls of the orbit or in the density of the orbital contents may be altered by tumors in such a way as to be detected by palpation or by roentgenograms. Arteriovenous aneurysm may be recognized by the bruit heard with the stethoscope or by the thrill felt by the finger over the eyeball or by both of these signs. All of these means of investigation must be utilized routinely in examination.

Other signs have to do with function of the eyes, such as motility and vision. Rotation of the eye may be impaired by paralysis of one or more of the extraocular muscles, which, in turn, may be the result of interference with the nerve supply, or of mechanical interference by involvement of the muscle or its tendon by invasion or displacement. Disturbance of ocular motility, as a rule, is not helpful in diagnosis of tumor or in the determination of the situation of the mass of the lesion, whatever its nature, whether diplopia is or is not present. Loss of vision is of great importance as a diagnostic sign only when it occurs as an early change in the course of exophthalmos. Defects in the visual fields are significant in a limited number of cases of posterior orbital involvement.

All of these signs of orbital tumor may be brought about by disorders that originate outside the orbit, such as intracranial tumors with intraorbital extension, aneurysms, cranial and facial deformities from congenital and acquired disease, maldevelopment, trauma and endocrine dysfunction. Subjective symptoms of orbital tumor, such as deep pain, sense of pressure and expansive headache, numbness, loss of tactile sensation about the face and head, throbbing or pulsation and stinging burning sensation of the eyeball and lids, are seen only occasionally and may not be at all relative to the tumor but expressions of anxiety or purely functional experiences. Such symptoms however are helpful in evaluating conditions which may or may not be referable to a tumor. A study of the signs and symptoms of orbital tumors in a considerable number of cases reveals some interesting and helpful trends in making a diagnosis and in deciding on methods of treatment and surgical management.

There are three cardinal signs of tumor of the orbit which I shall discuss in the order of their importance. The first is exophthalmos, the most common of all the signs of tumor of the orbit. As exophthalmos also occurs in all cases of space-taking or expansive disorders within the orbit, anterior ocular displacement in itself is not indicative of the cause even when proptosis is altered by displacement to one side. Generally speaking, the rate of increase in proptosis is an index of the rate of growth or expansion of a space-taking lesion behind the eyeball, but when proptosis is caused by a tumor its extent is not truly indicative of the size of the lesion, as tumors of the anterior part of the orbit, particularly in the superior quadrants, will, as a rule, produce exophthalmos in the early stages of their development, and as the globe occupies most of the space in the anterior third of the orbit, any extraocular growth displaces the eyeball as long as the bony walls stand firm, while tumors of the posterior half of the orbit may acquire considerable size before appreciable proptosis occurs. This is due to the absorption of fat from compression by slow-growing tumors and freedom with which a tumor may shift its position to occupy space where resistance is low.

A tumor in the anterior half of the orbit displaces the eyeball away from the side of the orbit along which it grows forward. This may be a confusing observation. The tumor may have its origin well back of the eyeball on the opposite side from which it appears to be and may cross from one side of the orbit to the other as it grows forward. In 1 case, observed at the Mayo Clinic a few years ago, a large mucocoele of the maxillary sinus and the ethmoid cells had entered the orbit through the nasal wall, well behind the globe. Within the orbit there were a palpable firm mass in the superior temporal quadrant and proptosis of the globe with displacement toward the nasal side. There was no indication of a mass situated in the nasal side of the orbit, and the logical surgical approach seemed to be along the superior temporal rim of the orbit. A similar situation may be encountered in cases of tumor of the blood vessels and some other tumors that expand by invasion of neighboring tissue rather than as encapsulated bodies.

Proptosis without lateral displacement of the eyeball is the rule in cases of space-taking masses arising in and filling the posterior third of the orbit, particularly tumors of the optic nerve. A tumor in this region may grow to the size of the eyeball and produce considerable proptosis without lateral displacement or troublesome disturbance of rotation. This also holds true of exophthalmos caused by conditions within the orbit other than tumors unless associated with paralysis of ocular muscles.

As most tumors of the orbit are unilateral, unilateral exophthalmos may be presumed to be due to a tumor unless there is some other evident cause for it. The presumption of tumor, however, does not warrant surgical exploration of the orbit until other probable causes of exophthalmos have been ruled out and only then if there is predictable probability of danger from waiting too long. Unilateral exophthalmos of a slowly progressive character is seen in metabolic diseases that in themselves present difficulties in diagnosis, particularly goiter. Visual loss is rare in such cases in the early stages, danger of permanent injury is quite remote and surgical intervention may be safely deferred. However, surgical exploration of the orbit is often done under the impression that a hidden soft tumor is responsible

for the proptosis. The results are difficult to explain to the patient and his relatives.

Bilateral exophthalmos due to tumors of the orbits is rare but is commonly present in Mikulicz's disease and in dysthyroidism. The rate of development of exophthalmos in such conditions is of more significance in differential diagnosis than are its extent and its duration.

Angioneurotic edema begins with intermittent swelling of the eyelids. It gradually increases in severity and extent and finally produces permanent swelling of the lids and exophthalmos, which may persist for several years with little variation. In the early stages the condition resembles pyocoele of the frontal or ethmoid sinuses and surgical intervention, again based on presumption has been done without any benefit.

Lymphoblastoma usually begins in the region of the lacrimal fossa and invades the eyelids. At the first examination one may find one or both sides involved. While one side may show changes some months or years before they are noticed on the other side, lymphogenous tumors of the orbit particularly in Mikulicz's disease are with few exceptions bilateral. Of this group of neoplastic diseases frequently found to be bilateral, neurofibromatosis is most often unilateral.

Confusion in the diagnosis of orbital tumors occurs when exophthalmos is bilateral and combined with moderate swelling of the eyelids. This is the picture usually seen in exophthalmic goiter and in Mikulicz's disease. On the other hand the ocular manifestations of either of these diseases may be limited to one side. Edema of the eyelids and conjunctival chemosis may be absent. If the basal metabolic rate is low and other signs of hyperthyroidism are minimal or absent exophthalmos in a case of arrested hyperthyroidism might well be and often is attributed to tumors of the orbits. That many such mistakes have been made is evident from the reports of cases in which surgical exploration has been undertaken for removal of a suspected tumor with the result that no tumor was found. Often the reason for exophthalmos could not be determined. In such cases the condition has been referred to as "pseudo-tumor of the orbit." Exophthalmos due to hyperthyroidism is sometimes delayed, it occurs some months after an episode of mild general symptoms that never were severe, or even were unnoticed, and have then entirely subsided. In some cases exophthalmos associated with edema of the lids subsides without treatment and the cause of the changes in the orbit may never be known. Low grade cellulitis following dental infection and extraction of teeth is a case in point. Exophthalmos due to low grade cellulitis may last several months and subside without permanent disabling sequelae. Exophthalmos of goiter may behave in the same way, but exophthalmos due to neoplastic diseases does not subside spontaneously.

Mucocoele and pyocoele causing exophthalmos often are undiagnosed or are mistaken for tumor. The reasons for this are obvious. Mucocoele is slow in development, shows minor or no changes in the roentgenogram, produces no inflammatory reaction in the orbit and may be palpated in some cases within the orbital rim as a firm smooth mass. Dermoid cyst of the orbit is likely to be mistaken for tumor or mucocoele. To distinguish tumor and pyocoele or mucocoele may be rather difficult, as the entire symptom complex may well indicate one or the other. Neither condition, however, should be confused with inflammatory disease of the orbit or with aneurysm.

The exophthalmos of aneurysm is peculiar in onset and progress and deserves special consideration, because surgical exploration of an orbit which contains an unsuspected aneurysm may lead to serious complications. Pulsating exophthalmos due to arteriovenous connection within the cavernous sinus gives rise to a well known symptom complex that is not often missed. However, when the arteriovenous connection is within the orbit, whether due to trauma or to disease, only small vessels are involved and the distinct bruit and thrill of cavernous sinus-carotid fistula may be absent or only slight but a venous aneurysm of considerable size may develop so as to require radical surgical intervention. The outstanding features of such conditions are derived from the history rather than from examination.

Exophthalmos due to traumatic aneurysm, which sometimes follows penetrating injuries of the orbit or fractures of the skull, occurs suddenly as a result of hemorrhage into the orbit. Within a few minutes after the injury the eye is noticeably protruded and the eyelid swollen and discolored from hemorrhage. As the swelling and discoloration recede, the veins become distended all orbital tissues become congested and the exophthalmos becomes stationary. Bruit and thrill can be detected. This is the usual manner of development of pulsating exophthalmos due to injury.

On the other hand, arteriovenous aneurysm due to vascular anomalies or disease usually develops slowly over a period of years and is accompanied by the appearance of enlarged veins over the face, a pronounced subjective bruit and a distinct pulsatile thrill. In some cases varices in the orbit take the form of sacculated aneurysms or occur as spongy cavernous tumors. Thrombosis may form in these cavernous spaces and give rise to acute inflammatory reaction, pain swelling and increased proptosis. Discoloration of the lids will indicate whether or not the lesion has bled and is a diagnostic sign that should not be overlooked. Careful inquiry should be made regarding a history of discoloration of the skin of the lids. Pigmentation of the skin may be noted if hemorrhages have been frequent or severe. In any case of suspected aneurysm of the orbit, careful search should be made for bruit and thrill.

In some cases of aneurysm, exophthalmos can be made to increase and to decrease with exertion and change of position of the head, a condition known as intermittent exophthalmos. Exophthalmos that varies considerably in degree usually is indicative of fluid masses of some kind behind the globe. They may consist of mucus or blood. Most commonly they are found to be mucocoeles or pyocoeles that can be emptied by change in position of the head.

According to Berens,<sup>1</sup> "Intermittent or periodic exophthalmos is attributed to a variety of causes, the most common of which are varicosities of the orbital veins, vascular tumor, hemorrhage, cavernous angioma and recurrent inflammation. The exophthalmos tends to increase or become stationary, or to disappear, depending on the disposition of the etiologic factor."

The most striking and unmistakable syndrome is caused by aneurysm. According to Walsh and Dandy,<sup>2</sup> who recently have reported such a case, "It is characterized by pronounced and rapid, almost instantaneous protrusion of one eye when venous stasis is induced by bending the head forward, by lowering the head by

turning the head forcibly by hyperextension of the neck, by coughing, by forced expiration with or without compression of the nostrils, and by pressure upon the jugular veins. The ocular protrusion disappears immediately when the head is erect and when artificially induced venous congestion is relieved. Usually, but not invariably, there is exophthalmos when venous congestion does not obtain. There may or apparently (from cases reported in the literature) may not be pulsation of the eyeball. The vision may or may not be affected. The condition is progressive and may be productive of unbearable pain and troublesome diplopia."

In any case of exophthalmos of obscure origin the probability of tumor must be considered from two points of view: first, whether the exophthalmos can be explained on the basis of any other cause, second, whether, if it is due to a neoplasm, it is benign or malignant and is primary within the orbit or invades the orbit by extension. The problem can best be attacked by attempting first to eliminate non-neoplastic diseases. This is not always easy to do. To rule out goiter, for instance, may require observation for several months under therapy. Exophthalmos may occur during an episode of myxedema, a fact which is often overlooked. A careful history should be taken and one should look for signs of previous hyperthyroidism regardless of the age of the patient. The basal metabolic rate should be known but its significance should not be overestimated, particularly if it is low. Repeated careful measurements of the degree of exophthalmos should be recorded, and comparison of photographs taken from time to time is helpful in determining minor changes. The facial expression in thyroid disease is often a most valuable diagnostic aid when it is properly interpreted.

The mechanism of exophthalmos in goiter is well known. In about a fourth of the cases of acute hyperthyroidism, swelling of the eyelids and exophthalmos come on rather early in the course of the disease and may be the most conspicuous signs. Edema of the eyelids and conjunctivas varies from mild to extreme severity, when it is practically irreducible. In cases of acute hyperthyroidism it is practically always bilateral and in advanced stages it is unmistakable. In cases of chronic hyperthyroidism, exophthalmos quite often appears first in the posthyperthyroid period, after thyroidectomy. As a rule the lids are not swollen and there is little or no chemosis. The exophthalmos may be unilateral, with or without muscle paralysis. The mechanism of the exophthalmos in chronic goiter is the same as it is in cases of acute hyperthyroidism, namely edema of the orbital tissues. As the ocular muscles are greatly swollen, motility is impaired and bizarre muscular findings vary from week to week. Although rotation may be impaired and squint may be present, the proptosis is not altered by lateral displacement of the eyeball and vision is seldom affected. The only other signs of goiter appear in the facial expression, particularly the position of the eyelids. The characteristic retraction of the upper eyelids usually indicates to the experienced observer the cause of the proptosis.

Mikulicz's disease may closely resemble orbital changes of hyperthyroidism. There are chronic swelling of the eyelids with exophthalmos, disturbance of motility and in some instances transient chemosis. These alterations may vary in extent from time to time but are for the most part consistent and progressive. The patient may not be seriously ill, and the general symptoms such as weakness and loss of weight may be

<sup>1</sup> 1. Berens, Conrad. *The Eye and Its Diseases*. Philadelphia: W. B. Saunders Company, 1936.  
<sup>2</sup> 2. Walsh, L. B. and Dandy, W. E. Unpublished data.



similar to those of the posthyperthyroid state. In Mikulicz's disease, however, there are nodules of infiltration that can be felt in the lids, about the eyeball or in the temporal region. The lacrimal and salivary glands are infiltrated and enlarged and there may be changes elsewhere, particularly in the thorax. Such glandular changes are not found in cases of goiter. In Mikulicz's disease the exophthalmos and the swelling of the lids rapidly disappear after the use of roentgen therapy, whereas, in goiter, irradiation has no appreciable effect in the cases in which the disease is chronic.

Other diseases that cause exophthalmos must be ruled out by local investigation of neighboring structures. A low degree of exophthalmos is common in cases in which a pituitary tumor brings about obstruction to the blood flow through the cavernous sinus. Other lesions about the optic chiasm may act in a similar manner to bring about congestion within the orbit and cause exophthalmos. Other signs of chiasmal disturbance, such as defects in the visual fields and changes noted by roentgenography, are determining factors.

Thrombosis of the cavernous sinus nearly always produces exophthalmos, but other signs are so indicative of the cause that tumor of the orbit is not suspected, particularly in the presence of fever and other signs of acute illness.

In an attempt to rule out cysts as a cause of exophthalmos, some surgeons have attempted to explore the orbit with a trocar. Although I never have employed this method of attempting to satisfy curiosity, I have seen some unfortunate results from this practice when employed by other surgeons. It is a futile procedure and I know of no condition which can be helped by it. On the contrary, great harm may be done. I know of 1 case in which an encapsulated tumor of the orbit was pierced by a trocar. When operation was performed at a later date, the patient was found to have a malignant tumor that had spread along the path of the trocar to the lids and was spreading from this tract. The encapsulated tumor originally could have been removed intact if the capsule had not been ruptured, but because of the release from its capsule the lesion spread throughout the orbit and the eye was lost. Exploratory incisions also are of little value and should not be made for diagnosis unless one is prepared to continue with whatever surgical procedures are necessary to complete the indicated surgical management.

Loss of visual acuity with preservation of vision in the peripheral field strongly indicates posterior orbital or chiasmal lesions. When central loss of vision occurs before exophthalmos appears, the chances are much in favor of the lesion being due to an inflammatory process and of loss of vision being attributed to a condition such as retrobulbar neuritis. While the possibility of tumor must be borne in mind the diagnosis of tumor rests on corroborative evidence. In the absence of ophthalmoscopic changes such as choked disk, optic neuritis, optic atrophy, retinal and choroidal disease and opacities in the media visual loss may be presumed to be due to changes along the visual pathways. The lesion may be retrobulbar and situated within the orbit. There is always the probability that it may be due to a tumor.

What visual losses are attributable to tumor of the orbit? The most common visual disturbance is lowered visual acuity. This may begin as a generalized depression of visual function, without significant changes in the visual field or as a central or paracentral scotoma. A tumor of the orbit that produces loss of vision before exophthalmos occurs must be situated in the posterior

portion of the orbit and affect the optic nerve. It may be a tumor of the nerve or its sheath or one that blocks the nerve by pressure, possibly a meningioma. Without other signs of tumor such a diagnosis obviously cannot be made. As a cause of visual loss tumors of the optic nerve are rare compared with toxemia and diseases of the central nervous system. It is not always possible to arrive at a definite conclusion in case of recent onset until after some weeks of observation.

Roentgenograms are useful in the identification of some orbital tumors. Osteomas of the sinuses that encroach on the orbit are best identified by this means. Hyperostosis of the orbital walls is brought about by tumors and diseases of the bone or of soft tissue that are situated near the bone. The most common form of hyperostosis that one sees in the roentgenogram is that of the sphenoidal ridge caused by an intracranial meningioma. Some vascular tumors that develop slowly along the orbital wall also produce hyperostosis. Such a case was reported by me and Love.<sup>3</sup> It has been shown rather conclusively that the roentgenographic appearance of hyperostosis caused by meningioma cannot be distinguished from that of vascular tumors, although the lesion in the bone is quite different.

Erosion of the walls is the rule in cases of pulsating tumor, although in some instances I have seen thickening of the lateral wall of the orbit caused by hemangioma and pulsating exophthalmos.

Pycocles of the sinuses cause pronounced thinning of the surrounding bones that give way to the expansion of the cyst. I have been surprised in some cases to see severe distortion of the orbital walls and the sinuses with little evidence of change in the roentgenogram. In cases of draining pycocle the roentgenogram may be entirely normal.

Considerable comment has been directed to roentgenograms of the optic canals. In a large series of cases of posterior orbital tumors and chiasmal lesions in which roentgenographic examination and operation have been performed at the clinic, very few changes of note have been observed in the size of the optic canals, and these have not always been explainable by the findings at operation. One cannot be sure that a tumor has involved the optic canal because the canal is larger than its fellow.

Soft tumors of the orbit, particularly if composed of dense fibrous tissue, may be portrayed in the roentgenogram with surprising clearness. While the roentgenograms of the head are often normal in cases of orbital tumor, every case should be studied by at least lateral and anteroposterior roentgenograms.

In a large series of orbital tumors one will find rare changes about the eyes that are indicative of tumor. In doubtful cases these changes may be of considerable help in diagnosis. In the eyelids one may find lesions that are of the same nature as a tumor in the orbit. Mikulicz's disease is a case in point. The swelling of the eyelids and exophthalmos are quite similar to those seen in goiter, but nodules in the lids or firm hypertrophic masses are always present in Mikulicz's disease but never in goiter. A biopsy will be conclusive.

Epitheliomas of the lids usually are easily recognized, but deep seated carcinomas, movable and firm, which in size and position resemble lipomas are not uncommon. Such carcinomas have been known to follow roentgen therapy of superficial lesions.

3 Benedict W. L. and Love J. G. Cavernous Hemangioma of the Orbit with Hyperostosis. Report of a Case. *Am J Ophth* 22: 1149, 1151 (Oct.) 1939.

Arnold Knapp called attention to the wrinkling of the fundus caused by pressure of a tumor on the posterior side of the eyeball. I have often seen the streaks in the fundus caused by wrinkling in cases in which the fundus was pushed forward for 4 to 6 diopters. I have never seen them in any other condition than tumor.

#### SUMMARY AND CONCLUSIONS

The probability of tumor in any case of exophthalmos is so great that only in cases of goiter is there serious doubt of the presence of an expanding lesion. The temptation to explore the orbit is irresistible for some surgeons and an exploration is planned. This is not a surgical procedure but a diagnostic one unless the surgeon is prepared to remove the tumor and do the necessary repair. Exploration by trocar is useless and should never be done. Such a procedure is of no help in diagnosis, and in case of malignant tumor or vascular aneurysm it is positively dangerous. Puncture for digital exploration only should never be practiced. One cannot explore the orbit with the finger from any one place along the rim and be sure that nothing has been missed. Exploration of the orbit for diagnosis should always be done through an incision large enough and so placed that, should a tumor be encountered or any other pathologic condition be found that would require surgical removal, the operation can be completed at the time. If one is not sure of the presence of a tumor, it is in most instances safe to employ roentgen therapy and await developments.

## THE ROENTGENOLOGY OF OSTEO-MYELITIS

J. W. PIERSON, M.D.

BALTIMORE

AND

LIEUTENANT COMMANDER J. F. ROACH  
(MC), USN

Osteomyelitis is a disease which has been known to man for many long years, and during that time a great deal of clinical and laboratory investigation has been performed. Many of its mysteries have been solved, but it remains today one of the important orthopedic problems. A brief survey of the literature of just the past few years will show the advocacy of many different forms of treatment and their very number is an indication of the clinical difficulties one meets with this disease. The most recent innovation has been the advent of penicillin for which we have held high hopes, but as yet sufficient time has not elapsed to evaluate its therapeutic effectiveness.

With the thought in mind that no disease can be rationally treated unless its diagnosis is established, we would like to discuss the diagnosis of osteomyelitis, chiefly from an x-ray point of view.

The onset of osteomyelitis is most commonly seen in the age group of 5 to 20 years, the period in life during which we undergo our most strenuous physical activity. Many writers have pointed to this age incidence and related trauma as a predisposing factor. Some weight is added to this theory by the fact that

boys are more subject to the disease than are girls, and it seems reasonable to assume that bacteria may gain a foothold in traumatized tissue more easily than in normal tissue.

The usual offending organism is *Staphylococcus aureus*, though a small proportion of cases (about 10 per cent) show other bacteria, among which are streptococci, pneumococci and typhoid bacilli. The organisms may gain access to the bone in one of three ways: the first two of which we do not consider important because they do not lead to any difficulty in diagnosis. These two are (1) by contamination of the bone such as may occur in a compound fracture and (2) by direct extension of an infection of the soft tissues adjacent to a bone. The third and important method is the hematogenous. It is by this route that bacteria are carried from a primary source to their new focus in bone. The primary source may be a well established clinical lesion such as a furuncle or carbuncle, or it may be a completely asymptomatic process such as a small infected abrasion. In either event the organisms enter the blood stream and, after escaping the body's protective mechanisms, are finally deposited within the bone. There is a rather definite predilection for certain areas of the bones, and these areas are those at which the blood supply is the greatest or, in other words, where growth is most active. Thus, the first changes of osteomyelitis are most frequently seen in the metaphysis of the long bones rather close to the epiphyseal line.

With the lodging of the bacteria in the bone, a minute abscess begins. The organisms multiply, their toxins are liberated and blood vessels become occluded. These processes lead to the first change in the bone that may be seen on the x-ray film. The exact physiologic mechanism of this change is not known, but it is generally believed that the formation of a minute abscess within the bone stimulates the activity of osteoclasts in the adjacent bone, which together with inflammatory cells (connective tissue and round cell) produce the absorption of living bone. This appears on the film as an area of rarefaction, which usually is seen as a circular zone of slightly lessened density in which the normal sharp architecture of the trabeculae is beginning to lose its clearcut appearance. The time at which this change can first be seen is often said to be in the neighborhood of seven to ten days from the beginning of the disease, subject to such variable factors as the thickness of the part, the relative density of the interposed tissues and the amount of lime salts present in the bone at the time of onset of the disease.

If the virulence of the organism within the abscess is greater than the resistance of the host, the process enlarges through the cancellous bone along the lines of least resistance. If it meets the epiphyseal plate its spread in this direction is usually checked because this cartilaginous structure is very resistant to infection. At times, however, this resistance is overcome and the disease may then involve the epiphysis. Again, the infection may advance in the opposite direction and gain access to the medullary canal. This may then result in necrosis of the fatty bone marrow and a rather extensive portion of the cortex of the diaphysis. Spread in a lateral direction brings the inflammatory process to the cortex. All of these developments lead to the accentuation of the first noticeable x-ray changes. That is, the zone of rarefaction becomes more pronounced and more extensive.

In a large percentage of osteomyelitis cases a subperiosteal abscess develops, and this is produced in one of two ways, either of which may sometimes be demonstrated on the film. If the medullary canal is infected, the process may extend through the haversian canals to the subperiosteal bone. In so doing, the bone surrounding the haversian canals may be destroyed, thus forming a demonstrable channel. The second route of spread to the subperiosteal region occurs in the cancellous bone. When the abscess spreads laterally it meets the cortex, which it necroses and perforates, thus allowing the escape of the infection to the subperiosteum.

Occasionally an osteomyelitic process may begin directly beneath the periosteum, and in these cases a rather extensive abscess may form before any changes can be demonstrated on the x-ray film. Once the inflammatory process has gained access to the subperiosteal bone, it strips this membrane away from the cortex. The extent of this stripping is quite variable but it may go so far longitudinally as to involve the entire shaft and it may also completely surround the bone. However, the subperiosteal abscess almost never extends beyond the epiphyseal line at either end, for here the periosteum is very firmly attached.

The development of the subperiosteal abscess leads to another x-ray sign. When the periosteum is separated from the cortex it carries with it many osteogenic cells, which now receive their nourishment from the rich periosteum. These cells are stimulated to activity and promptly begin to lay down a thin layer of bone. This process is so rapid that in a great many cases sufficient new bone to show on an x-ray film is produced in about a week. This new bone is first seen as a thin zone of calcification parallel to the cortex. Where the periosteum has been extensively stripped away from the cortex this new bone may form a sheath surrounding the old bone and dead bone or sequestrums may be entirely enclosed.

A similar physiologic process that is the stimulus of living bone cells to form new bone in the presence of infection leads to the third x-ray change. The osteogenic cells of both the metaphysis and the diaphysis in the infected and adjacent areas begin to produce new bone. This leads to two characteristic changes. First as new bone is laid down the bone becomes thickened in its cortical portion and the trabeculae in the cancellous portion become heavier. Second, the haversian canals and the fibrous spaces between trabeculae may be filled with new bone and thus obliterated. These processes lead to a thick, sometimes ivory-like bone. A film of such a bone shows it to be heavier and denser than normal.

To summarize the process thus far it can be said that pyogenic organisms are carried to the bone by the blood stream. There they set up an abscess which leads to absorption of bone. The abscess then spreads and may reach the periosteal region by direct extension through the cortex or via the medullary cavity and the haversian canals. Thus a subperiosteal abscess is set up. While these processes are going on reparative attempts are made by the bone, and these manifest themselves by periosteal and endosteal bone formation.

These acute changes sometimes subside spontaneously or with treatment but frequently they fail to do so and then the picture of chronic osteomyelitis prevails. This tendency to chronicity is brought about chiefly by the anatomic and pathologic conditions involved. Bone which is killed by the acute infection is absorbed with great difficulty and thus remains sometimes free in the

abscess cavity and sometimes incorporated within new bone. The infected dead bone may lead to chronic draining sinuses or it may be completely sealed off. In the latter case it is possible for living organisms to remain viable for many years with the ever present possibility of flaring up again into acute activity. The x-ray appearance of chronic osteomyelitis is that of a heavy dense bone which looks somewhat moth eaten. Sequestrums or pieces of dense ragged dead bone may be seen lying free or incorporated in the new bone formation.

If the organisms which reach the bone are of low virulence when compared to the resistance of the tissues a similar but less extensive process results. Here as before an abscess forms but its spread is considerably limited by the surrounding bone. Thus we have a localized osteomyelitis which shows many of the x-ray changes previously noted but to a lesser degree. The radiolucent zone produced by absorption is seen and sclerosis of bone is present in the adjacent area. If the abscess lies near the cortex the periosteum may be stimulated sufficiently to produce the formation of new periosteal bone. Here the process usually stops and the extensive changes of chronic osteomyelitis are not seen.

Another form of osteomyelitis that is occasionally seen is Garre's or chronic sclerosing osteomyelitis. In this disease there is quite a different pathologic process and thus a different x-ray picture. The infection is primarily a diffuse process involving a portion or all of the shaft of a bone. Usually no abscess is found and the disease manifests itself on the x-ray film chiefly by its bone producing activities. The osteogenic cells of both the periosteum and the cortex are stimulated and the new bone which is laid down produces a very heavy dense structure. This process may be extended to produce almost complete obliteration of the medullary canal.

The x-ray diagnosis of osteomyelitis is unfortunately not always simple, and changes which occur early in the disease are frequently mimicked by several other pathologic states. It is important, though not always possible, to differentiate these because in almost every instance both the prognosis and the accepted treatment differ greatly from those of pyogenic osteomyelitis. From an x-ray point of view there are three groups of diseases which frequently cause differential difficulties. These are (1) other infections, (2) bone tumors and (3) diseases of the reticuloendothelial system.

In considering other bone infections there are two which cause most of the difficulties. The first of these is syphilis in either the congenital or the acquired form, and it is the tertiary stage of these conditions which may simulate so closely the changes of osteomyelitis. Syphilis begins in the bone as a periosteal infection which stimulates the periosteum to proliferate new bone. In addition there is a true osteitis, which results again in bone osteogenesis in the cortical and medullary bone. Gumma, single or multiple, may appear and destroy bone, thus the final result of these processes as seen on the film is a thick irregularly dense moth eaten bone which may completely simulate the picture of osteomyelitis, and it is frequently impossible to differentiate the two without the aid of the clinical findings.

The second bone infection which offers diagnostic problems is tuberculosis. Usually tuberculosis of bone is not a difficult diagnosis to make, but in the relatively rare tuberculous osteomyelitis of a long bone a picture

closely resembling pyogenic osteomyelitis may result. There is one very helpful factor in differentiating tuberculosis, and that is that its bone destructive qualities usually surmount its bone producing activities. Thus on the film we are more apt to see radiolucent bone rather than the dense sclerotic bone of pyogenic osteomyelitis. However, it occasionally happens that a tuberculous abscess develops in a long bone, usually in the metaphysis. This may then go on to produce bone absorption, periosteal bone proliferation and endosteal bone formation. It is readily seen that these processes may produce the so-called characteristic picture of osteomyelitis.

Bone tumors form the second group of diseases which must be considered in conjunction with pyogenic osteomyelitis, and we are of the opinion that these are the most important conditions for differentiation. Here the prognosis is of course grave and incorrect diagnosis may lead to a sorry situation.

There are many forms of bone tumor, but we propose to discuss here only those which offer the greatest diagnostic problems. There are several clinical similarities of bone tumors and osteomyelitis which add to the difficulties of diagnosis. The peak age incidence of the two groups is just about the same, and the location of the disease tends to follow a similar pattern. The onset of clinical symptoms may be identical in the two conditions. Thus we may see a young patient with the symptoms of acute osteomyelitis even with an elevated white blood cell count, and if one is not careful a diagnosis of osteomyelitis may be made when the underlying pathologic condition is really that of a bone cancer.

The first tumor we should like to consider is osteogenic sarcoma. This tumor arises from the osteoblast of the periosteum and in many cases the predominant cell depends on the stage of development of the osteoblast at the time the tumor began. This however is not always the rule and a tumor may frequently change its cellular characteristics as the neoplasm advances. Thus we may find a growth which shows a preponderance of fibrous tissue, cartilage or bone, or a mixture of these three. If the tumor consists primarily of only one of these tissues, the x-ray picture is differentiated from osteomyelitis without too much difficulty. However, in the mixed types a different situation exists. The most confusing picture occurs when the tumor invades the bone early in the disease and produces bone destruction. When this is coupled with new bone production within the tumor and along the periosteum a pathologic process is encountered the x-ray appearance of which taxes the most astute diagnostic eye. We often hear of the "sunburst" picture of osteogenic sarcoma, and when this occurs the diagnosis is usually easy. However, new bone formation in spicules perpendicular to the cortex is not limited to osteogenic sarcoma nor is it always present in this disease. Any disease process which slowly lifts the periosteum from the bone so that the capillaries which run from the periosteum into the bone are not torn away and then new bone is apt to be laid down along the course of the capillaries. Thus one sees that the physiologic mechanism of the sunburst effect is not limited to any one pathologic state.

A second tumor of bone to be considered is Ewing's sarcoma, or preferably Ewing's endothelioma. The exact source of origin of this tumor has long been a disputed point but today most workers believe that it is not a true sarcoma and that it arises from the endothelial

cells of the blood vessels or lymphatics of bone. Although the growth may begin subperiosteally, it usually arises within the medullary cavity. In the latter case, while it stays within the confines of the cavity no x-ray changes are demonstrable. However, it sooner or later invades and destroys adjacent bone, and when the growth approaches the subperiosteal zone the periosteum is stimulated to activity and new bone is laid down. In addition, where bone is being destroyed there is also the stimulus to produce new bone, and though this is minimal in Ewing's tumor it nevertheless is present. It is at this stage in the development of the cancer that the greatest x-ray problems are encountered, for here just as in osteomyelitis we find the same three changes on the x-ray film, namely bone destruction, bone formation and periosteal proliferation.

A third tumor which occasionally offers diagnostic problems to the radiologist is the metastasis of neuroblastoma. It is the early stage of the single metastasis which causes the most difficulty. It is true that the growth is primarily osteolytic, but, as is always seen in bone destruction, the impetus to produce new bone is present and the final result may be a pathologic process the x-ray appearance of which is not at all unlike that of osteomyelitis.

There remains one group of diseases which may simulate the changes of osteomyelitis and this group includes several related entities all of which show either primary or secondary changes in the reticuloendothelial system. This group includes the leukemias, the lymphomas, the xanthomas and the congenital anemias. The characteristic x-ray picture of any one of these is usually readily differentiated from the others and from osteomyelitis, but each may have a stage in its development when one sees bone destruction, bone production and periosteal reaction in other words the picture of a relatively early osteomyelitis.

#### SUMMARY

Osteomyelitis produces changes in the x-ray film which can be explained on a sound physiologic and pathologic basis, and these changes are usually sufficiently characteristic to lead to a correct diagnosis. There is, however, a definite stage in the early development of hematogenous osteomyelitis when the x-ray picture is one which may be closely mimicked by several other pathologic conditions. It is unfortunate that this period is frequently at a time in the course of the disease when clinical symptoms and signs do not point to a definite diagnosis. Furthermore, the nature of several of the diseases whose films parallel those of osteomyelitis is such that a mistaken diagnosis and the resultant incorrect therapy may bring on a very unfortunate end result.

1107 St Paul Street

---

**The Heart**—When the modern physician speaks of the cause of death as cardiac or respiratory, he refers to the mechanical failure of these organs to continue performing their normal function. But when the ancient man spoke of these organs as not active he was alluding to the departure of the soul from them without any regard to their functional condition. The difference between life and death was the silence of the heart-beat a phenomenon primitive man could not miss and the cause of which he could not explain except by the presence of the soul in the organ. The heart therefore, was considered by many ancients the source of emotion, intellect, wisdom and courage—Gordon, Benjamin Lee. *The Romance of Medicine*, Philadelphia F. A. Davis Company, 1944.

SURVEY OF MEDICAL CARE IN A  
WAR INDUSTRY AREA

MALCOLM H. MERRILL, M.D.

Chief, Division of Laboratories, California State Department  
of Public Health

AND

MARTIN MILLS, M.D., M.P.H.

Chief, Bureau of Crippled Children, California State Department  
of Public Health

BERKELEY, CALIF.

The exigencies of war have placed a real strain on medical services and facilities throughout the country. This is particularly true in some of the war industrial areas that have experienced considerable increases in population. The extent of this strain in one Pacific Coast area is indicated by the data given here.

The study was undertaken by the California State Department of Public Health at the request of the Coordinating Committee on Medical Care of the California State Procurement and Assignment Service for Physicians, Dentists and Nurses. It was designed to provide information relative to the overall medical care situation in the area under study, with particular emphasis on the adequacy of physicians.

The picture had been somewhat clouded by the fact that an unknown proportion of the population was provided medical care under a prepayment plan. It had not been possible to determine even approximately the population remaining to be cared for through private practice channels.

The study was designed to provide information in the following areas:

1. The total population to be cared for.
2. The proportion of the population reached through the prepaid medical care plan and through private practice channels.
3. The physician personnel available to care for each of these two segments of the population.
4. The volume of service being rendered each group (prepaid medical care group and community at large group).
5. The adequacy of hospital facilities.
6. The consumer reaction to medical care being received.

## MATERIALS AND METHODS

The survey covered the area comprising the cities of Richmond, El Cerrito and San Pablo in Contra Costa County, Calif. The Permanente Metals Corporation comprises the most extensive industry in the area, although there are a number of other large industries, as oil refineries and automobile assembly plants. The survey was conducted during the week of Jan. 17-22, 1944. The data on patients seen by physicians were for the preceding week of January 9-16, inclusive.

The survey team consisted of three physicians, one public health nurse and one medical social worker. Data were collected from physicians by a personal call to each physician's office, during which visit a questionnaire was completed which showed the number of patient visits to the office and home calls made by the physician the preceding week. The data from the pre-

The opinions expressed in this report are those of the authors and do not necessarily indicate the opinions of the Coordinating Committee on Medical Care of the California State Procurement and Assignment Service for Physicians, Dentists and Nurses for which committee the survey was made.

Dr. Edith Young, Miss Nadine Small and Miss Helen Hall assisted in the field work in this study. Dr. Harold A. Fletcher, chairman of the Procurement and Assignment Committee, Dr. Milton Rice, Dr. W. P. Shepard, Dr. Wilton L. Halperin and Dr. Morton Gibbons were members of the subcommittee appointed to assist with the survey and gave valuable suggestions and assistance.

paid medical plan of the Permanente Foundation were taken from the December 1943 monthly report of that organization supplemented by data prepared by representatives of that organization. Hospital data were obtained by direct visits to the hospitals and interviews with hospital superintendents. Other medical care agencies, such as the local chapter of the American Red Cross, the local community health center, the health department and the county welfare department were visited by representatives of the survey team and opinions obtained from workers in these agencies and from patients and other people being served during a three day period by these agencies.

The consumer reaction to the medical care being received in the area was sampled by means of a questionnaire distributed through the sixth grade students of the public schools in the area. The same questionnaire was used in the offices and clinics of the health and welfare agencies just noted. It was also completed on a limited number of families contacted by direct home calls.

The Regional Housing Authority and its constituent units were also contacted and medical care problems coming to the attention of this agency noted.

## POPULATION DATA

The most recent and reliable population estimates obtainable were for Richmond 105,000, El Cerrito 16,626 and San Pablo 20,000, with a total for the area surveyed of 141,626.

For the purpose of the compilation of data the figure 140,000 was adopted as being probably the nearest round figure estimate of the population. It appeared that this was at least within 10,000 of the then current actual population and probably was a conservative estimate. The current population for the area represents approximately a threefold increase over the 1940 census.

## SOURCE OF MEDICAL CARE

From a study of the total shipyard population and geographic distribution of residence of shipyard employees and knowing the percentage covered by the prepaid medical plan, it was estimated that 28,000 people living in the survey area received medical care through the prepayment plan of Permanente Foundation. This left 112,000 in the community at large to be provided with medical service.

## PHYSICIAN POPULATION

It was found that 29 physicians were engaging in private medical practice in the area. Several of these were formerly retired physicians who were seeing very few patients, others maintained offices outside the surveyed area and therefore devoted only part time in the area. A study of the practice of each physician was made and the percentage effectiveness of each estimated. On this basis it was estimated that there were 24 fully effective physicians available for private practice in the area.

By applying similar estimates it was found that approximately 60 fully effective physicians were caring for the 71,139 patients covered by the Medical Plan of the Permanente Foundation.

## PHYSICIAN-POPULATION RELATIONSHIP

Using the foregoing figures, the physician-population relationships are shown in table 1. These figures indicate that there were approximately four times as



in any physicians per unit of population available to the shipyard workers as to the population of the community at large

#### VOLUME OF MEDICAL SERVICE PROVIDED

In order to estimate the total volume of the patient load seen in the office and at home, each physician in the area was asked to provide information on the number of patient visits to the office and the number of home calls made during the preceding week. In most instances actual figures were given day by day. In

TABLE 1—*Physician-Population Relationship in the Richmond, El Cerrito, San Pablo Area of California January 1944*

|                            | Community | Permanente Foundation |
|----------------------------|-----------|-----------------------|
| Population to be served    | 112 000   | 71 139                |
| Total physicians available | 21        | 60                    |
| Population per physician   | 4 660     | 1 185                 |

other instances estimates were given. Since the latter compared quite favorably with the actual counts from comparable practices, this estimate is thought to be fairly close to the actual facts. In arriving at these figures our table was compiled, giving age of physician, type of practice, daily office visits and daily home visits. Hospital cases were not included.

For the Permanente Foundation the December monthly report, which was provided to us, was the source of the data. It is emphasized that these figures give only quantitative information and in no way indicate the intangible qualitative factors, which latter we did not attempt to evaluate. The data are shown in table 2.

The figures shown are exclusive of the work done at the first aid station at the shipyards, for which 6 physicians were employed full time. Using these figures, which would appear to represent essentially comparable services, the office or clinic and home calls per physician per month were calculated by dividing the number of visits by the number of physicians providing the service. These are figured on a basis of what has been estimated to be 100 per cent effective physicians and also eliminating the 6 physicians at the first aid station. These figures are also shown in table 2.

TABLE 2—*Volume of Medical Service Provided in the Form of Office Visits and Home Calls*

| Volume of Service Rendered                        | Community | Permanente Foundation |
|---|-----------|-----------------------|
| Total estimated office or clinic visits per month | 25 350    | 34 600                |
| Total estimated home calls per month              | 1 950     | 1 470                 |
| Total office or clinic and home calls             | 27 300    | 36 068                |
| Number of physicians providing service            | 21        | 54                    |
| Patient visits per physician                      | 1 117     | 668                   |

If the services rendered at the first aid station at the shipyards are also included, a somewhat different comparative picture is presented. For the month of December a total of 130,652 patient visits to first aid station clinics and home calls were recorded in the Permanente report. Using this figure the patient visits per physician at Permanente becomes 130,652 divided by 60, or 2,177.

We were also interested in calculating the volume of medical service per thousand of population for the two population groups. These calculations are shown in table 3. The figures in table 3 demonstrate that on

a strictly quantitative basis the subscribers to the Health Plan were seeing a physician much more frequently than were the people in the community at large. If the service rendered at first aid stations is included, there were almost seven times as many patient visits per thousand of population in the Permanente group as in the Community group. This difference is only half as great if the industrial cases are excluded from the Permanente group, since 50 per cent of all treatments given by the Permanente physicians are industrial in nature. It would appear that for illness of non-industrial type the subscribers to the Medical Plan receive three to four times more medical treatments than do people in the community at large if the service rendered at the first aid stations is included. If first aid stations and industrial services are excluded the visits per thousand of population are almost comparable (244 vs 254).

#### PHYSICIAN OPINION RELATIVE TO ADEQUACY OF MEDICAL CARE IN THE AREA

All physicians practicing in the area were interviewed either in person or, in a few instances, through telephone calls. An attempt was made to estimate the number of requests for service that are turned down.

TABLE 3—*Volume of Medical Service per Thousand of Population in the Community and Permanente Population Groups*

|  | Community | Permanente Foundation |                    |
|--|-----------|-----------------------|--------------------|
|  |           | Total                 | Nonindustrial Only |
| Estimated population served  | 112 000   | 71 139                |                    |
| Estimated clinic and home calls (exclusive of first aid stations)        | 27 300    | 36 068                | 18 600             |
| Visits to physicians per thousand of population                          | 244       | 508                   | 264                |
| Home calls per thousand of population                                    | 17.4      | 20.1                  |                    |
| Total service including first aid station                                |           | 130 652               | 66 376             |
| Total treatments per thousand of population (clinic, home and first aid) |           | 1 810                 | 920                |

daily. It was estimated that at least 100 calls per day, or approximately 2,600 to 3,000 per month, are not being accepted. Our impression is that this figure is extremely conservative. All physicians expressed concern over the pressure of work, and several wondered how long they might be able to keep going at such a pace. We found the waiting rooms of most doctors visited filled to capacity, and in some instances patients were waiting in the halls.

The majority of the physicians expressed the opinion that additional doctors should be assigned to the area. The most urgent need expressed was for some relief from the late afternoon, evening and night calls. Some type of an emergency setup whereby the evening and night calls could be taken care of was almost unanimously proposed. The present handling of emergency work was considered by all as being quite inadequate.

Most physicians felt that the assigning of additional doctors to do general practice would do little to remedy the situation unless a significant number is assigned, as the demand for medical service would pyramid as the service became more available. No one ventured an opinion as to the total demand for medical service if it were readily available.

Physicians who had been brought in to work in the emergency room of the Richmond Hospital had built up practices so rapidly that within a month or so they were no longer interested in remaining at the hos-



pital on an emergency basis. Indications were that it would take about a physician a month to keep this service going unless the assignment was made under an arrangement that would guarantee continued service in the emergency unit.

A significant number of physicians were much concerned over the lack of adequate hospital facilities. Lack of facilities for care of emergency cases was repeatedly mentioned. There were several comments that beds for colored patients were particularly difficult to obtain.

Opinions concerning night calls varied from statements that many of the night calls were unnecessary to assertions that the chief difficulty was that patients wait too long before calling a doctor. There were some opinions expressed that patients do not know how to go about getting a doctor.

In addition direct interviews were held with Housing Authority representatives, representatives of the residents in the housing units and by direct home calls to over 100 homes scattered throughout the area.

The questionnaire was distributed through the following channels:

1 Through the sixth grade of nine selected schools which draw students from the major residential areas.

2 To the mothers attending well baby conferences covered by the public health nurses of the health departments.

3 To patients at the clinics at the Richmond Health Center.

4 To the mothers who bring their children to child care centers that are under the direction of city school nurses.

5 To persons calling for assistance, during the three days of the survey, from the Contra Costa County Social Service Department and American Red Cross.

TABLE 4—Items Included in and Data Tabulated from Questionnaire Distributed Throughout the Area Surveyed

|  |                                  |            |
|--|----------------------------------|------------|
| Total questionnaires distributed   | Schools                          | Other      |
| Total questionnaires returned  | 1 640                            | 260        |
| Total number of people represented   | 914 (55.7%)                      | 260        |
| Average number per family group  | 4 400                            | 835        |
|  | 4.9                              | 3.6        |
| Answers checked  | Percentage                       | Percentage |
| 1 Do you have a family physician where you now live?   | Yes 350 39.3 No 510 102 39.2 158 |            |
| 2 Have you or one of your family seen a local physician for the purpose of obtaining medical care within the past year?  | Yes 650 70.0 No 264 225 85.2 39  |            |
| 3 Where was the doctor seen?   |                                  |            |
| Office   | 461 47.0 156 45.1                |            |
| Home   | 246 22.4 81 23.4                 |            |
| Hospital   | 225 20.5 73 22.5                 |            |
| Shipyards  | 168 15.1 31 8.9                  |            |
| Total  | 1 098 100.0 346 100.0            |            |
| 4 Have you or your family had any difficulty in obtaining a physician within the past year?  | Yes 120 16.6 No 603 69 27.0 149  |            |
| 5a Was your attempt to obtain a physician successful?  | Yes 166 67.5 No 82 70 76.0 32    |            |
| 5b How many physicians did you call before obtaining one?  |                                  |            |
| Total reported   | 510 245                          |            |
| Average number of calls per report   | 1.8 2.6                          |            |
| 5c How long after you called was the physician seen? (See text for data)   |                                  |            |
| 6 Have you felt the need for a physician's services during the past year in this area but for one reason or another failed to call one? If the answer is yes please state the reason (See text for data) | Yes 174 28.4 No 439 50 11.0 148  |            |
| 7 Has any member of your family been a patient in a hospital in the past year in this area?  | Yes 187 21.7 No 603 64 26.4 178  |            |
| 8 Were you able to obtain hospitalization when needed?   | Yes 179 78.5 No 49 67 70.0 17    |            |
| 9 Was hospitalization delayed because of lack of beds at the hospital? If answer is yes for how long? (See text for data)  | Yes 25 13.1 No 165 15 31.6 39    |            |
| 10 Number of questionnaires bearing comments (Do you wish to make any comments concerning the medical or hospital care received by your family? If so please use the back of this sheet)                 | 153 59                           |            |

#### HOSPITAL SERVICE

From the initial conference in the area to the end of the survey the problem of lack of hospital facilities was constantly brought to our attention. Visits were made to all hospitals in the area. Total bed capacity and percentage of occupancy were determined and availability of hospital service was studied. Opinions of representatives of various agencies, physicians and hospital administrations were elicited. The composite picture served to indicate an acute shortage of hospital facilities for the expanded population. The problem however was quite confused owing to the utilization in varying degrees of hospital facilities of the contiguous Oakland-Berkeley area. For this reason no statistical data are included in this report.<sup>1</sup>

#### CONSUMER OPINIONS CONCERNING MEDICAL CARE

Information bearing on the attitude of the public in the area concerning the adequacy of physician and hospital service was obtained from several sources. A questionnaire was distributed through several channels:

1. The data compiled are available in the mimeographed report issued by the state Procurement and Assignment Service.

In items 2 to 5 inclusive it was possible to have some one who had been in conferences concerning the survey actually on hand to answer questions and assist in completion of the questionnaire and to record problem cases. These groups were designed to serve as a check on the data obtained through the schools. The summary tabulation is given in table 4. The data tabulated from the questionnaire are divided into those sent through the schools and the remainder covered under items 2 to 5 inclusive.

The results of all questions are shown in the table except 5c the second part of questions 6 and 9 and question 10. It will be noted that only 55.7 per cent of the forms distributed through the schools were returned. It may be argued that this does not therefore represent the true picture, as the results may be unduly weighted by persons who did not encounter difficulties. The fact that comparable results were obtained from the remaining groups in which there was 100 per cent return of questionnaires is indicative that the school results are representative. It must be borne in mind, however, that these questionnaires provide information only on family groups. Single men groups, elderly per-

sons and married people not having children in school are not represented

It will be observed that approximately 60 per cent of the families did not have a family physician. In over 70 per cent of the families some member had obtained medical care in the past year. About 65 per cent of these physician visits were made in the office and home. Almost 17 per cent of the one group and 32 per cent of the other group had encountered difficulty in obtaining a physician. Attempts to get a doctor were successful in only about 70 per cent of instances. Approximately one fourth of the people had failed to call a physician when needed. Some of the reasons noted for not calling a physician are given later. Slightly over 20 per cent of families had had one or more members in the hospital during the past year. Eighty per cent stated they had been able to obtain hospitalization when needed.

Under 5b as many as 30 calls to physicians were recorded before one was obtained and other figures noted were 20, and in several instances 10, 9, 8, 6 and 5.

Under 5c the waiting period varied from a few minutes to fifty-four days, but periods over twenty-four hours were noted in only 29 instances out of the total questionnaires returned. In 26 instances it was reported that the physician failed to call after the patient was advised he would do so.

Under question 6, persons were asked to state the reason why they had not called a physician. There were 143 answers given to this question. In 31 instances it was stated that doctors were too busy or so overworked. 24 stated that physicians were too difficult to get, 21 indicated that doctors would not make home calls, in 12 cases it was noted that one had to wait too long to get to see a physician. 6 times the comment was noted that appointments had to be made so far in advance, 5 stated that they did not know any doctor in this area, 5 others that there were not enough doctors, and 5 stated that it took too much time to get a doctor, in only 5 cases was an economic reason given for not calling a doctor. The remainder were various reasons mostly revolving around the general problem of time and difficulty involved. In only 1 case was poor transportation mentioned.

The following figures are those noted indicating wait before hospitalization was obtained. Days, three, three, two, five and seven. Weeks, two, two, two, four and two. Months, three and three.

There were 158 comments recorded in response to item 10. Owing to the wide diversity of opinions, no attempt at classification has been made. In general they followed the same pattern as those noted under question 6. Difficulty in getting a doctor for emergency and night service, the long waits in doctors' offices, statements concerning doctors being overworked, difficulty in getting immediate hospital service and shunting from agency to agency were comments most frequently noted. In a significant number of instances it was commented that the shipyard workers are fairly well taken care of but that there are not enough doctors for their families. In several instances it was stated that workers are leaving the area because of lack of doctors and medical care. Surprisingly few of the comments appeared to be of the complaint type.

As indicated, the data obtained from the questionnaires was supplemented by direct interviews. In these interviews specific case histories were obtained in an effort to determine the exact problems when there was difficulty encountered in obtaining medical attention.

The representatives of one of the housing unit citizens' associations provided a number of such specific case histories. These merely substantiated the statements noted on the questionnaires that it was very difficult to obtain physician service for evening and night home calls that in occasional cases real emergencies encountered considerable delay in achieving medical attention, that there were frequently long waits, whether in doctors' offices or at the Permanente Hospital clinics.

In another group of direct interviews 102 direct home calls were made in various areas of the city. These visits only served to confirm the general trend of information obtained from the questionnaires. The same general problems were encountered and a number of problem cases were cited. These revolved for the most part about the difficulty and delay in securing physician and hospital services.

#### OFFICIAL HEALTH SERVICES

There were repeated comments encountered throughout the survey concerning the inadequacy of the local health department. It was found that despite the fourfold increase in population in the city of Richmond the health department had less personnel than at the beginning of the war. Since the survey, the health department has been completely reorganized and has become much more adequately staffed.

#### COORDINATION OF SERVICES

Repeated comments were heard relative to lack of coordination of even existing medical facilities and services. Each agency has been carrying on its own activities, frequently without regard to other agencies. There has seemingly been considerable reluctance to accept responsibility by the various agencies. The need for a medical coordinating council or central medical clearing agency was repeatedly expressed by various persons interviewed. In several instances it was suggested that this should be the city health department.

Many of the interagency complaints and criticisms appeared to members of the survey staff to be based on inaccurate or inadequate information or frank misunderstandings. It appeared that perhaps the majority of such problems could be readily resolved if representatives of the various agencies could come together, define the limits of their respective responsibilities and discuss the areas wherein friction develops.

#### COMMENT

The problems in medical care presented in the district considered in this study are particularly interesting because of the coexistence of a prepaid medical care plan covering a considerable segment of the population alongside the private practice system serving the remainder of the people. The data that have been presented demonstrate that the recipients of the prepaid medical plan are receiving a much greater volume of medical attention than are the people in the community at large. The Permanente Foundation was in operation in the Richmond area before the program of the Procurement and Assignment Service was inaugurated. We were advised by the chairman of the Procurement and Assignment Service that it had been recognized that the Permanente Foundation was fulfilling a critical need in the area by way of insuring the continued effectiveness of the workers in the vital shipbuilding industry. Therefore the Procurement and Assignment Service had cooperated in every way to insure the continued effectiveness of the Permanente Foundation program during the present emergency. This probably accounts for the allowance of one phy-

sician to 948 employees in the shipyards, in contrast to one physician to 4,666 civilians in the community at large

Ciocco and Altman<sup>2</sup> have reported statistics on the patient load of private medical practitioners in Maryland, the District of Columbia and Georgia. These data were compiled from surveys conducted near the end of the first year of the war (August to December 1942). Since that time the problem of providing adequate physician service has become much more acute in many areas of the country. This is particularly evident from the study of physician population and load of medical work being done in the areas here studied. Whereas these workers found that the average weekly patient load was 111 in Georgia, 115 patients in Washington, 119 in Baltimore and 132 in Maryland, the patient load of the physicians in the area here studied was at least twice this number (1,185 per month). These authors also indicated that in order to maintain the then current volume of service the number of persons per physician could not be increased beyond 1,200 and 1,500 in Maryland and 2,000 to 2,400 in Georgia. It should be noted that this had been increased to 4,666 persons in the surveyed area here reported. The data clearly indicate that the demand for medical service is not being met, just as the demand for many services and commodities in other fields during this wartime period are not being met. Despite these facts there were relatively few cases brought to the attention of the survey team indicating real suffering or indicating real danger to the life and health of people in the community as a result of the limited medical service available. It would thus appear that there is a rather wide margin between the level of medical service that the community has been accustomed to and the service that on a temporary basis at least will result in significantly endangering the health of the community.

It would appear that in this war industrial area the cost of medical care was at the time of the survey not a significant factor. As already indicated, in only 5 instances was this factor even mentioned by people interviewed or on the questionnaires returned. For this reason the comment has already been made that the total volume of medical care that would be utilized if it was readily available could not be estimated.

It might be noted, however, that with a fourfold increase in the population there had actually been no increase in physicians in civilian private practice. This fact, coupled with the increased average income of the population, would seem to indicate that in all probability at least four times as many physicians in private practice would be kept busy if they were available.

If we apply to the area under study the calculations of Ciocco and Altman for the Maryland area, we have the following comparisons. In Maryland approximately 500 patient visits per physician monthly was estimated to be the reasonable maximum. In the surveyed area approximately 1,100 patient visits per physician monthly were recorded. The authors calculated that 1,200 to 1,500 persons per physician was a reasonable maximum in order to maintain the approximately perwar level of service. In the surveyed area there were approximately 4,700 persons per physician. Thus despite the fact that physicians were seeing twice as many patients there were still less than half as many

total visits per thousand of population in the surveyed area as in the Maryland district studied by Ciocco and Altman.

Another factor that complicates the picture of medical care in the area surveyed particularly in the war industry group is the fact that workers in these industries have been recruited from rejects for military service, from the older age group of the population from women workers who are not accustomed to the type of work in which they are engaged and from areas in the Southern states where the level of individual medical care appears to have been low, resulting in the accumulation of illnesses and defects requiring medical attention. Thus there has been a selection of a population needing medical care. All these factors have resulted in an increased demand for medical care particularly on the part of the shipyard workers. These factors, plus the more ready availability of the service and greater number of physicians per unit of population, probably account for the fact that there were seven times as many services rendered under the shipyard health plan as were received by the civilians in the community at large.

Another factor that was frequently called to the attention of the survey group was the fact that individuals from the area mentioned were not too well acquainted with how to utilize the medical facilities that were available. Many of these people do not know what to expect from a physician, are reluctant to follow advice and have no confidence in medical care provided, with the result that local physicians had become reluctant to handle them. In many instances it was found that patients had resorted to subterfuge and misrepresentation in order to secure medical service. In some of the housing districts some of the physicians were reluctant to accept calls at all, owing to such repeated instances of such subterfuge and misrepresentation.

The study also indicated that the Negro medical care problem was very acute and that facilities for the care of these people, from the standpoint of both hospital and medical facilities, were quite inadequate. There had been a considerable influx of Negro population within the preceding six to nine months into an area that had been almost entirely composed of white persons in the past. The facilities for their care had not kept pace with such an influx.

Another interesting item noted was that physicians frequently complained that patients waited too long before calling, yet at the same time there were numerous complaints that the majority of the calls were unnecessary. It is probable that the majority of the people could hardly be expected to differentiate between serious and minor illnesses. The general level of lay education in the medical field will probably have to be increased before any headway could be made in solving this problem.

Another factor that stood out in bold relief was the apparent lack of information concerning the medical services that were available. The community organizational and coordinating services had not kept pace with the expansion of the population.

One of the interesting findings was that we encountered so little in the way of complaints on the part of the public regarding the limited medical services that were available. Everywhere there was encountered the attitude that this limitation was part of the problem of being at war. With rare exceptions there was a feeling of sympathy toward the physicians of the community and a desire to limit request for service to real

2. Ciocco A. and Altman I. Statistics on the Patient Load of Physicians in Private Practice. *J. A. M. A.* 121:306-313 (Feb. 13) 1943. The Patient Load of Physicians in Private Practice. A Comparative Statistical Study of Three Areas. *Pub. Health Rep.* 58:1329-1351 (Sept. 3) 1943.

problems in order to save the time and effort of the physician. This was particularly true in the population group dependent on physicians in civilian practice. There were hardly any complaints registered regarding the quality of the care once a physician was secured.

#### ADDENDUM

Dr Harold A. Fletcher has provided the authors with the following information relative to action taken by the Coordinating Committee following the submission of the survey report and has granted permission for it to be added as an addendum to this report.

"The Coordinating Committee of Procurement and Assignment Service sent a copy of the survey and the conclusions of the Committee to the Council of the California Medical Association. The Coordinating Committee recommended and urged that the California Medical Association take steps within itself and its component county medical societies to remedy the shortage of medical care. The Council of the California Medical Association immediately requested the California Physicians' Service to institute an emergency medical care service in Richmond to cover that large element of population which was not receiving medical care from either the local physicians of Richmond or the Permanente Foundation program. The California Medical Association financed the inauguration of this service by California Physicians Service and underwrote any deficit which might occur for a period of ninety days or longer if the needs required. The California Physicians' Service inaugurated this service on May 1 in spite of a good many delays and obstructions due to difficulties in obtaining quarters, telephone service, etc. During May, one full time physician and one full time nurse were on duty from 6 to 11 in the evenings and from 2 on Saturday afternoon to 8 o'clock on Monday morning. This service was carried out in spite of not having a telephone exchange. Patients were charged fees on the basis of a modified fee schedule. The income for the month of May was \$134.50 and the operating expenditures were \$1,135.00, a loss of \$1,000.50. During June a twenty-four hour service was initiated seven days a week, with two physicians and two nurses, one physician sleeping in the center. Ten thousand cards notifying families and groups of the availability of the medical service were distributed. Total income for the month of June was \$402 and the total operating expense was \$1,553.35, an operating loss of \$1,151.35. During the month of July there were two doctors and two nurses for the same service. The income was \$934.40, with an operating cost of \$1,865.00. Operating loss was \$930.60. There has been a steady increase in the number of patients applying to this service for medical care, but as yet there is a definite operating loss which the California Medical Association is underwriting. It is hoped that, with the preliminary stages of this service overcome, the service will be a self-supporting project, and it is hoped that the California Medical Association will continue its backing until this result is obtained. It may be stated, however, that unless the service becomes self supporting in a reasonable period of time the question arises as to whether this added service was as necessary as would appear from the information revealed in the survey."

It should be noted that the service described was established for emergency medical care only. During the first three months of operation there were only 13 calls per patient. Patients were referred to other physicians in the community for any conditions requir-

ing follow-up care or hospitalization. There is perhaps some question whether or not such a strictly emergency service can be made to pay its way. Some plan of municipal subsidy may be necessary if this service is to be maintained.

## Clinical Notes, Suggestions and New Instruments

### INTRAHEPATIC OBSTRUCTIVE JAUNDICE FOLLOWING MAPHARSEN WITH DEVELOPMENT OF A SPRUELIKE SYNDROME

CAPTAIN EDWARD D. FREIS AND MAJOR DWIGHT A. MATER  
MEDICAL CORPS ARMY OF THE UNITED STATES

In a case of jaundice it is of paramount importance for the surgeon to differentiate extrahepatic biliary obstruction from other causes, since the decision to operate frequently is decided by this criterion. Fairly accurate indexes for such differentiation are available, but occasionally the information obtained will be misleading. Such is the series of cases of postarsphenamine icterus reported by Hanger and Gutman.<sup>1</sup>

Their cases presented the typical clinical and laboratory evidence of obstruction to the extrahepatic biliary tract, and for that reason several of their patients were operated on. No obstruction was found in these cases, however, other than pronounced bile stasis in the canaliculi of the liver.

The importance of preventing unnecessary laparotomies prompts us to draw attention again to the syndrome of intrahepatic obstructive jaundice. For this reason we wish to place on record a case which was typical of those described by the authors mentioned and which also presented for a time in the clinical course some of the manifestations of sprue.

#### REPORT OF CASE

A Negro aged 27 was found to have positive Kahn and Wassermann tests for syphilis on induction into the Army. Treatment was begun with mapharsen and a bismuth compound. Eight hours after the first mapharsen injection he experienced severe headache, paresthesias, chilly sensations and anorexia. Four hours after the third mapharsen injection he felt faint and nauseated and again experienced paresthesias, severe headache and chills and developed conjunctivitis.

Physical examination on admission to the hospital revealed that the patient was moderately ill and slightly icteric with a temperature of 100.8 F and a generalized erythema. There was some tenderness of the muscles and pain on flexion of the joints. The liver and spleen were not palpable.

Examination of the urine revealed a 2 plus test for albumin and a positive test for bile. The centrifuged sediment contained 2 to 6 renal epithelial cells per high power field, 0 to 2 epithelial cell casts and occasional leukocytes, leukocyte casts and coarsely granular casts. The red blood cell count was 3,800,000 per cubic millimeter, with 115 Gm of hemoglobin per hundred cubic centimeters. The white blood cell count was 10,000 per cubic millimeter, with 69 per cent polymorphonuclear leukocytes. The stools were clay colored and negative for bile and urobilinogen. The qualitative urine urobilinogen test was also negative. The blood nonprotein nitrogen was 21.4 mg per hundred cubic centimeters and the icterus index 57. The van den Bergh test showed an immediate direct reaction; the cephalin cholesterol test was negative and the prothrombin time was 22 seconds, normal control 21 seconds. The red cell fragility test showed beginning hemolysis at 0.36 per cent. There was no sickling.

Despite the clinical and laboratory evidence of obstructive jaundice and because of the history of recent therapy with

From the Laboratory and Surgical Services, A. A. F. Regional Station Hospital, Lincoln Army Air Field, Lincoln, Neb.  
1. Hanger, F. M. Serological Differentiation of Obstructive from Hepatogenous Jaundice by Flocculation of Cephalin Cholesterol Emulsions. *J. Clin. Investigation* 18: 261 (May) 1939. Hanger, F. M. and Gutman, A. B. Postarsphenamine Jaundice Apparently Due to Obstruction of Intrahepatic Biliary Tract. *J. A. M. A.* 115: 263 (July 27) 1940.

arsenicals, the patient was placed under observation for four and a half weeks. During this time he complained of anorexia and occasional abdominal cramps. Six days after the last mapharsen injection his temperature fell to normal and remained so thereafter. The urine albumin, casts and cells cleared in two weeks. The liver and spleen were at no time palpable. A gastrointestinal series was negative and scout films of the abdomen failed to reveal calcific densities in the region of the gallbladder. A roentgenogram of the chest was negative.

The icterus index rose gradually to 136. The stools were either yellow or completely clay colored with either a negative or a faint trace reaction when tested for bile and urobilinogen. The urine urobilinogen remained persistently negative. One month after admission the serum protein was 8 per cent, with 49 per cent albumin and 31 per cent globulin. The hippuric acid excretion was normal (374 Gm). The blood cholesterol was 300 mg per hundred cubic centimeters. The glucose tolerance test was normal, at fasting level being 90 mg per hundred cubic centimeters at one-half hour 160 mg per hundred cubic centimeters, at one hour 146 mg per hundred cubic centimeters and at three hours 68 mg per hundred cubic centimeters.

Because of the persistence of the signs of obstructive jaundice, it was felt that an exploratory laparotomy was indicated. This was done thirty-three days after admission. No evidence of extrahepatic biliary obstruction was found. The liver was smooth green and of normal size. The common duct was explored with negative results, and a biopsy of the liver was taken.

Following operation the daily output of bile varied from 50 to 260 cc. Cholangiograms taken at this time by injection of dye through the tube revealed filling of the bile duct radicles. The icterus index gradually fell over a period of two months to 25. At the same time urobilinogen appeared in the urine. The patient's only complaint was itching which was quite severe and lasted for three weeks during the time the jaundice was clearing. The anemia and anorexia receded during parenteral liver therapy and high vitamin and iron intake by mouth.

Two months after admission the glucose tolerance test showed a fasting level of 74 mg per hundred cubic centimeters, one half hour 76 mg per hundred cubic centimeters, one hour 80 mg per hundred cubic centimeters, two hours 78 mg per hundred cubic centimeters, three hours 78 mg per hundred cubic centimeters. This was repeated five days later with essentially similar results. The patient was then given 50 Gm of glucose intravenously with the following results: fasting level 71 mg per hundred cubic centimeters, one half hour 154 mg per hundred cubic centimeters, one hour 79 mg per hundred cubic centimeters, one and one half hours 74 mg per hundred cubic centimeters, two hours 71 mg per hundred cubic centimeters, three hours 71 mg per hundred cubic centimeters. The galactose tolerance test revealed 0.8 per cent reducing substance in the one hour specimen and none in the remaining four hourly specimens.

The blood calcium on two occasions was 8.2 per cent and 7.8 per cent respectively. The stools were voluminous and greasy but were gray brown, were positive for bile and contained numerous fat globules when stained with sudan III or scarlet red. A gastrointestinal series revealed a normal mucosal pattern in the small intestine.

The jaundice gradually cleared over a period of four and a half months at which time the icterus index was 9. The glucose tolerance curve had returned to normal and the stools contained considerably less fat than previously observed although abnormal amounts were still present. The excretion of bromsulphalein at this time showed a pronounced delay, there being 90 per cent retention at five minutes and 75 per cent at thirty minutes. Other liver function tests which do not depend on biliary excretion remained normal. Examination of the duodenal contents using the method of Lucders<sup>2</sup> revealed the presence of trypsin and lipase qualitatively. The patient had gained weight and felt quite well.

The pathologic examination of the liver biopsy by one of us (E D F) revealed that the biopsy specimen had a distinct green color and the cut surface showed numerous punctate areas of dark green pigment scattered throughout the parenchyma.

Microscopic examination revealed: 1 There was increased cellularity of the portal areas due to infiltration of lymphocytes and a few polymorphonuclear leukocytes and eosinophils. There was no dilatation or proliferation of the bile ducts. 2 Numerous scattered focal areas of swollen liver cells were seen around the central veins and in the midzonal regions but not around the portal areas. The most striking feature in these areas was the distention and plugging of the canaliculi with bile thrombi. The Kupffer cells in the region of the efferent vein were loaded with bile pigment. 3 Necrosis and inflammatory changes in the parenchyma characteristic of hepatitis were absent, as shown in the photomicrograph.

The diagnosis was pericholangitis and cholangiolitis.



Biopsy of the liver. The rounded dark areas are bile thrombi. There is much inspissated bile in the region of the central vein (I). The liver cells are enlarged except around the portal areas but do not appear degenerated. The portal area (II) is infiltrated with lymphocytes. The small bile duct (III) is not distended and contains no bile.

#### COMMENT

That this patient presented the syndrome of obstructive jaundice is evidenced by the presence of a steadily deepening icterus with clay colored stools, no enlargement of the liver and/or spleen, negative urine urobilinogen, immediate direct van den Bergh reaction, elevated serum cholesterol, negative cephalin cholesterol test, no increase in the prothrombin time, adequate excretion of hippuric acid and a normal serum protein partition. However, after the laparotomy it became evident that this case was an example of postarsenical jaundice apparently due to the intrahepatic obstruction described by Hanger and Gutman. The prolonged clinical course, the onset with fever and erythema following the third injection of an arsenical and the histopathology of the liver biopsy specimen were identical with the syndrome observed by these authors.

Although this syndrome is a comparatively uncommon reaction to arsenicals, the fact that it can occur makes it important in the differential diagnosis of the patient with obstructive jaundice who gives a history of recent treatment with arsenic.

Our attention was drawn to the spruelike syndrome when we found, during the period of gradual disappearance of the jaundice, that a previously normal glucose tolerance curve became flat. That the appearance of this abnormality was due to faulty absorption by the intestinal tract became evident when a normal intravenous glucose curve was demonstrated.

<sup>2</sup> Lucder, C. W. Quantitative Estimation of Enzyme Concentration in Duodenal Fluids. A Practical Clinical Method. *Am J Digest Dis & Nutrition* 2: 224 (June) 1935.



The probability that a deficiency in the absorptive mechanism existed in the intestinal tract was further emphasized by the appearance of voluminous greasy stools containing large amounts of fat during the time that bile was reaching the intestine and by the low blood calcium. The demonstration of the presence of trypsin and lipase in the duodenal contents suggests that the steatorrhea was not due to a deficiency of pancreatic enzymes. The absence of anemia and glossitis and the other B complex and fat soluble vitamin deficiencies at this time can be attributed to the fact that the patient received liver extract and vitamin K parenterally as well as vitamin supplements by mouth during the month following operation.

Although the syndrome resembling sprue has not been previously described in cases of postarsenical jaundice due to intrahepatic obstruction, it is of interest to note that Farber<sup>3</sup> has observed a similar hepatic lesion in some cases of steatorrhea in infants. The possible etiologic relationship must await further observations.

#### SUMMARY

A case of jaundice following the injection of mepharsen exhibited the clinical and laboratory data consistent with the diagnosis of extrahepatic biliary obstruction. No extrahepatic obstruction was found at operation, but examination of the liver biopsy revealed pronounced inspissation of bile in the bile canaliculi.

During the course of the disease the patient developed a syndrome which resembled sprue in many respects.

## Special Article

### THE DOCTOR LOOKS AT HIS INVESTMENTS

WALTER J. J. SMITH  
BALTIMORE

#### INTRODUCTION

The author, Mr. Walter J. J. Smith, is a graduate in the field of commerce of New York University, with the degree of Master of Commerce. He was a member of the editorial staff of the *Financial World* from 1937 to 1944 and since that time has been supervisor of accounts for *Market Trends*.

An outstanding characteristic of the investment counsel field has always been the youthfulness of the "old men" supervising investment portfolios. But in this field—as in all others—the war has brought changes. The "old men" of finance are now in the armed forces and the portfolios they formerly supervised have either been placed in the hands of other counselors already overburdened or else left to drift until the day when manpower mobilization becomes manpower demobilization. In either event a disservice, not a service, is being performed and the financial consequences of the action can only be imagined. We are assuming in this article that the doctor's portfolio is in the latter group. Since there is no substitute for competent and continuous investment counsel supervision, the following routine is not offered as a permanent "cure-all" for investment problems. Rather, the procedure is offered as a simple and satisfactory temporary method of supervision that avoids most of the investment pitfalls and makes minimum demands on the doctor's time.

In the light of the exhausting schedule being maintained by medical men in general, it would probably be no oversimplification of this investment problem to say that the physician should seek the freedom from worry and supervision achieved through the purchase

of U. S. government bonds. But the average doctor will take one look at the return on such an investment and conclude that he can stand a little less security and a little more income. The result must be a compromise investment.

Now the question immediately arises as to how far down the investment quality scale he should go. In my opinion no doctor considering the purchase of bonds and preferred stocks has the financial or moral right to go under the type of security now included in the medium grade group. Profitable operations in speculative securities demand the individual's maximum attention, and competent medical practice also demands the doctor's full time and interest. Experience has proved time and time again that the professional man whose portfolio continues to be heavily weighted with speculative issues will inevitably become a less competent man in his profession. The reason is simply that no man can serve two masters.

At the present time, issues in this medium grade group—which is constantly being adjusted to the rate of "pure interest"—yield between 4 and 6 per cent in the case of bonds and  $5\frac{1}{4}$  to  $6\frac{1}{4}$  in the case of preferreds. Note that the reference is not to any conventional system of alphabetical rating but rather to the market's own rating of the worth of the securities in the light of existing money market conditions. For the time being, therefore, purchases in this section of the security list should be limited to bonds and preferred stocks qualifying in this class. By the same token, such securities should be sold whenever they leave the medium grade group either on the top or on the low side as a result of yielding less than or more than the limits set up. If this routine is adopted, it will be possible to secure yields more than twice as large as those obtainable on long term taxable Treasury's with only a nominal increase in risk, the reason being simply that a definite plan of "merchandising" the securities is being followed. It is also apparent that the supervisory detail is reduced to a minimum because of the arbitrary procedure. Last but by no means least in these days of heavy taxation, the capital gains and losses over a period of time will tend to cancel out.

Even though this type of security will represent at least the major part of a doctor's portfolio, it is admitted that a well balanced list should also include common stocks. Unfortunately, the relatively simple yardsticks used above are not applicable here. Although brief reference to the financial publications will show an endless array of forecasting mediums, the more successful investment managers base their purchases and sales on broad economic and psychologic factors. At least one service—looking inside the market itself for an indication of future trends—has reduced the investing public's anxiety or optimism (the prime moving factor) to a simple ratio and uses it as a forecasting tool. While the advantages of this method are obvious, most people have neither the time nor the inclination to engage in the dreary task of adding up long series of figures in order to arrive at the necessary ratios. But the general principles of (1) When to buy or sell and (2) What to buy or sell can be employed with profit.

For example, the Dow-Jones averages are the fever chart of business. Reading this business thermometer differs in no respect from any other chart with which the doctor is familiar. Here the danger zone constitutes points where major changes in investment policy must be effected. The years 1932, 1938 and 1942 were points of primary interest to the investor concerned.

<sup>3</sup> Farber, S. Medical Progress. Pancreatic Insufficiency and the Celiac Syndrome. *New England J. Med.* 229: 633 (Oct. 21), 682 (Oct. 28), 1943.



only with adjusting his portfolio to the long range swings in the market. Stated another way, these major turning points were of interest primarily to those anxious to catch most of the bull market rise but side-step entirely the bear market declines. No close and continuous watching of market trends was necessary for such trading action. Although, in matters of this sort, long experience with the charts is of paramount importance if consistent success is to be secured, a victory model short-cut can be offered instead. There are four points to be remembered, and, if they can be kept clearly in mind, most of the investment pitfalls will be avoided. They are that 1 Bull markets tend to run for an average of almost two years and increase the general level of security prices about 65 per cent. 2 Bear markets run almost one year on the average and show price reductions averaging 40 per cent. 3 Since these are only average figures and any specific bull or bear market may run longer or shorter and increase more or less than the figures shown, limit the potential loss in any security to 20 per cent. A penalty of this size for a poor guess is not pleasant medicine, but it does have the virtue of preventing a possible 40 or 50 per cent loss. 4 Note the trend in low grade securities against the high grade issues and the kind of securities that are the current favorites.

The first two points will enable the busy professional man to determine in a general way just where the market stands with respect to the "typical" bull or bear market both in duration and in extent of increase or decrease and gauge his action accordingly. Obviously, considerably more caution must be exercised when buying into a bull market that has been boiling along for three or four years and has increased the general price level 70 per cent than when considering similar action in the same market if it has been moving along for only one year or even less and scored advances of only 10 per cent. Remember that the only good buying spot is the beginning of a bull market. As prices move up, profit possibilities become less and the risks of a loss correspondingly greater. In other words, proceed with increasing caution when buying into the later stages of a bull market and be prepared to move out in a hurry if the tide starts to run out, particularly if the "average" performance has already been realized and point 4 shows that speculative issues have dominated the market for a long time not only from the point of view of activity but also in the light of price gains registered.

Of course, the reverse comments apply in the case of a bear market. Never buy into a bear market that has just started irrespective of the quality of the security being offered for sale. If you will check the records, you will find that the good stocks crashed in 1929 and 1937 along with the poor ones and it was no consolation to the holders of the good stocks to know that they did not go down as much. The fact was they could have been purchased at a better price later in the bear market. The advantage of point 3 is self evident. Point 4 is intended to be a quality test of the market.

Admittedly, conclusions based on the exact method suggested can only be approximate at best. The reduction of this figure to a calculated ratio is more desirable, but remember that such computations are time consuming and "free time" is something a medical man does not have. I am attempting to show in a general way simple guideposts for temporary use until the portfolios in question can again be placed under professional supervision.

After the major question of when to buy is determined, the secondary question of what to buy arises. Early in a bull market the quality of purchases can be relatively lower, but the standards should be raised as the market gets into the "average" ranges indicated under the first two points. Also each issue should be selected with a view toward proper diversification within the portfolio, since an undue concentration of funds in any single issue is not sound. Obviously there is no cut and dried answer to that problem, since it will depend on the particular phase of the market at which the question comes up and also on the present composition of the portfolio in question. If the problem is one of what to sell, the answer is not difficult. The practical attack is to begin with the most speculative equities held and work up toward the more conservative securities, the extent of the action depending on the severity of the indicated decline. It must be remembered that there are times when the most desirable investment to hold is cash as well as times when one should be almost fully invested.

In a mechanism as complex as the security market and almost impossible to subject to laboratory analysis no foolproof rules can be found. However, it is hoped that the guideposts mentioned here will enable "my doctor" to muddle through the constantly shifting financial and economic sands with at least average success until his "old man" of finance returns.

---

## **Council on Pharmacy and Chemistry and Council on Industrial Health**

---

*The Council on Pharmacy and Chemistry and the Council on Industrial Health have authorized publication of the following report*

AUSTIN SMITH, M.D., Secretary  
COUNCIL ON PHARMACY AND CHEMISTRY  
C. M. PETERSON, M.D., Secretary  
COUNCIL ON INDUSTRIAL HEALTH

---

### **THE USE OF VACCINES FOR THE COMMON COLD**

#### **Status Report**

The symptom complex usually termed the common cold is a frequently recurring source of distress and disability to most residents of temperate climates, and it is the cause of much industrial absenteeism and economic waste. In recent years so-called vaccination is the method which has received the greatest amount of study as a possible means of preventing or controlling the ravages of this condition. If any available vaccine has demonstrable value for the prevention of the common cold or aids in its control it would be a boon of tremendous value and the method should be more widely utilized in practice, if on the contrary, the vaccines which are available are not of value in any of these respects then many members of the medical profession are being misinformed and the public is spending large sums uselessly.

The evaluation of the evidence for any prophylactic measure against the common cold is complicated by many factors which do not lend themselves readily to controlled investigation. All colds may not and probably do not have the same virus or bacterial causation, the frequency and symptomatology of colds in the community vary widely from year to year, the common cold is so mild that its victims rarely come under the direct observation of a physician during the period of invalidity, there are great differences in how people describe the severity and duration of their own colds and consequently most reports on colds are based on unreliable subjective accounts.

Scientific evidence must exclude everything of the so called 'testimonial type'. Any one person's history of 'colds' over a period of years will vary too much to allow the acceptance of such individual testimony on the results of vaccine prophylaxis. It is only through the use of a uniform type of vaccine for large numbers of persons with equally large numbers of controls over a long period of time that acceptable proof of efficacy can be obtained. These criteria applied to published reports eliminate all but a few from the necessity for serious scientific consideration.

Vaccines designed to reduce the incidence or severity of the common cold have been administered hypodermically, by the swallowing of capsules (so called oral vaccine) and more recently by local application to the mucosa of the upper respiratory tract by means of sprays. The constituents of the vaccines used have varied widely but most have been made up of heat or chemically killed organisms obtained originally by culture from the upper respiratory tract and combined in various proportions. The lack of agreement on the most desirable route of administration and the even greater lack of agreement on the types and proportions of organisms to include in the vaccines and on the methods of killing and preparing them are in themselves arguments against any scientific standing for this procedure. A greater measure of uniformity on these procedures would be necessary to remove a procedure of this nature from the realm of pure experiment.

#### ORAL VACCINES

A large number of articles in the medical literature<sup>1</sup> indicate the writers' belief that vaccines of various types may have some value for decreasing the incidence of colds or for reducing their severity or the incidence of complications. Most of the recent studies of a controlled nature have been with oral vaccines of which Entoral Lilly, Catarrhal Oravax-Merrill and the Cutter vaccines are highly publicized examples. Entoral was declared unacceptable for inclusion in New and Nonofficial Remedies in a report of the Council on Pharmacy and Chemistry published in 1937, - Catarrhal Oravax, while not considered in that report was discussed in a Current Comment in THE JOURNAL<sup>2</sup> in which it was pointed out that the evidence for its value was equally unacceptable. Since that time Stafford,<sup>3</sup> the Forgraves<sup>4</sup> and Murat<sup>5</sup> have published controlled reports on oral vaccines for the common cold in which the results were believed to be predominantly favorable. Stafford's report is based on a group of 338 students, one half of whom were given an enteric coated capsule each containing 50 million killed organisms including pneumococci types I, II and III Neisseria

catarrhalis, Hemophilus influenzae, Klebsiella pneumoniae, streptococci and staphylococci, and the other half a placebo containing starch and sucrose. Comparisons of the incidence of 'severe colds' was used as the index of effectiveness. Except for one week of the eight week period of observation, the incidence of 'severe colds' was less among the group receiving oral vaccine than among the controls. The number of 'mild colds' in the two groups did not differ materially, and the significance of the difference in severe colds was apparently not subjected to statistical analysis. The Forgraves, using the same type of oral vaccine, studied a group of 40 industrial workers divided into two groups; they record a reduction in the average number of colds between seasons of some 4.85 to 1.45 in the experimental group and from 4.2 to 3.9 in the controls. In numbers and period of observation this study appears to be deficient as a report on which adequate conclusions can be based. Murat divided 1,273 subjects into two groups alternate individuals being given tablets containing 'soluble antigenic derivative of the bacteria commonly found in the respiratory tract,' while the others were given similar tablets containing an innocuous substance. This author considered that there was a difference in susceptibility to colds in favor of those taking the vaccine; there was a loss of time in 63 per cent of those taking the vaccine as against that of 86 per cent of those taking the placebo, although how this was determined was not stated.

Most of the other 'controlled studies of oral vaccination against colds either fail to demonstrate any usefulness or are distinctly inconclusive. A particularly careful investigation of oral cold vaccines was performed by Siegel and his colleagues.<sup>7</sup> A commercial product composed of mixed heat killed bacteria commonly found in the respiratory tract was employed. Single capsules were taken daily for the first fourteen days and twice weekly thereafter. Two hundred and fifty-three persons were involved in the study, divided into almost equal test and control groups. The number of colds in the two groups was exactly equal. The average duration of symptoms experienced by the group taking the vaccine was 10.5 days per cold as compared with 9.7 days for the control group. The number of days of absence during the test period on account of respiratory illness varied from 0 to 43 but there was no striking difference in this respect between the test and control groups. These investigators concluded that the vaccine when given according to the manufacturer's directions did not have any influence on either the incidence or the severity of the common cold. Similarly, they could not observe any effect as a result of this treatment on the secondary complications frequently associated with the common cold. Other negative controlled studies, often involving several types of vaccination but all of them including one or more oral vaccines, have been reported by Diehl and his colleagues<sup>8</sup> and by McGee and his colleagues.<sup>9</sup> Toomey<sup>10</sup> while not presenting any studies based on controlled observations on human beings discussed the logic on which the immunologic basis for this form of prophylaxis rests and concluded that the case for oral vaccination against colds has not yet been made.

#### PARENTERAL VACCINATION

Extensive attempts to employ other routes of administration have also been made. The most important of these is by hypodermic injection including intramuscular, subcutaneous and intradermal. Although it has not received much attention in this country, the report by Bashford<sup>11</sup> based on observations in employees in the English Post Office System, are, because of the duration and numbers involved, particularly impressive. That study was made over a three year period by injection of a mixed bacterial vaccine. The colds in the injected and in an adequate control group were recorded. The average absence for sickness from colds among those receiving the vaccine during the first year of the experiment was less by half of one day than that of the noninoculated group. During the second

1 Thomson David Thomson Robert and Thompson E T. Immunization by the Oral Route in Respiratory Infections. Brit M J 1 258 (Feb 8) 1936. Bloom C J. Autogenous Vaccine Therapy in Pediatrics. New Orleans M & S J 88 738 (June) 1936. Reese J M. A Note on Vaccines and the Common Cold. J Roy Nav M Serv 22 209 (July) 1936. Wallfield M J. Experimental Vaccination Against Colds in an Infants. Home J Pediat 10 69 (Jan) 1937. Rockwell G E and others. Further Studies on Oral Immunization to Colds. J Lab & Clin Med 22 912 (June) 1937. Bristol L D. Vaccines Against the Common Cold: Are They of Value in the Industrial Health Program? Am J Pub Health 27 987 (Oct) 1937. Nelson L A. Result of One Year's Experience with Desensitization for the Common Cold. Texas State J Med 34 343 (Sept) 1938. Read W W. Colds and Oral Cold Vaccine. Canad M A J 41 493 (Nov) 1939. Campbell C A L. Catarrhal Vaccine as a Preventive of the Common Cold. M Times New York 68 515 (Nov) 1940. Palmer M R. and Andes J E. Treatment of Acute Respiratory Infections with Oral Corvax Antigen. Preliminary Report. Southwestern Med 25 144 (May) 1941. MacAdams E W. Vaccination Against Colds. J Am Inst Homeop 34 298 (July) 1941. Veasey C A Jr. Prophylaxis and Treatment of the Common Cold with Special Reference to Respiratory Vaccine. Ann Otol Rhin & Laryng 50 1168 (Dec) 1941. Brady M R. Reduction of Industrial Absenteeism by Preseasonal Immunization. M Press 206 488 (Dec 31) 1941. Powell H M. Heterophile and Oral Pneumococcal Antigenic Action of Cold Vaccine. Ohio State M J 38 32 (Jan) 1942. Victor K N. Upper Respiratory Infections. Evaluation of Immunization. Kentucky M J 40 43 (Feb) 1942. Sessions J C. Respiratory Infections. Prophylaxis with Oral Water Soluble Antigenic Substances. Indust Med 11 373 (Aug) 1942. Herron T B. Oral Prophylaxis Against Upper Respiratory Infections. Indust Med 12 390 (Sept) 1943. Krepps R M. Use of Antigenic Substances in the Treatment of Acute Respiratory Infections. Preliminary Report. Indust Med 13 235 (March) 1944. 2 Entoral Not Acceptable for N. N. R. Report of the Council on Pharmacy and Chemistry. J A M A 109 208 (July 17) 1937. 3 Oral Vaccines in the Cold. Sea on J A M A 109 1130 (Oct 2) 1937. 4 Stafford C I. The Common Cold. An Evaluation of an Oral Vaccine Based on a Controlled Study. Journal Lancet 60 319 (July) 1940. 5 Forgraves Paul and Forgraves John. The Common Cold. Prophylaxis by the Oral Route. Indust Med 9 530 (Oct) 1940. 6 Murat H S. Prophylaxis of the Common Cold. Indust Med 9 482 (Sept) 1940.

7 Siegel Morris and others. A Study on the Value of a Mixed Bacterial Oral Cold Vaccine. Am J M Sc 205 687 (May) 1943. 8 Diehl H S. and others. Cold Vaccines. An Evaluation Based on a Controlled Study. J A M A 111 1168 (Sept 24) 1938. 9 McGee L C. and others. Cold Vaccines, and the Incidence of the Common Cold. J A M A 124 555 (Feb 26) 1944. 10 Toomey J A. Active and Passive Immunity. Oral Vaccination Against Colds. J Pediat 10 673 (May) 1937. 11 Bashford H H. The Contribution of Industry to Medicine. Proc Roy Soc Med 31 185 (Jan) 1938.

year the average absence due to such disorders among the inoculated was 0.1 day higher than that in the noninoculated group, and during the third year was 0.2 day higher than that in the controls. With a symptom complex of this type, such infinitesimal variations must obviously be considered to be without significance. Houser<sup>12</sup> employed a mixed bacterial vaccine by hypodermic injection in students at the University of Pennsylvania over a four year period. He concluded that the prophylactic vaccination was followed by a lessened severity and duration of the 'disease' but that there was little evidence that colds were prevented by this type of therapy. At the University of Michigan, however, the Hausers<sup>13</sup> studied comparative groups given a vaccine or placebo subcutaneously and intradermally. The results were not conclusive and there was little definite difference between the groups. Similarly Stanley,<sup>14</sup> Diehl and his colleagues<sup>15</sup> and others<sup>16</sup> failed to find clearcut evidence of the value of bacterial vaccine for colds or their complications.

#### OTHER TYPES OF VACCINATION

The work of Besredka and those who have succeeded him has suggested that immunity to certain diseases can be built up in local tissues in excess of that circulating in the body as a whole. In pursuance of the implications of this suggestion Walsh<sup>17</sup> in a series of articles has presented experimental and clinical evidence on the use of a mixed bacterial vaccine applied as a spray to the nasal mucous membrane with the purpose of assisting the prophylaxis of the common cold. Walsh's observations have been on the whole encouraging to the use of this procedure, and his investigations have been more conservatively presented than those of many other proponents of new procedures. Nevertheless Cowan and Diehl,<sup>18</sup> in a controlled study in human beings of this method of vaccination have failed to obtain any evidence of its value or to confirm its clinical usefulness.

Other reports giving mainly negative results with the use of some type of vaccine have appeared (e. g. Schreuder<sup>19</sup>), but usually they have not been based on a large enough number of persons or observations over a long enough period of time to be considered decisive.

#### CONCLUSIONS

Vaccines prepared from a variety of bacteria commonly found in the respiratory tract have been prepared and combined in sundry ways and have been administered by various routes with the purpose of preventing colds decreasing their incidence, ameliorating their symptoms, shortening their duration or decreasing their complications, or all of these combined. These objectives are all highly desirable. Unfortunately the evidence of individual case reports does not have any value in a disorder such as 'the common cold,' which probably covers a multiplicity of infections which are only symptomatically related. The only evidence which has scientific value is that which can be obtained by carefully controlled studies by qualified observers on large numbers of persons over a sufficiently long period of time to overcome the natural fluctuations in the major features of this symptom complex. Decisive evidence of the value of any vaccine is not forthcoming, and the weight of careful studies clearly indicates that none of the vaccines now available when administered by the routes advised have proved value. Vaccines for colds cannot be recommended for routine administration to industrial groups or to individuals. At present any attempt to

prevent colds by the use of vaccines must be recognized as purely experimental and any proposal to administer such a vaccine, if given at all, should take this into consideration. As in all measures of a purely experimental nature the uncontrolled use of any cold vaccine now available should be discouraged. Industrial physicians are under particular obligation to employ cold vaccines if at all, only under the most rigidly controlled conditions and to report their results so that useless preparations can be promptly eliminated and further progress made.

#### NEW AND NONOFFICIAL REMEDIES

*The following additional articles have been accepted as conforming to the rules of the Council on Pharmacy and Chemistry of the American Medical Association for admission to New and Nonofficial Remedies. A copy of the rules on which the Council bases its action will be sent on application.*

AUSTIN SMITH, M.D., Secretary

#### CONTRACEPTIVE CAPSULES AND SUPPOSITORIES (See chapter on Contraceptives, New and Nonofficial Remedies 1944 p. 339)

**Actions and Uses**—Capsules and suppositories provide a convenient method for introducing obstructive and spermicidal material into the vagina with the advantage of freedom from the need of apparatus. The solid material introduced must be converted to a jelly or liquid form in order to cover the requisite area, hence prompt liquefaction is important. For some suppositories this results from a melting point below the temperature of the body. For others the active material is enclosed in a gelatinous shell which melts or opens when exposed to body temperature and moisture. The time required should be under ten minutes, and the users should be instructed to allow this time to elapse before intercourse. A douche should not be taken within six hours after ejaculation.

To insure further protection physicians may advise the concurrent use of an occlusive device such as a diaphragm (concerning which see general statement).

PERNOX, INC., NEW YORK

**Pernox Vaginal Capsules** A soft gelatin capsule containing a low melting mass prepared from the formula

|                               |          |
|-------------------------------|----------|
| Ricinoleic acid               | 0.045 Gm |
| Propylene glycol monostearate | 1.830 Gm |
| Woolfat fraction              | 2.200 Gm |
| Wetting agent                 | 0.045 Gm |
| Propylene glycol              | 0.183 Gm |
| Tragacanth                    | 0.214 Gm |

**Actions and Uses**—See preceding article, Contraceptive Vaginal Capsules

**Dosage**—One capsule containing 4.5 Gm

#### PENICILLIN (See THE JOURNAL, Oct 7, 1944, p. 367)

The following products have been accepted

PARKE, DAVIS & CO., DETROIT

**Penicillin (Sodium Salt)** Vials or ampuls each containing 100,000 Oxford units

LEDENLE LABORATORIES, INC., PEABODY RIVER, N. Y.

**Penicillin (Sodium Salt)** Ampuls containing 100,000 Oxford units

E. R. SQUIBB & SONS, NEW YORK

**Penicillin Sodium** Packages containing 100,000 Oxford units

#### CITRATED NORMAL HUMAN PLASMA (See New and Nonofficial Remedies, 1944, p. 533)

The following additional dosage form has been accepted

HYLAND LABORATORIES, LOS ANGELES

**Normal Human Plasma** 50 cc and 500 cc bottles containing an amount (preserved with phenylmercuric borate 1:25,000) to yield 50 cc of restored plasma packaged with a 50 cc bottle of distilled water as a diluent (preserved with citric acid 0.1 per cent)

#### AMPHETAMINE SULFATE (See New and Nonofficial Remedies 1944, p. 265)

The following additional dosage form has been accepted

SMITH KLINE AND FRENCH LABORATORIES, PHILADELPHIA

**Benzedrine Sulfate Elixir** 177 cc bottles. Each 3.69 cc contains racemic amphetamine sulfate 25 mg and alcohol 10 per cent

12 Houser, K. M. Analysis of Results of Vaccination of College Students Against Colds. Arch. Otolaryng. 26: 283 (Sept.) 1937.

13 Houser, K. J. and Houser, M. J. A Controlled Study of Cold Vaccines. Arch. Otolaryng. 29: 705 (April) 1939.

14 Stanley, L. L. Cold Vaccine Study. Journal Lancet 61: 48 (Feb.) 1941.

15 Diehl, H. S. and others. Cold Vaccines: A Further Evaluation. J. A. M. A. 115: 593 (Aug. 24) 1940.

16 Mudd, R. D. Vaccinotherapy for the Prevention of Colds. Indust. Med. 5: 62 (Dec.) 1936. Diehl, H. S. and Doyle, J. J. The Efficacy of Cold Vaccine: An Investigation Conducted Among Soldiers. Mil. Surgeon 54: 46 (Jan.) 1939. Towell, H. M. and others. Further Inoculation Experiments with the Common Cold Virus. J. Immunol. 35: 309 (April) 1940. Holbrook, A. A. The Prophylactic Use of Cold Capsule. Wisconsin M. J. 40: 346 (May) 1941.

17 Walsh, T. E. and Cannon, P. K. Immunization of the Respiratory Tract. J. Immunol. 35: 31 (July) 1938. Walsh, T. E. Intranasal Vaccine Spray. Its Use in Prophylaxis Against the Common Cold. Ann. Otol. Rhin. & Laryng. 49: 575 (Dec.) 1940. Walsh, T. E. Prophylaxis of the Common Cold. Arch. Otolaryng. 34: 1093 (Dec.) 1941.

18 Cowan, D. W. and Diehl, H. S. Intranasal Vaccine for the Prevention of Colds. Ann. Otol. Rhin. & Laryng. 53: 286 (June) 1944.

19 Schreuder, O. B. Treatment of Acute Colds with Bacteriophage. Fed. Bacterial Antigen. Mil. Surgeon 75: 211 (March) 1936.

# THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

535 NORTH DEARBORN STREET - CHICAGO 10, ILL

Cable Address

'Medic Chicago

Subscription price

Eight dollars per annum in advance

Please send in promptly notice of change of address giving both old and new always state whether the change is temporary or permanent. Such notice should mention all journals received from this office. Important information regarding contributions will be found on second advertising page following reading matter.

SATURDAY DECEMBER 2 1944

## HERPES ZOSTER VIRUS

In 1925 Kundratitz<sup>1</sup> inoculated the scarified skin surfaces of 3 infants with the clear contents of herpes zoster vesicles. After eleven days 2 of the infants developed several clear vesicles with slightly reddened peripheries. In subsequent tests 4 typical cases of thoracic herpes zoster produced typical local vesiculation of the skins of several children, all of them under 5 years of age. The lesions thus produced corresponded closely with the inoculatory vesicles of chickenpox previously described by Kling<sup>2</sup>. In 1921 Lipschutz<sup>3</sup> described intranuclear acidophilic inclusion bodies in the lesions of herpes zoster apparently identical with the inclusion bodies previously described in the cutaneous lesions of chickenpox.<sup>4</sup>

In spite of repeated trial, herpes zoster virus has never been successfully inoculated in series into any laboratory animal. In attempts to find another feasible research technique Goodpasture and his associates<sup>5</sup> of Vanderbilt University grafted samples of normal human skin on the chorioallantois of chick embryos. They found that such grafts are rapidly vascularized and that they survive for at least ten days, a period sufficiently long for inoculation tests. Such grafts were susceptible to inoculation with the viruses of herpes simplex, variola and vaccinia but refractory to the virus of chickenpox.

Such grafts have now been used in a study of the causative agent of herpes zoster. To do this a Thiersch graft from the thigh of an adult surgical patient was cut into 1 cm squares. On each square there was placed a drop of undiluted fluid from the vesicles of herpes zoster from a second individual. With the aspiration needle (size 27) multiple punctures were made through the drop into the surface of the graft. One hour later each graft was placed on the chorioallantois of a 9 day

old chick embryo. All grafts adhered successfully. The grafted eggs were then incubated for periods ranging from four to eight days, at the end of which period the grafts with adherent chorioallantois were fixed in Zenker's solution.

Microscopic study showed that the grafts had developed small foci of infection by the fourth day at the sites of the multiple needle punctures, increasing by the eighth day to relatively large pustular foci. The earlier lesions consisted of small groups of hyperplastic epithelial cells whose swollen nuclei contained characteristic acidophilic inclusion bodies. In the later lesions the epithelial cells were separated from one another by inflammatory fluid and cellular exudate consisting largely of chick leukocytes. In none of the lesions had sufficient fluid accumulated to cause gross vesiculation. There was no evidence of infection of the underlying chick cells.

Experimental herpes zoster lesions in grafted human skin serve to throw light on the controversial question of the pathogenesis of the herpes zoster eruption. Many clinicians<sup>6</sup> have so overemphasized the presumptive role of the neurovascular mechanism as to imply an absence of the virus in the skin lesion. Goodpasture believes that the failure of the experimental lesions in his skin grafts to develop completely as vesicles merely indicates the importance of neurovascular connections for the formation of the abundant serous exudate in the human eruption. Of greater hygienic interest is his finding of the apparent nonidentity of the herpes and chickenpox viruses, which identity is suggested by a large body of clinical evidence. Whether or not the nonidentity is due to specificity differences or to differences in virulence has not yet been determined.

## DRUGS AND THE DOCTOR

Those Americans who are inclined to find fault with the development of medical affairs in this country and who seek constantly to disparage what is being done in comparison with European models will find food for thought in an editorial just published in the *British Medical Journal*<sup>1</sup> entitled "Drugs and the Doctor." That editorial points out that a noticeable hiatus in the White Paper, which is a plan for medicine in Great Britain, is the failure to consider the bearing of a national health service on the supply of drugs and apparatus. The *British Medical Journal* emphasizes that the use of proprietary remedies has increased since the introduction of National Health Insurance and that the effect of this has been harmful to personal and social health. After a consideration of British legislation in relation to the marketing of proprietary remedies, the editorial asserts: "No medical service is likely to be

1 Kundratitz K. Ztschr f Kinderh 39 379 1925

2 Kling C A. Berl klin Wchnschr 50 2083 1913

3 Lipschutz B. Arch f Dermat u Syph 136 428 1921

4 Tyzzer E E. Philippine J Sc 1 349 1906

5 Goodpasture E W, Douglas Beverly, and Anderson Katherine

J Exper Med 68 891 (Dec) 1938 Goodpasture E W, and Anderson Katherine. Am J Path 20 447 (May) 1944

6 Baird P C, Jr. New England J Med 228 568 (May 6) 1943

1 Editorial. Drugs and the Doctor. Brit M J 2 535 (Oct 21) 1944

a success unless it leaves the individual practitioner considerable freedom in prescribing."

Our British colleagues render a great tribute to the work of the Council on Pharmacy and Chemistry of the American Medical Association in the following paragraph taken from the editorial

The difficulty is that no one has a vested interest in sane pharmacotherapeutics, and therefore active steps must be taken by the profession or the community to redress the balance. The individual doctor or patient must be supplied with unbiased information. The Americans manage these things better than we do, and a recent account of the Council on Pharmacy and Chemistry of the American Medical Association deserves serious study in this country. The Council has no legal powers, but most readers will agree with the claim that no single body in modern times has brought about so much change in the practice of therapeutics. The Council derives its influence largely from the important group of medical journals published by the American Medical Association, whose pages are closed to advertisements or names of preparations which are not approved by the Council. Its success has been such that it has become a model for the Council on Physical Therapy, the Council on Foods and Nutrition, and the Council on Dental Therapeutics. It consists of 17 members chiefly professors of medicine and pharmacology in the American medical schools, who work without remuneration but with a whole time medical secretary. The Council does not initiate clinical trials, and as a general rule the manufacturer must submit the evidence for therapeutic or other claims, which is then reviewed by the members of the Council, together with advertising material and other pertinent data. All the Council's actions, whether of acceptance, rejection or omission, are published in the *Journal of the American Medical Association*, and later in the book *New and Nonofficial Remedies* or in the annual reprints of the reports of the Council. The Council's work has been of immense educative value to the members of the American Medical Association, for, however keen an observer the individual clinician may be, he cannot research on all diseases all the time. It has overcome the kind of difficulty which occurs when new and potentially dangerous drugs, such as thiouracil, are introduced to the profession. We agree with a recent letter in our own columns to the effect that once these drugs are put on the market there can be no arbitrary selection of those doctors who use them. At the same time there is need for a mechanism for supplying information about them and for seeing that they are properly labelled. It is above all in the practice of correct nomenclature that the Council on Pharmacy and Chemistry has done most good, and it must be confessed that the advertising pages of medical journals and the demonstration stands at medical exhibitions in Great Britain compare unfavorably with their American counterparts.

This statement is particularly timely when some of the editors and business managers of medical periodicals in the United States have suggested that the Council on Pharmacy and Chemistry relax its standards in relation to the acceptance of claims for drugs and particularly in the matter of nomenclature. The British observe that it is above all in the practice of correct nomenclature that the Council on Pharmacy and Chemistry has done the most good, and they admit frankly that the advertising pages of medical journals and the demonstration stands at medical exhibits in Great Britain compare unfavorably with their American counterparts.

In a recent session the Board of Trustees of the American Medical Association reaffirmed its full support of the standards of the Councils on Pharmacy and Chemistry, Food and Nutrition and Physical Medicine. In this stand the Board of Trustees and the individual Councils merit the fullest support of the American medical profession.

#### RATE OF FLUID ADMINISTRATION IN SHOCK

Although the loss of the cellular elements of the blood has been emphasized<sup>1</sup> as an important factor in shock, a disturbance of the effective relationship between blood volume and vascular space has a significant role in its causation. Restoration of fluid to the blood vessels therefore becomes an effective treatment if begun before secondary changes occur. Isotonic solutions of salts are essentially ineffective because of the rapid disappearance from the circulation. For this reason various substances with large molecular weights were used as colloidal solutions because the nondiffusible micelles exert enough osmotic pressure to retain fluid within the blood vessels.

The method of administering therapeutic agents for combating shock is emphasized in recent observations on experimental shock by Swingle and Kleinberg.<sup>2</sup> Wound shock involving severe muscle trauma with external and internal hemorrhage was produced in deeply anesthetized dogs. Under reproducible experimental conditions fatal shock was observed in 90 per cent of a large number of untreated animals, a drop in arterial pressure and a decrease in plasma volume characterized the syndrome. During treatment with saline solution, plasma or gelatin, single massive transfusion was compared to the same volume divided into five doses given at once and at one, two, four and seven hours after the injury. Intermittent administration of plasma was highly efficacious in preventing shock, whereas a single large infusion given within ten minutes of the injury exerted little effect in this respect. Gelatin solution given intermittently was likewise effective but to a lesser degree than plasma. Even isotonic solution of sodium chloride administered in small amounts over the extended period showed an alleviating effect, though in turn somewhat less than that of gelatin. In a single dose the salt solution was essentially ineffective.

Under the conditions of these experiments, definite improvement in the treatment of shock results when massive single transfusions of fluid are replaced by intermittent administration of the same amount. The factor of rate of fluid administration seems worthy of attention in the treatment of shock in human patients.

<sup>1</sup> McKee, F. W., Laycock, C. F., Martens, T. G., and Nicholl, R. J. *Surg. Gynec. & Obst.* 78: 590 (May) 1944.

<sup>2</sup> Swingle, W. W., and Kleinberg, William. *Am. J. Physiol.* 141: 713 (July) 1944.

## Current Comment

### "COLD VACCINES"

In this issue of *THE JOURNAL* (page 895) appears a report sponsored jointly by the Council on Pharmacy and Chemistry and the Council on Industrial Health of the American Medical Association dealing with the use of so-called vaccines for the prevention of the common cold. The report points out that there is no uniformity in the types of vaccines employed, in their mode of administration or in the method of evaluating the results. None of the vaccines now available has proved value, none can be recommended for industrial groups or for individuals. In spite of the overwhelming evidence on this subject, some pharmaceutical firms continue to engage actively in the promotion and sale of various "vaccines" for the prevention of colds. This constitutes an irresponsible attitude toward the public and the medical profession, no better than most of the claims regarding the alleged benefit to colds from vitamins and proprietary nostrums. The air waves and the drug counters are crowded with so-called preventives or cures of these types, which do not serve any recognizable purpose other than to lighten the public purse.

### THE GILES TWINS OF THE A A F

If twin pairs entered the Army by mere chance one would expect them to appear once in 16 384 Army Register entries, whereas the actual frequency of their listing is over thirteen times as often.<sup>1</sup> The story of one conspicuous pair of army twins establishes again the extent to which identical twins resemble each other. These brothers carry between them five stars and demonstrate in their military history a parallelism which is most unusual. Lieutenant General Barney McK Giles entered the Army as a private, first class, in the Signal Corps in 1917, was commissioned a second lieutenant in the following year, was honorably discharged in 1920 with the rank of first lieutenant and was reappointed to that rank a few months later. He became a major in 1939 two years later a lieutenant colonel and in the spring of 1942 was advanced to the rank of brigadier general and in the fall of that year to major general. He was promoted to lieutenant general a little later and became chief of staff of the Army Air Forces only a few months later. Major General Benjamin F Giles entered the Army in 1917 as a second lieutenant of infantry, was honorably discharged in 1919 with the rank of first lieutenant, was recommissioned a second lieutenant in 1920 and became a major in 1930 and a temporary lieutenant colonel in 1939. In 1942 he was advanced to the rank of brigadier general and recently to that of major general. Both officers began their military careers in World War I at age 25, neither

went to West Point and they entered the Army at different times but both quickly transferred to aviation and continued in that service. Both were advanced to higher rank from near the bottom of the preceding grade. This unusual military history again demonstrates that identical twins from the genetic standpoint are the same individual in two bodies.

### MENTAL DISORDERS AND POPULATION DENSITY

At the Boston Armed Forces Induction Station a comparison was made between the rejection rates for the major mental disorders in selectees examined and the population densities of the communities from which they came.<sup>1</sup> Allowance was made for the socioeconomic factors and national origins, both of which influence the rate of mental disease. The highest rates of mental disorders occurred at the two extremes of population density—that for mental deficiency and psychoneurosis appeared in the semirural areas (500 per square mile) and for chronic alcoholism and psychopathic personality in a large city—Boston. Only chronic alcoholism was correlated with population density at every level. The study included communities that had the highest rates of mental disorders and those that had the lowest. Of the thirteen communities with extremely high rates, eight were in the extreme density bracket (over 20,000 people per square mile), whereas of the thirteen communities with low rates not one was in either extreme density bracket (under 500 or over 20,000 population density). Hyde and Kingsley find it not surprising that rural areas and the great city have similar rates of mental disorders. For both types of community, they say, have many unfavorable features. Only between these two extremes is there a mean that satisfies most fully the aspirations of modern life. In the community of middle size there are those advantages of interest, stimulation, excitement, of easy accessibility of recreation facilities, best opportunities for modern conveniences, without the loss of readily available rural advantages of open fields, woods and strong family life. The most adequate people, as judged by their adaptation to modern life, these writers say, migrate to the urban communities from both the rural and the dense urban areas leaving the least able people behind. This leaves an increased proportion of inadequate people living in the undesirable extremes of density in addition to the unfavorable influences of these communities themselves. The conclusions of these Boston investigators must be accepted with reserve. The results point to the need for intensive study of communities of different population densities and characters and their influence on mental health.

<sup>1</sup> Hyde, Robert W. and Kingsley, Lowell V. *Studies in Medical Sociology. II The Relation of Mental Disorders to Population Density*. New England J. Med. **231**: 571 (Oct. 26) 1944.



# MEDICINE AND THE WAR

## ARMY

### BAL IN OIL IN TREATMENT OF SEVERE MAPHARSEN REACTIONS

War Department Technical Bulletin of Medicine 104 dated October 12, announced the availability of a new drug, bal in oil, for use in the treatment of severe mapharsen reactions. Bal in oil is packaged in sterile ampules containing 500 mg of bal in 5 cc (10 per cent solution) of injectable material for intramuscular use only. It is stable when stored at ordinary temperatures. The bulletin discusses the selection of cases, the recommended dosage and reactions from bal in oil.

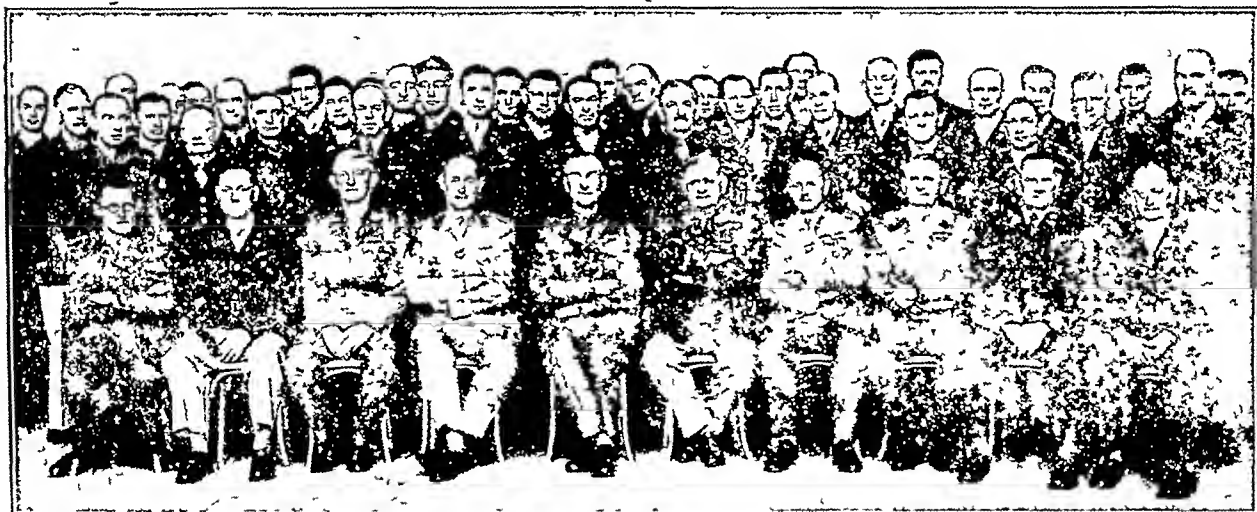
### U S AND BRITISH ARMY MEDICAL OFFICERS HOLD MEETING IN FRANCE

U S and British Army medical officers recently held a three day meeting at a large U S Army general hospital in France, where they exchanged ideas on the treatment of battle casualties. This was the first conference of its kind in that theater.

Firestone Rubber and Latex Company at Fall River, Mass. Special tape produced by the Industrial Tape Company New Brunswick N J is used in securing the canister and outlet valve to the plastic hood since natural rubber tape would form a tacky mass when attached to the vinylite plastic.

### AAF REGIONAL SURGICAL CONFERENCES

During the month of September the Air Surgeon Major Gen David N W Grant, U S Army, through his Professional Division conducted six two day teaching regional surgical conferences for the medical officers of the Army Air Forces. The medical officers in the hospitals of the Army Service Forces, Army Ground Forces and the Navy adjacent to the conference hospitals were invited to attend as well as the civilian physicians in the immediate locality of the meetings. The conferences were held at Kearns Field Utah, Santa Ana Army Air Base, California, Aviation Cadet Center San Antonio Texas, Lincoln Army Air Base, Nebraska, Patterson Field Ohio and Drew Field Florida.



Medical officers who attended the three day meeting in France. Seated from left to right are Brigadier E Bulmer consulting physician to the British 21st Army Group, Lieut Col L M Rousselot commanding officer 108th U S Army General Hospital, Col F C Cutler chief consultant in surgery ETO U S Army, Brigadier A E Porritt consulting surgeon to the British 21st Army Group, Major Gen A G Biggam consulting physician to the British army, Major Gen Paul R Hawley chief surgeon ETO U S Army who called the meeting, Major Gen D C Monro consulting surgeon to the British army, Col J S K Boyd consulting pathologist to the British 21st Army Group, Col I C Kimbrough director of professional services office of the chief surgeon U S Army, Col W S Middleton chief consultant in medicine ETO U S Army. Standing in the second row back of Brigadier Bulmer is Brigadier Sir Stewart Duke Elder consulting ophthalmic surgeon to the British army. Next to him is Lieut Col G Heim senior consultant in cardiology ETO U S Army. At Colonel Heim's left is Brigadier George Riddoch consulting neurologist to the British army. Standing at the extreme right in the second row is Lieut Col B Brennan British medical liaison officer to the office of the chief surgeon U S Army.

### HEAD WOUND GAS MASK DESIGNED BY CHEMICAL WARFARE SERVICE

The War Department recently announced that a gas mask to protect head wound patients from war gas has been developed by the Chemical Warfare Service and is now in production. The mask is the first such device which affords protection to patients with bandaged heads, faces or jaws and consists of a silklike vinylite plastic hood to which an air purifying canister and an outlet valve are attached. A flexible window across the eyes provides clear vision. Air is drawn into the mask by the ordinary breathing of the wearer. It is pulled over the head like a sack, the shimmering folds of the plastic cloth giving the wearer a luminous, ghostly appearance. The skirt of the hood fastens tightly around the neck or a gastight seal can be obtained by taping the hem to the wearer's chest.

The head wound masks are being produced by the Bennington Plant of the National Carbon Company and by the

There was a total registered attendance of 884, or an average of 147 officers per conference representing 258 Army and Navy hospitals.

The programs at the six meetings contained 89 papers, an average of 15 per meeting, with discussions of such pertinent subjects as (a) the principles of wound healing, (b) the management of shock, (c) the management of chest injuries, (d) the management of head injuries, (e) the diagnosis and treatment of hernia, (f) chemotherapy in a surgical practice, (g) the use of regional anesthesia, (h) the treatment of pilonidal cysts and sinuses, (i) the treatment of more common anal and rectal conditions and (j) the diagnosis and treatment of varicose veins. There were many excellent presentations from physicians of the Army Service Forces, the Army Ground Forces and the Navy as well as from civilian practice. The scientific material presented in the papers and discussions is being abstracted for publication. The surgical staffs of four of the conference hos-

pitals and the Aero-Medical Laboratory of Wright Field, Ohio, presented most interesting and instructive scientific exhibits

This is the second of a series of regional surgical conferences conducted by the Air Surgeon. The first group of twelve conferences, on Fractures and Orthopedic Surgery, was held during the fall of 1943

### COLONEL MENNINGER RECEIVES LASKER AWARD

The first annual Lasker Award in Mental Hygiene was recently presented to Col William C Menninger, chief consultant in neuropsychiatry, at the annual meeting of the National Committee for Mental Hygiene in New York City. The award this year was given for 'outstanding contribution to the mental health of the men and women of our armed forces'. The citation states that under Colonel Menninger's direction preventive psychiatry has been enhanced by a series of lectures on personal adjustment for all officers and enlisted men and that through his efforts the emphasis on diagnosis and disposition has been shifted to active treatment, retraining and reconditioning for resumption of military duty or return to civilian life. The citation further states that 'Colonel Menninger has taken very much to heart the difficulties that confront the soldier discharged for neuropsychiatric disability. He has taken every opportunity and means to correct the popular misunderstanding of these diagnoses.'

### SHIFT NINTH SERVICE COMMAND SURGEON

Brig Gen John M Willis, surgeon of the Ninth Service Command since October 1943, will leave soon for an important overseas assignment. Major Gen William E Shedd, commanding general of the service command, announced recently. Col Luther R Moore, former commanding officer of the Woodrow Wilson General Hospital, Saunton, Va., has succeeded General Willis.

## NAVY

### NAVY ESTABLISHES FILARIASIS REGISTRY

A filariasis registry was recently established by the Bureau of Medicine and Surgery at Marine Barracks, Klamath Falls, Ore., which is the reconditioning center for Marines returned to the United States from the Pacific because of malaria or filariasis.

The purpose of the registry is to make and keep a record in a central place of all Navy and Marine Corps personnel having a diagnosis of filariasis. Establishment of this centralized record keeping system will facilitate keeping filariasis patients under surveillance as long as they are on active duty. The information obtained will also make it easier to evaluate the extent of the problem presented by the disease and make possible an adequate follow-up system for effective handling of patients. All naval stations in the United States have been directed to examine health records so that if an entry of filariasis has been made for any individual the data can be forwarded promptly to Klamath Falls.

### CHANGES IN NAVY MEDICAL CORPS COMMANDS

Capt William J C Agnew, Medical Corps, U S Navy, was recently appointed assistant chief of the Bureau of Medicine and Surgery. He will relieve Rear Admiral Luther Sheldon Jr., who has held the post since June 1940. Rear Admiral Sheldon will go to Norfolk, Va., as medical officer of the Fifth Naval District, succeeding Rear Admiral Joseph J A McMullin, Medical Corps U S Navy. The latter has been shifted to Boston as medical officer of the First Naval District, succeeding Rear Admiral Richard H Laning, Medical Corps, U S Navy. Rear Admiral Laning will assume the post of Inspector, Medical Department Activities Pacific Ocean Areas, recently vacated by Rear Admiral William Chambers, Medical Corps,

## ARMY AWARDS AND COMMENDATIONS

### Lieutenant Colonel Jesse G Heard

The Bronze Star was recently awarded to Lieut Col Jesse G Heard, formerly of Houston Texas. The citation accompanying the award read 'For meritorious achievement in connection with military operations against the enemy at Aitape, New Guinea, from July 2 to Aug 9, 1944. Lieutenant Colonel Heard, as chief of the surgical service, evacuation hospital, efficiently organized the surgical service, overcoming many difficulties by improvising surgical appliances, selection of surgical teams, formulating policies, surgical technique and procedures. His outstanding performance as operating surgeon, superior surgical judgment and leadership contributed directly to the success of the entire medical service connected with the military operation.' Dr Heard graduated from the University of Texas Medical Branch Galveston, in 1930 and entered the service in July 1942.

### Major Champ Lyons

Major Champ Lyons, formerly of Mobile, Ala., was recently awarded the Legion of Merit. The citation read 'He initiated and guided the methods by which the new and potent agent penicillin has been utilized in the treatment of the seriously wounded. From the most forward mobile hospitals of Italy to the large general hospitals of the interior he has personally operated on and studied the treatment of the wounded, instructing his seniors and subordinates alike in a change of surgical procedures which is productive of better results. Lives and limbs of soldiers have been saved and the disability and deformity of wounds materially reduced. His professional judgment, combining a basic knowledge of the science of bacteriology with skill and experience in practical surgery, has cast new light on the age old problem of wound surgery. At no time has he spared himself mentally or physically, and the example he has set is an inspiration to all surgeons in the service.' Dr Lyons graduated from Harvard Medical School, Boston, in 1931 and entered the service Aug 11, 1943.

U S Navy, when he became medical officer in command of the National Naval Medical Center, Bethesda, Md.

Rear Admiral George C Thomas, Medical Corps U S Navy, (retired), has been appointed officer in charge of the newly established Professional Division in the Bureau of Medicine and Surgery. Since July 1943 Rear Admiral Thomas has been District Medical Officer of the Eleventh Naval District.

### SPECIAL COURSE IN PHYSICAL TRAINING

Further reduction of sick days of personnel in Navy hospitals is expected as a result of the graduation of the sixth class of 4 physical training officers and 67 enlisted specialist personnel from the school established recently by the Bureau of Medicine and Surgery and the Bureau of Naval Personnel at the Naval Training Center, Sampson N Y. Eighty-seven officers and 388 enlisted men are already on duty in Navy hospitals carrying out a program of corrective exercises of graded intensity, designed to expedite the return to health of all types of casualties. With about 40 officers and 250 enlisted men in training at the Sampson Naval Training Center at any given time, classes of physical training personnel for assignment to Navy hospitals are graduated at weekly intervals. Personnel who majored in physical education in college in civilian life and who in many instances, had experience in corrective exercises were selected for this new duty.

To facilitate assignment to appropriate exercise groups, medical officers classify patients according to their ability to undertake physical activity. As progress is made toward recovery, reclassification is made to the next higher group. Physical education officers and enlisted specialists are responsible for actually supervising and conducting exercises for each of the various groups of patients. As part of the Navy medical department's broad rehabilitation program, they are subject to the command of medical officers in command in the various hos-

pitals At the present time, there are at least one physical training officer and several enlisted specialists on duty in all hospitals in full operation The number of officers and enlisted men in a particular hospital will depend on the needs of that hospital

### NAVY MEDICAL OFFICERS ATTEND OPENING OF PENSACOLA SUR- VIVAL EXPOSITION

A Survival Exposition a permanent instruction exhibit providing graphic illustrations of survival afloat and ashore, was opened recently at the Naval Air Station, Pensacola, Fla The exhibit contains equipment developed under auspices of the Naval Medical Research Institute, National Research Council and other member agencies of the Air-Sea Rescue Agency It will be used as regular instruction material for ground training at the station The exhibits begin with the 'ditching' of a stricken plane by the pilot and crew and carry the visitor progressively through the ordeal of being adrift on rough seas

## MISCELLANEOUS

### HONORABLE DISCHARGE EMBLEM AUTHORIZED

A new Honorable Discharge Emblem has been adopted by the Army Navy, Marine Corps and Coast Guard under an agreement signed by Secretary of War Henry L Stimson and Secretary of the Navy James Forrestal Made of cloth and of the same design as the Honorable Service Lapel Button, it will be sewed above the right breast pocket of all outer uniform clothing at the time of discharge Honorably discharged personnel may wear their uniforms to their homes and thereafter at official ceremonies The basic design of the emblem will be embroidered in gold, with the background material varying to match the color of the uniform on which it is to be worn Supplies of the emblem are not yet available for distribution Regulations pertinent to the Honorable Discharge Emblem will be published in the near future

### AID FOR BLIND VETERANS

Veterans Administration regulations issued recently, under authority of recently enacted legislation which permits seeing eye dogs to be furnished to blind veterans, stated that such veterans may be furnished the necessary travel expenses to and from their places of residence to the point where adjustment to the see eye or guide dog is available Meals and lodging during the period of adjustment will be provided in cases in which the veteran has to be away from his usual place of residence during the period of adjustment In addition, mechanical and electronic equipment considered as aiding in overcoming the handicap of blindness may also be supplied, the regulations state

### MEDICAL AND SURGICAL RELIEF COMMITTEE OF AMERICA

The Medical and Surgical Relief Committee of America (420 Lexington Avenue, New York 17) is preparing several cases of medical supplies and food to be shipped to Oran Algeria, and to southern France for the use of prisoners of war and their families Distribution abroad will be under the supervision of the "Comite de Secours aux Prisonniers de Guerre et a leurs Familles" The shipment will include baby foods canned apples and apricots cod liver oil, vitamin tablets Eskay's tonic calcium phosphate tablets Cartons, rectal saline acid gauze bandages sulfonamide crystals, glycerin suppositories, milk of magnesia and Agarol

### U S CADET NURSE CORPS

Dr Thomas Parran Surgeon General, U S Public Health Service Federal Security Agency recently announced that approximately 30,000 new student nurses have enrolled in the U S Cadet Nurse Corps this fall This is in addition to the 65,521 new student nurses admitted to the nation's nursing schools during the first year of the corps which ended June 30,

in rubber life rafts, planning salvation in polar or tropical regions and setting up temporary camp while awaiting rescue Life size manikins demonstrate how the aviator's survival paraphernalia together with the natural means of protection to be found in various regions, can best be used for survival In the 'Afloat' room the pilot and crew are shown adrift in rubber life rafts, employing the survival kits which are a part of the equipment of all naval aviators Around the walls of the room are shown the individual parts of the kit Birds, found at varying distances from shore are flown overhead, and in the ceiling pinpoint lights depict the constellations of the stars that can be used as navigational fixes

The exposition, which is in the charge of Capt Bertram Groesbeck Jr (MC), USN, was constructed under the supervision of Lieut Comdr Henry Nesburn (MC) USNR, whose experiences as a Navy flight surgeon in the Pacific enabled him to include in the exhibits situations confronting aviators in the Pacific This exhibit will be included in the ground school syllabus for flight students at Pensacola and marks a definite change in this element of ground training

1944 The Cadet Nurse Corps recruitment quota for the twelve month period ending June 30, 1945 is 60,000 new student nurses It is estimated that a total of 40,000 student nurses will have been enrolled between July 1, 1944 and Jan 1, 1945, so that the opportunity still awaits 20,000 qualified young women to join the corps when spring classes start, soon after the first of the year

### RED CROSS WOMEN ON SHIPS

The first American Red Cross women assigned to Navy hospital ships will sail soon aboard the *Refuge*, marking the beginning of a new service requested by the Navy Red Cross workers formerly had been assigned only to Army hospital ships which give medical care and treatment while transporting patients overseas The two Red Cross hospital workers who will sail on the *Refuge* are Miss Leona McGowan of South Clinton, Iowa, in charge of Red Cross work on the ship, and Miss Katherine Bush of Santa Monica, Calif, who will assist her Both have been serving in Red Cross domestic hospital units

### HOSPITALS NEEDING INTERNS AND RESIDENTS

The following hospitals have indicated to the Council on Medical Education and Hospitals that they have not completed their house staff quota allotted by the Procurement and Assignment Service

(Continuation of list in THE JOURNAL November 18 p 777)

#### FLORIDA

St Vincent's Hospital Jacksonville Capacity 300 admissions 8 240  
Sister Margaret Superintendent (resident—urology)

#### MINNESOTA

St Barnabas Hospital Minneapolis Capacity 208 admissions 6 20  
Miss Nellie Gorgas Superintendent (intern Jan 1, 1945)

#### NEW JERSEY

St Mary's Hospital Passaic Capacity 237 admissions, 5 808  
Sister Martha Eucharista RN Superintendent (interns)

#### NEW YORK

Our Lady of Victory Hospital Laekawanna Capacity 185 admissions,  
4 143 Sister M Bathilde Superintendent (2 interns)

#### OHIO

Lima Memorial Hospital Lima Capacity 167 admissions 4 790  
Mr Leslie O Fonkalsrud Administrator (1 intern 1 mixed  
residency)

St Thomas Hospital Akron Capacity 175 admissions 5 392 Sister  
M Eleanor RN Superintendent (2 interns Jan 1 1945)

#### OREGON

Emmanuel Hospital Portland Capacity 425 admissions 12 034  
Mr A L Morland Superintendent (1 resident—orthopedics 1 resi-  
dent—pathology 2 mixed residencies July 1 1945)

#### WEST VIRGINIA

Charleston General Hospital Charleston Capacity 380 admissions  
10 200 Dr John E Cannaday Director (intern July 1 1945)

# ORGANIZATION SECTION

## Official Notes

### THE PHILADELPHIA SESSION

#### Application Blanks Available for Space in the Scientific Exhibit

One of the features of the Philadelphia session will be the Scientific Exhibit to be held on the first floor of Convention Hall. Besides several special exhibits sponsored by the Committee on Scientific Exhibit of the Board of Trustees, there will be interesting displays presented by the medical departments of the Army, Navy and Air Corps, and many individual exhibits prepared by physicians, teachers and others.

Application blanks for space are now available and may be obtained from the Director Scientific Exhibit, American Medical Association, 535 North Dearborn Street, Chicago 10, Illinois.

## Washington Letter

(From a Special Correspondent)

Nov 27, 1944

### President Wants Research Continued

President Roosevelt has proposed that wartime scientific research be continued into the postwar era to improve national health and better national living standards and to stimulate employment. He expressed this view in a letter to Dr Vannevar Bush, director of the Office of Scientific Research and Development, which has coordinated the application of scientific knowledge to war problems.

New frontiers of the mind are before us, the President said, 'If they are pioneered with the same vision, boldness and drive with which we have waged this war, we can create a fuller and more fruitful employment and a fuller and more fruitful life.'

Mr Roosevelt asked Dr Bush for recommendations on these four points: 1. What can be done, consistent with security, to give the world the scientific contributions made to the war effort? 2. With respect to combating disease, what can be done now to organize for the future the work done in medicine and related sciences? 3. What can the government do to aid public and private research? What can be done to develop scientific talent in American youth to assure progress comparable to that which has occurred during the war?

### World Organization Covers Medical and Health Fields

Facilities for international medical and health programs are provided in the proposed United Nations organization planned at Dumbarton Oaks. An Economic and Social Council, to be a separate subsidiary to the main General Council, will be able to go into the field of international economic and social cooperation on a much broader basis than in the old League of Nations. The General Council would have the power to elect eighteen countries whose representatives would sit on this Economic and Social Council for three year terms. The number was limited to eighteen so as to create a workable body. On the Economic and Social Council each country would have one vote and its decisions would be made by simple majority. All the nations elected might be small nations though that is unlikely. The Economic and Social Council would recommend courses of action to the General Assembly. Decisions of the Economic and Social Council would not become laws regulating international commerce, immigration and emigration or sanitary labor and living conditions in any country. It could recommend courses of action to the General Assembly or provide information to the Security Council on international conditions affecting the peace of the world. Present independent social and economic agencies would take part on appropriate commissions. For instance, the United Nations Relief and Rehabilitation Administration and the International Labor organization would come

under the social and humanitarian commission. For the first time it is proposed to create a body to look at the whole world, see what goes on in living conditions, labor and commerce and recommend what might be done to keep nations from causing war.

### Kelley Committee Resumes Hearings

Dr Thomas Parran, Surgeon General of the United States Public Health Service, was one of the principal witnesses called when the Kelley Committee, a subcommittee of the House Labor Committee investigating ways and means of assisting disabled persons resumed hearings. Dr Parran was to testify Wednesday on proposed expansion of the Public Health Service, and its organization for disabled persons.

Paul V McNutt, Administrator of the Federal Security Agency and Katherine F Lenroot, Chief of the Children's Bureau, Department of Labor described the work of their organizations. First witnesses heard were J C Capt, Director of the Bureau of Census, and Michael J Shortley, Director of the Office of Vocational Rehabilitation, Federal Security Agency. To be heard are A F Hinrichs, Commissioner of Labor Statistics, Department of Labor, Harry B Mitchell, President of the Commissioners, Civil Service Commission, Oscar M Powell, Executive Director, Social Security Board and John W Studebaker, Commissioner of U S Office of Education.

Physical disablement caused by the war and accidents in industry assisting the war effort constitute a problem concerning the entire nation," said Representative Augustine B Kelley, Democrat Pennsylvania, Committee Chairman. The subcommittee, created by H Res 230, was appointed by Representative Mary T Norton, Democrat, New York, Labor Committee Chairman, and includes Representatives Jennings Randolph, Democrat West Virginia, Thomas E Scanlon, Democrat, Pennsylvania, Richard J Welch, Republican, California, Stephen A Day, Republican, Illinois, and Joseph Clark Baldwin, Republican, New York, with Samuel Barker, D C attorney, as counsel.

### Medical Phone Calls Handled

Although Thanksgiving Day telephone service in Washington and in other strike bound areas at Detroit and Dayton, Ohio, was curtailed, emergency medical calls were given prompt attention by staffs replacing strikers. The situation, however, highlighted the seriousness from a medical standpoint of having national telephone service disrupted. Strikers called off the walkout just before the President was about to take over. Prompt attention to grievances was promised by the office of the President and the War Labor Board.

### Dr John Louis Parks Is Children's Bureau Consultant

Dr John Louis Parks, professor of obstetrics and gynecology at George Washington University, has been appointed to serve as consultant in obstetrics to the Children's Bureau. He will advise the Children's Bureau on obstetric aspects of maternal and child health programs for which the bureau makes grants to state health agencies under the Social Security Act.

## Society Proceedings

### COMING MEETINGS

American Academy of Orthopaedic Surgeons Chicago January 21-24  
Dr Myron O Henry 825 Nicollet Ave Minneapolis Secretary  
American Society of Anesthetists New York Dec 14 Dr McKim L Phelps 745 Fifth Ave New York 22 Secretary  
Annual Forum on Allergy Pittsburgh January 20-21 Dr Jonathan Forman 956 Bryden Road Columbus Ohio Director  
Association for Research in Nervous and Mental Diseases New York Dec 15-16 Dr Thomas E Bamford Jr 115 E 82d St New York 28 Secretary  
Puerto Rico Medical Association of Santurce Dec 15-17 Dr E Martinez Rivera P O Box 3866 Santurce Secretary  
Southern Surgical Association Hot Springs Va Dec 5-7 Dr Alfred Blalock Johns Hopkins Hospital Baltimore 5 Secretary

## Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES NEW HOSPITALS EDUCATION AND PUBLIC HEALTH)

### ILLINOIS

**Joint Medical Meeting**—A joint meeting of the Illinois Trudeau Society and the Lake County Medical Society was held at the Lake County Tuberculosis Sanatorium, Waukegan November 14. Dr. David F. Loewen, Decatur, was chosen president-elect of the Illinois Trudeau Society and Dr. William J. Bryan, Rockford, was inducted into the presidency. Dr. Loren L. Collins, Ottawa, is secretary-treasurer. Among the speakers at the joint session were:

Dr. W. Harrison Mehn, Waukegan, Penicillin Treatment of Tuberculous Empyema—Preliminary Observations  
Dr. Werner S. Prenzlow, Waukegan, Nontuberculous Conditions Encountered in Sanatorium Outpatient Clinic  
Dr. Henry C. Sweany, Chicago, X-Ray and/or Diagnostic Clinic  
Dr. Paul G. Dick, Chicago, Chest X-Rays in Industry

### Chicago

**Thomas Larsen Observes Fiftieth Anniversary at Chicago**—In November Thomas A. Larsen in charge of the stockroom of the laboratory supply department, University of Chicago, completed fifty years of service in the department and forty-two years of taking subscriptions for THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION. Among the noted scientists who have subscribed to THE JOURNAL through Mr. Larsen are: Drs. Edward V. L. Brown, Paul R. Cannon, George F. Dick, Ralph C. Hamill, Basil C. H. Harvey, Ernest E. Irons, Arno B. Luckhardt, Dallas B. Phenister, Wilber E. Post and the late H. Gideon Wells. Dean D. Lewis and Howard T. Ricketts. The service of three sons of Mr. Larsen to the university brings the total of family service to ninety years, twenty for one son, Ralph, and ten each for Glen and Leonard.

**Annual Clinical Conference**—The Chicago Medical Society will hold its second annual clinical conference at the Palmer House, Chicago, February 27-March 1. Among the speakers will be:

Dr. Stanley Gibson, Heart Murmurs in Children: Interpretation of Their Significance  
Dr. George M. Curtis, Columbus, Ohio, Present Status of the Therapy of Hyperthyroidism  
Dr. Wingate M. Johnson, Winston-Salem, N. C., Management of Patient with Ulcer  
Dr. Clyde L. Randall, Buffalo, Bleeding At and After the Menopause  
Dr. C. Charles Burlingame, Hartford, Conn., Present and Future Effects of the War Neuroses  
Dr. I. E. Poole, Burbank, Calif., Coordination of the Activities of the Plant Physician and the Private Physician  
Dr. Robert Lee Sanders, Memphis, Tenn., Pre and Post Operative Treatment  
Dr. Herman L. Kretschmer, President, American Medical Association, Medical and Surgical Diseases of the Prostate  
Col. William Paul Holbrook, M. C., Rheumatic Fever  
Dr. Eugene W. Secord, Detroit, Mistakes to be Avoided in the Application of Plaster Casts  
Dr. Irvine H. Page, Indianapolis, Hypertension  
Dr. Owen H. Wengenstein, Minneapolis, Bowel Obstruction  
Dr. Roger I. Lee, Boston, President-Elect, American Medical Association, Gynecitics  
Dr. Kendall Emerson, New York, Tuberculosis  
Wounds and Burns (speaker not announced)  
Dr. Otto Spahr, Visceral Changes in Poliomyelitis  
Dr. Edward L. Cornell, Prolonged Labor  
Dr. Theodore L. Sauer, Milwaukee, Hay Fever and Asthma  
Louis Schwartz, medical director, U. S. Public Health Service, Vocational Dermatoses  
Dr. Walter C. Popp, Rochester, Minn., X-Ray Therapy of Acute Infections  
Surgical Lesions of the Lungs (speaker not announced)  
Dr. Philip M. Stum, New York, Advances in the Treatment of Infectious Diseases  
Dr. Edward Tolstoi, New York, Management of the Healthy and Sick Diabetic  
Dr. Marion A. Blankenhorn, Cincinnati, Pneumonia  
Arthritis (speaker not announced)  
Dr. Sidney Barber, Boston, Chronic Diarrheal Disorders in Young Children  
Dr. Peter C. Kroufeld, Chicago, Eye Conditions That Should Be Recognized by General Practitioners  
Dr. Earle B. Mahoney, Rochester, N. Y., Shock  
Dr. John W. Harris, Madison, Wis., Use and Abuse of Forceps  
Dr. John S. Lockwood, New Haven, Conn., Penicillin in Surgery  
Lieut. Col. Hardy A. Kemp, M. C., Tropical Diseases  
Dr. John C. McKinley, Minneapolis, Problem of Social Psychopathy in Postwar Planning

Lectures will include a panel on endocrinology by Drs. Edward H. Rinearson, Rochester, Minn., Ernest Perry McCullagh, Cleveland, Elmer L. Scovringhaus, Madison, Wis., Henry H. Turner, Oklahoma City, and George W. Thorne,

Boston, and a panel on nutrition by Drs. Morris Fishbein, Editor THE JOURNAL, Robert Elman, St. Louis, and Paul R. Cannon, Chicago. A panel discussion on hematology is also planned, the participants to be decided later.

### INDIANA

**Association Approves Health Insurance Plan**—On November 12 the house of delegates of the Indiana State Medical Association in special session in Indianapolis adopted resolutions approving the inauguration of a prepayment health insurance plan. Details of the plan will be worked out by a specially appointed committee representative of the physicians both as to geographic distribution and as to kinds of practice. The final plans to be approved by the house of delegates again in special session. The Indianapolis News stated that the plan is of an indemnity type of insurance, under which persons participating would pay their medical and surgical bills with money received from the insurance company.

### LOUISIANA

**Personal**—Dr. Marcelo Martinez Repetto, Merida, Mexico, is spending several months in New Orleans to study the causes and prevention of anemia pellagra and intestinal diseases in local hospitals. This visit is part of a tour of the United States made at the invitation of the State Department.

**University News**—Dr. Roy R. Kracke, dean of the new University of Alabama School of Medicine, Birmingham, addressed the recent commencement exercises of the Louisiana State University School of Medicine, New Orleans, on 'The Physician's Obligation to Society'. Of the 79 graduates, 21 were in the Navy, 47 in the Army and 11 were civilians, 7 of whom were women.

### MASSACHUSETTS

**Personal**—Dr. C. Walter Clarke, New York, executive director of the American Social Hygiene Association, was recently appointed clinical professor of public health practice at Harvard University.

**Harvard Society to Resume Meetings**—The Harvard Medical Society held a meeting November 14 in the Peter Bent Brigham Hospital, Boston, the first since the beginning of the war. Meetings are planned for the second Tuesday of each month and a program will include the presentation of a clinical case, three papers of fifteen minutes each and a five minute discussion of each paper. According to the *New England Journal of Medicine*, this plan will make it possible for clinical studies to be offered as well as results of fundamental investigation.

### MICHIGAN

**Memorial to Physician**—A part of the proposed new building for St. Luke's Hospital, Saginaw, will be dedicated in memory of the late Dr. Karl Kanzler as the result of a recent gift of \$50,000 in memory of the physician. The donation came from the Josephine and Ernest Kanzler Fund, of which Ernest C. Kanzler, Detroit, son of the physician, is president. Dr. Kanzler died in 1920.

**Women Form New Medical Branch**—On October 24 the Blackwell Society of Detroit and the Michigan branch of the American Medical Women's Association were merged; the new organization to be known as Blackwell Branch 20 of the American Medical Women's Association. Drs. Fanny H. Kenyon was named president-elect, Harriet I. E. McLane, president, Rose E. Herrold, vice president, Delma F. Thomas, treasurer, and Esther H. Dale, secretary, all of Detroit.

**Changes in Health Officers**—Dr. Gladys J. Kleinschmidt has been named health officer of Isabella County.—Dr. Alexander Witkow has resigned as health officer of Menominee County.—Dr. Homer G. Slade, on October 25, became director of district health unit number 4, including the counties of Alpena, Presque Isle, Montmorency and Cheboygan. He will have headquarters in Rogers City.—Dr. Georgia A. Mills has resigned as deputy health officer in Saginaw.

**Chairman Named to Start Fund Raising Campaign**—Wendell W. Anderson, president of the Medical Science Center of Wayne University, Detroit, has been named chairman of the first cycle of the medical centers fund raising campaign. Four buildings to be constructed in the first cycle program, the goal of which is about \$10,000,000, are the halls of the medical sciences to house the Wayne University College of Medicine, the college of pharmacy, the school of mortuary science, and allied programs; a university hospital for teaching and research; a classroom administration and dormitory build-



ing for the recently authorized college of nursing, and a powerhouse laundry and service building. The eventual goal of the Medical Science Center campaign is \$50,000,000 of which approximately \$20,000,000 will be for construction and equipment of buildings and \$30,000,000 for the endowment of program and research. The city plan commission has approved a fifty-three acre, fifteen block site for the Medical Science Center situated east of the Art Center. The corporation counsel has begun the condemnation of the first three blocks of this site.

### MINNESOTA

**Illegal Practitioner**—On October 17 Elmer C. Hultgren, Minneapolis, was sentenced to a term of one year in the Minneapolis Workhouse following his plea of guilty to an information charging him with the crime of practicing healing without a basic science certificate. He was arrested September 16 following his attempt to perform an abortion on an unmarried woman at his apartment for which he received the sum of \$20. Hultgren admitted that he had no medical education of any kind, stating that three or four years ago he attempted to perform an abortion on another woman and that these 2 cases were the only ones in which he was ever involved.

**Personal**—Dr. James M. Hayes, formerly of Minneapolis, has been appointed assistant professor of surgery at the College of Medical Evangelists, Los Angeles.—Dr. Audley V. Fankboner, who has had charge of the Range Hospital Buhl for the past eight years, has been named head of the medical department of the Walter Butler Shipbuilding Company with offices at the Riverside yard effective September 15.—On October 4 the Minnesota Public Health Association gave a dinner in honor of Dr. Edward A. Meyerding, St. Paul, in recognition of his twenty years of service with the association of which he is executive secretary. Dr. Meyerding, who has been executive secretary since 1924, previously served as director of the division of hygiene of the St. Paul department of education.

### MISSOURI

**Elmer Bartelsmeyer Dies**—Mr. Elmer H. Bartelsmeyer, executive secretary of the Missouri State Medical Association from 1933 to 1942, when he became consultant, died in St. Louis November 18, aged 54.

**Alpha Omega Alpha Lecture**—On November 10 Dr. Joseph Earle Moore, associate professor of medicine, Johns Hopkins University School of Medicine, Baltimore, gave the annual Alpha Omega Alpha Lecture at Washington University School of Medicine, St. Louis. His subject was "Chemotherapy of Syphilis."

**Dr. O'Reilly Honored**—Dr. James Archer O'Reilly, professor and head of the department of orthopedic surgery, St. Louis University School of Medicine, and president of the St. Louis and Missouri societies of crippled children, was given a citation and medal for distinguished service to crippled children throughout the country during the twenty-second annual meeting of the National Society for Crippled Children at the Edgewater Beach Hotel, Chicago, in October. Dr. O'Reilly has been a member of the board of trustees of the national society since 1930 and has served as secretary and chairman of the Section on Orthopedic Surgery of the American Medical Association.

**Postwar Plans for St. Louis University**—A \$500,000 addition to the present building of the St. Louis University School of Medicine is planned in the \$2,600,000 postwar expansion program, according to Rev. Patrick J. Holloran, S.J., president of the university, in a statement to the press November 4. Plans have been completed and work will be started on the medical school immediately on release of permission by the war production board. Of brick and stone the new construction will be four stories in height and will contain a library and an amphitheater which will seat the entire student body. The proposed building program includes an addition to the nurses home, a new library, a new classroom building and a new dormitory. Twin science buildings will be erected at a cost of \$250,000 each, one to house the physics and geophysics departments and the other the chemistry and biology classes.

### NEW JERSEY

**Physician Resigns as Dean of New Medical School**—Dr. Arcangelo Liva Hackenschack, announces that he has resigned the deanship of the Essex College of Medicine and Surgery, Newark, which was scheduled to open November 4 (THE JOURNAL, September 9, p. 115, and November 4, p. 647).

### NEW YORK

**Child Guidance Center**—The Westchester County Children's Association announces the opening of the Guidance Center, a service for children and young people of Westchester County. Two of the services offered by the center group demonstrations and the consulting service, have been available for some time, but the recent addition of a fee service includes adjustment of emotional, educational and behavior problems and vocational counseling and testing. The Westchester County Children's Association is located at 8 Church Street, White Plains.

**Graduate Lectures**—Dr. Philip M. Stimson, associate professor of clinical pediatrics, Cornell University Medical College, will give a graduate lecture on poliomyelitis before the Suffolk County Medical Society, Smithtown, December 6. Dr. William F. Lipp, Buffalo, gave a graduate discussion on the "Treatment of Jaundice" before the Steuben County Medical Society, Bath, November 9. Dr. Harry M. Rose, New York, will address the Saranac Lake Medical Society, December 20, in the Saranac Laboratory on "The Diagnosis and Treatment of Meningitis." These lectures are sponsored cooperatively by the state medical society and the state department of health.

### New York City

**Personal**—Philip S. Platt, Ph.D., who recently completed a current study of voluntary health agencies under the sponsorship of the National Health Council and for many years director of the Palama Settlement in Honolulu, T.H., has been appointed executive director of the National Association for the Blind.

**County Medical Societies Consider Mayor's Health Plan**—On November 17 the conference committee of the Health Insurance Plan of Greater New York met at the New York Academy of Medicine with presidents and other representatives of the county medical societies in the metropolitan area to explore the possibilities of their cooperation in developing the comprehensive medical service plan originally announced by Mayor Fiorello La Guardia early this year (THE JOURNAL, May 13, page 161). The conference stated that there had been an encouraging exchange of views and a second meeting was to be held December 1 at the academy of medicine.

### NORTH CAROLINA

**Seaboard Medical Association**—The forty-ninth annual meeting of the Seaboard Medical Association of Virginia and North Carolina will be held at the Cherry Hotel, Wilson, December 5-7, under the presidency of Dr. Malory A. Pittman, Wilson. Among the speakers will be:

- Dr. Paul F. Whitaker, Kinston, Medical Care of the Future
- Dr. Rufus E. Raiford, Franklin, Va., Intravenous Anesthesia
- Dr. James Graham Ramsay, Washington, Torison of Omentum
- Dr. Antonio A. Burle, Norfolk, Va., Glaucoma with Especial Relation to Early Treatment
- Dr. Cleon W. Goodwin, Wilson, Enterogenous Cyst
- Dr. Charles Lydon Harrell, Norfolk, Remarks on the Early Approach to the Care of the Tuberculosis Patient
- Dr. Claiborne T. Smith, Rocky Mount, Chronic Noncalculous Cholecystitis
- Dr. Southgate Leigh, Jr., Norfolk, Treatment of Crushing Injuries of the Extremities
- Dr. Clayton W. Eley, Norfolk, Treatment of Sinusitis in Children by Ray
- Dr. Samuel A. Thompson, New York, Comparison and Value of Various Resuscitation Methods
- Dr. William C. Hunter, Wilson, Endemic Typhus Fever
- Dr. Randolph Bryan Grinnan, Jr., Norfolk, Coronary Occlusion
- Dr. Clarence P. Jones, Jr., Newport News, Va., Observations in Clinical Use of Prostigmin
- Dr. Russell von L. Buxton, Newport News, Treatment of Tetanus
- Dr. Albert G. Hahn, Hickory, Infantile Paralysis

A symposium on Rocky Mountain Spotted fever will be presented Wednesday afternoon by Drs. Coy C. Carpenter, Robert P. Morehead, Robert B. Lawson and George T. Harrell, Jr., all of Winston-Salem.

### OKLAHOMA

**Surgery Course Postponed**—The ten weeks course of postgraduate medical study in surgical diagnosis which was to have opened in Tulsa, October 13, has been indefinitely postponed pending the employment of an instructor according to the Bulletin of the Tulsa County Medical Society. Dr. Archibald G. Fletcher, Philadelphia, who had been employed to present the course in the state during 1944 and 1945 has resigned (THE JOURNAL, Dec. 18, 1943, p. 1059). The course was to be offered under the auspices of the Oklahoma State Medical Association, with financial assistance from the Commonwealth Fund of New York and the state department of health.



## PENNSYLVANIA

**Personal**—Dr Horace C Scott, Philadelphia, has been appointed deputy secretary of health of Pennsylvania in charge of Negro public health activities—Dr J Newton Hunsberger, Norristown, recently won the Challenge Trophy offered by the Professional Horsemen Association. The 78 year old physician rode to first place astride his 18 year old hunter, Highboy.

## Philadelphia

**Public Health Society Organized**—The Public Health Society of the University of Pennsylvania was recently organized and held its inaugural dinner, November 8, at the Warwick Hotel, Philadelphia. Dr Angelo M Perri is president of the society, and Dr Mildred C J Pfeiffer, 331 S Smedley Street, Philadelphia 3, is secretary. Dr Perri was toastmaster at the dinner, and Lieut Col Arthur P Hitchens, M C, was guest of honor. Other speakers included Drs Stuart Mudd, professor of bacteriology, and Charles C Wolferth, professor of clinical medicine, at the school and Dr Rufus S Reeves, director of health of Philadelphia, Dr Hubley R Owen, director of medical services board of education of Philadelphia, and Dr Claude P Brown, assistant director state department of health laboratories. The society plans to hold bimonthly scientific sessions. Membership is not restricted to graduates of the University of Pennsylvania alone but is open to doctors of medicine, veterinary medicine and dentistry, social workers, sanitary engineers, public health nurses, political scientists and any one interested in the broad field of public health and preventive medicine.

## TENNESSEE

**Postgraduate Study**—Dr Joseph R Bromwell Branch will conduct a postgraduate course in gynecology in western Tennessee the week of January 15, according to the state medical journal. He recently concluded the 1944 circuit of lectures and returned to the Novak Clinic, Baltimore. The state journal reports that the total number of registrants for these courses during the two years the state association has sponsored them is 1,391, including 991 civilian physicians and 400 medical officers of the Army, Navy and Marine Corps.

**Faculty Changes**—Dr Herbert S Wells Winston-Salem, N C, is acting professor of physiology at the University of Tennessee College of Medicine, Memphis. Dr Lathan A Crandall Jr, professor of physiology, is head of the department. Forrest R Davison, Ph D, Kalamazoo, Mich, has been named assistant professor of pharmacology to succeed Dr Lloyd D Seager, who has become head of the department of pharmacology at Woman's Medical College of Pennsylvania, Philadelphia. Other changes in the faculty at Tennessee include the resignation of Dr Howard Curl as assistant professor of anatomy to become assistant professor of radiology at the school.

## WASHINGTON

**New Executive Secretary**—Mr Ralph W Neill for nine years correspondent for the Associated Press Bureau at Olympia, has been chosen executive secretary of the Washington State Medical Association, succeeding the late Arthur Anderson.

## Director Named for State Division of Mental Hygiene

—Dr George C. Stevens, who has been in charge of the development and operation of the mental hygiene program in Indiana for the past six years, has been appointed in charge of the newly established Washington division of mental hygiene. The creation of the new unit has been approved by the Washington State Medical Association, and a medical committee has been appointed to assist in developing a program which is a part of the general health plan of the state. The division will work closely with interested groups having responsibility for rehabilitating the returned veteran. A full time mental hygiene clinic is already in operation in room 320, Smith Tower, Seattle, and offers service to returned servicemen who have neuropsychiatric problems and to parents and others in child guidance who cannot afford other assistance. According to *Northwest Medicine*, as additional personnel become available it is planned to establish a second full time clinic in Spokane County, with a third clinic unit being made available on a traveling basis to all parts of the state as need arises. The psychiatric clinic service will necessarily be limited to those persons who would be unable to provide private care.

**Proposed State Medical-Dental School**—In a discussion of the proposed state medical dental school in connection with the University of Washington Seattle *Northwest Medicine* states that a recent survey disclosed that about 360 Washington residents are continually seeking medical education in other states and that about 116 residents must obtain their dental

degrees elsewhere. This circumstance would not be so alarming, it was stated, were it not for the fact that a high percentage of these persons, including many of those graduating in the higher brackets, fail to return to their home state to enter practice because of the opportunities offered elsewhere. It was pointed out that a medical-dental school in the state would be a magnet for prospective medical and dental students, not only of Washington but also of Alaska, British Columbia, Idaho and Montana. Replacements in the state have been "few and far between" in recent years. A recent survey disclosed that currently there is an average of only 1 physician to 1,765 persons in the state, compared with 1 physician to only 964 persons in prewar days. The journal points out that while legislation is required to establish the school the state medical and dental associations are planning to conduct a campaign for donations, contributions and endowments.

## WISCONSIN

**Ira Baldwin Named Dean of Graduate School at Wisconsin**—Ira L Baldwin, Ph D, professor and head of the department of bacteriology, University of Wisconsin, Madison has been appointed dean of the graduate school. Dr Baldwin, who during the past year has been doing war work in Washington under a leave of absence, will devote full time to his university work after December.

## GENERAL

**Pediatric Board Increases Fees**—At the recent annual meeting of the American Board of Pediatrics, it was decided to increase the application fee to \$75, effective May 1, 1945.

**Meeting of Anesthetists**—The annual meeting of the American Society of Anesthetists will be held at the New York Academy of Medicine, December 14 under the presidency of Dr Emery A Rovenstine, New York. Among the speakers will be

Dr Ralph M Waters, Madison, Wis, subject not announced.  
Dr Albert D Foster, New York, *Peripheral Circulatory Responses During Anesthesia: Hemorrhage and Shock: the Use of the Digital Plethysmograph as a Clinical Guide*.  
Dr Solomon G Hershey, New York, *Effects of Anesthesia on the Circulatory Response to Blood Loss*.

**Sessions on Industrial Health**—The four national associations of professional workers in industrial health will meet at the Drake Hotel, Chicago, during the week of April 23. The National Conference of Governmental Industrial Hygienists will hold its meetings on April 23-24, the American Association of Industrial Hygienists will meet on April 25-26 and the American Association of Industrial Physicians and Surgeons' meetings are scheduled for April 25-27, the last day's sessions to be held jointly with the American Industrial Nurses Association, which will continue its sessions on April 27-28.

**Special Society Elections**—Dr Archibald D Campbell, Montreal, Que, was named president-elect of the American Association of Obstetricians, Gynecologists and Abdominal Surgeons at its annual meeting recently and Dr Lewis F Smead, Toledo, Ohio, was inducted into the presidency. Dr James R Bloss, 418 11th Street, Huntington 1, W Va, was reelected secretary. The next annual session will be held at Hot Springs, Va, September 6-8—Dr Frank R Bradley, medical superintendent of Barnes Hospital, St Louis, was named president-elect of the American College of Hospital Administrators. Dr Claude W Munger, medical director, St Luke's Hospital, New York, was installed as president.

**Jackson Memorial Lecture**—The first Jackson Memorial Lecture, named in honor of the late Dr Edward Jackson, Denver, was given by Dr William H Crisp, Denver, during the meeting of the American Academy of Ophthalmology and Otolaryngology in Chicago, October 11. The lecture is sponsored by the *American Journal of Ophthalmology* as a tribute to Dr Jackson, who was for many years editor of the journal. Dr Crisp's title was "Edward Jackson's Place in the History of Refraction." Dr Crisp had been associated with Dr Jackson on the editorial board of the *American Journal of Ophthalmology* and still holds a directorship in the publishing company and serves as an associate editor. Dr Jackson was elected president of the academy in 1906 and was the first to hold the office under the present name of the organization.

**Child Welfare Information Service**—The Child Welfare Information Service, Inc., was recently organized with headquarters in Washington, D C. According to the *State Charities and Association News* the service is designed as a national clearing house of information on federal legislation and the activities of federal agencies concerning welfare of infants, children and youths. The scope of the service includes security, recreation, child labor and related activities.

Eugene Meyer Washington, co publisher of the Washington Post is president. Other officers include Dorothy Canfield Fisher, Ph.D., Arlington, Vt., vice president, Mrs. Gertrude Folks Zimand, New York, secretary, and George J. Hecht, New York, treasurer. Bernard Locker New York, assistant executive secretary of the State Charities Aid Association's welfare legislation bureau, has been named executive director of the new group, effective November 1.

**Borden Award for Nutritional Research**—The first annual Borden Award for nutritional research, given through the American Academy of Pediatrics, was presented at the wartime conference on child health in St. Louis November 10 to Major Harry H. Gordon, M.C. and Dr. Sam Z. Levine, assistant professor (on leave) and professor of pediatrics, Cornell University Medical College, New York, respectively. The award consists of a bronze medal with the inscription "Award for outstanding achievement in research in nutrition of infants and children and a prize of \$1,000. Major Gordon and Dr. Levine received the award for their work on "Metabolic Studies on Nutritional Requirements of Premature and Full Term Infants" the formal paper being presented by Major Gordon at the meeting of the academy November 11. Major Gordon has been stationed at Harmon General Hospital Longview, Texas since December 1942 and is currently chief of the malaria section.

**Society News**—The seventeenth annual convention of the Aero Medical Association of the United States will be held at the Palmer House Chicago, September 24-26. Dr. David S. Brachman 1016 Dime Building, Detroit 26, is the secretary. —The Society of American Bacteriologists will hold its 1945 session at the Book-Cadillac Hotel Detroit, May 22-25. Leland W. Parr, Ph.D., George Washington University School of Medicine Washington, D.C., is the secretary of the association. The association announces that Eli Lilly and Company is again offering a \$1,000 prize and bronze medal to a young man or woman working in a research or educational institution who is deemed to have done the most outstanding work in the field of bacteriology and immunology. To be eligible for the award a nominee shall not have passed his thirty-fifth birthday on April 30 of the year of the award. All nominations must have been received on or before February 15 for the 1945 award, the first announcement of the award to be made at the annual meeting of the Society of American Bacteriologists.

**Medical Correctional Association**—Dr. Robert V. Seliger Baltimore, was chosen president of the Medical Correctional Association at its annual meeting in the Hotel Pennsylvania, New York October 12. Other officers include Dr. Robert H. Felix Washington, D.C., and Robert M. Lindner, Ph.D., Lewisburg Pa., vice presidents and Mr. Edwin J. Lukas New York secretary-treasurer. The program of the meeting included discussion of "Treatment in the Postwar Prison—From the Point of View of the Psychiatrist." Dr. Marion R. King of the psychologist, Benjamin Frank, supervisor of education Bureau of Prisons Department of Justice of the physician, Dr. John W. Crown, all of Washington. In addition the following spoke:

- Mr. Lukas Alcohol and Crime
- Dr. Lawrence F. Woolley Towson Md. Integration of Psychiatric Service with Court Procedures
- Dr. Seliger What the Psychiatrist Wants from the Social Worker
- Dr. Lindner Hypnoanalysis in the Treatment of Psychopathic Characters
- Dr. John D. Reichard Lexington Ky. Tension Its Study and Possible Role in Neurotic and Antisocial Behavior

The Medical Correctional Association is an affiliate of the American Prison Association, and the recent meeting was a part of the annual corrections' congress held in New York October 12-15. Dr. Edwin J. Lukas is the secretary of the Medical Correctional Association which may be addressed at the Society for the Prevention of Crime 122 East Twenty-Second Street New York 10. Membership at \$1 a year is open to all interested persons.

**Sectional Meeting of Federation for Clinical Research**—The eastern section of the American Federation for Clinical Research will hold a meeting December 9 at the Massachusetts General Hospital, Boston. Included among the speakers will be:

- Dr. Sidney Scherlis Staunton Va. Clinical and Stethographic Observation on Sounds Associated with Auricular Activity
- Dr. Gordon B. Myers and Benjamin G. Oren Detroit, Use of the Augmented Unipolar Left Leg Lead in the Differentiation of the Normal from Abnormal Q Wave in Standard Lead III
- Dr. C. Cabell Bailey and Rachel S. Leech B.S. Boston Observations on Alloxan Diabetes with Special Reference to Blood Alloxan Determinations
- Dr. Edward C. Reifstein Jr. Laurance W. Kinsell and Saul Hertz Boston Effect of Testosterone Compounds upon the Nitrogen Balance and Creatine Excretion in Patients with Thyrotoxicosis

- Dr. Elmer C. Bartels Boston, Prooperative Use of Thiouracil in the Management of Severely Toxic Hyperthyroidism
- Dr. Richard S. Gubner and Murrill M. Szucs New York Comparative Study of Various Therapeutic Measures in 150 Cases of Rheumatic Fever
- Dr. Thiesen A. Ray and John S. LaDue New Orleans Intravenous Administration of Lanatoside C to Patients Taking Maintenance Doses of Folio Digitalis Up to the Date of Hospitalization with Recurrent Congestive Heart Failure
- Dr. Thomas M. Durant Joan H. Long and Morton J. Oppenheimer Philadelphia Air Embolism: An Experiment Study of the Cardiac Manifestations
- Dr. Charles S. Davidson Dr. John H. Freed and Francis H. L. Taylor Ph.D., Boston Methods of Estimating and Meeting Protein Requirements in Disease
- Dr. John T. Quinby and John H. Talbot Boston Blood Gas Values in Polycythemic States
- Dr. Joseph F. Ross Boston Hemoglobin Metabolism Studies with Radio-Active Iron in Normal Persons and Anemic Patients
- Dr. William B. Scoville Frammingham Mass Recent Developments in the Diagnosis and Treatment of the Cervical Ruptured Intervertebral Disc
- Dr. Henry J. Tagnon William Goodpastor and S. N. Levinson Boston A Clinical Pathological Correlation of the Kidney in Patients with Thermal Burns
- Dr. William G. Leaman Jr., Philadelphia Prolonged Use of Mercupurin in Congestive Cardiac Failure

## FOREIGN

**Campaign Against Leprosy**—A grant approximating a million dollars has been allocated by the British government for a five year campaign against leprosy in Nigeria. The New York Times stated that this is the British taxpayers' latest contribution under the colonial development and welfare act passed in 1940. A high proportion of the people of the British empire live in the tropics, where leprosy is most prevalent. The Times stated in reporting an announcement from the British Information Service. In 1924 the British Empire Leprosy Relief Association was established to work with all existing antileprosy agencies. By 1944 they had twenty nine clinics in operation and 12,000 persons with leprosy were receiving treatment. In addition, fourteen model leper villages had been built.

## Government Services

### Robert Felix Placed in Charge of Mental Hygiene Division

Dr. Robert H. Felix has been appointed medical director in charge of the mental hygiene division in the bureau of medical services, U. S. Public Health Service. He succeeds Dr. Lawrence Kolb, who retired October 31. Dr. Felix, who was born in Kansas in 1904, graduated at the University of Colorado School of Medicine, Denver, in 1930. He was commissioned in the regular corps of the public health service in August 1933 and assigned to the medical center of the bureau of federal prisons at Springfield, Mo. In 1936 he left his position in Springfield as clinical director and went to the public health service hospital, Lexington, Ky., where he served as clinical director and later as executive officer for the medical and psychiatric rehabilitation of narcotic drug addicts. In 1942 he was sent to the U. S. Coast Guard Academy, at New London, Conn., where he developed and operated a mental hygiene service for coast guard cadets and applied psychological and psychiatric tests in the selection of officer material.

### Walter Treadway Retires from Public Health Service

Walter Lewis Treadway, medical director U. S. Public Health Service, concluded more than thirty-two years in the public health service November 1 when he retired from active duty for disability incurred in service. Dr. Treadway had been stationed in Los Angeles since July 1941 as medical officer in charge of public health service activities. He graduated at the Barnes Medical College, St. Louis in 1907 and joined the public health service on July 28, 1913. He subsequently held many important assignments concerned with the mental hygiene activities of the public health service and from 1930 through 1938 was assistant surgeon general in charge of a newly created division of mental hygiene in the service. In 1938 he was detailed as medical officer in charge of the public health service hospital in Lexington, Ky. and in the following year was assigned to the University of California Medical School San Francisco to collaborate with the California Department of Institutions and the university in the establishment of a department of psychiatry in the medical school and the creation of the Langley Porter Clinic. He remained in San Francisco until his assignment to Los Angeles in 1941.

## Foreign Letters

### LONDON

(From Our Regular Correspondent)

Oct 22, 1944

#### Institutional Care of Young Children

Proposals to support a scientific inquiry into the effects on young children of being brought up in institutions are announced by the Nuffield Provincial Hospitals Trust. This inquiry is of particular importance at the present time, when so many children are being brought up in this way. Some sort of provision will have to be made in the future, as in the past, for the care of homeless, abandoned and handicapped children. But, although the impression exists that children brought up in institutions compare unfavorably in their adaptation to life with children brought up in normal homes, there is no scientific evidence on which a national policy can be based. The Nuffield Trust authorities are therefore making a substantial grant to the Provisional National Council for Mental Health to enable that body to undertake a carefully planned inquiry.

The widespread benefactions of the automobile magnate Lord Nuffield have been reported in previous letters to THE JOURNAL. Other recent grants made by the Nuffield Provincial Hospitals Trust are for the support of cancer research at Sheffield and to the department of child life and health in the University of Edinburgh for special study of problems of nutrition and dietetics in infancy and childhood.

#### Alterations Proposed for Royal Society of Medicine Building

The Royal Society of Medicine, the principal British medical society, is appealing to its fellows for \$250,000 to enlarge its premises. The number of fellows is now three times what it was in 1910, when the house at 1 Wimpole Street, London W. 1, was built, and the society's work is likely to expand. The proposed alterations include (1) a new top floor to contain a large room fully equipped for the clinical examinations, (2) an additional spacious library on the second floor approximately equal in accommodation to the present library on the first floor, (3) a third meeting room on the third floor, which can be used for discussions after clinical meetings, and (4) improved common room and committee room accommodations. The appeal is made with confidence that the Royal Society of Medicine has a brilliant future in accordance with its past traditions if the alterations can be made without being hampered by a building debt.

#### Return of University Students to London

The bombing of London led to the transfer of its educational establishments to safer places. Now with a great decline in the attacks the colleges are returning. The University of London is faced with the problem of finding accommodations for its students. About a third of College Hall, the only London University hall of residence for women, which closed at the beginning of the war, has been reopened for students. A third has been requisitioned by the government for the American Red Cross, and the other third was demolished in an early blitz. It can now take only 80 instead of the normal 170 residents. University College has taken over five bombed houses but their repair is held up by shortage of labor.

#### Radiolocation for the Blind

In the London Laboratory of Capt. H. G. Round, acoustics consultant of St. Dunstons' Institute for the war-blinded, a radiolocation box has been invented by which a blind man will be able to recognize obstacles in his path. It consists of two pieces of electrical sound and light apparatus weighing

about 10 pounds and set on wooden boards. To it is connected a pair of ear phones. The first experiments in using the apparatus have shown it to be a success. The blind man can range-find with it, if the apparatus is set for 8 feet, it makes a buzzing noise when any object is that distance away. It is hoped to develop a model weighing only 1 pound, which could be carried in the pocket. Experiments are also being made to produce a switchboard which can be operated by a man who has lost his hands.

### BRAZIL

(From Our Regular Correspondent)

RIO DE JANEIRO, Sept. 25, 1944

#### Dr. George T. Pack in Rio de Janeiro

Dr. George T. Pack, from the Memorial Hospital of New York City, spent a few days in Rio de Janeiro as a special representative of the American College of Surgeons. Before several young doctors and medical students he operated on cancer patients at the Moncorvo Filho Hospital, one of the newest municipal institutions, which is under the direction of Dr. Helson Cavalcante. Dr. Pack read papers on the treatment of cancer of the stomach and rectum and melanotic carcinoma at the National Academy of Medicine, at the Moncorvo Filho Hospital and at the Brazilian College of Surgeons, where he was received as a corresponding member. Dr. Pack was invited to a luncheon at the Gavea Golf and Country Club where Dr. A. de Oliveira Lima, secretary general of health for the Federal District (city of Rio de Janeiro), presented him, in the name of Mayor Henrique Dodsworth, the welcome of the capital city of Brazil. Before leaving, Dr. Pack received from the Brazilian government the insignia of the highest honor of the order of the Cruzeiro do Sul (the Southern Cross).

#### Medical Films

The Bureau of Health Information of the Rio de Janeiro City Health Department, under the direction of Dr. J. F. Fontenelle, in cooperation with the Division of Motion Pictures of the Office of the Coordinator of Inter-American Affairs, a few weeks ago began the weekly presentation of technical films to the physicians of the city. Several films passed by the Board of Censors of the American College of Surgeons or prepared by the United States Public Health Service have already been shown, among which were those on modern local treatment of burns, the treatment of varicose veins, injuries to the face, surgical treatment of glaucoma, the fight against malaria, the modern diagnosis of tuberculosis and the treatment of syphilis.

## Marriages

DOMINICK F. CHIRICO, Brooklyn, to Miss Mary Grace Babcock of Duluth, Minn., in Little Rock, Ark., November 18.

THEODORF W. NEUMAN, Central Valley, N. Y., to Mrs. Grace Middleton Hanson of New Rochelle, October 14.

EDGAR WINSLOW LANE JR., Bloomsbury, N. J., to Miss Jane Gardner Garrou in Valdece, N. C., September 27.

JOHN GIRDWOOD THOM, Los Angeles, to Miss Louise Theresa Newcomb of West Pittston, Pa., September 23.

HOWARD BUCHANAN SMITH JR., Mullins, S. C., to Miss Katherine Rhadert of Charleston, September 15.

MORTON G. MARKS, Lincoln, Neb., to Miss Dorothy M. Kayser of Atlantic City, N. J., October 22.

CHARLES ROBERT TABORSKY to Miss Nancy Margaret Nesbit, both of Madison, Wis., October 5.

BERT JOHN VOS JR. to Miss Elizabeth Aughey, both of Washington, D. C., October 1.

THOMAS CARROLL TYRELL, Muncie, Ind., to Miss Sallie Jane Major of Mishawaka, recently.

STILWELL G. MEANY, East Troy, Wis., to Mrs. Luella Jordan in Baraboo, September 2.

## Deaths

**Philip Foster Barbour** @ Louisville Ky Hospital College of Medicine Louisville 1890, professor emeritus of pediatrics at the University of Louisville School of Medicine where he had been clinical professor of diseases of children and head of the department of pediatrics from 1908 to 1940 professor of chemistry from 1895 to 1898 and professor of diseases of children from 1898 to 1907 at the Hospital College of Medicine professor of pediatrics at the Louisville and Hospital Medical College 1907-1908 specialist certified by the American Board of Pediatrics Inc, member and state chairman of the American Academy of Pediatrics member of the Association of American Teachers of Diseases of Children and the Southern Medical Association, in 1925 vice chairman of the Section on Pediatrics of the American Medical Association and in 1936 member of the House of Delegates, fellow of the American College of Physicians president of the Kentucky State Medical Association in 1932 past president of the Kentucky Alumni Association of Delta Kappa Epsilon and the Conference of Social Workers served as president of the Kentucky State Pediatric Society and the Louisville Society for Mental Hygiene, medical chairman of the Kentucky White House Conference consultant pediatrician, Kentucky State Department of Health and Kentucky State Baptist Orphan Asylum consultant pediatrician and formerly chief of staff, the Children's Free Hospital formerly visiting pediatrician Louisville City Hospital, and pediatric consultant on the staff of the Kosair Crippled Children Hospital trustee, Centre College member of the Rotary Club, died in St Anthony's Hospital November 1, aged 77, of coronary thrombosis

**Lindsay Stephen Milne** @ Kansas City Mo University of Edinburgh Faculty of Medicine, Scotland 1904 fellow of the Royal College of Physicians of Scotland, fellow of the American College of Physicians the New York Academy of Medicine and the Kansas City Academy of Medicine, member of the American Association of Pathologists and Bacteriologists and the Pathological Society of Great Britain and Ireland, one of the founders, and president, in 1941, Kansas City Southwest Clinical Society served as member of the council of the Jackson County Medical Society formerly professor of medicine at the University of Kansas School of Medicine Kansas City Kan, specialist certified by the American Board of Internal Medicine lieutenant colonel in the medical corps of the U S Army from 1917 to 1919 serving with the American Expeditionary Forces overseas as commanding officer of Base Hospital number 28 pathologist at the Russell Sage Institute of Pathology in New York from 1908 to 1912 member of the staff and served as chairman of the executive committee of the General Hospital, member and past president of the staff of the Research Hospital, on the staffs of the Menorah and St Luke's hospitals, died September 17, aged 61

**Oscar Monroe Gilbert** @ Boulder Colo, Barnes Medical College, St Louis 1898 member of the House of Delegates of the American Medical Association, 1928 and 1929 fellow of the American College of Physicians, past president of the Colorado State Medical Society, honorary life member and formerly director of the Colorado Tuberculosis Society member of the Denver Clinical and Pathological Society and the National Tuberculosis Society, professor of medicine emeritus at the University of Colorado School of Medicine where he had formerly been professor of anatomy assistant professor of medicine, professor of clinical medicine, associate professor of medicine and professor of medicine instructor of anatomy at his alma mater, 1898-1899, contract surgeon with the rank of captain during World War I on the staffs of the Community Hospital and Mesa Vista Sanatorium, died October 18 aged 71, of heart disease

**William Stimpson Hubbard**, Philadelphia Long Island College Hospital, Brooklyn 1894 member of the Medical Society of the State of New York fellow of the American College of Physicians past president of the Long Island Medical Society associate secretary in 1901 and secretary in 1902, Medical Society of the County of Kings at one time instructor in physical diagnosis at the Long Island College Hospital where he had been chief of the orthopedic clinic and consulting physician, for many years practiced medicine in Brooklyn where he had been on the staffs of the House of St. Giles the Cripple St. Johns and Kings County hospitals, at one time president of the chamber of commerce of Brooklyn died September 1 aged 78, of complications resulting from a cerebral hemorrhage

**James Higgins McIntosh**, Columbia, S C College of Physicians and Surgeons, New York, 1888, member and past president of the South Carolina Medical Association, had served as president of the Columbia Medical Society, Seventh and Second district medical societies of South Carolina, the Tri-State Medical Association of Virginia and the Carolinas and the Association of Surgeons of the Atlantic Coast Line Railway, member of the draft board during World War I for many years local surgeon for the Seaboard Air Line Railroad and the Southern Railway at one time state referee, Mutual Life Insurance Company of New York on the staff of the Columbia Hospital, died September 2, aged 77, of cerebral hemorrhage

**David Max Henning**, Memphis Tenn, Memphis Hospital Medical College 1900 Columbia University College of Physicians and Surgeons, New York, 1902, member of the Tennessee State Medical Association, at one time lecturer on rectal diseases and assistant demonstrator of surgery on the cadaver Memphis Hospital Medical College served overseas during World War I on the staffs of the Methodist and St. Joseph hospitals and the Hospital for Crippled Adults, formerly on the staff of the Memphis General Hospital now known as the John Gaston Hospital, died September 7, aged 68 of heart disease

**Charles B Wilkerson**, Raleigh N C, University of North Carolina School of Medicine 1906, member of the Medical Society of the State of North Carolina past president of the Wake County Medical Society and of the Raleigh Academy of Medicine, formerly Wake County physician, served as local surgeon for the Seaboard Air Line Railway and for the Durham and Southern Railway formerly president of the Peoples Bank of Apex on the staffs of the Rex and St. Agnes hospitals, died September 20 aged 65, of carcinoma of the pancreas

**James R Adam**, Mount Clemens Mich, Detroit College of Medicine 1896, died September 27, aged 75

**Charles William Bell**, Farmington Maine, Medical School of Maine Portland 1897, member of the Maine Medical Association, fellow of the American College of Surgeons, for many years medical examiner for Franklin County on the examining board during World War I consulting surgeon emeritus on the staff of the Franklin County Memorial Hospital, died October 13, aged 71, of coronary thrombosis

**Henry Walter Birdsong** Athens Ga Atlanta College of Physicians and Surgeons, 1911 member of the Medical Association of Georgia and the Southeastern Surgical Congress formerly a member of the state board of medical examiners, on the staffs of St. Mary's and Athens General hospitals past president of the Lions Club, died October 10, aged 61, of heart disease

**Laurence H Coffey**, Wauhan N C, Medical College of Virginia Richmond, 1906 an examiner for the board of Caldwell County during World War I practiced in Lenoir where he had been first county physician and quarantine officer served on the staffs of the Long Hospital, Statesville, and Hickory Hospital Hickory died in the Gordon Crowell Memorial Hospital Lincolnton, September 3, aged 68, of cerebral hemorrhage

**Francis James Coughlin** @ Aurora Ill, Northwestern University Medical School, Chicago 1901, served as health officer of Aurora, died in St. Mary's Hospital, Rochester, Minn September 22 aged 68

**Charles Hicks Cram**, Evanston, Ill Illinois Medical College Chicago 1900 member of the Illinois State Medical Society died in the Presbyterian Home September 29, aged 89 of chronic pyelonephritis and cystitis

**Richard Smith Crichtlow** @ New Orleans Tulane University of Louisiana School of Medicine New Orleans 1917 in charge of the outpatient dispensary of the Veterans Bureau for twelve years, junior ophthalmologist on the staff of the Touro Infirmary, on the staff of the Eye, Ear Nose and Throat Hospital examiner for the Selective Service Board number 16 lieutenant colonel medical reserve corps, U S Army not on active duty died in the Southern Baptist Hospital September 6, aged 62, of congestive heart failure and hypertension

**Ernest Michael Dorsett**, Philadelphia Medico Chirurgical College of Philadelphia, 1904, died September 18, aged 63 of coronary thrombosis

**Thomas Andrew Grace**, Excelsior Springs, Mo Medico Chirurgical College of Kansas City, 1903 served during World War I died in the Veterans Administration Facility, Wadsworth, Kan, September 14 aged 73

Rollin S. Fillmore, Long Beach, Calif., Missouri Medical College, St. Louis, 1883, practiced medicine in Blue Rapids, Kan. for forty-six years, died November 2, aged 89, of heart disease.

Thomas H. Gafney, Chicago College of Physicians and Surgeons, Chicago, 1891, died in the Englewood Hospital October 21, aged 76, of uremia and prostatic hypertrophy.

Irwin B. Gilbert, Philadelphia Hahnemann Medical College and Hospital, Philadelphia, 1882, died in the Hahnemann Hospital September 7, aged 89.

Thomas A. Griffin, Washington, D. C. Columbian University Medical Department, Washington, 1894, retired chief of the application division, Civil Service Commission, died October 12, aged 79, of cerebral hemorrhage.

James Caleb Gruber, Lisbon, Ohio, Illinois Medical College, Chicago, 1905, on the staff of the Salem City Hospital, Salem, died September 8, aged 71, of cerebral hemorrhage.

Caroline Frances Hamilton, White Plains, N. Y. Woman's Medical College of the New York Infirmary for Women and Children, New York, 1888, for many years a medical missionary in Turkey, died in the White Plains Hospital September 11, aged 83.

Vernard Reno Hodges, Indianapolis, Rush Medical College, Chicago, 1904, served during World War I, formerly on the staff of the Methodist Hospital, died September 14, aged 61, of coronary occlusion.

Bernard Hohenberg, New York University of the South Medical Department, Sewanee, Tenn., 1900, on the staff of St. Mark's Hospital, died September 6, aged 72, of coronary thrombosis.

John M. Hooten, Woodbury, Ga. Atlanta Medical College, 1885, died September 12, aged 83.

Chester Clifford Houck, Dormont, Pa. University of Pittsburgh School of Medicine, 1922, served an internship at St. Francis Hospital in Pittsburgh, died September 19, aged 46, of heart disease.

Jesse Whipples Hull, Toledo, Ohio Cincinnati College of Medicine and Surgery, 1897, served on the staff of the Toledo Hospital, died in the Masonic Home, Springfield, September 19, aged 81, of arteriosclerosis.

Norman Reek Ingraham, Philadelphia, Jefferson Medical College of Philadelphia, 1902, assistant professor of dermatology and syphilology at the University of Pennsylvania School of Medicine, for many years a member of the medical department of the Pennsylvania railroad, died in the Pennsylvania Hospital September 20, aged 64, of hypertensive cardiovascular disease.

Dwight David Johnson, Grass Valley, Calif., University of the City of New York Medical Department, 1883, member of the California Medical Association, died October 30, aged 83.

Carl Power Jones, Grass Valley, Calif., Cooper Medical College, San Francisco, 1907, a lieutenant commander in the U. S. Navy during World War I, served as health officer of Nevada County, physician and owner of the W. C. Jones Memorial Hospital, died October 18, aged 66, of coronary occlusion.

Thomas Monroe Jones, Anderson, Ind. Johns Hopkins University School of Medicine, Baltimore, 1902, a major in the medical corps of the U. S. Army during World War I, served as president of the school board of Anderson, on the staff of St. John's Hospital, director of the Anderson Banking Company, died September 19, aged 67, of rheumatic heart disease.

Lee Kahn, Louisville, Ky. Louisville Medical College, 1903, honorary member of the Jefferson County Medical Society, member of the Kentucky State Medical Association, fellow of the American College of Surgeons, a captain in the medical corps of the U. S. Army during World War I, attending surgeon, Jewish, Louisville City and Children's Free hospitals and the Masonic Widows and Orphans Home and Infirmary, associate surgeon, Kosair Crippled Children Hospital, died September 14, aged 66, of coronary occlusion.

Clarence King, Franklinville, N. Y. University of Buffalo School of Medicine, 1885, died in Machias, September 3, aged 85, of carcinoma of the stomach.

Philip Albert Kimball, Northampton, Mass. Boston University School of Medicine, 1918, member of the New Hampshire Medical Society, on the staff of the Northampton State Hospital, where he died September 2, aged 55.

William A. Kyger, Free Union, Va. University College of Medicine, Richmond, 1901, died September 8, aged 69, of heart disease.

Arnaud Julian La Pierre, Norwich, Conn. University of Vermont College of Medicine, Burlington, 1910, member of the Connecticut State Medical Society, died July 12, aged 59.

William Manners Lawhon, Chicago, Barnes Medical College, St. Louis, 1898, died September 12, aged 78, of cerebral hemorrhage and pneumonia.

Samuel Louis Leffel, Orangeburg, N. Y., Long Island College of Medicine, Brooklyn, 1931, served an internship at the Bushwick Hospital, Brooklyn, formerly an intern and resident in psychiatry at St. Lawrence State Hospital, Ogdensburg, on the staff of the Rockland State Hospital, where he died September 9, aged 49, of carcinoma.

Francis Alexander Leslie, Toledo, Ohio, Bellevue Hospital Medical College, New York, 1894, served on the staffs of Toledo St. Vincent's and Robinwood hospitals, chief of staff and on the advisory council of the Toledo District Nurses' Association, died September 6, aged 80, of heart disease.

Clarence J. Lewis, Philadelphia, Hahnemann Medical College and Hospital of Philadelphia, 1891, served in France as a medical officer with the 28th Division during World War I, chairman of the local draft board number 64, major medical reserve corps, U. S. Army, not on active duty, on the staffs of the Hahnemann and Frankford hospitals, died September 2, aged 76, of hepatitis.

Minor Carson Lile, Seattle, University of Virginia Department of Medicine, Charlottesville, 1914, fellow of the American College of Surgeons, served overseas during World War I, on the staffs of the Virginia Mason Hospital and the Children's Orthopedic Hospital, died September 3, aged 55, of coronary thrombosis.

Elmer William Litle, Los Angeles, Grand Rapids (Mich.) Medical College, 1901, on the staffs of the Presbyterian, St. Joseph and French hospitals, died September 8, aged 74, of heart disease.

Ludwig Mannheim Loebe, Chicago, Rush Medical College, Chicago, 1900, formerly assistant professor of medicine at his alma mater, for many years on the staff of the Cook County Hospital, since 1906 medical examiner for various insurance companies, died November 6, aged 66.

Carl Lovelace, Waco, Texas, Columbian University Medical Department, Washington, D. C. 1902, veteran of the Spanish American War and World War I, chairman of the board of directors of the Waco Public Library, served as president of the Texas Club of Internal Medicine, medical director of the Amicable Life Insurance Company, on the staffs of the Hillcrest Memorial and Providence hospitals, died September 14, aged 68, of tuberculosis.

Archibald Alexander McFadyen, Morganton, N. C. North Carolina Medical College, Davidson, 1903, for many years a medical missionary in China, where he had been in charge of the Men's Hospital in Hsuechowfu, member of the staff of the State Hospital, died September 23, aged 67, of coronary thrombosis.

Ralph Lyman McGeoch, Goshen, N. Y. New York Homeopathic Medical College and Hospital, New York, 1894, member of the Medical Society of the State of New York, town health officer for forty years, died September 1, aged 76, of cerebral edema, myocarditis and arteriosclerosis.

James R. McHugh, Ortonville, Minn. Curtis Physio Medicine Institute, Indianapolis, 1893, died July 21, aged 85, of chronic cystitis and uremia due to benign hypertrophy of prostate.

J. M. McIntosh, Bristol, Tenn. (licensed in Tennessee in 1896), died August 12, aged 75.

Robert Sprague McKee, Connellsville, Pa., Western Pennsylvania Medical College, Pittsburgh, 1896, member of the Medical Society of the State of Pennsylvania, for many years affiliated with Company D of the Pennsylvania National Guard, served on the Mexican border and later in France during World War I, member of the Fayette County local draft board number 1, formerly member of the school board, on the staff of the Connellsville State Hospital, where he died September 2, aged 70.

James Shelby McKown, Osceola, Texas, Vanderbilt University School of Medicine, Nashville, 1886, member of the State Medical Association of Texas, died in the Boyd Sanitarium, Hillsboro, September 13, aged 82, of pneumonia.

Simon M. Mollinger, Milwaukee, Northwestern University Medical School, Chicago, 1904, member and past president of the staff of the Misericordia Hospital, where he died September 9, aged 62, of uremia, acute nephritis and acute hemorrhagic pancreatitis.



Earl Harrell Moody, Bluff City Tenn University of Tennessee College of Medicine Memphis 1926 on the staff of the Kings Mountain Memorial Hospital Bristol, Va died September 18, aged 46 of bacterial endocarditis

William Howe Morrison, New York College of Physicians and Surgeons, New York, 1892 member of the Medical Society of the State of New York died in the Roosevelt Hospital August 26 aged 75, of arteriosclerotic heart disease and right hemiplegia

Francis Rudolph von Nahowski \* Chicago, Northwestern University Medical School, Chicago 1921 fellow of the American College of Surgeons specialist certified by the American Board of Surgery served an internship at the Mercy Hospital on the staff of the Ravenswood Hospital, died in a hospital at Portage, Wis, September 15 aged 50, of coronary thrombosis and duodenal hemorrhage

Edgar Shane Newlin, North Adams Mich, Miami Medical College Cincinnati 1891 died September 5, aged 76 of chrome myocarditis

Cornelius James Noonan \* Brooklyn Columbia University College of Physicians and Surgeons, New York 1900 on the staff of St Peter's Hospital, where he died September 10, aged 67 of pernicious anemia

American College of Surgeons on the courtesy staff of the Brooklyn Hospital director of surgery and attending surgeon at St Mary's Hospital, where he died September 26, aged 65 of leukemia and uremia

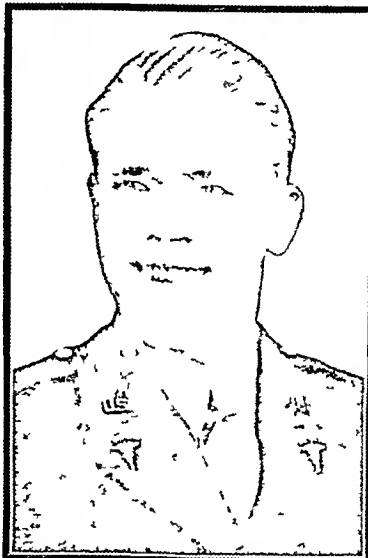
Harry Hapeman Patrie \* Brooklyn, University of Pennsylvania School of Medicine, Philadelphia, 1916, specialist certified by the American Board of Otolaryngology fellow of the American College of Surgeons served during World War I on the staffs of the Brooklyn Eye and Ear Hospital and the Brooklyn Hospital, where he died September 12, aged 53, of coronary occlusion

Ward Elverton Potter, St Petersburg, Fla, College of Physicians and Surgeons of Chicago School of Medicine of the University of Illinois 1900 member of the Illinois State Medical Society, formerly a practitioner in Oak Park, Ill, where he was affiliated with the West Suburban Hospital served in the medical corps of the U S Army during World War I, died in Asheville N C September 14, aged 68 of tuberculous meningitis and pulmonary tuberculosis

Boyd Cornick Rembe, Chicago Chicago Medical School, 1920 died in the Mother Cabrini Hospital September 28, aged 54 of coronary embolism



CAPT FRANK M KING  
M R C, U S A 1911-1944



LIEUT HUBERT H WASHBURN  
M R C, U S A 1917-1943



CAPT THEODORE PARKS ROBIE  
M C, A U S, 1917-1944

Rance O'Neal, West Point Ga, Atlanta College of Physicians and Surgeons 1901 member of the Medical Association of Georgia on the staff of the Valley Hospital member of the Lions Club died September 11 aged 69, of carcinoma of the stomach

William Vincent Pascual \* Brooklyn Columbia University College of Physicians New York 1900 fellow of the

William P Shackleford Jr, Hollandale Miss University of Louisville Medical Department 1908, died in the King's Daughters Hospital, Greenville, September 8, aged 58 of heart disease

Clayton Whittemore Shaw, Alexander, Ky Medical College of Ohio Cincinnati 1894 member of the Kentucky State Medical Association past president of the Campbell Kenton

## KILLED IN ACTION

Frank Malcolm King Ramona Okla St Louis University School of Medicine 1937, member of the Oklahoma State Medical Association served an internship and residency at the State University and Crippled Children's Hospitals, Oklahoma City in 1940 named director of the health unit at Woodward Okla commissioned a first lieutenant in the medical reserve corps of the U S Army on June 1, 1937 began active duty on Aug 21 1942 departed for foreign service in February 1943 promoted to captain Oct 24, 1943 after active duty in the Tunisian campaign went to Italy, serving in a battalion aid station killed in action in Italy January 10 aged 32

Hubert Horace Washburn, Beaver, Pa Jefferson Medical College of Philadelphia 1941 served an intern-

ship at the Philadelphia General Hospital began active duty as a first lieutenant in the medical reserve corps of the U S Army on Aug 1 1942 attached to the 504th Parachute Infantry Regiment reported missing July 11 1943 after his airplane crashed en route from Tunisia to Sicily declared dead Nov 11 1943 aged 25

Theodore Parks Robie, New York Harvard Medical School Boston 1942 diplomate of the National Board of Medical Examiners served an internship at the Massachusetts General Hospital in Boston commissioned a first lieutenant in the medical corps Army of the United States on July 10, 1942 began extended active duty on Aug 13 1943 later promoted to captain killed in action in France September 19 aged 27



Counties Medical Society served as councilor of the Eighth District of the Kentucky State Medical Association for many years county health officer served during World War I on the staff and trustee of Speers Memorial Hospital Dayton where he died September 11, aged 73, of cerebral hemorrhage

David Kalbach Shivelhood @ Petersburg Va Jefferson Medical College of Philadelphia, 1933 member of the Medical Society of the State of New York on the staff of the Petersburg Hospital formerly on the staff of the New York Post-Graduate Medical School and Hospital in New York specialist certified by the American Board of Radiology, died September 11, aged 37, of melanosisarcoma

Harry James Stewart, San Diego Calif Northwestern University Medical School Chicago, 1893, member of the California Medical Association, died October 31, aged 76, of heart disease

Carl Philip Struve @ South Elgin, Ill Northwestern University Medical School Chicago, 1904, past president of the Kane County Medical Society, on the staffs of St Joseph Hospital and the Sherman Hospital, Elgin where he died September 19, aged 66 of cerebral hemorrhage

Loamma Edgar Turney, Brownstown, Ill Physio Medical College of Indiana, Indianapolis, 1899 served on the staff of the Mark Greer Hospital, Vandalia died August 18 aged 74, of hemiplegia and diabetes mellitus

Arthur Allen Wall, Rankin, Pa, Leonard Medical School, Raleigh, N C, 1909, died September 3, aged 62 of lobar pneumonia

Charles R Wallace, Struthers, Ohio Cleveland Medical College, Homeopathic, 1897, member of the Ohio State Medical Association had been a member of the village council board of education and board of health, died September 30, aged 77, of cerebral hemorrhage

John Thomas Walsh, New York Bellevue Hospital Medical College New York, 1898, assistant registrar, bureau of records city board of health, for many years, died October 17, aged 70 of heart disease

Nathan Alonzo Warren @ Yonkers N Y Bellevue Hospital Medical College, New York 1879, an Affiliate Fellow of the American Medical Association served as mayor, postmaster, president and honorary director of the chamber of commerce, president of the U S Pension Board in Yonkers and member of the city civil service commission formerly on the staffs of St John's Riverside St Joseph's Yonkers General and Yonkers Professional hospitals, died in Oak Bluffs, Mass, August 14, aged 88, of coronary heart disease

Charles F Weir @ Chicago, Northwestern University Medical School, Chicago, 1894, formerly instructor in anatomy and instructor in clinical gynecology at his alma mater for many years a member, past president of the staff and, at the time of his death, a member of the board of trustees of Englewood Hospital, died September 27, aged 74, of coronary thrombosis

Virgil H Wells, Napoleon, Mich, Saginaw Valley Medical College, Saginaw, 1897, served as health officer, died August 8, aged 75, of arteriosclerosis

Earl E Wilcox Chicago the Halnemann Medical College and Hospital, Chicago 1908, member of the Illinois State Medical Society served during World War I, on the staff of the Jackson Park Hospital, where he died September 16, aged 58 of coronary occlusion

David Edgar A P Williams, Union, Mo Barnes Medical College, St Louis, 1904, died August 11, aged 79, of heart disease

Samuel E Williams, Manlius, Ill College of Physicians and Surgeons of Chicago 1893, died in the Julia Rackley Perry Memorial Hospital Princeton, August 28, aged 78 of carcinoma of the sigmoid

William Robert Williams @ Riverside, Ill Chicago College of Medicine and Surgery 1916, formerly on the associate staff of the Cook County Hospital, Chicago, member of the staff of the North Riverside Branch of the City of Chicago Municipal Tuberculosis Sanitarium, cardiologist and member of the executive staff West Suburban Hospital Oak Park, where he died September 27, aged 59, of intestinal obstruction and peritonitis

Chester Pearce Woodward Baltimore Maryland Medical College Baltimore, 1911 died September 1 aged 64 of chronic myocardial degeneration

Gaylord Worstell @ Eng Sandy Mont Columbian University Medical Department Washington D C 1899 died in Fort Benton August 11 aged 81, of carcinoma of the prostate

## DIED IN MILITARY SERVICE

Oliver Austin, Trenton N J Northwestern University Medical School Chicago 1941 an intern at the Cook County Hospital Chicago where he also served a residency in surgery diplomate of the National Board of Medical Examiners began active duty as a first lieutenant in the medical corps Army of the United States on Sept 23 1943 died in an airplane accident July 5 aged 32

Brown Hutcheson Carpenter @ Danville Va University of Tennessee College of Medicine Memphis 1934 served an internship and a residency in surgery at the Nashville General Hospital, Nashville Tenn commissioned a captain in the medical corps Army of the United States, on Aug 13, 1942 later promoted to major killed in an airplane crash in Morris County N J, October 5, aged 33

Monroe Bertram Gall, New York, Université de Strasbourg Faculté de Médecine France 1938 internship at Hôpitaux Civiles, Strasbourg Alsace 1936 1938 served a residency in psychiatry at the U S Public Health Service Hospital in Lexington Ky diplomate of the National Board of Medical Examiners formerly associated with the Civilian Conservation Corps in Vienna Md, Westover Md, and Towson, Md commissioned a first lieutenant in the medical reserve corps of the U S Army on March 1 1939 began active duty on Dec 5 1940 later promoted to captain and major died in Toeni Dutch New Guinea August 5, aged 32

William John Hawes, Columbia, Mo, John A Creighton Medical College, Omaha, 1913 member of the Missouri State Medical Association, served overseas during World War I, at one time city physician in Kansas City, formerly served with the Civilian Conservation Corps commissioned a captain in the medical reserve corps of the U S Army on Jan 22 1925 later promoted to major began active duty on July 10 1941, died in the European theater of operation July 10 aged 55, of coronary occlusion

Eugene Milton Holleb, Brooklyn, New York University College of Medicine New York, 1936, member of the Medical Society of the State of New York, diplomate of the National Board of Medical Examiners, specialist certified by the American Board of Radiology Inc served an internship at the Queens General Hospital in Jamaica formerly resident physician at the Bellevue New York City Cancer Institute Hospital and Mount Sinai Hospital all in New York commissioned a first lieutenant in the medical reserve corps of the U S Army on April 4 1940 began active duty on April 1 1941 later promoted to captain and major died in Port Moresby, New Guinea, October 14 aged 32 of injuries received in a motor vehicle accident

Raphael Christopher McDonough, Spokane, Wash, University of Oregon Medical School, Portland 1930 member of the Washington State Medical Association and the American Academy of Dermatology and Syphilology served an internship at the Seattle City Hospital and the Furland Sanatorium Richmond Highlands formerly resident in dermatology at the Barnard Free Skin and Cancer Hospital in St Louis commissioned a captain in the medical corps Army of the United States on June 6, 1942 began active duty on Aug 10, 1942 died in the AAF Regional Station Hospital, Santa Ana, Calif September 6, aged 39, following a cholecystectomy

Daniel Paul McEndy, Halesite, N Y McGill University Faculty of Medicine, Montreal, Que, Canada, 1940, diplomate of the National Board of Medical Examiners served an internship and residency in pathology at the New York Hospital, New York commissioned a captain in the medical corps Army of the United States on May 1, 1942, died in Washington, D C, August 19 aged 30

Arie C Rempe, Pella, Iowa Rush Medical College Chicago, 1937 member of the State Medical Society of Wisconsin, commissioned a lieutenant in the medical corps U S Naval Reserve on June 17 1942 died in the U S Naval Hospital Oakland, Calif, June 28, aged 39, of coronary thrombosis

Charles Albert Rethers, San Francisco, Creighton University School of Medicine, Omaha, 1933, member of the California Medical Association, served internships at the Southern Pacific General and St Mary's hospitals commissioned a lieutenant in the medical corps of the U S Naval Reserve in May 1942, died in Tia Juana, Mexico May 26 1943 aged 39 of multiple injuries

## Correspondence

### BACTERIOPHAGE ELECTRON MICROGRAPHS

*To the Editor*—The editorial "Bacteriophage Electron Micrographs" in *THE JOURNAL*, November 4, corroborates certain observations about the relative size of coli and staphylococci bacteriophages made in England and America approximately a dozen years ago

In Britain, Elford and Andrewes (*The Sizes of Different Bacteriophages, Brit J Exper Path* 13 446 [Oct] 1932), employing graded collodion membranes (gradocel) and checking by diffusion through Jena sintered glass disks, concluded that coli phage particles had a diameter of about 30 millimicrons while *Staphylococcus* phage particles ranged between 50 and 75 millimicrons

In this country, by far cruder methods, I observed that certain races of bacteriophage were able to pass through types of filters which others could not (Goldsmith, N R Variations in the Filtrability of Different Races of Bacteriophage, *J Bact* 33 495 [May] 1937)

Of four races of bacteriophage lytic for *Escherichia coli*, *Streptococcus hemolyticus*, *Streptococcus fecalis* and many *staphylococci* all of which passed Chamberland candles of various porosities only the first two were also able to pass through the Coors—a much finer filter. The variations in filtrability were not altered by the age of the filtrates by storage temperatures, by contacts with the homologous cultures or by mixtures with definitely filtrable races of phage. Although not proved by the filtration experiments it is suggested that the observed variations in filtrability are due to differences in the size of bacteriophage races

Luria, Delbruck and Anderson, referred to in your editorial (*Proc Nat Acad Sc* 28 127, 1942 *J Bact* 46 57, 1943), note that one *staphylococcus* phage was found to be about twice the size of a coli phage in all dimensions, or eight times its volume

At the time of my observation it was felt that variations in size were responsible for the differences in filtrability, although it was recognized of course that there are many factors determining filtrability. Luria's findings indicate that perhaps my original conception may be near the truth

NORMAN R. GOLDSMITH, M.D., New York

### THE MALE CLIMACTERIC—A MISNOMER

*To the Editor*—Among the numerous male patients complaining of various functional nervous disorders, including sexual impotence Heller and Myers (*THE JOURNAL*, October 21, p 472) found 23 who had pronounced elevation in gonadotropic hormone excretion, comparable quantitatively to that occurring in castrates. Testicular biopsy done on 8 of these patients revealed reduction in size and in activity of the seminiferous tubules and reduction in size and number of Leydig cells. Three times hyalinization of the seminiferous tubules was found. The age of those patients varied from 25 years to the seventh decade. They made a striking improvement after parental administration of testosterone propionate. They are considered to be "true examples of the male climacteric." Heller and Myers emphasize that their findings are by no means a physiologic accompaniment of the aging process in the male. "It is a relatively rare syndrome, probably affecting only a small proportion of men who live into old age"

Further investigation and corroboration seem to be necessary with regard to the following statements of Heller and Myers

1 The large number of clinical symptoms listed in their table 2 is encountered in both groups of patients, those with

and those without evidence of testicular failure. Testosterone propionate injected or implanted is effective only in the first and not in the latter group of patients. It is surprising that in the latter group diagnosed as psychoneurosis not one patient should have responded to this treatment. Any kind of treatment should have had at least a psychologic effect in one or another of those psychoneurotic persons

2 According to Heller and Myers there is a sharp line of separation between the "male climacteric" and the psychoneurotic, there is no room for transitional or mixed cases. This is surprising since in female climacteric such a mixture and amalgamation of hypo ovarian and psychoneurotic symptoms is the rule rather than the exception

3 Why has oral or sublingual administration of methyl testosterone been quite ineffective?

4 Hot flushes are characteristic of the female climacteric. I never encountered them as a spontaneous complaint in men. Are they not the result of suggestive questions asked by the physician?

5 Treatment with injections of testosterone resulted not only in alleviation of the symptoms but also in a pronounced drop of the elevated level of the excreted gonadotropic hormone. If Heller and Myers believe that the elevation of gonadotropins in testicular insufficiency is due to failure of utilization of this hormone by the testes, how do they explain the effect of parental testosterone administration on the amount of gonadotropin in the urine?

On the grounds that the syndrome reported by Heller and Myers occurs as a rare and pathologic accompaniment of the aging process and that among 23 patients it was observed three times in men under the age of 30, I should prefer calling the syndrome "testicular insufficiency" rather than "male climacteric." I see no reason to change my standpoint expressed in the monograph "Constitution and Disease Applied Constitutional Pathology" (New York, Grune & Stratton, 1942, p 83). "If the term climacteric is used, as it should be, to designate the cessation of the gonadal activity at a definite period of life, with all the consequences brought about by such an elimination of the gonads from the endocrine system, then there is little justification for using the term male climacteric. The functional activity of the testes slackens with advance in years. There is, however, neither generally nor individually a definite age at which the testes stop functioning as do the ovaries. Flushes, vasomotor crises and sudden attacks of perspiration characterize the menopause, these do not occur, however, in males. The rise in concentration of gonadotropic pituitary hormone in the urine of women at the menopause is not to be observed in men with advance in years. There is not sufficient foundation for calling the whole gamut of neuroasthenic complaints occurring in men between 45 and 60 climacteric, just because a mental depression may be associated with sexual impotence."

JULIUS BAUER, M.D., Los Angeles  
Clinical Professor of Medicine, College of Medical Evangelists

### ACUTE INFECTIOUS LYMPHOCYTOSIS

*To the Editor*—In *THE JOURNAL*, June 3, you published the very interesting article of Dr. Carl H. Smith "Acute Infectious Lymphocytosis." May I inform you that apparently the same illness with most of its peculiarities were described in my paper "Febris lymphocytica," *Ann paediat* 152 117 (Nov) 1938

S. ROSENBAUM, M.D., Tel-Aviv, Palestine

## Bureau of Legal Medicine and Legislation

### MEDICOLEGAL ABSTRACTS

**Chiropractic Practice Acts Texas Act Unconstitutional and Void**—A separate chiropractic practice act was enacted in Texas in 1943 (Acts 1943 ch 359) creating an independent board of chiropractic examiners to examine and license applicants qualified as set out in the act for licenses to practice chiropractic as defined in the act and making it a misdemeanor for any unlicensed person to practice chiropractic or for any person to advertise as a chiropractor without following his name with the term 'chiropractor'. Halsted was charged in the county court of Johnson County Texas with practicing chiropractic without a license and with advertising as a chiropractor without following his name with the term 'chiropractor'. He was arrested and taken into custody and subsequently he instituted in the district court Johnson County, habeas corpus proceedings for discharge from that arrest. He contended that the chiropractic practice act was unconstitutional and void and that the offenses charged against him were not based on any valid law. He was denied relief, was remanded to custody and appealed to the court of criminal appeals of Texas.

A provision in the Texas constitution, said the appellate court, permits the legislature to pass laws prescribing the qualifications of practitioners of medicine in Texas but expressly provides that no preference shall ever be given by law to any schools of medicine (Texas Constitution art 16, sec 31). By authority of this provision as well as by the general police power to protect the public health, the legislature has in the medical practice act expressly defined the practice of medicine and has prescribed rules and regulations governing its practice. That act provides that any person shall be regarded as practicing medicine who for money or other compensation treats or offers to treat any disease or disorder mental or physical or any physical deformity or injury, by any system or method (Vernon's Penal Code, art 741). The medical practice act, as well as the definition of practicing medicine "just adverted to has been sustained as valid not only by this court but by the Supreme Court of the United States. In construing the medical practice act and in determining what constitutes the practice of medicine thereunder, this court has consistently held that one who publicly professes to treat diseases or disorders as a profession or avocation is practicing medicine, regardless of the system or method employed the name by which the system is known, or whether or not drugs or surgery are used. The practice of medicine as contemplated by the medical practice act is not restricted to the treatment of diseases and disorders of the human body by the use of drugs or surgery and embraces the practice of chiropractic and osteopathy similarly and did embrace the practice of optometry prior to the passage of the optometry practice act. It is apparent that by the passage of the chiropractic practice act the legislature intended to take the practice of chiropractic out of the field of the practice of medicine as defined in the medical practice act, to set up chiropractic as an independent science separate and distinct from the practice of medicine and by special treatment and classification, to authorize practitioners of chiropractic to treat diseases of the human body. So then, the question before us is whether or not the act expresses the legislative intent in a valid definite understandable law. If so, did the legislature have the authority to enact such a law.

With respect to the question as to whether or not the act before us said the court is a valid definite understandable law the definition the legislature gave to the term chiropractic in the act is of paramount importance. The term is defined in sections 3 and 3a of the act as follows:

Sec 3 Chiropractic is defined to be the Science [sic] of analyzing and adjusting the articulations of the human spinal column and its connecting tissues without the use of drugs or surgery. Chiropractic shall in no sense be construed or defined as treatment or attempted treatment of patients by use of surgery or medicine. It is hereby declared

the purpose of the Legislature to make as definite the distinction between Chiropractic and other sciences as the distinction between Dentistry and Medicine.

Sec 3a No chiropractor shall treat any patient for any ailment or illness except by chiropractic as that term is herein defined. Provided that it shall be a violation of this Act for any person licensed hereunder to treat any person for infectious or contagious diseases or to engage in the practice of medicine.

Section 3 it will be noted is divided into two parts one positive the other negative that is to say, one sets forth what chiropractic is while the other sets forth what it is not. These taken together constitute the definition of chiropractic. By the positive, chiropractic is the 'science of analyzing and adjusting the articulations of the human spinal column and its connecting tissues, without the use of drugs or surgery'. Under the negative Chiropractic shall in no sense be construed or defined as treatment or attempted treatment of patients by use of surgery or medicine. It is not the practice of medicine but is separate and distinct therefrom. The terms surgery and medicine not being specially defined are used in the sense in which they are commonly understood. So then under section 3 it may reasonably be said that chiropractic is the science of analyzing and adjusting the articulations of the human spinal column and its connecting tissues without the use of drugs or surgery, and that it is not the practice of medicine as defined in the medical practice act but is separate and distinct therefrom. Section 3a of the act states the rights, powers and privileges conferred on chiropractors that of necessity have a bearing on and become a part of, the definition of chiropractic for whatever a chiropractor may lawfully do as a practitioner becomes a part of the definition of the practice. The first part of section 3a prohibits a chiropractor from treating a patient except by chiropractic as defined. By the application of familiar rules of statutory construction that means that a chiropractor may treat a patient for an illness or disease, except infectious and contagious diseases, by chiropractic but in the same section it is made a violation of the act for a chiropractor "to engage in the practice of medicine which as we have shown, means, of necessity, that a chiropractor by chiropractic was prohibited from treating or offering to treat diseases or disorders of the human body for compensation. Section 3a therefore by its terms authorizes the chiropractor to treat patients for all ailments and diseases except those that are infectious and contagious, and, at the same time makes it unlawful for him to do so. As thus construed sections 3 and 3a are in irreconcilable conflict, for by the terms thereof, a chiropractor is both permitted to treat and is prohibited from treating patients for illnesses and diseases. He is both within and without the provisions of the medical practice act defining the practice of medicine. Such being true it is impossible from the wording of the act, to determine what is chiropractic and the practice thereof and whether the same is or is not the practice of medicine under the medical practice act, as judicially determined.

The chiropractor recognized this conflict between sections 3 and 3a but insisted that what the legislature intended in prohibiting a chiropractor from practicing medicine was that he could not practice medicine by means or methods other than those comprehended in the practice of chiropractic and that so long as he treated patients by chiropractic he was not practicing medicine. But answered the court, if the chiropractor's views are accepted then the validity of the chiropractic practice act depends on the power of the legislature to say that one who treats a patient for noncontagious or noninfectious diseases or disorders by analyzing and adjusting the articulations of the human spinal column and its connecting tissues, and without the use of drugs or surgery, is not practicing medicine within the meaning of the medical practice act. This resolves itself to the question as to whether or not the legislature has the power and authority to pass such a law, and thereby to create and to set aside as an independent class treatment of diseases and disorders of the human body by chiropractic. There is no question but that the legislature is authorized to regulate and control the treatment of diseases and disorders of the human body. The legislature also may make reasonable classifications of practitioners in that field and such classifications are not inhibited by the provisions of the federal constitution prohibiting class legislation. Thus was recognized as not prohibiting

the legislature from passing the optometry practice act and appears also as the doctrine on which the validity of the acts of other states controlling and regulating the practice of chiropractic has been upheld. But in this state the authority of the legislature to enact legislation touching the practice of medicine or the healing art has been expressly limited by that provision of our state constitution providing that no preference shall ever be given by law to any school of medicine. No similar constitutional provision is in effect in any other state and therefore the fact that other states have authorized the practice of chiropractic as an independent field of endeavor, as being outside the field of the practice of medicine is of no consequence or relevancy here. The chiropractic practice act of Texas must be construed in the light of the Texas constitution.

The fact continued the court that we have previously upheld the constitutionality of the separate dental and optometry practice acts enacted in this state has no bearing whatsoever on the right of the legislature to enact a separate chiropractic practice act in this state. Admittedly there is no question as to the constitutionality of the optometry practice act or of the dental practice act. In both cases the legislature restricted the practitioners of optometry and of dentistry to a particular part of the body. In the case of optometry the optometrist is expressly precluded from treating the eye for disease or disorder and from treating for diseases and disorders of the human body. In the case of dentistry the dentist is restricted to a certain part of the human body and is not authorized to treat the body generally for a disease or a disorder. Chiropractic on the other hand relates to the whole of the body and authorizes the treatment thereof for diseases or disorders.

The final question to be determined by the court was whether or not the chiropractic practice act was in violation of that clause of the Texas constitution which provides that no preference shall ever be given by law to any schools of medicine. This provision said the court has been the basis on which has rested the legislative control over and definition of the practice of medicine. It furnishes the direct reason why the courts have steadfastly held that if one treats or offers to treat as a business profession or avocation diseases of the human body by any method system or means he must first qualify himself to do so by taking the same examination that is required of all others doing the same thing regardless of the system employed. The term schools of medicine used in the constitutional provision referred to has reference to the system means or method employed or the schools of thought accepted by the practitioner. Under the medical practice act one desiring to practice medicine must possess certain qualifications as to character and educational attainments and must pass a satisfactory examination on certain basic subjects. Under the chiropractic practice act one desiring to practice chiropractic must also possess certain qualifications of character and educational attainments and must pass a satisfactory examination on certain basic and special subjects. The educational qualifications imposed by the medical practice act and the chiropractic practice act materially differ those qualifications imposed by the medical practice act being decidedly more onerous. Assuming then that under the chiropractic practice act the legislature has set up recognized and defined chiropractic as a separate system for the treatment of diseases and that practitioners thereof are authorized to treat, by chiropractic, patients for diseases and disorders it is evident that the legislature has preferred chiropractic and chiropractors over all others engaged in treating the human body for diseases and disorders because the chiropractor is not required to have the same educational qualifications nor is he required to pass examinations in the same subjects that are required of others similarly situated. The preference accorded the chiropractic system does not stop there for we know that prior to the enactment of the chiropractic practice act one who had qualified under the medical practice act was at perfect liberty to practice by the chiropractic system, or by any other system that to him seemed proper. The law did not control or attempt to control the licensed practitioner under the medical practice act in the system, means or method he employed. All that the law required was that if one treated diseases as a calling he must first qualify himself to do so by passing satisfactorily the examination required of all others similarly situated and coming within the same class. This is no longer true under the chiropractic

practice act because even though one be licensed to practice medicine under the medical practice act he cannot employ a chiropractic system of treating diseases without taking and passing the examination required under this act. Thus the legislature has carved out of the field of the healing art a single system for treating diseases and has given it special treatment, limiting its use to those who qualify under the chiropractic practice act. It seems clear that this legislation violates the nonpreference clause of the Texas constitution.

When this act is construed as an overall picture, said the court the practice of chiropractic is either definite or indefinite, certain or uncertain. If it is indefinite or uncertain, it falls by reason thereof. If it is definite and certain it violates the nonpreference clause of the state constitution. It follows, therefore that the chiropractic practice act is unconstitutional and void, that there exists no valid law denouncing as a crime the practice of chiropractic by one not licensed specifically so to do and that Halsted is entitled to be discharged.—*Ex parte Halsted* 182 S W (2d) 479 (Texas 1944)

## Medical Examinations and Licensure

### COMING EXAMINATIONS AND MEETINGS

#### NATIONAL BOARD OF MEDICAL EXAMINERS EXAMINING BOARDS IN SPECIALTIES

Examinations of the Examining Boards in Specialties were published in THE JOURNAL November 25 page 854

#### BOARDS OF MEDICAL EXAMINERS

ALABAMA \* Montgomery June 26 28 Sec Dr B F Austin 519  
Dexter Ave Montgomery 4  
ALASKA Juneau March Sec Dr W M Whitehead Box 561 Juneau  
ARIZONA \* Phoenix Jan 23 Sec Dr J H Patterson 826 Security  
Bldg Phoenix  
CALIFORNIA \* Oral Los Angeles Jan 21 Written Los Angeles  
March 5 8 Sec Dr Frederick A Scatena 1020 N St Sacramento 14  
COLORADO \* Denver Jan 25 Sec Dr J B Davis 831 Republic  
Bldg Denver  
IDAHO Boise Jan 8 11 Dir Bureau of Occupational Licenses  
Mrs Lela D Painter 355 State Capitol Bldg Boise  
ILLINOIS Chicago Jan 24 Supt of Registration Department of  
Registration and Education Mr Philip Harman Springfield  
INDIANA Indianapolis Jan 35 Exec Sec Board of Medical  
Registration and Examination Miss Ruth V Kirk 301 State House  
Indianapolis 4  
MINNESOTA \* Minneapolis Jan 16 18 Sec Dr J F DuBous  
230 Lowry Medical Arts Bldg St Paul 2  
NEW HAMPSHIRE Concord March 8 9 Sec Board of Registration in  
Medicine Dr D G Smith 77 Main St Nashua  
NORTH DAKOTA Grand Forks Jan 25 Sec Dr G M Williamson  
4½ S 3rd St Grand Forks  
OHIO \* Endorsement Columbus Jan 9 Examination Columbus  
June Sec Dr H M Platter 21 W Broad St Columbus  
RHODE ISLAND \* Providence Jan 4 5 Chief Division of Examiners  
Mr Thomas B Casey 366 State Office Bldg Providence  
SOUTH CAROLINA \* Columbia June 28 27 Sec Dr N B Heyward  
1329 Blandina St Columbia  
SOUTH DAKOTA \* Pierre Jan 16 17 Sec Medical Licensure State  
Board of Health Dr G Cottam Pierre  
TEXAS Dallas Dec 19 21 Sec Dr T J Crowe 918 20 Texas  
Bank Bldg Dallas 2  
VERMONT Burlington June Sec Dr F J Lawliss Richford  
VIRGINIA \* Richmond June 20 23 Sec Dr J W Preston 30½  
Franklin Rd Roanoke  
WASHINGTON \* Seattle Jan 15 17 Dir Department of Licenses  
Mr Thomas A Swayze Olympia  
WEST VIRGINIA \* Charleston Feb 26 28 Commissioner Public Health  
Council Dr John E Offner State Capitol Charleston 5  
WISCONSIN \* Madison Jan 9 11 Sec Dr C A Dawson Tremont  
Bldg River Falls  
WYOMING Cheyenne Feb 5 6 Sec Dr M C Keith Capitol Bldg  
Cheyenne

\* Basic Science Certificate required

#### BOARDS OF EXAMINERS IN THE BASIC SCIENCES

COLORADO Denver Dec 6 7 Sec Dr Esther B Starks 1459 Ogden  
St Denver  
CONNECTICUT Feb 10 Address State Board of Healing Arts 250  
Church St New Haven 10  
DISTRICT OF COLUMBIA Washington Apr 23 24 Sec Commission  
on Licensure Dr G C Ruhland 6150 E Municipal Bldg Washington 1  
FLORIDA DeLand June 1 Sec Dr J F Conn John B Stetson  
University DeLand  
IOWA Des Moines Jan 9 Dir Division of Licensure and Registra-  
tion Mr H W Grefe Capitol Bldg Des Moines  
MICHIGAN Ann Arbor and Detroit Jan 12 13 Sec Miss Elouise  
Le Beau 101 N Walnut St Lansing  
MINNESOTA Minneapolis Jan 23 Sec Dr J C McKinley  
126 Millard Hall University of Minnesota Minneapolis 14  
NEW MEXICO Santa Fe Feb 12 Sec Miss Marion M Rhea  
State Capitol Santa Fe  
TENNESSEE Memphis and Nashville Dec 18 19 Sec Dr O W  
Hyman 874 Union Ave Memphis

## Current Medical Literature

### AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1934 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (\*) are abstracted below.

### American Heart Journal, St. Louis

28 271-410 (Sept) 1944

Q<sub>1</sub> Deflection of Electrocardiogram in Bundle Branch Block and Axis Deviation W A Sodeman, F D Johnston and F N Wilson —p 271

\*Auricular Infarction E W Young and A Koenig —p 287

Effect of Chronic Lead Poisoning on Arterial Blood Pressure in Rats J Q Griffith Jr and M A Jindauer —p 295

Electrocardiographic and Clinical Study of Various So-Called Cardiac Drugs R M Tandowsky, Norma Anderson and J K Vandeventer —p 298

Mechanism of Electrocardiographic Syndrome of Short PR Interval with Prolonged QRS Complex T T Fox and Audrie L Bobb —p 311

\*Clinical Experience with Dicumarol W I Geffer, D W Kramer and J G Reinhold —p 321

Alterations in Form of T Waves with Changes in Heart Rate D Scherf —p 332

Morphologic Study of Cardiac Conduction System. Part III. Bundle Branch Block D J Glomset, Anna T A Glomset and R F Birge —p 348

Studies on Unipolar Leads. IV. Effects of Digitalis E Goldberger —p 370

Effect of Chronic Coronary Sinus Occlusion on Vascularity of the Dog's Myocardium A Lorber and A T Greenberg —p 378

Pericarditis Associated with Primary Atypical Pneumonia D Finkelstein and M T Kluner —p 385

**Auricular Infarction**—According to Young and Koenig auricular infarction as a distinct entity is rarely reported. They report 3 cases of distinct auricular infarction without ventricular involvement. A fourth case in which the electrocardiograms showed changes apparently typical of auricular damage proved to be one of ruptured false aneurysm with hemorrhagic infiltration of the auricles. In 3 of the 4 cases there were deviations of the P-T segments conforming to that described as typical of auricular damage. In one there was also an apparent disturbance of the auriculoventricular conduction pathway, this was most likely due to the ulceration through the interventricular wall. All of the infarcts were located in the right auricle.

**Clinical Experience with Dicumarol**—Geffer and his associates used dicumarol for 30 patients with thromboembolic disease. There were 14 cases of peripheral arterial occlusion, 1 case of coronary artery occlusion, 4 cases of cerebral artery occlusion, 2 cases of subacute bacterial endocarditis, 4 cases of pulmonary artery occlusion, 1 case of retinal vein thrombosis, 3 cases of thrombophlebitis and 1 case of what was probably hepatic vein thrombosis. No changes were observed in the leukocyte count, hemoglobin, blood sugar, blood urea nitrogen, van den Bergh, icterus index, bromsulphalein retention, urine specific gravity, albumin, sugar and iodine elements. On the dosage schedule of 300 mg orally for two days and 50 mg daily thereafter the plasma prothrombin fell rapidly from 80 per cent to 25 per cent of normal in three days, was 20 per cent or less from the fourth to ninth days and then rose slowly to a level of 50 per cent in four weeks, where it was subsequently maintained. Coincidentally the clotting time rose from four minutes to a level of six minutes in three days, was six minutes or more from three to ten days and then fell slowly to a level slightly greater than normal in four weeks. The bleeding time was unimpaired. Of the 30 patients 7 died and 23 recovered. Improvement in the peripheral vascular circulation was demonstrated in 6 of 8 cases studied. Hemorrhage, the sole mani-

festation of toxicity was observed in 5 cases in all of which recovery occurred. The only reliable method of ascertaining the proper dose of dicumarol is by frequent plasma prothrombin determinations.

### Am J Roentgenol & Rad Therapy, Springfield, Ill

52 245-352 (Sept) 1944

Roentgenographic Diagnosis of Small Central Protruded Intervertebral Disk Including a Discussion of Use of Pantopaque as Myelographic Medium B Copleman —p 245

Iodized Oil Myelography of Cervical Spine. Observations on Normal and on 5 Patients with Ruptured Intervertebral Disks of Lower Cervical Spine B S Epstein and L M Davidoff —p 253

Roentgen Analysis of Motion of Lower Lumbar Vertebrae in Normal Individuals and in Patients with Low Back Pain C Cianturo —p 261

Noninjection Method for Roentgenographic Visualization of Internal Semilunar Cartilage. Technique and Analysis of Results in 709 Examinations L Long —p 269

\*March Fracture. Analysis of 200 Cases G R Krause and J R Thompson Jr —p 281

\*Peptic Ulcer of Greater Curvature of Stomach S D Blum —p 291

Roentgen Appearance of Common Duct Stone O D Söhler and A O Hampton —p 298

Pulmonary Changes in Chronic Cystic Pancreatic Disease G I Brylin —p 302

Roentgen Diagnosis of Pancreatic Disease M H Poppel and R H Marshak —p 307

\*Roentgenologic Observations in Mesenteric Thrombosis R A Rendich and L A Harrington —p 317

Giant Hemangioendothelioma with Thromboembolic Purpura. Results of Roentgen Therapy A W Rhodes and F J Borrelli —p 323

Direct Visual Guidance. Triangulation Roentgenoscopy in Removal of Opaque Foreign Bodies W E Roberts —p 327

**March Fracture**—Krause and Thompson report a study on 200 soldiers with 220 march fractures of the metatarsals. The immediate cause of the fracture is the rhythmically repeated subthreshold traumas incident to marching which acting by summation, reach a point beyond the ability of the bone to bear stress. Fatigue of the calf muscles causes these subthreshold injuries to be accentuated. Observations on the 200 men with march fractures and on 400 controls revealed that these fractures usually occur within the first six months of training especially among infantrymen. The second and third metatarsals are most frequently involved. One half of the fractures are seen and can be diagnosed before callus formation occurs. The fractures vary in extent from a narrow 'hair line' to actual comminution. A small proportion (7 per cent) cannot be diagnosed on the first examination but will be apparent on reexamination after a few days. Careful study of technically perfect roentgenograms is a requisite. The nature of the soldier's previous occupation and his body build have no relation to the cause of march fracture. The presence of a short first metatarsal is not a predisposing cause. A slender foot does not appear to be a significant predisposing cause. The authors think that these fractures will continue to occur in the course of training soldiers. The most important fact is that early recognition and proper conservative treatment restore these men to duty with a minimum of lost time.

**Peptic Ulcer of Greater Curvature of Stomach**—Blum stresses the rarity of benign ulcers of the greater curvature of the stomach, pointing out that only 15 proved cases have been found in the literature. The real incidence of these ulcers is unknown, mainly because of lack of histologic proof and inadequate follow up of the cases reported. The author reports the history of a patient with a large ulcer on the greater curvature which was demonstrated roentgenographically and proved by surgical resection and histopathologic examination. The patient is alive and well, without symptoms of peptic ulcer, six months postoperatively. According to the literature and the best medical opinion, a niche located on the greater curvature of the stomach should be considered malignant until proved otherwise.

**Roentgenologic Observations in Mesenteric Thrombosis**—Rendich and Harrington describe roentgenologic observations in 3 cases of superior mesenteric thrombosis. There was one common and striking finding in the plain roentgenogram of the abdomen in these cases which the authors believe has some diagnostic merit, namely, distention of the small bowel and the right half of the colon simulating a mechanical obstruction. The gas collection ended abruptly at the left end of the transverse colon. The distended bowel corresponded to the



distribution of the superior mesenteric vessels. In 1 case a barium enema was given and no mechanical lesion was found although expected by the sharply demarcated distention down to the splenic flexure as noted in the flat roentgenogram of the abdomen. This observation suggests the possible value of a sign complex in the diagnosis of superior mesenteric occlusion: the free passage of the barium through a section of intestine so distended as otherwise to suggest a mechanical obstruction. One of the 3 patients whose histories are reported died. The other 2 patients made a complete recovery after bowel resection. The literature indicates that distention is a frequent symptom in mesenteric thrombosis. The authors deplore that roentgen examination of the abdomen is too often neglected in the presence of acute abdominal symptoms. They think that the roentgenologic observations in their 3 cases suggest that the possible diagnosis of thrombosis of the superior mesenteric vessels should be among those considered when the plain roentgenogram of the abdomen discloses bowel dilated down to the region of the splenic flexure, simulating a mechanical obstruction. If a subsequent barium enema reveals no obstruction, it is believed that the diagnosis may be ventured with some probability.

### Archives of Otolaryngology, Chicago

40 157-232 (Sept.) 1944

- Traumatism of Frontal Sinuses R A Tenison—p 157  
Vertical Nystagmus Produced by Peripheral Labyrinthine Lesions E A Spiegel and A P Scala—p 160  
Pseudomembranous Angina Followed by Partial Pharyngeal Paralysis J V M Ross—p 164  
Management of Alveolar Fistula F T Hill—p 167  
Otolaryngologic Aspect of Frontal Meningocele: Report of Cases E A Stuart—p 171  
Primary Tumors of Stenosis and Wharton's Ducts F A Figs and W D Rowland—p 175  
Preepiglottic Space: Its Relation to Carcinoma of Epiglottis L H Clerf—p 177  
Ossifying Fibroma of Superior Maxilla H J Hara—p 180  
Hemangioma of Adult and of Infant Larynx: Review of Literature and Report of 2 Cases G B Ferguson—p 189  
\*Prevention of Secondary Post-Tonsillectomy Hemorrhage with Sulfathiazole Gum F H McGovern—p 196  
Surgical Treatment of Nasal Obstruction: Indications for Plastic Approach to Septal Deformity: Details of Plastic Procedures N A Bolotow—p 198  
Peroral Endoscopy L H Clerf, J R Fox and S J Ryan—p 210

**Sulfathiazole Gum in Secondary Post-Tonsillectomy Hemorrhage**—According to McGovern, secondary hemorrhage takes place usually from three to fourteen days after operation, often at the time the slough is separating from the tonsillar fossa. The methods of controlling secondary hemorrhage include blood transfusion, injection of the fossa with a solution of procaine hydrochloride and epinephrine hydrochloride and local application of astringents and coagulants. Most often the gentle removal of the clot, sedation with a morphine salt and pressure applied to the fossa with cotton sponges are sufficient to control the bleeding. Cauterizing the bleeding point with a saturated solution of silver nitrate is often successful, provided the silver nitrate can be accurately applied to the dried area. Cunningham found the local application of powdered sulfapyridine to be effective in the control of vascular oozing in delayed tonsillar hemorrhage. Preliminary study of the effects of routine postoperative use of sulfathiazole gum indicated a reduction in the incidence of secondary hemorrhage. The gum used contained  $3\frac{3}{4}$  grains (25 mg.) of sulfathiazole. When the gum was chewed for one-half to one hour the average salivary concentration of sulfathiazole was 70 mg. per hundred cubic centimeters. The blood sulfathiazole of children chewing one tablet for one-half hour for twelve daily doses showed a maximal concentration of 0.5 mg. per hundred cubic centimeters. Adults chewing two tablets for the same period showed a peak concentration of 0.8 mg. per hundred cubic centimeters. The gum is pleasant, practical, simple to administer and well tolerated by the patient; no untoward effects have been noted. The dose is one to two tablets chewed for one-half to one hour, four to six times a day, depending on the age and the weight of the patient. A preliminary study of the routine use of sulfathiazole gum after tonsillectomy indicated a reduction in the incidence of secondary hemorrhage.

### Archives of Pathology, Chicago

38 123-186 (Sept.) 1944

- Argentaffin Tumors of Gastrointestinal Tract G Ritchie and W T Stafford—p 123  
Pseudocarcinomatous Hyperplasia in Primary Secondary and Tertiary Cutaneous Syphilis H Lawrence—p 128  
Diverticula and Duplications of Intestinal Tract J L Bremer—p 132  
\*Carcinoma in Young Persons R P Morehead—p 141  
Recent Research in Pathology of Burns H N Harkins—p 147  
Adenoma of Apocrine Sweat Glands (Hidradenoma) of Anal Canal W L Cooper and J R McDonald—p 155  
Arteriosclerosis W C Hueper—p 162

**Carcinoma in Young Persons**—Morehead presents the histories of 2 patients in whom carcinoma of the cervix occurred at or below the age of 20. Adenocarcinoma constitutes only about 5 per cent of the epithelial cancers which arise in the cervix; yet of the 15 reported cervical cancers proved to be carcinoma in persons 20 years of age or under more than two thirds were adenocarcinomas. Squamous cell carcinoma is rapidly fatal in the young, while adenocarcinoma offers a much better prognosis. Three cases of carcinoma of the body of the uterus arising under the age of 30 have been added to those already reported. The course of fundal neoplasms occurring in young persons appears to be influenced mostly by the morphologic type. It has been impossible to determine the influence of age on the morphologic type of these tumors. Primary carcinoma of the liver characteristically occurs between the ages of 40 and 60, but the disease has been seen in newborn infants, and Steiner has collected 75 cases in which it arose during childhood. In 41 of these cases it occurred before the age of 2 years. The occurrence of carcinoma of the liver in infants and young children suggests that at least in some cases congenital factors may play a part in the etiology. The disease is rapidly fatal, and age does not influence its course or morphologic character. To those tumors diagnosed as primary carcinoma of the liver which have been reported as occurring in young persons the author has added 2 more, 1 in a boy of 13 and the other in a youth of 18.

### California and Western Medicine, San Francisco

61 129-178 (Sept.) 1944

- \*Coccidioidomycosis in Western Flying Training Command R V Lee—p 133  
Rh Factor in Intragroup Hemolytic Transfusion Reactions R W Hammack—p 135  
\*Cheese Borne Epidemics of Typhoid Fever A F Meyer—p 137  
Occupational Adjustment of Disabled H D Hicker—p 139  
Treatment of Acute Naval Casualties F H Downing—p 141  
Food Poisoning Due to Custard Filled Pastry: Report of Outbreak: Causative Organism B Typhi Murium J C Geiger and A B Crowley—p 143  
Present Importance of Tropical Diseases W McD Hammon—p 145  
Problem of Syphilis as Handled in U S Navy H D Newton—p 149

**Coccidioidomycosis**—Lee says that all new personnel coming to the air fields are skin tested, and the negative reactors are retested six months later. All suspicious clinical cases in the dispensaries and hospitals are skin tested, and in addition specimens of blood are sent to the Army Epidemiological Board for confirmatory evidence when indicated. Over a quarter of a million skin tests have been given, a thousand or more clinical cases recognized and nine complete necropsies done. The author differentiates three forms of coccidioidomycosis: primary, intermediate and advanced. The primary form is usually subclinical. The only evidence of its having occurred is the finding of a positive skin test in an individual who was previously negative. This will occur in about 10 per cent of personnel, but some stations have reported as high as 80 per cent of the post population turning positive. Frequently, what would ordinarily pass as a cold, mild influenza or "desert rheumatism" is properly diagnosed as coccidioid infection. When erythema nodosum occurs the diagnosis is suspected much more frequently. The intermediate (or pulmonary) stage is the one which is most frequently recognized clinically. This is an acute, subacute or chronic pulmonary inflammation. It resembles tuberculosis. Cavities occur frequently, but they show a great tendency toward spontaneous closure. The advanced or disseminated form is about 100 times as likely to occur in the Negro as in the white soldier. Dissemination, if it occurs, is likely to occur early. If there are going to be late disseminations the problem



will be very difficult. In the disseminated cases almost every organ of the body has been involved. The body may be literally riddled with cold abscesses. There have been a few cases of dissemination in which apparent recovery occurred. That dissemination may be impending can often be anticipated from a rising titer in the complement fixation test. There is no effective treatment.

**Cheese Borne Epidemics of Typhoid**—Meyer states that during the months of April and May the California State Health authorities were greatly baffled by an increased incidence of typhoid in four counties. All of the 77 cases were due to type C *Eberthella typhosa*. Epidemiologic inquiries revealed that all patients had consumed unpasteurized Cheddar cheese of the unripened variety. Persons who had eaten the cheese in cooked form were not attacked. The literature on epidemics of typhoid caused by cheese shows that the infective agent invariably reached the cheese through the use of raw milk accidentally contaminated by a carrier or an ambulatory patient. Adequate pasteurization of the milk, or pasteurization at any stage in the cheese making process should render fresh, unripened cheese safe. The consumer and the industry continue to argue as to whether or not the flavor is destroyed or the quality is injuriously affected by heating the milk. Other means have been suggested. Since ripening requires weeks or several months, it has been stated that cured cheeses of the Cheddar type are safe if they are held in storage for one or two months. These conclusions are based on the studies of Wade and Shere, who showed that in artificially infected cheeses held at 60°C the typhoid bacilli lived for from thirty-four to thirty-six days. Other investigators maintain that the manufacturer of Cheddar cheese cannot depend on the acids or on the antibiotic forces liberated by the ripening process to free his product from disease producing micro organisms. In California the Agricultural Code has been amended to the effect that all cheese sold to the retail trade must be pasteurized or manufactured from milk which has been pasteurized, except cheese which has been allowed to ripen or cure for a minimum of sixty days. As a further protection, all cheeses in California must be labeled as to date, place of manufacture and grade.

### Connecticut State Medical Journal, Hartford

8 581-658 (Sept.) 1944

- Planning for Medical Care J R Miller—p 586  
Cancer of Cervix in Pregnancy A H Morse—p 592  
Study of Fetal Mortality at Hartford Hospital Ruth M Anderson—p 595  
Diseases of Spine A Oppenheimer—p 598  
Treatment of Subcoracoid Dislocations H W Wellington—p 602  
Meningococcal Infections K K Gregory—p 604  
Some New Socioeconomic Developments in Medicine J C Leonard—p 610  
Position of American Cancer Society and Field Army in Connecticut A N Creadick—p 612

8 659-724 (Oct.) 1944

- Treatment of Deformity from Burns V H Kazanjian—p 661  
Current Trends in Diabetes Mellitus A Clinical Review B Greenhouse—p 671  
Industrial Dermatitis L Tulipan—p 674  
Preventive Medicine in Chemical Industry J H Foulger—p 677  
Suggestion as Cause of Disease P P Swett—p 683

### Diseases of Chest, Chicago

10 391-470 (Sept Oct.) 1944

- Transitory Migratory Pulmonary Infiltrations Associated with Eosinophilia (Loeffler's Syndrome) with Report of Additional Case J W Peabody—p 391  
Cervical Breathing Is There Such a Sound? G G Ornstein—p 407  
Treatment of Bronchial Lesions by Inhalation of Nebulized Solution of Sodium Sulfathiazole I L Applebaum—p 415  
Funnel Chest Report of Case Successfully Treated by Chondrosternal Resection J R Phillips—p 422  
Bronchiolitis W S Anderson and J B Mackay—p 427  
Cystic Disease of Lung with Iodized Oil Studies H A Madsen and H B Pirkle—p 433  
Paradox of Vocational Disability L Brahdv—p 442

**Inhalation of Nebulized Solution of Sodium Sulfathiazole in Bronchial Lesions**—Applebaum treated 50 patients with infectious bronchial lesions by inhalation of nebulized sulfonamides. These patients had given no adequate response to sedation, expectorants, iodides, bronchodilating

drugs, bronchoscopy, instillation of iodized oil, oral sulfonamides, clearance of upper respiratory tract and vaccines. Each case was selected on the basis of the following criteria: (1) symptoms of cough and expectoration of more than six weeks duration; (2) no response to previous modes of therapy; (3) the presence of a bronchial lesion of bacterial origin. In several instances the noninfectious type of asthma was treated for the purpose of control. A 5 per cent solution of sodium sulfathiazole was placed in a nebulizer and this was connected by a rubber tube to an oxygen tank equipped with a flow meter. A rate of flow of 4 liters per minute was found satisfactory. The patient held the nozzle of the nebulizer between the teeth and breathed with the mouth open for a period of twenty minutes. Treatments were administered three times daily for an average of ten consecutive days. It was determined that approximately 2 cc of the solution was utilized in a single treatment. Definite improvement resulted in 43 of the 50 cases treated. This preliminary survey indicates the promising therapeutic possibility of sulfonamide nebulization in a resistant type of respiratory infection.

### Journal of Lab and Clinical Medicine, St Louis

29 889-1000 (Sept.) 1944

- Sulfonamide Resistant Gonorrhea Treated with Urea and Sulfonamide by Mouth M A Schmitter and C D Lenhoff—p 889  
Acute Agranulocytosis During Sulfamerazine Therapy G O Favorite L Reiner and R London—p 899  
Isolation of Bacterium Tularensis from Sputum of Atypical Case of Human Tularemia H N Johnson—p 903  
Natural Occurrence of Tularemia in Dogs Used as Source of Canine Distemper Virus H N Johnson—p 906  
Vi Agglutinative Properties for Bacterium Typhosum Demonstrated Following Infection with Malaria Parasites M B Coleman—p 916  
Studies on Absorption of Sulfonamides from Gastrointestinal Tract of Alluno Rits E H Loughlin R H Bennett Mary E Flanagan and S H Spit—p 921  
Cold Agglutinins in Tuberculosis E Bridge A Thurston and A Repetti—p 936  
Incidence of Plasma Coagulating Staphylococci in Feces of Chronic Invalids G H Chapin—p 938  
Allergy from Timbo (Ichnocarpus H B K.) Report of Case A O Lima—p 939  
Observations on Hematologic Actions of Acetanilid and Acetophenetidin in Dog E J Van Loon and B B Clark with technical assistance of Dorothy Blair—p 942  
Effect of Estrone on Anaerobic Glycolysis of Uterus of Rat in Vitro Beatrice M Sweeney—p 957  
Studies on Ingestion of Large Quantities of Protein and Amino Acids A H Free and J R Leonards—p 963

### Journal National Malaria Society, Tallahassee, Fla

3 159-226 (Sept.) 1944

- On Parasite Density Prevailing at Certain Periods in Vivax Malaria Infections M F Boyd—p 159  
Relation of Intersection Line to Production of Anopheles Quadrimaculatus L E Rozenboom and A D Hess—p 169  
Water Level Management for Malaria Control on Impounded Waters A D Hess and C C Kider—p 181  
Airplane Dusting for Control of Anopheles Quadrimaculatus on Impounded Waters C W Kruse A D Hess and R L Metcalf—p 197  
Permanent Works for Control of Anophelines on Impounded Waters C I Bishop and T E Gartrell—p 211  
Selection of Antimosquito Methods to Fit Specific Malaria Control Programs N H Reclor—p 221

### Medical Annals of District of Columbia, Washington

13 319-362 (Sept.) 1944

- \*Cruevilhier-Baumgarten Syndrome Report of 2 Cases W M Yater and J P Kenrick—p 319  
Pentothal Sodium as Rectal Analgesic During Labor S M Dodek and S Katzman—p 325  
Mortality of Acute Obstruction of Small Intestines J R Veal—p 328  
Acute Gangrene of Cecum Report of 2 Cases O C Cox—p 332

**Cruevilhier-Baumgarten Syndrome**—Armstrong and his associates reviewed in 1942 the data on 52 previously reported cases of Cruevilhier-Baumgarten syndrome and added to the 2 previously described by them a further case which they found in the necropsy protocols of the Los Angeles County Hospital. The term 'Cruevilhier-Baumgarten syndrome' may be applied to a clinical picture of portal hypertension featured by, a loud abdominal murmur and frequently a thrill. From Armstrong's analysis it appears that cases presenting the syndrome and having adequate necropsy descriptions can be divided into two large groups and seven subgroups. One of these categories (gr

1 A) includes 6 cases that fulfil the criteria of Cruveilhier and Baumgarten as instances of congenital patency of the umbilical vein and atrophy of the liver with little or no cirrhosis and splenomegaly. This combination is designated "Cruveilhier-Baumgarten disease" (in contrast with "syndrome"). Any other disease that results in portal hypertension and happens to utilize umbilical collaterals excessively may produce a similar clinical picture, the "Cruveilhier-Baumgarten syndrome." Yater and Kendrick report 2 such cases. The first concerned a woman aged 53, the second a man aged 31. These 2 cases bring the total reported number to 57. One patient is still alive without complaints, the other died but necropsy was refused. Both patients had disease of the liver, probably cirrhosis. The murmur and thrill are most intense in the umbilical or epigastric regions and are generally continuous. The murmur has been described as a venous murmur, a hum, a roar, a "mill-like murmur," a hollow spinning wheel sound and a grinding sound. Armstrong states that the production of the murmur probably depends on the passage of blood to an area of different caliber or direction, the eddying of a current in a blind dilated venous sac or pouch, or the flowing of the blood through constrictions in the course of a dilated and tortuous vein. Yater and Kendrick think that the murmur results from the flow of blood from small vessels into large ones in or close to the abdominal wall. For such a situation it is not necessary to assume that patency of the umbilical vein exists. They believe that if care is taken to auscultate the epigastrium in cases of disease of the liver mainly advanced cirrhosis such a murmur will be discovered more often.

### Nebraska State Medical Journal, Lincoln

29 265-296 (Sept.) 1944

- Medical Problems of Selective Service E B Badger—p 268  
Functional Somatic Complaints in Army Consideration by Psychiatrist.  
C H Barnaue—p 274  
Functional Somatic Complaints in Army Consideration by an Internist  
C V Allen—p 278  
Penicillin in Acute Osteomyelitis Report of Case T Riddell—p 284  
Rickettsial Diseases L O Vose—p 285

29 297-328 (Oct.) 1944

- Occiput Posterior Positions J C Litzberg—p 300  
B Vitamin Deficiencies in Clinical Medicine L E Holt Jr—p 304  
Surgical Treatment of Peptic Ulcer S J Carnazzo—p 308  
\*Fluorescence Microscopy Its Value in Studying Tuberculous Tissues  
F H Tanner—p 312  
Report of New Practice Act C Selby—p 315  
Presentation of Oliver Wendell Holmes Trophy R H Loder—p 318

**Fluorescence Microscopy in Tuberculosis**—Hagemann in 1937 first proposed staining bacteria with fluorescent dyes and examining them with the fluorescence microscope. He discovered that the dye auramine would stain *Mycobacterium tuberculosis* and that the organism, once stained, would resist decolorization in acid alcohol whereas other organisms readily decolorized. The auramine was as specific for acid fast organisms as was fuchsin. The auramine stained bacilli appeared yellow, while the background was black. Tanner showed that this method detected organisms more frequently than did the usual carbolfuchsin method. He noticed, in studying tissue sections with the usual hematoxylin-eosin stain, a small area of granulomatous nature. Sometimes this lesion is so small that additional sections of the same block of tissue may not contain the suspected lesion. In such instances the original hematoxylin-eosin slide can be put in xylene to remove the cover slip. Then the slide is placed in acid alcohol to remove the stain. After allowing the tissue to dry, it can be stained with the fluorescent dye auramine exactly as if this was to be the original stain. The same granulomatous lesion can thus be checked by the fluorescence microscope for the presence of acid fast organisms. The staining by auramine does not interfere with the subsequent staining by fuchsin, and thus a comparison of the number of organisms stained by each method may be made. The author has made such a comparison. By greatly limiting the area of tissue examined and recording on a graph the location of each organism as seen in the examination by each method it has been possible to compare identical fields. More organisms are visible by the auramine fluorescence method and only occasionally does an organism appear with the Ziehl-Neelsen method

that has not been seen with the fluorescence microscope. The author also suggests that the fluorescence method may be of value in studying the pattern of organisms in tissue infected by *Mycobacterium tuberculosis*.

### New England Journal of Medicine, Boston

231 405-436 (Sept 21) 1944

- Problem of Postwar Surgical Training for Returning Medical Officers  
A O Whipple—p 405  
Epidemic Typhus Fever and Other Rickettsial Diseases of Military Importance C S Stephenson—p 407  
\*Differential Diagnosis of Weakness and Fatigue F N Allan—p 414  
Extrarenal Tuberculous Lesions Associated with Renal Tuberculosis  
D S Cristol and L F Greene—p 419  
Modern Concepts of Renal Structure and Function in Chronic Bright's Disease S E Bradley—p 421

**Differential Diagnosis of Weakness and Fatigue**—Allan states that one of the problems most frequently encountered by the general practitioner and the internist is a complaint variously described as weakness, exhaustion, fatigue, loss of ambition, low vitality or weak spells. Data have been compiled at the Lahey Clinic on 300 consecutive cases in which weakness, fatigue or weak spells were the chief complaint. Physical disorders were found to be responsible in 20 per cent of the cases, in the others a nervous state was the cause. This state was classified as a neurosis in approximately 20 per cent and as a benign nervous state, chronic nervous exhaustion or nervous fatigue in the rest of the cases. In nearly half of the cases in which a physical disorder was found to be the cause of weakness it was possible to make a positive diagnosis by clinical observation alone. In the others, laboratory tests or roentgenograms were essential to reveal a hidden disease or confirm the diagnosis. The most frequent physical disorders were chronic infection, diabetes, heart disease, various neurologic disorders and serious diseases of the blood. Certain conditions, such as vitamin deficiency and glandular disorders, considered widespread causes of weakness by both the public and the medical profession, were actually found to be rare, and not a single case of weakness due to liver trouble, poor elimination or low blood pressure was encountered. Although a high percentage of patients with weakness or fatigue have no physical disorder, there is a group in which physical conditions of unusual interest may be discovered. In any case these symptoms warrant thorough and complete investigation.

### New Orleans Medical and Surgical Journal

97 93-150 (Sept.) 1944

- Tropical Medicine in United States as Result of War E C Faust—p 93  
Distribution and Epidemiology of Important Tropical Diseases of War Areas A Miller—p 93  
Malaria A J Walker—p 98  
Dysenteries J S D Antoni—p 101  
Rickettsial Diseases Yellow Fever Dengue and Sandfly Fever L E Napier—p 108  
Hemoflagellate Infections H A Senekjic—p 112  
Filariasis and Schistosomiasis E C Faust—p 115  
Recurrent Malaria in Military Personnel W D Stubenbord—p 120  
Patient-Physician Relationship T A Watters—p 122  
Combined Use of Fever and Chemotherapy in Syphilis T E Billing—p 127  
Present Status of Five Day Intensive Treatment of Syphilis H C Knight—p 130  
Treatment of Early Syphilis by Means of Eight Weeks Mapharsen Therapy with Bismuth: Experimental Background and Application in Practice O F Agee—p 133

### New York State Journal of Medicine, New York

44 1951-2062 (Sept 15) 1944

- Regional Anesthesia in Army S J Martin—p 1991  
Observation of Anorectal Disease and Pilonidal Cysts in Army Hospital J C Afford—p 1997  
Two Score Years of Pediatrics History of Pediatric Section T W Clarke—p 2001  
Recent Advances in Studying Problems of Healing and Their Effect on Treatment of Wounds and Burns E L Howes—p 2006  
Treatment of Meningitis with Penicillin Injected Intravenously and Intramuscularly A H Price and J H Hodges—p 2012  
Fixed Diet Regimen in Treatment of Peptic Ulcer A L Garbit—p 2015  
Minimal Chemotherapy in Pneumonia Preliminary Report of Two Dose Ten Gram Method Using Sulfathiazole and Sulfadiazine L P Mancito—p 2022

## South Carolina Medical Assn Journal, Florence

40 179-198 (Sept) 1944

Problem of Ruptured Intervertebral Disk R G Doughty—p 179

\*Headaches from Eye Ear, Nose and Throat Standpoint R MacDonald—p 184

Suggested Method of Treatment for Acute and Chronic Infections of Middle Ear R W Hanchel—p 187

**Headaches**—Headaches related to the eye may be due to errors of refraction, accommodation anomalies, muscle imbalances and glaucoma. Patients with refraction errors complain of burning, stinging and a sandy feeling in the eyes. In glaucoma the headache at first is localized in the eye ball, later it radiates over the entire area supplied by the ophthalmic division of the trigeminal nerve. There is a rare type of ophthalmic migraine which is caused by glare, but this condition has other associated symptoms such as ocular paralysis, particularly that of the third nerve. Retrobulbar neuritis causes pain deep in the orbit and is worse when the eye is in motion. There are headaches caused by orbital tumors and by exophthalmos. Sinus headache is the most popular type of which patients complain. The public has been made sinus conscious and is aided by newspaper advertisements and radio broadcasts. The proprietary drugs advertised contain bromides and acetanilid. When first taken they will usually relieve headaches, but their continued use produces headaches and symptoms of poisoning. Many persons who have sinusitis of long standing never complain of headache, others have sinusitis and headache. The two, however, are not necessarily associated, and perhaps 5 per cent of all headaches are due to sinusitis. Maxillary sinus headaches are mostly located in the cheek and zygomatic regions and in the frontal sinus over the eyes. The sphenoidal sinus usually causes temporal and vertex headaches. Infections in the ethmoidal air cells cause pain in behind and in the inner angles of the eye. While patients are under observation, barbiturates with ephedrine will give temporary relief. Many headaches are benefited by thyroid even though the basal metabolic rate is not too low. Unilateral headaches along the branches of the sphenopalatine ganglion have been confused with sinus headaches. Cocainization of this ganglion often leads to dramatic relief. Acute otitis media may cause diffuse dull headaches around the mastoid and deep in the ear. Paracentesis usually relieves them. Where the pain is noted constantly in one area, an extradural abscess should be suspected. Occipital headaches usually point to cerebellar abscess. Headaches, plus diplopia, dysphagia and facial pains due to involvement of the sixth, ninth and fifth cranial nerves may be caused by carcinoma of the nasopharynx.

## Surgery, Gynecology and Obstetrics, Chicago

79 337-448 (Oct) 1944

\*Perforating Abdominal Injuries with Special Reference to Reduction in Mortality by Use of Transfusions and Sulfonamides H E Sloan Jr—p 337

Late Condition in Nerve Homografts in Man H J Seddon and W Holmes—p 342

Estimation of Areas of Burns C C Lund and N C Browder—p 352

\*Value of Sympathectomy in Treatment of Buerger's Disease G de Takats—p 359

\*Hypoproteinemia in Thoracic Surgery Clinical Study T F Thornton Jr, W E Adams and P W Schafer—p 368

\*Maternal Obstetric Paralysis J E O'Connell—p 374

Radiographic Examination of Ankle Joint Including Arthrography F R Berridge and J G Bonnin—p 383

Exact Anatomy and Development of Ligaments Attached to Cervix Uteri R M H Power—p 390

Reconstruction After Radical Operation for Osteomyelitis of Frontal Bone Experience in 38 Cases V H Kazanjian and E M Holmes—p 397

Alpha Rays in Treatment of Wounds E M Uhlmann—p 412

New Simplified Method of Defunctionalizing Colon E F Berman—p 419

Rectovaginal Fistula S F Wilhelm—p 427

Use of Venous Tourniquets as Aid to Diagnosis of Incipient Traumatic Shock W P Longmire Jr, G W Duncan and A Blalock—p 434

Laboratory Routine for Fluid Electrolyte and Protein Control in Surgical Patients J L Carr—p 438

**Perforating Abdominal Injuries**—Sloan presents observations on 146 cases of perforating abdominal injuries that were explored at the Johns Hopkins Hospital between 1925 and 1943. There were 91 gunshot wounds and 55 stab wounds. Among the 87 cases explored from 1925 to 1938 there were 27 deaths, a mortality of 31 per cent. Between 1939 and 1943 there were

6 deaths in 59 cases, a mortality of 10.1 per cent. The operative technic remained essentially unchanged. The striking reduction in mortality in the years 1939 to 1943 can be attributed chiefly to the use of transfusions and sulfonamides. Improvements in anesthesia and the use of constant gastric suction or the Miller-Abbott tube would seem to have had only a small share in the reduction in mortality. It is probable that the use of blood and blood substitutes has had a greater influence in the reduction in mortality than the use of sulfonamides despite the fact that most of the deaths in recent years have been due to shock rather than to infection. Patients in shock are more susceptible to infection. The improved postoperative condition of patients receiving transfusions must have played a large part in their resistance to infection. In the perforating abdominal injuries operated on in the past five years death has been due largely to hemorrhage which could not be controlled at operation or to injury so severe that massive transfusions had little effect on the patient's state of shock. The results reviewed here, of patients treated with all the resources of a large hospital, represent a goal unattainable by the military surgeon on the battle field. However, the use of transfusions and sulfonamides can effectively reduce the mortality of perforating abdominal wounds.

**Sympathectomy in Buerger's Disease**—According to de Takats sympathectomy in Buerger's disease does not modify the course of this disease, it is undertaken only for the purpose of improving circulation in limbs in which blood vessels are occluded. Before sympathectomy is undertaken it is necessary to demonstrate the presence of an adequate collateral vascular bed. The disease must be in a quiescent stage and it should not show too much visceral extension. The author discusses the essential preoperative studies and describes and illustrates surgical procedures and postoperative management. In a series of 50 cases 136 sympathectomies were done. About one half of these patients have also had minor amputations combined with sympathectomy. Of the 50 patients, 37 have been rehabilitated to full time work, 7 are doing part time work and only 6 are invalids. In addition to foot hygiene and complete abstinence from tobacco, a change of occupation is important for those whose feet are continuously subjected to an exposure to cold or trauma.

**Hypoproteinemia in Thoracic Surgery**—Thornton and his collaborators state that the surgical treatment of disease of the chest may be complicated by hypoproteinemia owing largely to the chronicity of many lung diseases and the relatively severe blood loss associated with major thoracic surgery. They investigated the effect of chest operations on plasma proteins in 32 operations on 29 patients. The operations included 14 lobectomies, 5 pneumectomies, 7 exploratory thoracoplasties, 1 partial pericardectomy and 1 first stage lobectomy. Preoperative plasma protein and hematocrit determinations were made on all patients. During the operations and in the postoperative period large whole blood and plasma transfusions were given to replace blood loss. At two day intervals following operations the plasma proteins and hematocrit determinations were repeated. The study was continued for ten days or until the readings returned to the preoperative level. A plasma protein fall of approximately 1 Gm per hundred cubic centimeters occurred in 31 of the 32 operations. The fall usually occurred from three to five days following operation and was accompanied by a similar decrease in hematocrit, hemoglobin and, to a lesser degree, red blood cells. The principal causes of the drop in plasma protein were (a) diminished protein reserve, (b) operative blood loss, (c) loss of blood and plasma into the wound and pleural space after operation, (d) infection and (e) inadequate replacement. Massive transfusion of whole blood was the most satisfactory single therapeutic agent when the plasma proteins were lowered as the result of hemorrhage.

**Maternal Obstetric Paralysis**—O'Connell believes that protrusion of a lumbar intervertebral disk is the factor which produces maternal obstetric paralysis in a large proportion of cases. He presents 4 case reports which indicate an increased risk of a lumbar intervertebral disk protrusion occurring in pregnancy. This may be due to changes in the intervertebral joints analogous to those known to occur in the pelvic joints during pregnancy. Such changes would render the joints concerned less fit to withstand normal stresses as well as those

additional stresses occasioned by the posture of pregnancy and by labor. The severe objective neurologic disturbance which not infrequently occurs when a disk protrudes during or after labor may perhaps be accounted for by the large size and the rapid development of the protrusion and the consequent severe involvement of nervous tissue. Changes in the lower intervertebral joints in pregnancy and the puerperium render them less fit to withstand strain. The strains of heavy work appear to be contraindicated at such times. Spontaneous cure of maternal obstetric paralysis frequently occurs, but sometimes recovery is slow and incomplete. Operation will be indicated when the motor disturbance is severe and persistent even if pain is slight. On the other hand, severe sciatic pain which does not respond to rest may indicate operation when objective neurologic disturbance is mild. In cases which fall into either of these groups, treatment by excision of the disk protrusion can be recommended.

## United States Naval Med Bulletin, Washington, D C

43 409 610 (Sept) 1944 Partial Index

- \*Cultivation of *Gonococcus* Advantages of Chocolate Agar with Bacto-Supplement A as Culture Medium H E Morton and P R Leberman—p 409
- Choline Hydrochloride in Experimental Yellow Fever in Rhesus Monkeys A W Sellards and W S McCann—p 420
- Penicillin in Sulfonamide Resistant Gonorrhea Preliminary Report of 124 Cases J G Menville and C W Ross—p 423
- Modified Intensive Method for Treatment of Primary and Secondary Syphilis H S Zeve—p 429
- \*Evaluation of Cold Agglutination Test in Primary Atypical Pneumonia J H I Heintzelman and A W Seligmann Jr—p 433
- Lobar Broncho and Atypical Pneumonia Study of 500 Cases A W Hobby—p 438
- Gastric Diseases in Navy Personnel Study of 191 Gastroscopic Examinations R H Lee and E H Berger—p 450
- Effective Management of Gastrointestinal Department at Naval Hospitals H A Monat and W T Carleton—p 459
- \*Passage of Miller Abbott Tube Through Pylorus with Aid of Electromagnet H Mayer Jr—p 463
- Fractures of Carpal Navicular H E Hipps—p 467
- Skeletal Traction in Fractures of Hand and Wrist W W Ebeling—p 477
- Hidden Dementia Precox J M Hill and H M Hildreth—p 483
- Invaldings from Service for Causes Existing Prior to Enlistment Women's Reserves H A Raskin—p 490
- Maxillofacial Radiochrome Photography J W Richter—p 495
- Eighteen Months on Attack Transport H D Vickers—p 513
- Management of Fungous Infection of Feet T Glaser—p 525

**Cultivation of *Gonococcus***—Morton and Leberman compared the value of the standard chocolate agar and the chocolate agar with Bacto-Supplement-A (extractives of yeast and crystal violet). The latter medium was found to be more accurate in the detection of gonococci in male urethral discharges.

**Cold Agglutination Test in Primary Atypical Pneumonia**—According to Heintzelman and Seligmann the physical aspects of primary atypical pneumonia are meager, consisting usually of rales over the affected area. In the more severe cases dyspnea, cyanosis and prostration occur. Diagnosis, particularly in patients with no objective physical findings depends on the x-ray examination. Recently the cold agglutination reaction has been found a promising adjuvant in the diagnosis of this disease. The cold agglutination reaction is based on the presence of agglutinins which cause clumping of homologous or group O red cells at low temperatures. To test for the presence of these agglutinins serial dilutions of serum are mixed with washed suspensions of group O erythrocytes in isotonic solution of sodium chloride. The tubes are allowed to stand overnight in a refrigerator at temperatures varying from 0 to 5 C. Readings are made the next morning. The test is not infallible since cases do not all yield a positive reaction. Furthermore cold agglutinins have been reported in paroxysmal hemoglobinuria, trypanosomiasis, pernicious anemia, leukemia, lymphoblastoma, cirrhosis, venous thrombosis and gangrene among others. When it concurs with the clinical picture of primary atypical pneumonia, the test becomes virtually specific for this disease. The authors employed the cold agglutination test in 33 cases of primary atypical pneumonia which were proved by roentgenoscopy. Twenty-two patients showed a positive titer, that is a cold agglutination reaction in serum dilution of 1:32 or above, at some time during the course of their disease. A positive reaction has considerably more significance than a negative one. In pneumonias of undetermined etiology the detection of cold agglutinins made it possible to cease or

to withhold sulfonamide therapy, as most authors are agreed that primary atypical pneumonia does not respond to this type of treatment. The test was found to be of considerable help in the evaluation of upper lobe lesions. Patients having such lesions frequently require repeated sputum and x-ray studies over long periods of time to establish the presence or absence of pulmonary tuberculosis.

**Passage of Miller-Abbott Tube Through Pylorus with Aid of Electromagnet**—Mayer points out that the Miller-Abbott tube has not been as widely used as it should be because of the difficulty in getting the tip past the pylorus. Several methods have been suggested to overcome this difficulty, and in 1933 Paine suggested the use of an electromagnet. The author recently attempted to use a magnet after having failed two years ago. He found that alnico, a permanent magnetic alloy, satisfied the demand for a highly magnetic relatively noncorrosive tip. The metallic tip is fixed on the end of an ordinary Miller-Abbott tube. This is used in conjunction with an electromagnet. In all cases in which alnico is used the polarity of the tip of the tube must be determined with relation to the magnet the latter being adjusted so that it attracts rather than repels the metallic tip. This can easily be tested prior to introduction of the tube, and if the tip is repelled by the electromagnet the polarity of the latter can be reversed by reversing the plug in the socket. The tube is passed through the nares into the stomach. After the stomach has been decompressed by attachment of a Wangenstein suction apparatus the tube is passed down to the pylorus. Occasionally the tube will tend to loop back in the stomach, and the magnet in these cases can be applied under fluoroscopic control along the anterior abdominal wall in such a way as to guide the tip toward the pyloric antrum. Once the tip has reached the pylorus the patient is turned to the right anterior oblique position (either erect or prone) and the magnet applied firmly against the right flank posteriorly in line with the general direction of the first portion of the duodenum and at the same level as the tip of the tube as visualized under the fluoroscope. The power is then turned on and the tube slowly but steadily advanced from above. It will be seen under the fluoroscope to pass quite readily through the pylorus into the first portion of the duodenum. The magnet is then removed the tube advanced and the balloon inflated in the usual manner. The author used this method in a small number of cases, the results are promising in that the tube can usually be passed through the pylorus within one or two minutes and in no case has it failed.

## War Medicine, Chicago

6 67-138 (Aug) 1944

- Morphine Dextroamphetamine Analgesia Analgesic Effects of Morphine Sulfate Alone and in Combination with Dextroamphetamine Sulfate in Normal Human Subjects A C Ivy, I R Goetzl and D Y Burrill—p 67
- Use of Penicillin for Gonorrhea Resistant to Sulfonamide Compounds Report of 450 Cases L W Riba, C J Schmudlapp and L Bosworth—p 72
- \*Suture of Wounds by Plasma-Thrombin Adhesion F Young and B V Favata—p 80
- Sensitivity of Bacteria from Infected Wounds to Penicillin Method of Assay E Gallardo—p 86
- Bacterial Content of Air in Army Barracks Results of Study with Special Reference to Dispersion of Bacteria by Air Circulation System H M Lemon, H Wise and M Hamburger Jr—p 92
- Problems of Fatigue as Illustrated by Experiences in Decompression Chamber J Romano, G L Engel, E B Ferris Jr, H W Ryder, J P Webb and M A Blankenhorn—p 102

**"Suture" of Wounds by Plasma-Thrombin Adhesion**—Young and Favata show that adherence of wound edges or surfaces can be readily accomplished by the use of plasma and purified thrombin. The fibrin fixation artificially produced in this way has less tensile strength than ordinary suture material, for this reason use of plasma-thrombin adhesion of wounds should be limited to those in which tension does not exist. Plasma-thrombin adhesion has been found useful as the sole fixation (1) for traumatic lacerations, (2) as a skin closure when a particularly fine scar is desired, (3) as a method of producing adhesion between the flaps and the chest wall in radical mastectomy and (4) as an adjunct in free skin graft. No untoward results have been observed in 69 cases in which plasma-thrombin adhesion of wounds has been used.

## FOREIGN

An asterisk (\*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

## British Journal of Experimental Pathology, London

25 81-110 (June) 1944

- Experimental Streptococcal Lesions of Rabbit Eye and Their Treatment J M Robson and A A B Scott—p 81  
\*Tumors of Thyroid Produced by 2-Acetyl-Amino-Fluorene and Allyl-Thiourea F Bielschowsky—p 90  
Difference in Carcinogenicity Between Shale Oil and Shale T Berenblum and R Schoental—p 93  
Production of Penicillins by Organisms of Subtilis Group E S Duthie—p 96  
Nature and Mode of Action of Staphylococcus Coagulase W Smith and J H Hale—p 101

**Tumors of Thyroid Produced by 2-Acetyl-Amino-Fluorene and Allyl-Thiourea**—Bielschowsky demonstrated that tumors can be induced in white rats by 2-acetyl-amino-fluorene. Tumors did not develop in endocrine glands. This seemed to indicate that these cells are far less susceptible to the carcinogenic action of the drug than the epithelial cells of many other organs, such as the liver or the mammary gland. From human pathology it is known that cancer of the thyroid nearly always originates in a goitrous gland. Since goiter can be easily produced in rodents, the best experimental approach to the problem at hand seemed to investigate the action of the carcinogenic agent on a goitrous thyroid gland. Acetyl-amino-fluorene was given as in previous experiments at a daily dose of 4 mg per rat for thirty weeks. The rats received daily 5 mg of allyl-thiourea each for the first four weeks and then 6 mg daily until the animals were killed. Twenty rats were used. Ten received the standard diet with the addition of acetyl-amino-fluorene and allyl-thiourea. 10 served as controls and received the same diet with the addition of allyl-thiourea only. Benign and unalignant tumors of the thyroid were produced in the thyroid by the combined action of allyl-thiourea and 2-acetyl-amino-fluorene. Neither drug when given alone induces neoplastic growth in the thyroid gland of the white rat. Prolonged administration of allyl-thiourea produces only a parenchymatous solid goiter. 2-acetyl-amino-fluorene does not affect normal thyroid tissue at all. The stimulated hyperplastic thyroid is, however, susceptible to the carcinogenic action of acetyl-amino-fluorene.

## Journal Obst &amp; Gynaec of Brit Empire, Manchester

51 277-376 (Aug) 1944

- \*Clinically Suspect Pelvis and Its Radiographical Investigation in 1000 Cases M Kenny—p 277  
Contracted Pelvis in Childbirth Study of Its Morbid Effects on Mother and Child Blair Bell Lecture 1944 H R MacLennan—p 293  
Acute Inversion of Uterus Case A F Clusholm—p 318  
Primary Ovarian Pregnancy Case O D Browne—p 321  
Caesarean Section Under Spinal Analgesia R C Thomas—p 324  
Iniencephalus Susanne J Paterson—p 330  
Statistical Study of Purpura and Errors of Routine Daily Measurement of Puerperal Uterus C S Russell—p 334  
Case of Complete Placenta Previa Accreta Occurring in Primigravida Dorothy M Shotton and C W Taylor—p 340  
Childbirth in Greek Island of Chios in 6th Century BC 1780 and 1914 P Argenti—p 344  
Vesicovaginal Fistula Foreign Body and Calculi in Bladder Following Attempted Criminal Abortion and Normal Labor R C Thomas—p 350

**Roentgenographic Investigation of Pelves of 1,000 Pregnant Women**—Kenny examined by x-rays the pelvis of 1,000 women in whom clinical examination in late pregnancy or history of previous dystocia presaged abnormal labor. Women were selected for roentgenography nearly always in the last two weeks of pregnancy. The conviction was reached of the importance of the shape rather than the size of the pelvis as a guide to prognosis and conduct of labor. Thus normal delivery has been relieved with a simple flat pelvis with a true conjugate of the brim of  $3\frac{1}{2}$  inches and caesarean section found necessary with android pelvis of  $7\frac{1}{2}$  inches conjugate. The 1,000 roentgenograms cover the greater number of the 520 operative deliveries that were carried out. With increasing experience it became possible to forecast the course and nature of labor and delivery very accurately from the shape of the pelvis the rela-

tive position of the fetal head and a study of the maternal powers to endure the proposed travail. A survey of the bony structures of the birth canal and its passenger evaluates the few factors that can be measured with scientific accuracy and it should form at least the basis on which "suspect cases" may be safely treated. The various pelvic types in this clinically suspect group are classified morphologically according to the Caldwell-Moloy classification, except that the author has substituted the term "pithecoïd" for "anthropoid." The incidence of the gynecoid android pithecoïd and platypelloïd combinations of these and pathologic types such as rachitic flat and osteomalacic ones are listed in a table. Taking the gynecoid pelvis as unity, the possessors of android pelvis are more than twelve times more likely to develop the mild and eight times more probably the severe forms of toxemia. Puerperal morbidity likewise is greatest in those with android and android-gynecoid pelvis. The author also inquired into the similarity between the pelvis of female infants and their mother. Of 20 little girls examined in this respect, 13 had pelvis of exactly the same type as their mothers. The author urges the use of roentgenographic methods of estimating pelvic capacity in the interests of mother and accoucheur.

## Lancet, London

2 265-300 (Aug 26) 1944

- Intrathoracic Metallic Foreign Bodies A L D Abreu I W Litchfield and C J Hodson—p 265  
Clinical Trial of Clobin Insulin and Other Insulins with Delivered Action J C Eaton—p 269  
Aneurysm of Anterior Tibial Artery with Note on Arteriography M Fallon—p 270  
Treatment of Perforating Corneal Ulcer E M G Cullen—p 272  
Tetraethyl Thiuram Monosulfide in Treatment of Scabies D B Bradshaw—p 273  
Bronchial Asthma Treated by Breathing Exercises H I Weier—p 274

2 301-332 (Sept 2) 1944

- \*Hepatitis After Yellow Fever Inoculation Relation to Infective Hepatitis G M Findlay N H Martin and J B Mitchell—p 301  
\*Cardiac Neurosis as Manifestation of Hypoglycaemia R Greene—p 307  
Eosinophilia with Pulmonary Disease on Return from Tropics J Apple and G H Grant—p 308  
Note on Scalp Closure H C Cillies—p 310  
Outbreak of Pneumonia in Smallpox Contacts H T Howat and W M Arnott—p 312  
Superior Sulcus Tumor (Pancorist) B A Dormer F J Wiles and I Friedlander—p 312

2 333-362 (Sept 9) 1944

- Delayed Suture of Soft Tissue Wounds T R Sergeant and W A Morton—p 333  
Systemic Administration of Penicillin I W J McAdam J P Duguid and S W Challinor—p 336  
Dangers of Intensive Alkali Treatment in Blackwater Fever B G MacGrath and R E Hayard—p 338  
\*Hepatitis After Yellow Fever Inoculation Relation to Infective Hepatitis G M Findlay N H Martin and J B Mitchell—p 340  
Unhurried Blind Intubation H M Bird—p 344  
Return of Virity After Prefrontal Leukotomy with Enlargement of Gonads R E Hemphill—p 345

**Hepatitis After Yellow Fever Inoculation**—Findlay and his associates say that the presence in endemic yellow fever zones in Africa of considerable numbers of Europeans as well as of Africans made it important to detect yellow fever at the earliest moment for, even though wholesale prophylactic inoculation had largely allayed anxiety, there was always the hazard that a few might have escaped immunization. In this African command every case of jaundice in military personnel has been notified whatever the presumed cause. It has thus been possible to get an idea of the incidence of infective hepatitis month by month. Late in December 1942 the notifications for jaundice began to rise rapidly. As the notifications continued to increase in January it was found that the cases followed injection of particular batches of yellow fever vaccine used between Sept 19 and Dec 31, 1942. In all 689 cases were recorded as being due to yellow fever vaccine inoculations. The average latent period among 670 cases in which the date of commencement of symptoms could be recorded was one hundred and one days. Preicteric symptoms were in the main visceral. Loss of appetite, nausea, lassitude and vague abdominal discomfort were the usual complaints though occasionally the abdominal pain was severe enough to suggest biliary colic or duodenal ulceration. The physical signs were jaundice, hepatic and splenic enlargement,









abdominal tenderness and fever. There was one death in the series. No features of the clinical history or the necropsy served to distinguish this case from the findings in infective hepatitis: the terminal rise in temperature especially is characteristic of what has been seen in fatal cases of infective hepatitis. On the basis of necropsy studies in this case the authors say that both the macroscopic and the microscopic findings point to the conclusion that death was due to a progressive and overwhelming destruction of the liver parenchyma. Treatment has been along routine lines. In mild cases additional sugar has been given by mouth, in severe cases intravenous drips of 10 per cent glucose-saline solution have been used, together with 5 to 10 units of insulin a day. Up to 20 Gm of fat was allowed a day in some cases together with small daily doses of sodium taurocholate, to assist in the absorption of vitamin K. In 2 cases with purpuric rashes vitamin K was administered with apparently beneficial results. Latterly additional protein has been added to the diet in the form of skimmed milk up to 1½ pints daily, eggs and a puree of liver. In convalescence dried yeast has been prescribed.

**Cardiac Neurosis as Manifestation of Hypoglycemia**—Greene reports that 5 patients were admitted to the hospital with the diagnosis of effort syndrome. Each patient had symptoms suggesting a cardiac abnormality, and each had a normal heart. The symptoms of the 5 patients were found to be related to hypoglycemia. The early symptoms of hypoglycemia are in reality those of excessive epinephrine secretion. Da Costa's syndrome is caused by abnormal fears. The somatic symptoms of fear are also due to excessive epinephrine secretion. It is therefore not surprising that the symptoms of hypoglycemia and of Da Costa's or effort syndrome are identical. Since the symptoms of the former can be relieved by a suitable diet, an effort should be made to evaluate the part played by abnormal carbohydrate metabolism in producing the symptoms of patients with Da Costa's syndrome or a similar cardiac neurosis.

### Medical Journal of Australia, Sydney

2 101-124 (July 29) 1944

Control of Medical Equipment in Nation at War. A. Newton—p. 101  
Psychiatry Yesterday and Today. E. S. Meyers—p. 109  
Chronic Glaucoma of Traumatic Origin. A. W. D. Ombrian—p. 112

2 125-152 (Aug. 5) 1944

An Address. E. A. H. Russell—p. 125  
Closed Intrapleural Pneumolysis. C. G. Bayliss—p. 129  
Irritation Produced by Procession Caterpillar (*Ochrogaster Contraria*). H. Flecker and A. McSweeney—p. 137

### Practitioner, London

153 129-192 (Sept.) 1944

Clinical Manifestations of Arteriosclerotic Disease. G. Evans—p. 129  
Diagnosis and Treatment of Coronary Diseases. T. J. Hoskin—p. 136  
Diagnosis of Congenital Heart Disease. K. D. Wilkinson—p. 146  
Treatment of Congestive Heart Failure. H. Cookson—p. 155  
Management of Rheumatic Heart Disease in Early Life. A. G. Watkins—p. 161  
Headache, Ciddiness and Eyestrain. H. M. Traquair—p. 166

### Ophthalmologica, Basel

105 121-232 (March-April) 1943

Histochemical Investigations on Demonstration and Localization of Vitamin C in Ocular Tissues. E. Burki and A. E. Schmid—p. 121  
Diagnostic Value of Puncture of Anterior Chamber. M. Amsler and F. Verrey—p. 144  
Device for Capillary Centrifugation of Aqueous Humor. F. Verrey—p. 151

\*Evaluation of Sulfonamide Therapy in Trachoma. L. Poleff—p. 156

**Sulfonamide Therapy in Trachoma**—Poleff on the basis of observations on 1,050 trachoma patients, regards sulfonamide therapy not as a panacea but as an important adjuvant. Sulfonamide therapy will effect complete cure of trachoma only in combination with local treatment, he says. Following microscopic examination of secretions and of epithelial smears a disinfecting treatment with silver nitrate solution or a disinfectant solution is employed for about a week. Then follows pressing out of the follicles and scraping of the diseased conjunctiva. After the irritative reaction caused by this has subsided conjunctival massage is begun. This massage by means of a glass or silver rod must be continued for months. During

all this time the patient is given sulfonamides internally. The duration of trachoma treatment averages three months. The internal sulfonamide therapy exerts a favorable influence on the secondary processes, particularly the catarrhs and corneal ulcers. During the early stage the sulfonamides act favorably also on the trachomatous follicles. Sulfonamide therapy sterilizes the trachoma infection and thus provides protection against relapses.

### Hospital, Rio de Janeiro

26 1-149 (July) 1944 Partial Index

Megacolon, Dolichocolon and Vitamin B<sub>1</sub>. R. Britto—p. 41  
\*Etiology and Pathogenesis of Erythroblastosis of Newborn Infants. M. Pereira de Mesquita and V. R. Leite Ribeiro—p. 85

**Etiology and Pathogenesis of Erythroblastosis Fetalis**—Three factors are necessary for the development of erythroblastosis of newborn infants: (1) A fetus with a positive Rh blood factor, whereas the mother has a negative Rh blood factor, (2) an interchange of fetal Rh erythrocytes and maternal anti-Rh agglutinins through the placental barrier, and (3) lack of group specific substances (in the placenta, the umbilical cord and the fetus) which may be able to fix and neutralize the maternal agglutinins. The first and last conditions have been proved. The passage of erythrocytes through the placenta has not been proved. The authors made daily intraperitoneal injections of dissolved erythrocytes in amounts corresponding to 1 cc of the total blood of Rhesus monkeys for eleven consecutive days and five injections of the same dose every other day. Specific agglutinins appeared in the blood of all the guinea pigs as proved by the occurrence of agglutination of the erythrocytes which was equal to that which is observed after experimental immunization of guinea pigs with blood of Rhesus monkeys. The authors conclude that the stroma of erythrocytes of the fetus rather than the erythrocytes is the causal factor of the immunization of mothers and of the consequent formation of anti-Rh agglutinins by the mother and also the cause of the development of erythroblastosis in the fetus.

### Revista de Otorrinolaringologia, Santiago

4 4 61 (June) 1944 Partial Index

\*Osteomyelitis of Frontal Bone. I. Otte—p. 4  
Cancer of Esophagus. H. Garcia—p. 29

**Osteomyelitis of Frontal Bone**—Otte reports 12 cases of chronic and acute forms of the disease. General and local infection and trauma may play a causal role. The symptoms are those of acute infection with fever, local pain and edema. The acute stage is followed by a period of complete subsidence of the symptoms, which lasts for several months. Palpebral edema, which in some cases simulates allergic edema, appears and disappears at varied intervals of weeks during the period of subsidence of the symptoms. It is a diagnostic sign of chronic frontal osteomyelitis and an indication for x-ray study of the frontal bone. Operation consists in resection of the necrotic bone and drainage. Delayed operation is the cause of the development of either a Pott's puffy tumor or a cerebral abscess. Acute frontal bone osteomyelitis is a complication of chronic suppurative sinusitis. It can be prevented by surgical removal of the outer and inner tables of the frontal sinus in cases of chronic suppurative sinusitis. The therapy consists in radical resection of the frontal bone as advocated by Mosher. Sulfonamide and blood transfusions are indicated before the operation in cases of hematogenous type.

### Klinische Wochenschrift, Berlin

22 29-88 (Jan. 23) 1943

\*Treatment of Fresh Cardiac Infarction by Administration of Strophanthin. E. Edens—p. 69  
\*Etiology of Epidemic Hepatitis. Additional Investigation Aimed At Virus Cultivation. W. Siede and K. Lutz—p. 70  
Prognostic Significance of Chemoresistance in Sulfonamide Therapy for Pneumonia. S. Sjostedt, G. Vahlne and N. Berg—p. 74  
Treatment of Polyglobulism by Feeding with a Low Vitamin Diet. D. von Hohenberg—p. 77  
Study of Agglutination of Blood Platelets. E. Ollgaard—p. 80

**Strophanthin Therapy of Fresh Cardiac Infarction**—Edens states that the indirect effect of strophanthin on the functional disturbances of the coronary arteries results in the improvement of the coronary circulation and the cardiac metabo-

lism In the majority of the cases this indirect effect compensates for its immediate unfavorable effect, such as auricular fibrillation, bigeminy and auricular tachycardia for which the abnormal irritability of the impaired cardiac elements may be responsible. The rationale of strophanthin therapy was demonstrated in 24 cases of cardiac infarction. Treatment was instituted within the first six days of the attack. There were 20 men and 4 women. Seven patients were between the ages of 40 and 50 years, 5 from 50 to 60 years and 12 patients were over 60. Eleven patients had hypertension. Strophanthin alone was administered in 13 cases. Strophanthin combined with half an ampule of theophylline and oxyamine or with 1 mg. of dihydromorphinone hydrochloride or with both was employed in 11 cases. Strophanthin was given in doses of 0.1 to 0.3 mg. Sedatives were given three to four times daily. Seven patients died within two to sixty-five days, 1 died after two years and 1 after two and a half years. The condition of the other 15 patients was improved considerably. All the patients experienced immediate relief from the administration of the strophanthin alone and particularly after the combined strophanthin-dihydromorphinone therapy. There was not a single fatal case due to strophanthin, since death did not occur within the first hour after its administration. Clinical experience proved that one hour is required to compensate for the immediate unfavorable effect of the drug.

**Etiology of Epidemic Hepatitis**—Siede and Lutz state that epidemic hepatitis is a contagious disease whose epidemiologic behavior and characteristic clinical picture suggest a specific causative agent. Human duodenal juice was used as an inoculation medium in experiments following Woodruff and Buddingh's chorioallantois cultivation method. Twenty-one specimens of duodenal juice from persons suffering with epidemic hepatitis and 5 specimens from normal persons were inoculated into large chicken eggs. Not a single embryo died from every 8 eggs which were inoculated with 1 of 3 of the 5 specimens from normal persons. One embryo died from every 5 eggs which were inoculated with 1 of the remaining 2 specimens from normal persons. Chorion and liver pulp from these dead embryos were inoculated into two series of 8 eggs, and every 1 of these eggs hatched. Results of inoculation experiments with the 21 specimens from persons suffering with epidemic hepatitis were as follows. All the eggs inoculated with 7 of the specimens hatched. In 4 additional instances many of the embryos died but cultivation of the causative agent by passage failed. Passage was performed successfully with the remaining 10 specimens. An agent was isolated from the duodenal juice, which according to its biologic behavior, may be classified with the filtrable types of viruses. Its cultivation depends on early duodenal removal within the first days of the disease and on immediate inoculation avoiding prolonged transportation from the residence of the patient to the place where the inoculation is performed or on using a frigidaire for the transportation. Chicken embryos died within five days on an average. Time of death varied from three to nine days, depending on the virulence of the agent. Occasionally full virulence may be maintained for from six to eight passages, but on an average it may disappear after the fourth passage. The virus seems to be hepatotropic, since the passage was particularly successful when the liver pulp of the dead embryos was used. Its stability is suggested by the fact that in the frigidaire the virus in the duodenal juice may be preserved for fourteen days, and in the embryonal tissues it may be preserved for eight days. Thermolability, however, is suggested by the fact that questionable or negative results were obtained with specimens kept for some time at a temperature of  $\pm 20^{\circ}\text{C}$ .

## 22 201-220 (March 6) 1943

- New Theories of Fine Structure of Protoplasm. K. Zeiger—p. 201  
Artificial Hypoprothrombinemia and Its Therapeutic Application. K. V. von Kaula—p. 205  
Study of Sutherland's Rapid Tuberculin Test. Else Gehling—p. 208  
Function of Kidneys and Chemical Diagnosis of Renal Calculi. H. L. du Mont—p. 210  
Qualitative Hematology. J. Arneith—p. 213

**Artificial Hypoprothrombinemia and Its Therapeutic Application**—Von Kaula states that thrombosis may be prevented by prolonging artificially the coagulation time of the blood. That may be obtained by a reduction of the prothrombin

level since prothrombin represents an integral factor in intravascular clotting. Experiments on rabbits and on normal men with dicumarol are reported. The prothrombin content of the blood was determined by Lehmann's modification of Quick's method. Five mg. of the compound per kilogram of body weight was administered to rabbits by stomach tube. The compound acts only after six to ten hours and even later. Its effect, however, is intensive and may last for six days, whereas massive doses of heparin (125 mg. per kilogram) had only a momentary effect. Intravenous administration of massive doses of vitamin K (30 mg. per kilogram of body weight) did not counteract the effect of dicumarol. Doses of from 125 to 375 mg. of 'anti-prothrombin,' a Swedish commercial preparation of dicumarol in tablet form, were administered to healthy men. The effect on the prothrombin level was significant. The compound acted at an interval of from six to ten hours, but its effect was prolonged for from seventy-two to one hundred and twenty hours. An increase in prothrombin for from twelve to fourteen hours resulted in several instances from oral administration of from 100 to 200 mg. of vitamin K but was followed again by a sudden reduction of the prothrombin, which was compensated for later on. This increase in the prothrombin level occurred at an interval of from three to ten hours after the administration of vitamin K. Untoward reactions such as vomiting or diarrhea, abdominal pain associated with rise in temperature and acceleration of pulse for several hours occurred within two hours after the administration of 'antiprothrombin.' The administration of from two to three single doses of 125 mg. after meals may reduce these untoward reactions. Eleven other coumarin derivatives were tested on rabbits, but the duration and the intensity of their effects did not equal those of anti-prothrombin.

## 22 221-244 (March 13) 1943

- \*Sudden Reduction in the Number of Leukocytes After Intravenous Injection of Heparin in Rabbits and in Man. Its Significance for Blood Transfusion. P. Jucker—p. 221  
Results of Cutaneous Reaction in Typhus. G. Bischoff—p. 227  
Demonstration of Antisulfonamide Effect in Human Serum After Administration of Procaine Hydrochloride. H. Stocker—p. 230  
Study of Cooked Serum Test According to Kurten. Charlotte Marquardt—p. 232  
Study of Pathogenesis of Stomach Ulcers. G. Hetenyi and I. Kallapos—p. 234  
Adie's Syndrome. A. Werner—p. 237

**Leukopenia After Heparin Administration**—According to Jucker, leukopenia occurred in both rabbits and man after intravenous injection of heparin. The reduction in the number of leukocytes was manifest within three to four minutes. The polymorphonuclears were more affected than the lymphocytes. In the majority of the cases the initial number of leukocytes recurred within six to ten minutes, but leukocytosis may occur occasionally. The leukopenia which resulted in the rabbits from the rapid administration of large doses was more severe than that from the slow administration of smaller doses or from the slow administration of equal doses. The increase in the number of leukocytes recurred independently from the absolute amount of the administered preparation. It is suggested that this phenomenon is the same as that observed after the administration of other high molecular bodies such as glycogen, acacia gelatin, methyl cellulose, albumin or peptone. The author mentions the theory of Fahraeus and Vajons, according to which reduction of the suspension stability of the blood is the cause of leukopenia. The leukopenia produced in man was less severe than that in rabbits and resulted from such small doses of heparin as 0.12 mg. per kilogram of body weight. There were no allergic reactions when pure heparin preparations were employed. The drop in blood pressure was not pronounced (about 5 mm. of mercury). Heparin should not be given to blood donors in cases in which transfusion aims to increase the defensive power and the volume of the circulating blood or to combat anemia. Administration of heparin is not advisable in cases of agranulocytosis. It may be safe to proceed with blood transfusion after the heparin treatment when the leukocytes have once more risen to safe levels. Heparin treatment is contraindicated in patients with deficient leukopoiesis.

## Book Notices

**Rehabilitation Re Education and Remedial Exercises** By Olive F. Guthrie Smith MBE CSM M G T M G Principal of the Swedish Institute London With a foreword by Lord Horder G C V O M D FRCP Cloth Price \$6 Pp 424 with 273 illustrations Baltimore: William Wood & Company 1943

Reconditioning and rehabilitation are rapidly becoming established as scientific branches of medicine. The main objective of the book is to draw attention to the extraordinary value of reeducating joints and muscles that have been incapacitated through injury or disease by movement when the action of gravity has been eliminated. Exercises of joints should encourage the patient to cooperate in his own cure. The movements are performed entirely by the patient himself, but under the supervision of a skilled operator.

Rehabilitation covers the whole range of treatment of the injured person from the time of accident to the point at which his condition is restored to the pre-accident state, or until the fullest possible restoration has been effected. One of the first steps in rehabilitation is to awaken the will to recover and to obtain cooperation. From the first day in the hospital the patient's mind is turned toward improvement. Unless absolute rest is necessary he is called on to exert a conscious effort on his own behalf every day. His interest in inducing the return of power by his own perseverance must be stimulated and encouraged. After the cooperation of the patient has been obtained, his actual treatment will be the sum total of the coordinated activity of a team of experts, medical and physical therapist, whose work will not end until he is fit for discharge and normal work. The physical therapist's part in this coordinated plan is ever enlarging in scope. In recent years its growth has acquired tremendous momentum. Thus muscular activity carefully graded to suit each stage of recovery is the basis of the physical therapist's contribution to rehabilitation. Every new activity is a point gained, and it is by the accumulation of such points that progress is made.

In this book will be found a series of rehabilitation exercises and methods for the reeducation of muscles which have lost some or all of their function. The methods described have been adopted by the ever increasing number of rehabilitation departments in the Ministry of Health as well as by the larger teaching hospitals. Treatment is based on a combination of three principles—psychologic, physiologic and mechanical, each requiring a definite technic. Although apparatus is extensively used, it is recommended that its use remain individual and that the exercises not be allowed to degenerate into mechanical movements. Active movement carried out under supervision is the only safe treatment for recent injuries. It is only by voluntary movement that restoration of function can be achieved. This is true also when dealing with advanced rehabilitation exercises; these must be carried out under voluntary power, the muscles acting against resistances which are continually graduated in strength. Strenuous exercises can be disguised in many ways as games or some useful occupation, such as digging or chopping wood.

The existing gaps in physical therapy appear to be due to various causes: (1) to certain limitations of the Swedish system on which British physical therapy is grounded; (2) to an old prejudice against "apparatus"; (3) to the lack of that class of work designated as "self-activated." One of the chief limitations of the Swedish system is that the operator tends to work on, rather than with, the patient. One may expect, therefore, to see the pendulum swing sharply in the direction of hard exercise. Such work will take the form of outdoor occupations, games, physical training of a strenuous type and persistent careful muscle training against resistances. Lack of "self-activated" work has been the most serious gap for two decades. A wave of electrical thought and apparatus swamped active work and forced it into a secondary place, thus it has come about that the usual practice has been to combine massage and electricity and to add a few exercises to complete the treatment. A reorientation is taking place and the emphasis is now on progressive activity rather than passivity while making full use of combined treatments and all the valuable electrotherapeutic knowledge that has been acquired. The training in physical

therapy, while continuing on the old sound basis, now incorporates new methods so as to fit in with a more strenuous type of work required by the modern conception of rehabilitation. Simple appliances and rhythmic movement and also have the advantage of assisting relaxation, especially that reciprocal relaxation of the antagonist muscles which is so important after traumatism. Apart from these factors there is the underlying aspect of increased self respect and improvement in morale which comes to patients who feel that they are cooperating in their treatment and consequently a stirring up of hope, of better health, which will promote better functioning.

A number of distinguished men and women have contributed chapters on their specialties, thus enabling the scope of modern physical therapy to be presented in a way which would have been impossible for a single writer to express. Dr. J. B. Menell is given special consideration for his chapter on manipulations. Physical therapists are greatly indebted to him for his brilliant work. Mr. Gerald Rae Fraser presents some interesting photographs for "massage." The supplementary chapters on joint manipulation, recovery after fractures, rehabilitation methods in chest and maternity cases, electrical treatment and occupational therapy, all written by colleagues distinguished in their particular subjects, add greatly to the value of the book and make it a complete textbook on the subject. This book is of real value to all physical therapists, to all orthopedic and traumatic surgeons and especially to military surgeons.

**Hipertensión arterial nefrótica** Por Eduardo Braun Menéndez y otros. Cloth. Pp 475 with 93 illustrations. Buenos Aires: Librería y Editorial El Ateneo. 1943.

The authors are distinguished contributors to the study of renal hypertension. As the title indicates, the survey is principally concerned with this topic, although discussions of other modes of experimental hypertension and of clinical hypertension are included. The book is completed by an extensive and excellent bibliography, an index and an appendix which details the special biochemical methods used in their own investigations.

The authors state in the introduction that "in evaluating results, which are sometimes contradictory, we have taken into account, apart from the proof—which is the essential—the authority of those who present it, as manifest in their scientific status and training, their critical spirit and honesty." The concept, however it may be justified as continental or Latin, introduces elements of personal appraisal which are too dangerously subjective to form a part of international scientific method. It leads the authors magisterially to toss the stones of distrust at others, unaware that the mansions of every one's science, including their own, have occasional panes of glass. It flows from this that the book hews zealously to the authors' stream of conviction, discarding in the chapter summaries what does not fit their personal measure.

Thus, their data do not establish the presence of pressor substances of renal origin in the blood in long established renal hypertension, were such substances present, it is far from established by their citations that these are liberated as the result of renal ischemia. Still, it is stated that "experimentation has proven that it [renal hypertension] is due to liberation of pressor substances of ischemic origin" (p. 248) and the question is begged again in the chapter heading "Renal Hypertension Due to Renal Ischemia."

Studies are quoted which prove that while renal arteriolar sclerosis is common in the late and fatal stages of hypertension it is not nearly as common in earlier stages of the disease, but the authors state that "it is now accepted that in essential hypertension there exists from the outset a certain degree of renal arteriolar sclerosis," fitting the conclusion to their concept but not to their evidence. Minor inaccuracies occur in the review of renal function; thus, it is not true that glomerular filtration pressure necessarily follows the levels of arterial tension (p. 43) or that glomerular efferent arteriolar constriction must always increase filtration fraction above the normal (p. 45). The increased sensitivity of renal hypertensive animals to a variety of pressor drugs is not "an established fact" (hoche seguro) (p. 58) but rather a very variable observation. The "staugs-hochdruck" of congestive heart failure is attributed to renal venous stasis and resultant ischemia with release of humoral pressor agents (p. 286) which are functionally independent of

the nervous system. This view is not reconciled with the claim that renal denervation abolishes hypertension due to experimental renal venous compression (p. 77).

The clinical discussion is weakened by the suggestion that acute glomerulonephritis is a state of acute febrile infection and by a tabular comparison of clinical, essential and experimental renal hypertension, which overemphasizes their similarities as in its suggestion that the response to thoracolumbar sympathectomy is equally insignificant in the two conditions.

This is a useful manual of reference or bibliography for those students of hypertension who are not content with what must still remain arbitrary opinions; others may be misled by the force and clarity of the highly specific presentation. The authors deserve more than ordinary commendation for their splendid experimental work. The manner they have chosen for its monographic presentation does not do it justice.

**Rorschach's Test: I. Basic Processes.** By Samuel J. Beck, Ph.D., Head of Psychology Laboratory, Department of Neuropsychiatry, Michael Reese Hospital, Chicago. Foreword by Willard L. Valentine, Ph.D., Head of Department of Psychology, Northwestern University, Evanston, and Chicago. Cloth. Price \$3.50. Pp. 223 with 10 illustrations. New York: Grune & Stratton, 1944.

This volume, which is to be followed shortly by a second one by Dr. Beck covering interpretation problems, presents a lucid, specific analysis of the way in which individual Rorschach responses are evaluated or "scored." The literature to date on the Rorschach method has been notably deficient in providing sufficient standards to make the use of this personality test truly objective and scientific. The lack of norms established from accumulated data has necessitated every worker to form his own standards from his particular experience and the theoretical considerations described by the leaders in the field. Thus there was much room for variation in the scoring process basic to the personality interpretation. After employing scientific experimental procedure Dr. Beck has written a technical manual replete with countless examples showing how the psychologic determinants of Rorschach responses are decided and their relative weight. A frame of reference is established for the accuracy of form perception and there are detailed descriptions of various types of movement, color and light determined responses. One of the unique contributions of this book is the chapter on the organization activity, wherein the author places a relatively unexplored significant mental process on a statistical basis. This manual should enable much wider use of the Rorschach test as it can be understood by beginners. It likewise can be utilized as a reference book for experienced testers and fulfils a concrete need.

**Photomicrography in Theory and Practice.** By Charles Patten Shillaber. Cloth. Price \$10. Pp. 773 with 291 illustrations. New York: John Wiley & Sons Inc. London: Chapman & Hall Ltd. 1944.

This volume can be included in the few authoritative books on photomicrography. The subject is discussed in simple phraseology, and wherever possible diagrams or photographs are used to illustrate a given point more clearly. Several excellent examples of photomicrography are found throughout the text. Chapter 1 deals with the mechanics of the microscope, a clear understanding of which is so essential to successful photomicrography. Other chapters deal with adjustments and various techniques relating to the microscope and the illuminating system, the preparation of the specimen, camera photographic technique and other aspects. Of especial value to the teacher of this subject is the list of practical questions which follow all but two chapters.

It is a matter of regret that a chapter on color photomicrography was not included in this volume since in recent years there has been such great improvement in color photographic processes. The author acknowledges the omission of a consideration of this field as well as of work with polarized light, ultraviolet and infra-red radiation, stereoscopic pictures and other highly specialized fields and promises to amend by adding "from time to time complete information regarding these and other important branches of microscopy." Truly the material in this book is basic and in many instances can be applied to the specialized fields, however, more specific treatment is desirable and the promised chapters will be of great value especially to the research physician and the biologist.

**Tuberculosis of the Ear, Nose and Throat, Including the Larynx, the Trachea and the Bronchi.** By Myron C. Myerson, M.D. Cloth. Price \$7.50. Pp. 241 with 88 illustrations. Springfield, Illinois: C. C. Thomas, 1944.

Unless attached to a hospital for the care of tuberculosis the average laryngologist only infrequently sees the manifestations of this disease. These nevertheless exist and must be constantly kept in mind. The author has had a large experience, and out of a rich clinical background has come this book. It reads easily, much of what has been accepted as fact and passed down through generations of authors is quietly discarded and there appears as a result the seasoned and considered opinion of a careful and competent observer. As is to be expected, tuberculosis of the larynx receives most of the author's attention. To it he devotes seven chapters, representing about one half of the printed matter of his work. The format is such that headings easily appreciated by the eye introduce the reader to the material presented. The author's own statistics from an obviously adequate experience substantiate his statements and there are enough illustrations, all of them apparently new. There follow chapters on tuberculosis of the ear, nose and throat and among others, what is most interesting, a chapter on bronchoscopic tuberculosis, a field in which the writer has had a great interest. The refreshing candor, the sane clinical attitude and the modesty of presentation of his material by the author recommend this volume to all those who may meet tuberculosis in the special field with which it deals.

**Regional Anesthesia.** By H. W. L. Molesworth, F.R.C.S., Senior Surgeon, Royal Victoria Hospital, Folkestone. Cloth. Price 8s. 6d. Pp. 90 with 42 illustrations. London: H. K. Lewis & Co. Ltd. 1944.

The author bases the contents of his book on experience with regional anesthesia in 1,500 cases. In 500 of these cases major operations were performed. It is clear to the experienced person that the author has intelligently interpreted the actions and reactions observed during use of local anesthetics and that his statements and deductions are accurate and certainly will be unlikely to change even though his experience has been ten times as great except in the case of nupercaine. The attention of the anesthetists in the United States might well be called to the author's suggestion that it should not be necessary for the surgeon to have to carry out the local and regional methods of anesthesia in cases in which regional anesthesia is unsatisfactory and general anesthesia must be resorted to; it is especially undesirable. The text is well illustrated and the methods which the author has found to be valuable include surface analgesia, infiltration anesthesia and a variety of nerve blocks including paravertebral sacral infiltration of hematoma in a fractured bone block anesthesia of the various parts of the extremities, brachial plexus block and various blocks of the cranial nerves. He emphasizes the use of regional anesthesia for operations on the abdominal wall within the abdominal cavity and on the perineum. He devotes five pages to spinal anesthesia. The small size of the book in no way indicates the breadth of treatment of the subject given by the author. This book will be of interest to both surgeon and anesthetist, especially those in England.

**Emergency Surgery.** By Hamilton Bailey, F.R.C.S., Surgeon, Royal Northern Hospital, London. Fifth edition. Cloth. Price \$18. Pp. 969 with 1,039 illustrations. Baltimore: William Wood & Company, 1944.

This edition is similar to the fourth edition in general plan and setup but has the advantage of containing references to recent developments, notably the sulfonamide drugs and war experience. As was said in a previous review, the prime quality of the book is its practicability. In that respect it should be particularly valuable as a guide to general practitioners who are called on to do emergency surgery. The introduction to this edition is an interesting account of the growth of the book from the first time the author thought of writing it until its final publication. The introduction tells why it is that the reviewer can enthusiastically recommend the procedures outlined as safe, well tried procedures—not always the most recently advocated but those which experience has found useful and which should not be discarded until much time has found the newer ones better.

## Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT HOWEVER REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS BUT THESE WILL BE OMITTED ON REQUEST.

### MINERAL OIL IN INTESTINE

**To the Editor**—Is it possible for mineral oil to get through the intestine without some of it being emulsified and saponified? Can it escape some saponification in the intestinal and hepatic alkaline secretions? Would not such soap solution be an irritation and in time sclerose the mucous membrane?

M D Wyoming

**ANSWER**—Mineral oil (liquid petrolatum) cannot undergo saponification. Mineral oil is a mixture of hydrocarbons containing only hydrogen and carbon. Fats and fatty oils undergo saponification. Soaps are the alkaline salts of fats or fatty oils. Fats and fatty oils are glycerides or a combination of glycerol and fatty acids. Vegetable and animal oils are natural mixtures of various fats and fatty oils. Their resemblance to mineral oil is in their physical properties, such as consistency and unctuousness.

Mineral oil does undergo emulsification with the water of the gastrointestinal contents. This emulsification by its capacity for holding water and preventing its absorption from the colon and the dilution of the intestinal contents by the oil itself are the physical means by which mineral oil keeps the constipated stool soft.

The use of mineral oil as a laxative does have objections. It interferes with the absorption of fat soluble vitamins. In doses sufficient to make the feces mushy or liquid the intestinal contents do not become formed in the colon but seep distally into the rectum. In the nonconstipated individual with a normal defecation reflex the rectum is not a reservoir of feces. For this reason mineral oil does not correct the altered physiology of constipation.

#### References

- Morgan James W. The Harmful Effects of Mineral Oil (Liquid Petrolatum) Purgatives. *THE JOURNAL* Oct 18 1941 p 1335.  
Jenkins G L and Hartung W H. The Chemistry of Organic Medicinal Products ed 2 New York John Wiley & Sons Inc 1943.

### INDICATIONS FOR CIRCUMCISION

**To the Editor**—Can you give me information concerning the indications for circumcision? It was recently stated in a gathering of women that all enlisted men are circumcised by the Army unless already circumcised. I have observed that all male animals have the glans protected by the prepuce. Why remove it? Mabel D Murphy M D Glendale 7 Calif

**ANSWER**—The chief indications for circumcision are a prepuce that cannot be retracted over the glans, a few causes of which are phimosis, paraphimosis and persistent balanoposthitis. In many hospitals circumcision is done almost as a routine procedure. As a result perhaps many foreskins are needlessly sacrificed. On the other hand, this procedure prevents the occurrence of many penile disturbances. It is not true that all enlisted men in the armed forces are routinely circumcised.

### STILLBIRTH AND PLACENTAL INFARCTS

**To the Editor**—A woman aged 28 after going through a normal pregnancy was delivered at term of a stillborn infant that was known to have died four days before delivery. The pathologist's diagnosis was (1) female stillborn in stage of autolysis and postmortem disintegration (2) multiple infarction of the placenta (3) Kline test on placental blood negative and no signs of syphilis present. The mother suffers obvious endocrine dysfunction and became pregnant with difficulty only after treatment with thyroid and synapoidin (a combination of chorionic gonadotropin and pituitary). What are the possible causes of this or any placental infarction? What are the probabilities of a repetition in succeeding pregnancies? What investigation might help to determine the cause of the placental abnormality? Lawrence H Lief M D Jonesburg N J

**ANSWER**—Not much is known about the etiology of placental infarcts. Nearly every placenta shows infarct formation but the latter seldom produces any disturbances. However, when the infarct formation is extensive enough to involve a large part of the placental tissue there will result a deficient supply of blood to the fetus with interference in its development or death.

Clinically infarcts cannot be diagnosed, but large amounts of infarct formation are associated with nephritis and syphilis.

At present there is no known way of preventing the development of infarcts. Of course, when syphilis is present it should be treated. In cases of outspoken nephritis, pregnancy must usually be terminated in the interests of the mother, else in the latter part of pregnancy in most cases the baby is expelled prematurely and the placenta shows considerable areas of infarction.

This woman should have a thorough medical investigation, and if no disease is found she may safely become pregnant again. In a large proportion of stillbirths the cause cannot be found and most of these women subsequently give birth to healthy children. The thyroid and synapoidin almost certainly had no bearing on the fetal death, but were they really needed for the "obvious endocrine dysfunction"?

### ASYMPTOMATIC NEUROSYPHILIS AND TREATMENT WITH TRYPARSAMIDE

**To the Editor**—A patient with late latent syphilis of eight years duration received treatment with neosarsphenamine and bismuth for the first two years. The blood and spinal fluid give a 4 plus Wassermann reaction. Organic or mental changes are not apparent. 1 Is it necessary to abstain from food and fluid for two to three hours prior to and subsequent to receiving an intravenous injection of tryparsamide? 2 In such a patient coming twice a week for treatment is bismuth or mapharsen the more effective to use in addition to the tryparsamide? 3 If tryparsamide is not tolerated what substitute is suggested? 4 How long should such patients be treated with tryparsamides and in general? 5 Is iodide orally advisable in such cases? 6 Is abstinence from food and fluids for two or three hours before and after injection of mapharsen recommended?

M D New York

**ANSWER**—A patient with syphilis of eight years' standing and a supposed positive spinal fluid cannot be regarded as having latent syphilis. A major distinction is to be drawn between patients with true latent syphilis (in whom by definition the spinal fluid should be normal) and those with asymptomatic neurosyphilis, in whom the prognosis is vastly more grave. Detailed suggestions for treatment cannot be provided without more details of the spinal fluid examination. It is assumed that there are no symptoms or neurologic evidence of involvement of the nervous system. The examination of the spinal fluid, however, should provide data concerning cell count, total protein content, quantitative Wassermann reaction and colloidal gold curve.

In general, fever therapy is more satisfactory for patients with neurosyphilis, asymptomatic or otherwise, than tryparsamide or any other arsenical drug whether pentavalent or trivalent.

If tryparsamide is employed, however, the following answers may be supplied to the specific questions asked:

- 1 No
- 2 Tryparsamide should never be given twice a week. There is a serious risk of irremediable visual damage from its use once a week, and this risk is greatly increased if the interval between injections is lessened. If it is desired to use a bismuth compound in conjunction with tryparsamide, the two injections may be given the same day, obviating the necessity for twice weekly visits. Bismuth injections should be given to insure a concentration in the urine of 0.002 Gm or more of metallic bismuth per day. If, for a reason which does not appear in the query, it seems essential to treat the patient twice a week, mapharsen should be alternated with tryparsamide.

3 If the patient is unable to tolerate tryparsamide, a trial may be made of aldarson, another pentavalent drug which is said to be less prone to produce visual reactions than tryparsamide. Unfortunately, there are few satisfactory data concerning the effectiveness of aldarson.

4 This question cannot be answered without further and much more detailed knowledge of the situation.

- 5 No
- 6 Yes

### THERAPY OF BONE LESIONS OF MYELOMA

**To the Editor**—The recent answer to a query on Therapy of Bone Lesions of Multiple Myeloma in *The Journal* Aug 5 1944 is in disagreement with both the bulk of the literature on the subject and with my experience based on the study of approximately thirty five histologically proved cases of multiple myeloma at the Massachusetts General Hospital during the past eleven years (Jacobson B M Krane F Gall E A and Lingley L J. The Diagnosis of Multiple Myeloma to be published). Contrary to the answer cited roentgen therapy to areas shown to be involved rarely results in relief of pain. And with the exception of the extremely rare cases of solitary plasmoma the bone lesions of multiple myeloma are not radiosensitive and do not heal following roentgen therapy.

Bernard M Jacobson Lieut Comdr (MC) USNR



## Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

### MINERAL OIL IN INTESTINE

**To the Editor**—Is it possible for mineral oil to get through the intestine without some of it being emulsified and saponified? Can it escape some saponification in the intestinal and hepatic alkaline secretions? Would not such soap solution be an irritation and in time sclerose the mucous membrane?

M. D. Wyoming

**ANSWER**—Mineral oil (liquid petrolatum) cannot undergo saponification. Mineral oil is a mixture of hydrocarbons containing only hydrogen and carbon. Fats and fatty oils undergo saponification. Soaps are the alkaline salts of fats or fatty oils. Fats and fatty oils are glycerides or a combination of glycerol and fatty acids. Vegetable and animal oils are natural mixtures of various fats and fatty oils. Their resemblance to mineral oil is in their physical properties, such as consistency and unctuousness.

Mineral oil does undergo emulsification with the water of the gastrointestinal contents. This emulsification by its capacity for holding water and preventing its absorption from the colon and the dilution of the intestinal contents by the oil itself are the physical means by which mineral oil keeps the constipated stool soft.

The use of mineral oil as a laxative does have objections. It interferes with the absorption of fat soluble vitamins. In doses sufficient to make the feces mushy or liquid the intestinal contents do not become formed in the colon but seep distally into the rectum. In the nonconstipated individual with a normal defecation reflex the rectum is not a reservoir of feces. For this reason mineral oil does not correct the altered physiology of constipation.

#### References

- Morgan James W. *The Harmful Effects of Mineral Oil (Liquid Petrolatum) Purgatives*. THE JOURNAL Oct 18 1941 p 1335.  
Jenkins G. L. and Hartung W. H. *The Chemistry of Organic Medicinal Products* ed 2 New York John Wiley & Sons Inc 1943.

### INDICATIONS FOR CIRCUMCISION

**To the Editor**—Can you give me information concerning the indications for circumcision? It was recently stated in a gathering of women that all enlisted men are circumcised by the Army unless already circumcised. I have observed that all male animals have the glans protected by the prepuce. Why remove it? Mabel D. Murphy M.D. Glendale 7 Calif

**ANSWER**—The chief indications for circumcision are a prepuce that cannot be retracted over the glans, a few causes of which are phimosis, paraphimosis and persistent balanoposthitis. In many hospitals circumcision is done almost as a routine procedure. As a result perhaps many foreskins are needlessly sacrificed. On the other hand, this procedure prevents the occurrence of many penile disturbances. It is not true that all enlisted men in the armed forces are routinely circumcised.

### STILLBIRTH AND PLACENTAL INFARCTS

**To the Editor**—A woman aged 28 after going through a normal pregnancy was delivered at term of a stillborn infant that was known to have died four days before delivery. The pathologist's diagnosis was (1) female stillborn in stage of autolysis and postmortem disintegration (2) multiple infarction of the placenta (3) Kline test on placental blood negative and no signs of syphilis present. The mother suffers obvious endocrine dysfunction and became pregnant with difficulty only after treatment with thyroid and synopoidin (a combination of chorionic gonadotropin and pituitary). What are the possible causes of this or any placental infarction? What are the probabilities of a repetition in succeeding pregnancies? What investigation might help to determine the cause of the placental abnormality? Lawrence H. Lief M.D. Jamesburg N. J.

**ANSWER**—Not much is known about the etiology of placental infarct. Nearly every placenta shows infarct formation, but the latter seldom produces any disturbances. However, when the infarct formation is extensive enough to involve a large part of the placental tissue there will result a deficient supply of blood to the fetus with interference in its development or death.

Clinically infarcts cannot be diagnosed, but large amounts of infarct formation are associated with nephritis and syphilis.

At present there is no known way of preventing the development of infarcts. Of course, when syphilis is present it should be treated. In cases of outspoken nephritis, pregnancy must usually be terminated in the interests of the mother, else in the latter part of pregnancy in most cases the baby is expelled prematurely and the placenta shows considerable areas of infarction.

This woman should have a thorough medical investigation, and if no disease is found she may safely become pregnant again. In a large proportion of stillbirths the cause cannot be found and most of these women subsequently give birth to healthy children. The thyroid and synopoidin almost certainly had no bearing on the fetal death, but were they really needed for the "obvious endocrine dysfunction"?

### ASYMPTOMATIC NEUROSYPHILIS AND TREATMENT WITH TRYPARSAMIDE

**To the Editor**—A patient with late latent syphilis of eight years' duration received treatment with neosarsphenamine and bismuth for the first two years. The blood and spinal fluid gave a 4 plus Wassermann reaction. Organic or mental changes are not apparent. 1 Is it necessary to abstain from food and fluid for two to three hours prior to and subsequent to receiving an intravenous injection of tryparsamide? 2 In such a patient coming twice a week for treatment is bismuth or mapharsen the more effective to use in addition to the tryparsamide? 3 If tryparsamide is not tolerated what substitute is suggested? 4 How long should such patients be treated with tryparsamides and in general? 5 Is iodide orally advisable in such cases? 6 Is abstinence from food and fluids for two or three hours before and after injection of mapharsen recommended?

M. D. New York

**ANSWER**—A patient with syphilis of eight years' standing and a supposed positive spinal fluid cannot be regarded as having latent syphilis. A major distinction is to be drawn between patients with true latent syphilis (in whom by definition the spinal fluid should be normal) and those with asymptomatic neurosyphilis, in whom the prognosis is vastly more grave. Detailed suggestions for treatment cannot be provided without more details of the spinal fluid examination. It is assumed that there are no symptoms or neurologic evidence of involvement of the nervous system. The examination of the spinal fluid, however, should provide data concerning cell count, total protein content, quantitative Wassermann reaction and colloidal gold curve.

In general, fever therapy is more satisfactory for patients with neurosyphilis, asymptomatic or otherwise, than tryparsamide or any other arsenical drug, whether pentavalent or trivalent.

If tryparsamide is employed, however, the following answers may be supplied to the specific questions asked:

1 No

2 Tryparsamide should never be given twice a week. There is a serious risk of irremediable visual damage from its use once a week, and this risk is greatly increased if the interval between injections is lessened. If it is desired to use a bismuth compound in conjunction with tryparsamide, the two injections may be given the same day, obviating the necessity for twice weekly visits. Bismuth injections should be given to insure a concentration in the urine of 0.002 Gm or more of metallic bismuth per day. If, for a reason which does not appear in the query, it seems essential to treat the patient twice a week mapharsen should be alternated with tryparsamide.

3 If the patient is unable to tolerate tryparsamide, a trial may be made of aldarson, another pentavalent drug which is said to be less prone to produce visual reactions than tryparsamide. Unfortunately, there are few satisfactory data concerning the effectiveness of aldarson.

4 This question cannot be answered without further and much more detailed knowledge of the situation.

5 No

6 Yes

### THERAPY OF BONE LESIONS OF MYELOMA

**To the Editor**—The recent answer to a query on 'Therapy of Bone Lesions of Multiple Myeloma' in THE JOURNAL Aug. 5, 1944, is in disagreement with both the bulk of the literature on the subject and with my experience, based on the study of approximately thirty-five histologically proved cases of multiple myeloma at the Massachusetts General Hospital during the past eleven years (Jacobson B. M. Kroner F. Gall E. A. and Lingley, L. J. *The Diagnosis of Multiple Myeloma* to be published). Contrary to the answer cited roentgen therapy to areas shown to be involved rarely results in relief of pain. And with the exception of the extremely rare cases of solitary plasmoma the bone lesions of multiple myeloma are not radiosensitive and do not heal following roentgen therapy.

Bernard M. Jacobson Lieut. Comdr. (MC) U.S.N.R.

edema responded promptly and improvement began. The patient was discharged, afebrile, on the thirty-fourth hospital day. One month after discharge he had regained his lost weight, but dizziness persisted.

The harmful effects of improperly given intravenous therapy are well illustrated by this case. In spite of careful nursing and attention to diet with moderate

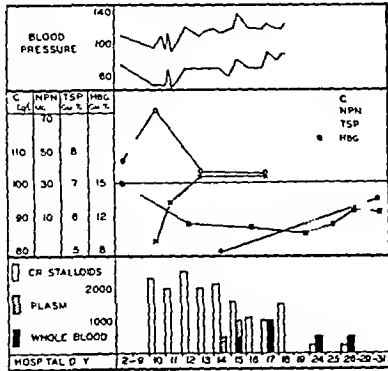


Chart 1—Effect of intravenous fluids in case 1, man aged 45, rash present four days

amounts of fluid by mouth the patient became more toxic. Since he had been sweating profusely, losing water and salt, prerenal azotemia and hypochloridemia developed. These conditions readily responded to intravenous saline and glucose solution, but although the nonprotein nitrogen and chlorides returned to normal, the patient clinically was worse. Increasing edema, rales in the lungs and pneumonia developed. The edema was then recognized as being partially due to hypoproteinemia. With the administration of blood and plasma the edema disappeared from the lungs and subcutaneous tissues, and the patient rapidly recovered. Saline solution and glucose were given with impunity after adequate administration of blood and plasma.

The failure of quinine, sulfadiazine and intravenous metaphen as specifics is illustrated. A clinical recrudescence occurred simultaneously with the initiation of quinine therapy.

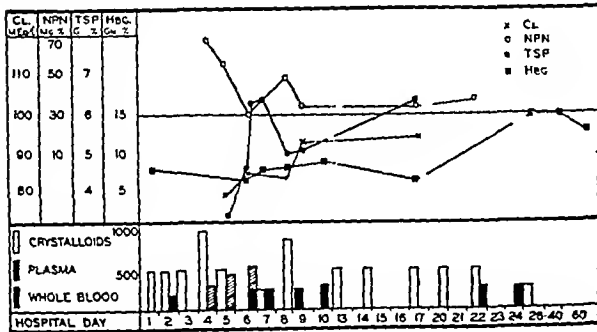


Chart 2—Effect of parenteral fluids in case 2, girl aged 2 years, weight 11.7 Kg, rash present six days

The experience with this adult was duplicated in the case of a child.

**CASE 2**—A tick was removed from behind the ear of a 2-year-old white girl two weeks before entry. Headache and high fever developed six days later. A rash appeared on the extremities at the same time and then became generalized.

On admission the child was stuporous and dehydrated with a temperature of 40 C (104 F), a pulse rate of 106 and 60 respirations per minute. A generalized petechial macular rash

was present, and there were purpuric areas on the toes, heels and elbows. Gallop cardiac rhythm with a soft apical systolic murmur was noted, but there was no peripheral venous engorgement. The lungs were clear. The spleen extended 4 cm below the costal margin. Occasional muscular twitchings and generalized clonic convulsive movements occurred.

The accessory clinical findings are summarized in table 2 and chart 2. The urine contained many hyaline and granular casts. The spinal fluid was negative. The agglutination for Proteus OX<sub>10</sub> rose to 1:320. When the serum proteins were 3.4 Gm per hundred cubic centimeters, the albumin fraction was 1.7 Gm per hundred cubic centimeters, calcium 9 mg per hundred cubic centimeters and phosphorus 2.9 mg per hundred cubic centimeters.

During the patient's first week in the hospital the temperature fluctuated between 37.2 and 40.5 C (99 and 105 F), with a disproportionately high, feeble pulse and rapid or Cheyne-Stokes respirations. During the first ten days, 1,720 cc of whole blood, 1,050 cc of plasma and 2,400 cc of other fluids (chart 2) were given intravenously or by bone marrow. In five days of treatment the blood chemical findings returned almost to normal. Following the restoration of plasma protein the generalized edema, which had been increasing, disappeared. With the restoration of chloride the convulsive seizures ceased. The patient received, parenterally, ascorbic acid and vitamin B complex during the third week; nutrition was maintained by gavage feeding. By the tenth hospital day the temperature averaged 38.7 C (102 F), the pulse 136 and respirations 30.

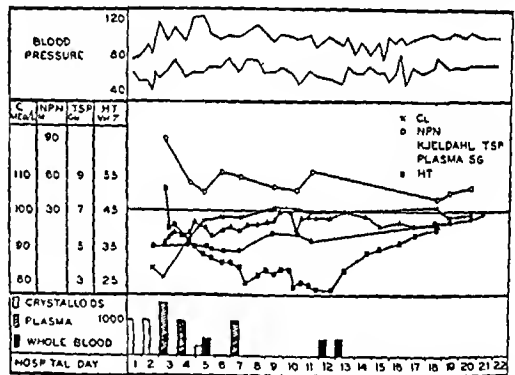


Chart 3—Effect of intravenous fluids in case 3, boy aged 15 years, rash present eight days. The discrepancy between the values for total serum proteins as determined by the Kjeldahl method and calculated from values of plasma specific gravity is unexplained.

to 40. The child became afebrile by the fifty-seventh hospital day. Pronounced neurologic changes persisted after clinical recovery: generalized spasticity, mental confusion, choreoathetoid movements of the extremities, hyperactive reflexes and a bilaterally positive Babinski sign were still present at discharge two and a half months after onset.

The anemia and albuminuria present on admission are evidence of the severity of the infection. The severity and persistence of damage to the central nervous system noted in this case occur occasionally in Rocky Mountain spotted fever. Because the patient was comatose, a gavage tube was inserted; the inadequacy of oral fluid and mineral replacement therapy alone is illustrated by the table. Subcutaneously administered parenteral fluids were not absorbed rapidly enough to supplement adequately oral therapy. Pre-renal azotemia, edema and hypoproteinemia developed; the loss of protein in the urine contributed to the hypoproteinemia. A dramatic diuresis occurred simultaneously with the initiation of protein replacement therapy given by bone marrow. The tremendous amount of blood and plasma given this 2-year-old child

illustrates the safety of properly chosen intravenous therapy. One transfusion of blood from a donor convalescent from the disease was given without reaction.

**CASE 3**—A boy aged 15 years complained of a painful postauricular nodule, headache, generalized muscular aching and a sore throat. A rash developed eight days before admission to the hospital. Three days later he had a shaking chill followed by high fever and stupor. No definite history of tick bite was obtained.

day and showed 8 mononuclear cells, a strongly positive Pandey reaction and a negative benzidine test. The agglutination with Proteus OX<sub>10</sub> became positive in a dilution of 1:640 and the complement fixation test for Rocky Mountain spotted fever was positive in a dilution of 1:32. The van den Bergh test ranged from 2.0 to 1.1 mg per hundred cubic centimeters. Hippuric acid excretion tests during the first eleven days showed 0.22 Gm of benzoic acid excreted; by discharge this had increased to 3.00 Gm. Urea clearance tests were at the lower level of the normal range. The nitrogen output in the urine for a period

TABLE 1—Clinical Observations in Case 1

| Date † | Blood                       |                             |                      |                      |                                |  |                           |                                 | Fluids      |           |          |                    |            |          | Urine              |             |                  |         |            |
|--------|-----------------------------|-----------------------------|----------------------|----------------------|--------------------------------|--|---------------------------|---------------------------------|-------------|-----------|----------|--------------------|------------|----------|--------------------|-------------|------------------|---------|------------|
|        | Hemoglobin<br>Gm per 100 Cc | Red Blood Cells<br>Millions | White Blood<br>Cells | Hematocrit<br>Vol% % | Serum Protein<br>Gm per 100 Cc | Nonprotein<br>Nitrogen, Mg<br>per 100 Cc | Chloride mEq<br>per Liter | Carbon Dioxide<br>mEq per Liter | Intravenous |           |          | Subcutaneous       |            |          | Oral *             | Volume Cc % | Specific Gravity | Albumin |            |
|        |                             |                             |                      |                      |                                |  |                           |                                 | Blood Cc    | Plasma Cc | Water Cc | Sodium Chloride Gm | Glucose Gm | Water Cc | Sodium Chloride Gm |             |                  |         | Glucose Gm |
| 9/3/41 | 10                          | 5.0                         | 7700                 |                      |                                | 43                                       |                           |                                 |             |           |          |                    |            |          |                    | 3700        | 1500+            | 1.018   | 1+         |
| 11     |                             |                             | 6200                 |                      |                                | 73                                       | 52                        |                                 |             | 2300      | 27       | 100                |            |          |                    | 2450        | 1600+            | 1.016   | 1+         |
| 12     |                             |                             |                      |                      |                                |  | 91                        | 24                              |             | 2000      | 18       | 100                |            |          |                    | 2750        | 900+             |         |            |
| 13     |                             |                             |                      |                      |                                |  |                           |                                 |             | 2500      | 23       | 100                |            |          |                    | 4100        | 2700+            | 1.010   | Trace      |
| 14     | 11                          | 3.2                         | 7200                 |                      |                                | 38                                       | 102                       | 25                              |             | 2000      | 18       | 100                |            |          |                    | 2900        | 2600             |         |            |
| 15     |                             |                             |                      |                      | 4.9                            |  |                           |                                 |             | 2100      | 18       | 100                |            |          |                    | 2900        | 1600+            |         |            |
| 16     |                             |                             |                      |                      |                                |  |                           |                                 | 500         | 1600      | 13       | 75                 |            |          |                    | 2300        | 3300+            |         |            |
| 17     |                             |                             |                      |                      |                                |  |                           |                                 | 500         | 1100      | 9        | 50                 |            |          |                    | 2850        | 3700+            | 1.006   | 0          |
| 18     | 10.8                        | 3.4                         | 4900                 |                      |                                | 33                                       | 103                       |                                 | 1000        | 1000      | 9        | 25                 |            |          |                    | 2400        | 1800+            |         |            |
| 19     |                             |                             |                      |                      |                                |  |                           |                                 |             | 1500      | 1        | 38                 |            |          |                    | 2400        | 1600+            |         |            |
| 20     |                             |                             |                      |                      |                                |  |                           |                                 | 400         | 250       | 2        |                    |            |          |                    | 2850        | 1600+            |         |            |
| 27     | 11                          |                             |                      |                      |                                |  |                           |                                 | 500         | 900       | 2        |                    |            |          |                    | 2800        | 2600+            |         |            |
| 10/7   | 12.5                        |                             |                      |                      | 6.0                            |  |                           |                                 |             |           |          |                    |            |          |                    | 2400        | 2100+            | 1.010   | 0          |

In the tables \* indicates morning values are listed. When other determinations were done during the day the values are recorded in the graphs.

† Representative days are recorded starting at 7 a. m.

‡ Because of occasional vomiting the use of enemas and duodenal intubation the amount of fluid given by the gastrointestinal tract is only approximate in all cases.

§ Each of these patients was incontinent; hence this is only approximate.

TABLE 2—Clinical Observations in Case 2

| Date †  | Blood                       |                             |                      |                     |                                |  |                           |                                 | Fluids      |           |          |                       |            |          | Urine       |                  |         |
|---------|-----------------------------|-----------------------------|----------------------|---------------------|--------------------------------|--|---------------------------|---------------------------------|-------------|-----------|----------|-----------------------|------------|----------|-------------|------------------|---------|
|         | Hemoglobin<br>Gm per 100 Cc | Red Blood Cells<br>Millions | White Blood<br>Cells | Hematocrit<br>Vol % | Serum Protein<br>Gm per 100 Cc | Nonprotein<br>Nitrogen, Mg<br>per 100 Cc | Chloride mEq<br>per Liter | Carbon Dioxide<br>mEq per Liter | Intravenous |           |          | Subcutaneous          |            | Oral †   | Volume Cc % | Specific Gravity | Albumin |
|         |                             |                             |                      |                     |                                |  |                           |                                 | Blood Cc    | Plasma Cc | Water Cc | Sodium Chloride<br>Gm | Glucose Cm | Water Cc |             |                  |         |
| 6/19/41 | 8                           | 3.0                         | 9 040                |                     |                                |  |                           |                                 |             |           |          |                       |            |          |             |                  |         |
| 20      |                             |                             |                      |                     |                                |  |                           |                                 | 170         |           |          |                       |            | 500      |             |                  |         |
| 21      |                             |                             |                      |                     |                                |  |                           |                                 |             |           |          |                       |            | 500      |             |                  | 3 +     |
| 22      |                             |                             |                      |                     |                                | 63                                       |                           |                                 |             |           |          |                       |            | 500      |             |                  |         |
| 23      |                             |                             |                      |                     | 3.4                            | 56                                       |                           |                                 |             | 300       | 1 000    |                       | 100        |          |             |                  |         |
| 24      | 7                           | 2.6                         |                      | 20                  | 4.6                            | 30                                       | 85                        | 26                              |             | 250       |          |                       |            | 500      |             |                  |         |
| 25      | 8                           | 3.1                         | 13 000               | 23                  | 6.4                            |  |                           |                                 |             | 450       | 500      |                       |            |          |             |                  | 2 +     |
| 26      | 8.2                         |                             |                      | 21                  | 5.0                            | 43                                       | 84                        |                                 |             | 250       |          |                       |            |          |             |                  |         |
| 27      |                             |                             |                      |                     | 5.1                            | 34                                       | 93                        |                                 |             | 250       | 400      |                       | 20         | 500      |             |                  | 1 010   |
| 28      | 9                           |                             | 12,800               |                     |                                |  |                           |                                 |             | 300       |          |                       |            |          |             |                  | 1 +     |
| 7/1     |                             |                             |                      |                     |                                |  |                           |                                 |             |           |          |                       |            |          |             |                  |         |
| 2       |                             |                             |                      |                     |                                |  |                           |                                 |             |           |          |                       |            | 500      |             |                  |         |
| 5       | 7.6                         |                             | 21 100               |                     | 6.3                            | 34                                       | 94                        |                                 |             |           |          |                       |            | 500      |             |                  |         |
| 8       |                             |                             |                      |                     |                                |  |                           |                                 |             |           |          |                       |            | 500      |             |                  | 2 +     |
| 10      |                             |                             |                      |                     |                                |  |                           |                                 |             | 250       |          |                       |            | 500      |             |                  |         |
| 11      |                             |                             |                      |                     |                                |  |                           |                                 |             |           | 500      |                       |            | 500      |             |                  |         |
| 12      |                             |                             |                      |                     |                                |  |                           |                                 |             |           |          |                       |            | 500      |             |                  |         |
| 16      | 14.8                        |                             |                      |                     |                                |  |                           |                                 |             | 250       |          |                       |            |          |             |                  | 0       |
| 28      | 14.6                        |                             | 11 300               |                     |                                |  |                           |                                 |             |           |          |                       |            | 500      | 2           | 1 510            |         |
| 8/17    | 17.0                        |                             | 14 200               |                     |                                |  |                           |                                 |             |           |          |                       |            |          |             | 2 000            | 0       |
|         |                             |                             |                      |                     |                                |  |                           |                                 |             |           |          |                       |            |          |             | 1 060            | 0       |

On admission the patient was comatose, his temperature was 38.9 C (102.5 F), pulse 104, respirations 28 and blood pressure 80/58. A generalized reddish purple macular rash was present. The everted margins showed papilledema. The neck was stiff and painful on motion. The lungs were clear. The spleen was palpable. The liver was not felt. Minimal nonpitting edema of the feet was noted. Sustained ankle clonus was present bilaterally.

The accessory clinical findings are summarized in table 3 and chart 3. On admission with serum proteins of 4.8 Gm per hundred cubic centimeters, the albumin was 2.1 Gm per hundred cubic centimeters. At the time of discharge the albumin globulin ratio was 1.0. The spinal fluid which was clear on admission became xanthochromic by the third hospital

of seventy-eight hours was determined. The data indicated the conversion of nearly all the nitrogen to urea. The amount of nitrogen eliminated by the kidney was equivalent to the destruction of 561 Gm of dry protein or 7 pounds of skeletal muscle in seventy-eight hours.

The temperature ranged to 40.4 C (105 F), with a corresponding pulse rate until the twelfth hospital day. It remained around 38 C (100.4 F) for ten days longer. With massive intravenous therapy the blood pressure rose to 120/70 but gradually dropped back to 100/60 where it became stabilized. The patient had received 50 cc of hyperimmune rabbit serum by the fifth hospital day (thirteenth day after the appearance of the rash) without striking change in the degree of toxicity. After the initial dehydration was overcome by intravenous and

subcutaneous infusions, adequate fluids were given by constant duodenal intubation. A high protein, high calory liquid diet, with additional sodium chloride and vitamins was given by gavage tube. As much as 1,500 cc of plasma was given intravenously in nine hours. Lumbar punctures relieved the stupor and periodic apnea. The sensorium cleared gradually, but at the time of discharge the neurologic signs had not entirely disappeared.

This case illustrates the life saving property of large doses of plasma in the peripheral circulatory collapse that frequently accompanies severe infections. The great protein requirement is shown by the studies on nitrogen metabolism. No impairment of kidney excretory function was demonstrated. The protein was given ready made, since the liver function studies indicated impairment. The severity of the encephalitis is illustrated by the need for gavage tube feeding, catheterization and lumbar punctures to reduce the cerebrospinal fluid pressure, as well as by the stupor and partial

"myocardial intoxication" or "renal intoxication," although little evidence has been found post mortem to support this theory. The kidneys are not seriously damaged, as is shown by the urea clearance studies in case 3 and by the ready reduction in blood nonprotein nitrogen when adequate fluids are properly given. Some of the edema, especially that occurring later in the course of the disease, is due to lowering of the plasma proteins.

The disease is not usually diagnosed until after the endothelium and smooth muscle of blood vessels have been damaged, so that the familiar skin eruption results. The injury to blood vessels produces physiologic changes analogous to those caused by burns. Plasma, water and crystalloids leak out of the damaged vessels, producing hemoconcentration and circulatory failure. The tissues of the patient may not be dehydrated, and large volumes of water and crystalloids given by mouth or parenterally may aggravate the situation. With the leakage of fluid

TABLE 3—Clinical Observations in Case 3

| Date †  | Blood *                     |                             |                      |                     |                                  |   |                           | Fluids      |           |          |                       |            |          |                       | Urine          |                  |         |            |
|---------|-----------------------------|-----------------------------|----------------------|---------------------|----------------------------------|---|---------------------------|-------------|-----------|----------|-----------------------|------------|----------|-----------------------|----------------|------------------|---------|------------|
|         | Hemoglobin<br>Gm per 100 Cc | Red Blood Cells<br>Millions | White Blood<br>Cells | Hematocrit<br>Vol % | Serum Protein %<br>Gm per 100 Cc | Nonprotein<br>Nitrogen Mg<br>per 100 Cc | Chloride mEq<br>per Liter | Intravenous |           |          | Subcutaneous          |            |          | Oral *                | Volume<br>Cc % | Specific Gravity | Albumin |            |
|         |                             |                             |                      |                     |                                  |   |                           | Blood Cc    | Plasma Cc | Water Cc | Sodium Chloride<br>Gm | Glucose Gm | Water Cc | Sodium Chloride<br>Gm |                |                  |         | Glucose Gm |
| 7/11/43 |                             |                             |                      |                     |                                  |   |                           |             |           |          |                       |            |          |                       |                |                  |         |            |
| 12      | 14                          | 5.6                         | 12,500               |                     | 4.8                              |   |                           |             |           |          |                       |            |          |                       |                |                  |         |            |
| 13      | 14                          | 5.0                         | 12,200               | 50                  | 4.8                              | 88                                      | 83                        |             | 1,500     | 1,000    | 9                     | 50         | 1,000    | 9                     |                | 800              | 1.375+  | 0          |
| 14      | 13                          | 4.9                         | 8,200                | 37                  | 5.0                              | 82                                      | 80                        |             | 1,000     |          |                       |            |          |                       |                | 3,350            | 1.460+  | 0          |
| 15      |                             |                             |                      | 31                  | 4.8                              | 44                                      | 56                        | 300         |           |          | 2                     |            |          |                       |                | 3,050            | 1.200   |            |
| 16      | 11.5                        | 4                           |                      | 30                  | 4.0                              | 60                                      | 97                        |             |           |          |                       |            |          |                       |                | 3,400            | 2.700   |            |
| 17      |                             |                             |                      | 29                  | 4.0                              | 57                                      | 97                        |             | 1,000     |          |                       |            |          |                       |                | 4,900            | 4.440   |            |
| 18      |                             |                             |                      | 26                  |                                  |   |                           |             |           |          |                       |            |          |                       |                | 3,500            | 3.200   |            |
| 19      |                             |                             |                      | 20                  | 5.6                              | 47                                      | 100                       |             |           |          |                       |            |          |                       |                | 3,200            | 2.900   |            |
| 20      | 9                           | 5.0                         | 5,600                | 27                  | 5.0                              | 45                                      | 99                        |             |           |          |                       |            |          |                       |                | 4,400            | 0.500   |            |
| 21      |                             |                             |                      | 23                  | 5.2                              | 60                                      | 98                        |             |           |          |                       |            |          |                       |                | 4,500            | 2.500   | 1.011      |
| 22      |                             |                             |                      | 22                  |                                  |   |                           | 500         |           |          |                       |            |          |                       |                | 4,500            | 2.400   |            |
| 23      |                             |                             |                      | 27                  |                                  |   |                           | 500         |           |          |                       |            |          |                       |                | 4,900            | 2.600   |            |
| 24      |                             |                             |                      | 32                  |                                  |   |                           | 500         |           |          |                       |            |          |                       |                | 4,800            | 2.225   |            |
| 25      | 10.5                        | 4.4                         | 6,900                | 33                  |                                  |   |                           |             |           |          |                       |            |          |                       |                | 4,050            | 1.400+  |            |
| 26      |                             |                             |                      | 40                  | 6.1                              | 38                                      | 100                       |             |           |          |                       |            |          |                       |                | 4,710            | 2.200   |            |
| 27      |                             |                             |                      |                     | 6.2                              | 47                                      | 97                        |             |           |          |                       |            |          |                       |                |                  |         |            |
| 28      |                             |                             |                      |                     | 6.4                              | 46                                      | 98                        |             |           |          |                       |            |          |                       |                |                  |         |            |
| 29      | 12.5                        | 4.3                         | 8,850                | 67                  |                                  |   |                           |             |           |          |                       |            |          |                       |                |                  |         |            |
| 30      |                             |                             |                      | 66                  | 4.4                              | 99                                      | 91                        |             |           |          |                       |            |          |                       |                |                  |         |            |
| 8/3     |                             |                             |                      |                     |                                  |   |                           |             |           |          |                       |            |          |                       |                |                  |         |            |

\* Kjeldahl method. The values calculated from plasma specific gravity are included in the graph.

muscular paralysis. Once deficiencies in water and salt were made up by parenteral administration of fluids, an adequate intake was maintained by duodenal intubation even though the patient was comatose.

This was the first case treated in this hospital with specific hyperimmune rabbit serum, little beneficial effect was noted from this, since the disease was well advanced before the patient was admitted.

COMMENT

Intravenous supportive therapy properly given is not harmful in Rocky Mountain spotted fever but may be life saving. The confusion over this point in the literature has arisen because of failure to appreciate the pathologic physiology of the disease.

*Mechanism of the Edema*—Early in the course of the disease a moderate amount of generalized edema involving the face, eyes, hands and legs frequently develops. It is firm in consistency and does not tend to localize in the dependent portions of the body. It is not accompanied by orthopnea. The edema cannot be attributed to cardiac failure, for venous engorgement, rales in the chest and other evidences of cardiac failure are not present. The fatalities are said to result from

forced out by the arterial pressure, the protein content of the blood is lowered so that its osmotic pressure on the venous side of the capillary bed is reduced and its ability to hold water in the vascular bed or to draw back fluid from the tissues is lost.

The development of edema is further aggravated by deficient formation of blood protein. Delirium and general intoxication result in a reduced intake of food necessary for the formation of new protein. Because of liver damage, which is a recognized part of the pathology of the disease, protein is not synthesized even though adequate nutrition is maintained. The pronounced reduction of liver function is demonstrated by the hippuric acid studies and by the slightly elevated van den Bergh reaction and icterus index. The extent of this impairment and its significance in relation to therapy has not been sufficiently appreciated. The very large amount of protein metabolized daily is indicated by the nitrogen excretion studies done in case 3. In patients who are stuporous or delirious, tube feeding may be necessary. A high protein, high carbohydrate diet supplemented by casein, if necessary, should be given to protect the liver and to assist in the regeneration of plasma proteins. If liver damage is very severe, ready

made protein in the form of blood or plasma should be given intravenously

**Harmful Effects of Intravenous Fluids**—In Rocky Mountain spotted fever one of the most severe forms of peripheral circulatory collapse or "medical shock" develops. The "toxic" condition is strikingly similar to early "shock" associated with functional capillary damage from any cause, experimentally this may be produced by burns, bacterial toxins or other substances. Because of this alteration in the normal physiology of the body it is easy to understand why improperly chosen intravenous fluids would be ineffective and might even be harmful. Since the osmotic pressure of the blood is not maintained, intravenous glucose or saline solution would rapidly leave the blood stream and might even tend to wash more protein out into the tissues. This possibility has been discussed in detail by Minot and Dodd<sup>5</sup> and by Beard and Blalock<sup>6</sup>. The mistaken conception that no intravenous fluids should be used has become entrenched so firmly that even the packages of antiserum contain the admonition "Not to be used intravenously."

**The Beneficial Effects of Plasma**—It has been shown by many workers that if "shock" is treated early enough the changes are reversible. Since patients with Rocky Mountain spotted fever present the picture of peripheral circulatory collapse, plasma and whole blood would be the fluids of choice. If the hemoglobin or hematocrit determinations indicate a loss in red cells, whole blood would be preferred until this condition is remedied. We have not observed the severe reactions to transfusions reported by others<sup>4</sup>. Blood or plasma obtained from a convalescent donor seems to have no advantage over that obtained at random. A large quantity of blood or plasma may be required in a short time as is evidenced by cases 2 and 3. Once the peripheral circulatory collapse and hypoproteinemia are controlled, the proper selection of additional parenterally administered fluids will depend on the hematocrit, blood count and blood chemical studies.

It is conceivable that, in extreme degrees of vascular damage, plasma transfusions may be useless, the plasma passing into the tissues or peritoneal cavity, producing only a transient decrease in the hematocrit and no improvement in peripheral circulation or protein level. It is also conceivable that an overdose of plasma may be given in instances of severe damage. The fluid may not be lost from the body but remain in the tissues and eventually return to the circulation through the lymphatics. The resulting increase in blood volume, as the capillaries recover, might be harmful.

**The Proper Use of Crystalloids**—As a result of profuse continued sweating, the blood chlorides may be moderately lowered, muscular tenderness, twitching, fibrillation and convulsions are found, as in heat cramps, and disappear with the restoration of chlorides. Simultaneously prerenal azotemia may occur, this also is common in sublethal shock. In those patients who are treated before the circulatory failure becomes irreversible, no permanent impairment of kidney function results. Crystalloids alone are usually adequate to correct this condition. The solution may be isotonic

or hypertonic saline with or without glucose isotonic solution of three chlorides, calcium chloride sodium lactate or whatever is necessary. The use of all fluids should be based on the laboratory data and the clinical condition of the patient<sup>8</sup>. In general the amounts given should be sufficient to restore the circulating blood volume and the blood constituents to normal. Because of the abnormal permeability of the capillaries and the resultant loss of fluids from the vascular tree repeated laboratory determinations should be made to be sure that the desired result has been obtained. If properly chosen and administered intravenous therapy is safe and may prove life saving.

**Other Methods of Treatment**—Eradication of the infection is made difficult because of the underlying pathology of the disease. The rickettsias are located intranuclearly, hence any therapeutic agent must pass through two cell membranes to reach the organism. It is probably for this reason that the serum recently introduced by Topping<sup>9</sup> has been found to be effective only in the first three days of the rash before a sufficient number of parasites have become established in cells. No specific chemotherapeutic agent is yet available. Quinine and intravenous neoarsphenamine dissolved in a 1:1,000 solution of aqueous metaphen have been used<sup>9</sup>. The sulfonamides have been ineffective and occasionally appear to make the patient worse<sup>4</sup>. Experimentally guinea pigs treated with sulfonamides died sooner than those which were not treated<sup>10</sup>. Penicillin has not been reported to be helpful.

The liver may be aided in the regeneration of plasma proteins by the intravenous administration of amino acids. The oral vitamin intake can be supplemented by the addition of niacin, ascorbic acid and thiamine hydrochloride to the intravenous injections. The requirement for these substances is increased many times in infections. Thiamine may help prevent shock and hence be especially helpful,<sup>11</sup> ascorbic acid may assist in maintaining the continuity of vascular endothelium.

**Treatment of Complications**—Pneumonia is a frequent complication. With the lowering of the blood osmotic pressure pulmonary congestion develops. The protein-containing edema fluid supplies a perfect culture medium for any pathologic organism which may be present in the upper respiratory tract. If the infecting organism does not respond to the sulfonamides or if these are felt to be contraindicated, x-ray therapy may safely be given,<sup>12</sup> as was done in case 1. Penicillin may be useful in such an instance, but we have not yet had an opportunity to try it.

Thrombophlebitis may result from damage to the endothelium of larger blood vessels. The reduction of circulating blood volume, the tendency toward peripheral circulatory failure and the stasis occurring in the presence of vascular damage favor the development of thrombosis. When this occurs in the leg, injection of procaine hydrochloride around the lumbar sympathetic

8. Wolff W. A. and Bauer J. T. The Control of Fluid Balance by Laboratory Methods. *S. Clin. North America* 22: 1759-1774 (Dec.) 1942.

9. Baker G. E. Rocky Mountain Spotted Fever. *J. A. M. A.* 122: 841-850 (July 24) 1943.

10. Topping N. H. Experimental Rocky Mountain Spotted Fever and Endemic Typhus Treated with Protosil or Sulfapyridine. *Pub. Health Rep.* 54: 1143-1147 (June 30) 1939.

11. Govier W. M. Studies in Shock Induced by Hemorrhage. III. The Correlation of Plasma Thiamine Content with Resistance to Shock in Dogs. *J. Pharmacol. & Exper. Therap.* 77: 40-49 (Jan.) 1943.

12. Rousseau J. P., Johnson W. N. and Harrell G. T. The Value of Roentgen Therapy in Pneumonia Which Fails to Respond to the Sulfonamides. *Radiology* 28: 281-289 (March) 1942.

5. Minot A. S. and Dodd Katherine. The Correction of Distorted Fluid Equilibrium in the Presence of Vascular Injury. *J. Pediat.* 17: 571-584 (Nov.) 1940.

6. Beard J. W. and Blalock Alfred. Experimental Shock. *Arch. Surg.* 22: 617-625 (Feb.) 1931.

7. This degree of vascular damage is comparable to that seen in irreversible shock.

ganglions may reduce the pain and prevent the aggravation of restlessness

For the severe headache, which may be accompanied by actual blurring of the optic disk because of cerebral edema, lumbar puncture to reduce the cerebrospinal fluid pressure may be helpful. Occasionally the changes in the blood supply to the brain may result in temporary mental or neurologic changes which disappear slowly over a period of months, as in case 1, or in more permanent damage to the brain, as in case 2.

Ileus, probably due to irritation of the central nervous system resulting from vascular injury, may prove extremely resistant to therapy, as in case 1. Heavy sedation with barbiturates, scopolamine or other drugs may be necessary. Occasionally as a result of damage to the central nervous system the patient may sleep with his eyes open and develop corneal ulcers. Instillations of some mild substance such as cod liver oil will prevent drying out of the cornea. Herpes simplex may be troublesome but rarely is dangerous. Because of the damage to the blood vessels and the resultant tendency toward anoxia and gangrene, constant and painstaking care must be given to the skin to prevent the development of decubitus ulcers.

#### SUMMARY

Rickettsial spotted fever is a severe systemic disease. It is rarely diagnosed until the skin rash has appeared. No specific therapeutic agent is available which is effective after the third day of the rash, hence therapy must be largely supportive.

Regulation of supportive therapy, based on the pathologic physiology of the disease, has not been attempted. Because of the vascular lesions, the loss of circulating body fluids, particularly protein, is analogous to that in burns, and peripheral circulatory collapse may develop if inadequate or improper treatment is given. The administration of saline solution or glucose without blood or plasma will aggravate rather than correct the abnormal physiology by washing out further protein.

Intravenous therapy, properly chosen, is not harmful, as it has been reported to be, but may prove life saving. It should include plasma and whole blood in adequate quantities in addition to glucose, salts, vitamins and amino acids. Careful laboratory control in choosing the type and quantity of parenteral or oral fluids to be administered is important.

The elevation of the blood nonprotein nitrogen and lowering of blood chlorides are connectable.

Edema of the subcutaneous tissues and lungs can be produced by excessive administration of crystalloids. The increase in water binding power of the circulating fluid produced by the administration of blood and plasma, pulls water out of the interstitial spaces and reduces the edema. The peripheral circulation can be supported and the blood pressure raised from shock levels.

The serum proteins are reduced, nitrogen excretion studies suggest that protein destruction is great. The impairment of liver function makes protein replacement therapy necessary for variable lengths of time.<sup>13</sup>

## THE PREOPERATIVE PATENT DUCTUS

M. J. SHAPIRO

Clinical Director, Minneapolis Children's Hospital  
MINNAPOLIS

Since it is now possible to correct patent ductus arteriosus by surgery it is of interest to determine when the correct diagnosis be made, to avoid unnecessarily to a major surgery. In those cases with this lesion the possibility of surgery is obvious. Since the first successful ligation by Gross in 1938 patients have been referred for surgical treatment, who on examination were found to have other types of congenital heart disease. Some do not have patent ductus arteriosus. The majority of patients who have come to surgery have not been diagnosed before they were of school age. In most instances they were referred to the heart clinic because of a murmur found during the school physical examination. Often the parents have been told by their pediatricians or pediatricians that the child "would grow out of the condition." It is for these reasons that the early diagnosis of patent ductus arteriosus is both timely and important.

In utero at term, the ductus arteriosus is of considerable size which acts as a by-pass of blood away from the fetal lungs and carries blood from the pulmonary artery to the aorta. In the newborn infant the ductus closes within a few days after the first breath is taken. Recent studies suggest that failure of closure in uncomplicated patent ductus arteriosus may result from lack of contraction of the blood, possibly because of obstruction of the anastomoses in the newborn infant.

Two types of patency of the ductus may occur. The duct may remain open as part of a serious congenital defect and may act as the only means of circulation in a heart seriously impaired by congenital defects. Such patients have unmistakable evidence of congenital heart disease. In the type of case which is curable by surgery the patent ductus is the only defect present. The heart is otherwise normally developed. Strictly speaking the uncomplicated isolated patency of the ductus is not a congenital lesion, as it occurs after birth and has nothing to do with developmental defects of the heart.

#### SEX AND AGE INCIDENCE

We have had under observation at the clinic for a variable number of years 62 patients in whom a definite diagnosis of uncomplicated patent ductus arteriosus could be made. Of these 62 patients 47 were females and 15 were males (table 2). In all series of cases reported this same preponderance of females is present. This is more than an accidental finding, but there seems to be no clear explanation for this sex preponderance.

When our patients were last examined 18 of them were up to 10 years of age, 27 were between 10 and 20 years of age, 10 between 20 and 30, 4 between

Read before the Section on Pediatrics at the Ninety-Fourth Annual Session of the American Medical Association, Chicago, June 14, 1944.  
1. Kennedy, J. A. and Clark, S. I. Observations on Physiological Reactions of Ductus Arteriosus. *Am. J. Physiol.* 136: 140-147 (March) 1942.

13. After this paper was written a similar study in cases of epidemic typhus was reported. Woodward, T. E. and Bland, E. F. Clinical Variations in Typhus Fever with Special Reference to the Cardiovascular System. *J. A. M. A.* 126: 287-293 (Sept. 30) 1944.



30 and 40, 1 between 40 and 50 and 2 between 50 and 60 years of age. The 3 patients over the age of 40 have since died. A study of the literature indicates that while patients over the age of 40 with patent ductus arteriosus are occasionally seen, it is true that such patients rarely live beyond this age. As previous studies have revealed,<sup>2</sup> most of them die either of subacute bacterial endarteritis or of congestive heart failure in early adulthood.

Thirty-five of our patients have been observed up to five years, 15 between 5 and 10 years and 12 between 10 and 20 years.

#### CLINICAL CHARACTERISTICS

Stunting of growth has been considered a typical finding in patients with patent ductus arteriosus. The retardation of growth results from the shunting of blood from the periphery to the pulmonary circulation. However, in my experience stunting of growth is not always found. Some of the more serious cases with definite evidence of cardiac strain have shown no abnormality of growth. Thirty-three of the patients (table 3) have been normally developed, 23 were undersized and 6 were obese.

On physical examination the most characteristic finding in this lesion is the so-called machinery murmur, which is heard over the first or second interspace just to the left of the sternum. The murmur is pathognomonic and, once heard, is easily recognized. The murmur is continuous throughout the heart cycle, and

TABLE 1—*Electrocardiographic Observations*

|                               |    |
|-------------------------------|----|
| Normal                        | 52 |
| Left axis deviation (slight)  | 5  |
| Right axis deviation (slight) | 1  |
| Other changes                 | 4  |

within the murmur an accentuated pulmonic second sound is usually heard. The murmur leads up to the accentuated second sound and then fades away during diastole.

With our present knowledge it is my feeling that a diagnosis of patent ductus arteriosus should not be made unless this characteristic murmur is present. A study of the older literature will reveal the statement that patent ductus arteriosus can occur in patients in whom only a systolic murmur is heard. In my experience all of our patients who have been studied either at the operating table or at postmortem and in whom the diagnosis has been verified have had this characteristic murmur with 1 exception, and in this case no murmur at all was heard. In our series 61 patients had this murmur, while in 1 instance already mentioned in a patient 46 years of age in whom a very large open ductus was found at postmortem no murmur was found.

A thrill, palpable over the point of maximum intensity of the murmur, is usually present. Fifty-three of our patients had this thrill. In 9 instances no thrill was palpable.

The peripheral vascular findings will vary in accordance with the size of the ductus. In patients in whom the ductus is small the pulse pressure may be normal, however, in those individuals in whom there is any

considerable leak through the open ductus the peripheral vascular findings will be much the same as those found in aortic regurgitation: increased pulse pressure, pistol-shot femorals, capillary pulse and the like. In 14 of our patients the pulse pressure was found normal and

TABLE 2—*Patients Under Observation*

|                                    |    |
|------------------------------------|----|
| Cases studied                      |    |
| Females                            | 47 |
| Males                              | 15 |
| Total                              | 62 |
| Age of patients when last examined |    |
| 0 to 10                            | 18 |
| 10 to 20                           | 27 |
| 20 to 30                           | 10 |
| 30 to 40                           | 4  |
| 40 to 50                           | 1  |
| 50 to 60                           | 2  |
| Number of years followed           |    |
| 0 to 5                             | 35 |
| 5 to 10                            | 15 |
| 10 to 20                           | 12 |

in 48 there was a definite increase in pulse pressure, in these the accompanying characteristic peripheral vascular findings were noted.

#### ELECTROCARDIOGRAPHIC FINDINGS

The electrocardiogram in patent ductus arteriosus is important from a negative point of view. In the uncomplicated lesion the electrocardiogram is within normal limits. Occasionally one finds a slight right or slight left axis deviation, and there may also be present slight slurring in one or two leads. However, if a pronounced right axis deviation is found the diagnosis of an uncomplicated patent ductus arteriosus should be seriously questioned. This is also essentially true when a pronounced left axis deviation is found. In our series 52 patients had normal findings (table 1), 5 had a slight left axis deviation, 1 had slight right axis deviation, and 4 had other slight changes.

TABLE 3—*Clinical Characteristics of 62 Patients with Patent Ductus Arteriosus*

|                  |    |
|------------------|----|
| Nutrition        |    |
| Normal           | 33 |
| Stunted          | 23 |
| Obese            | 6  |
| Murmur           |    |
| Machinery murmur | 61 |
| No murmur        | 1  |
| Thrill           |    |
| Present          | 53 |
| Absent           | 9  |
| Pulse pressure   |    |
| Normal           | 14 |
| High             | 48 |

#### X-RAY FINDINGS

Roentgen studies are of great value, not only in making the diagnosis, but also in observing the progress of the individual case. Much can be learned in regard to the severity of the leak and the amount of cardiac strain present by x-ray observation. In patients with small ducts the heart may be within normal limits,

2. Shapiro M. J. and Keys Ancel. The Prognosis of Untreated Patent Ductus Arteriosus and the Results of Surgical Intervention. *Am J M Sc* 206: 174-183 (Aug.) 1943.

ganglions may reduce the pain and prevent the aggravation of restlessness

For the severe headache, which may be accompanied by actual blurring of the optic disk because of cerebral edema, lumbar puncture to reduce the cerebrospinal fluid pressure may be helpful. Occasionally the changes in the blood supply to the brain may result in temporary mental or neurologic changes which disappear slowly over a period of months, as in case 1, or in more permanent damage to the brain, as in case 2.

Hiccup, probably due to irritation of the central nervous system resulting from vascular injury, may prove extremely resistant to therapy, as in case 1. Heavy sedation with barbiturates, scopolamine or other drugs may be necessary. Occasionally, as a result of damage to the central nervous system, the patient may sleep with his eyes open and develop corneal ulcers. Instillations of some mild substance such as cod liver oil will prevent drying out of the cornea. Herpes simplex may be troublesome but rarely is dangerous. Because of the damage to the blood vessels and the resultant tendency toward anoxia and gangrene, constant and painstaking care must be given to the skin to prevent the development of decubitus ulcers.

#### SUMMARY

Rickettsial spotted fever is a severe systemic disease. It is rarely diagnosed until the skin rash has appeared. No specific therapeutic agent is available which is effective after the third day of the rash, hence therapy must be largely supportive.

Regulation of supportive therapy, based on the pathologic physiology of the disease, has not been attempted. Because of the vascular lesions, the loss of circulating body fluids, particularly protein, is analogous to that in burns, and peripheral circulatory collapse may develop if inadequate or improper treatment is given. The administration of saline solution or glucose without blood or plasma will aggravate rather than correct the abnormal physiology by washing out further protein.

Intravenous therapy, properly chosen, is not harmful, as it has been reported to be, but may prove life saving. It should include plasma and whole blood in adequate quantities in addition to glucose, salts, vitamins and amino acids. Careful laboratory control in choosing the type and quantity of parenteral or oral fluids to be administered is important.

The elevation of the blood nonprotein nitrogen and lowering of blood chlorides are connectable.

Edema of the subcutaneous tissues and lungs can be produced by excessive administration of crystalloids. The increase in water binding power of the circulating fluid produced by the administration of blood and plasma, pulls water out of the interstitial spaces and reduces the edema. The peripheral circulation can be supported and the blood pressure raised from shock levels.

The serum proteins are reduced, nitrogen excretion studies suggest that protein destruction is great. The impairment of liver function makes protein replacement therapy necessary for variable lengths of time.<sup>13</sup>

<sup>13</sup> After this paper was written a similar study in cases of epidemic typhus was reported. Woodward T. E. and Bland E. F. Clinical Observations in Typhus Fever with Special Reference to the Cardiovascular System. *J. A. M. A.* 126: 287-293 (Sept. 30) 1944.

## THE PREOPERATIVE DIAGNOSIS OF PATENT DUCTUS ARTERIOSUS

M. J. SHAPIRO, MD

Clinical Director Minneapolis Children's Heart Clinic and Hospital  
MINNEAPOLIS

Since it is now possible to cure a patent ductus arteriosus by surgery it is of utmost importance that the correct diagnosis be made, lest we subject patients unnecessarily to a major surgical procedure or deny those with this lesion the possibility of surgical cure. Since the first successful ligation of a patent ductus by Gross in 1938 patients have been referred to me for surgical treatment, who, on examination, were found to have other types of congenital heart lesions but did not have patent ductus arteriosus. By far the great majority of patients who have come under my observation have not been diagnosed correctly until they were of school age. In most instances these patients were referred to the heart clinic because a murmur was found during the school physical examination. Too often the parents have been told by their family physicians or pediatricians that the child "would outgrow the condition." It is for these reasons that a discussion of the various aspects of the diagnosis of patent ductus arteriosus is both timely and important.

In utero at term, the ductus arteriosus is a vessel of considerable size which acts as a by-pass directing the blood away from the fetal lungs and carrying blood from the pulmonary artery to the aorta. In the normal newborn infant the ductus closes within a few minutes after the first breath is taken. Recent studies<sup>1</sup> suggest that failure of closure in uncomplicated cases of patent ductus arteriosus may result from lack of oxygenation of the blood, possibly because of obstruction of the air passages in the newborn infant.

Two types of patency of the ductus may occur. The duct may remain open as part of a serious developmental defect and may act as the only means of carrying on circulation in a heart seriously impaired by congenital defects. Such patients have unmistakable evidence of congenital heart disease. In the type of case which is curable by surgery the patent ductus is the only defect present. The heart is otherwise normally developed. Strictly speaking the uncomplicated isolated patency of the ductus is not a congenital lesion, as it occurs after birth and has nothing to do with developmental defects of the heart.

#### SEX AND AGE INCIDENCE

We have had under observation at the clinic for a variable number of years 62 patients in whom a definite diagnosis of uncomplicated patent ductus arteriosus could be made. Of these 62 patients 47 were females and 15 were males (table 2). In all series of cases reported this same preponderance of females is present. This is more than an accidental finding, but there seems to be no clearcut explanation for this sex preponderance.

When our patients were last examined 18 of them were up to 10 years of age, 27 were between 10 and 20 years of age, 10 between 20 and 30, 4 between

Read before the Section on Pediatrics at the Ninety Fourth Annual Session of the American Medical Association, Chicago, June 14, 1944.  
<sup>1</sup> Kennedy J. A. and Clark S. J. Observations on Physiological Reactions of Ductus Arteriosus. *Am. J. Physiol.* 136: 140-147 (March) 1942.

30 and 40, 1 between 40 and 50 and 2 between 50 and 60 years of age. The 3 patients over the age of 40 have since died. A study of the literature indicates that while patients over the age of 40 with patent ductus arteriosus are occasionally seen, it is true that such patients rarely live beyond this age. As previous studies have revealed,<sup>2</sup> most of them die either of subacute bacterial endarteritis or of congestive heart failure in early adulthood.

Thirty-five of our patients have been observed up to five years, 15 between 5 and 10 years and 12 between 10 and 20 years.

#### CLINICAL CHARACTERISTICS

Stunting of growth has been considered a typical finding in patients with patent ductus arteriosus. The retardation of growth results from the shunting of blood from the periphery to the pulmonary circulation. However, in my experience stunting of growth is not always found. Some of the more serious cases with definite evidence of cardiac strain have shown no abnormality of growth. Thirty-three of the patients (table 3) have been normally developed, 23 were undersized and 6 were obese.

On physical examination the most characteristic finding in this lesion is the so-called machinery murmur, which is heard over the first or second interspace just to the left of the sternum. The murmur is pathognomonic and, once heard, is easily recognized. The murmur is continuous throughout the heart cycle, and

TABLE 1—*Electrocardiographic Observations*

|                               |    |
|-------------------------------|----|
| Normal                        | 51 |
| Left axis deviation (slight)  | 5  |
| Right axis deviation (slight) | 1  |
| Other changes                 | 4  |

within the murmur an accentuated pulmonic second sound is usually heard. The murmur leads up to the accentuated second sound and then fades away during diastole.

With our present knowledge it is my feeling that a diagnosis of patent ductus arteriosus should not be made unless this characteristic murmur is present. A study of the older literature will reveal the statement that patent ductus arteriosus can occur in patients in whom only a systolic murmur is heard. In my experience all of our patients who have been studied either at the operating table or at postmortem and in whom the diagnosis has been verified have had this characteristic murmur with 1 exception, and in this case no murmur at all was heard. In our series 61 patients had this murmur, while in 1 instance already mentioned in a patient 46 years of age in whom a very large open ductus was found at postmortem no murmur was found.

A thrill, palpable over the point of maximum intensity of the murmur, is usually present. Fifty-three of our patients had this thrill. In 9 instances no thrill was palpable.

The peripheral vascular findings will vary in accordance with the size of the ductus. In patients in whom the ductus is small the pulse pressure may be normal, however, in those individuals in whom there is any

considerable leak through the open ductus the peripheral vascular findings will be much the same as those found in aortic regurgitation: increased pulse pressure, pistol-shot femorals, capillary pulse, and the like. In 14 of our patients the pulse pressure was found normal and

TABLE 2—*Patients Under Observation*

|                                    |    |
|------------------------------------|----|
| Cases studied                      |    |
| Females                            | 47 |
| Males                              | 15 |
| Total                              | 62 |
| Age of patients when last examined |    |
| 0 to 10                            | 15 |
| 10 to 20                           | 27 |
| 20 to 30                           | 10 |
| 30 to 40                           | 4  |
| 40 to 50                           | 1  |
| 50 to 60                           | 2  |
| Number of years followed           |    |
| 0 to 5                             | 35 |
| 5 to 10                            | 15 |
| 10 to 20                           | 12 |

in 48 there was a definite increase in pulse pressure; in these the accompanying characteristic peripheral vascular findings were noted.

#### ELECTROCARDIOGRAPHIC FINDINGS

The electrocardiogram in patent ductus arteriosus is important from a negative point of view. In the uncomplicated lesion the electrocardiogram is within normal limits. Occasionally one finds a slight right or slight left axis deviation, and there may also be present slight slurring in one or two leads. However if a pronounced right axis deviation is found the diagnosis of an uncomplicated patent ductus arteriosus should be seriously questioned. This is also essentially true when a pronounced left axis deviation is found. In our series 52 patients had normal findings (table 1), 5 had a slight left axis deviation, 1 had slight right axis deviation, and 4 had other slight changes.

TABLE 3—*Clinical Characteristics of 62 Patients with Patent Ductus Arteriosus*

|                  |    |
|------------------|----|
| Nutrition        |    |
| Normal           | 33 |
| Stunted          | 23 |
| Obese            | 6  |
| Murmur           |    |
| Machinery murmur | 61 |
| No murmur        | 1  |
| Thrill           |    |
| Present          | 53 |
| Absent           | 9  |
| Pulse pressure   |    |
| Normal           | 14 |
| High             | 48 |

#### RAY FINDINGS

Roentgen studies are of great value, not only in making the diagnosis, but also in observing the progress of the individual case. Much can be learned in regard to the severity of the leak and the amount of cardiac strain present by x-ray observation. In patients with small ducts the heart may be within normal limits

2. Shapiro M J and Keys Ancel. The Prognosis of Untreated Patent Ductus Arteriosus and the Results of Surgical Intervention. Am J M Sc 206: 174-183 (Aug) 1941.

to size. There is almost always a slight enlargement of the pulmonary trunk. The enlargement of the pulmonary trunk may be apparent only on fluoroscopy or by obtaining films in oblique views. In patients with larger ducts and in whom there is considerable leak from the aorta into the pulmonary artery there will be found enlargement of both left and right ventricles as well as moderate to pronounced enlargement of the pulmonary trunk. The branches of the pulmonary artery in the lungs will also be enlarged. On fluoroscopy these pulmonary branches will be seen to pulsate.

In 22 of our patients (table 4) no enlargement of the heart was discovered, 21 had slight enlargement, 15 had moderate enlargement and 4 had pronounced enlargement of the heart. In 10 instances no evidence of enlargement of the pulmonary artery could be made out, 36 had slight enlargement, 15 moderate and 1 pronounced. In 36 instances there was no enlargement of the pulmonary branches, 13 slight, 12 moderate, and 1 pronounced.

TABLE 4—X-Ray Observations

|            | Enlargement of Heart | Enlargement of Pulmonary Artery | Enlargement of Pulmonary Vessels |
|------------|----------------------|---------------------------------|----------------------------------|
| None       | 22                   | 10                              | 36                               |
| Slight     | 21                   | 36                              | 13                               |
| Moderate   | 15                   | 15                              | 12                               |
| Pronounced | 4                    | 1                               | 1                                |

TABLE 5—Diagnostic Verification

|                             | No. of Cases | Errors |
|-----------------------------|--------------|--------|
| By operation                | 19           | 0      |
| By postmortem (3 operative) | 7            | 0      |

#### DIAGNOSTIC VERIFICATION

We have had the opportunity of checking our diagnosis in 23 instances (table 5). In 19 patients who have been operated on a patent ductus was found in each instance. Three of these patients died and were further studied post mortem. In the 4 patients who died of this lesion not operated on and were studied post mortem, the diagnosis was correct in each instance, so that up to the present writing no errors in diagnosis have been made in our clinic.

#### DIFFERENTIAL DIAGNOSIS

There are several cardiac conditions which may be confused with patent ductus arteriosus. One of the most important, especially in infants and young children, is the so-called venous hum. This is also a continuous murmur heard over the base of the heart. It is usually not as loud as the characteristic machinery murmur. The venous hum is generated in the vessels of the neck, may be heard over the base of the heart and not infrequently is heard as far down as the apex. The murmur can be obliterated by moving the child's head from side to side or by applying pressure with the finger on the neck vessels. Of course none of the other findings of patent ductus arteriosus will be present.

Occasionally the diastolic murmur of aortic regurgitation will simulate the machinery murmur. In aortic

regurgitation, however, there is invariably a pause between the systolic and diastolic murmurs. These murmurs are usually heard lower down along the left border of the sternum. The blood pressure findings may be exactly the same as in patent ductus arteriosus. X-ray studies, however, will reveal no enlargement of the pulmonary trunk or vessels in the lungs. The enlargement of the heart in aortic regurgitation will, of course, involve primarily the left ventricle, producing a contour which is distinctly different from that found in patent ductus arteriosus. The electrocardiograph in well developed aortic regurgitation will reveal a pronounced left axis deviation.

Patients with interauricular septal defect commonly exhibit X-ray changes which simulate the findings in patent ductus arteriosus. On fluoroscopy the contour of the heart may suggest that found in patent ductus arteriosus, however, in most instances the heart is considerably larger and more rounded in patients with interauricular septal defects. The pulmonary vessels are also usually much larger and pulsate much more in the septal defect. The leak in auricular defect is intracardiac in contrast to that in patent ductus. The peripheral vascular findings in interauricular septal defect are normal, in contrast to the characteristic findings in patent ductus arteriosus. There should be no difficulty in making a differential diagnosis between these two lesions.

In patients with large defects of the interventricular septum, the shunt from left to right may be sufficient to produce enlargement of the pulmonary artery and its branches. The contour of the heart may simulate that in patent ductus arteriosus. In the ventricular septal defect the murmur is not of the machinery type, is heard best at the lower end of the sternum and is not accompanied by the characteristic peripheral vascular findings. The systolic murmur heard over the second left interspace in such instances is produced by the enlarged pulmonary artery and has none of the characteristics of the machinery murmur. Various other types of congenital heart lesions are commonly accompanied by enlargement of the pulmonary artery. Such localized increase in size of the pulmonary trunk in itself is not enough to make a diagnosis of a patent ductus.

#### DIAGNOSTIC CRITERIA

The diagnostic criteria of patent ductus arteriosus may be summarized as follows:

1. Machinery murmur
2. Thrill in pulmonary area
3. Enlarged pulmonary artery
4. Enlarged and pulsating pulmonary vessels
5. Enlarged heart
6. Increased pulse pressure
7. Stunting of growth
8. Absence of cyanosis and clubbing of fingers
9. Normal electrocardiogram
10. History of heart disease from early childhood

#### CONCLUSIONS

1. The diagnosis of patent ductus arteriosus can be made without error.
2. Patients should not be referred for surgical treatment unless they show the characteristic machinery

murmur The only exception to the rule is the occasional patient with a large patent ductus who may exhibit no murmurs

3 Patients with cyanosis and clubbing of the fingers do not have uncomplicated patent ductus They cannot be treated surgically

4 Pronounced electrocardiographic changes are not part of the picture of simple patent ductus arteriosus

#### ABSTRACT OF DISCUSSION

DR HARRY VESELL, New York In reference to the murmur in patent ductus arteriosus, in the past several years it has been the general opinion of those who have reported on this subject that the continuous murmur is essential to the diagnosis I have seen 3 cases in which only the systolic murmur was present These cases presented the other clinical and x-ray evidence of patent ductus arteriosus In 1 of them in addition there was subacute bacterial endocarditis, and operation revealed a wide ductus arteriosus but a short one, almost just a fistula A test I have found of some use in helping to confirm the diagnosis is the one described by Bohn It is the determination of the blood pressure immediately after exercise With the blood pressure cuff on the arm, Bohn has a patient do fifteen squats, and within one minute after the end of this exercise he has noted the systolic pressure go up slightly, but the sign he considered pathognomonic is the lowering of the diastolic pressure, which I have seen go down from 60 to 30 or 20 I have found the sign not positive in 1 case in which there was a patent interauricular septum, the diagnosis being proved by angiocardiology The test has also been confirmed by Lewicki The first case of subacute bacterial endocarditis on a patent ductus with recovery following operation was reported by Dr Turoff and myself in 1940 Recent follow-up of these earliest cases reveals that recovery has occurred and four and one half years after the operation the patients are working

DR M J SHAPIRO, Minneapolis I have not seen a proved case of suspected patent ductus arteriosus with only a systolic murmur I shall still insist on the presence of the typical machinery murmur before a definite diagnosis is made This is particularly true if surgical treatment is being considered The results of surgery have not all been good The mere making of a correct diagnosis of patent ductus arteriosus is not enough indication for surgical intervention Two of our patients who were operated on developed subacute bacterial endarteritis after surgery One of them died and the other one has been treated with penicillin and apparently has recovered from his blood stream infection Until we have accurate statistical data on the effects of surgery, it would be wise to operate on only those patients who show some evidence of cardiac strain or stunting of growth It is conceivable that in the near future, with the perfection of this surgical procedure, all patients with patent ductus arteriosus might be subjected to surgery, even as a prophylactic measure

**Improvements in Obstetrics During the Eighteenth Century**—With the publication of Mauriceau's text on obstetrics in 1668, this branch of medicine was well on the way to a specialty Physicians rather than midwives assumed the leading role and the various medical schools established departments in obstetrics France, still a leader in the field, produced several able midwives, among whom were Angelique Marguerite Boursier de Coudray and Marie Louise Lachapelle At the beginning of the century several outstanding obstetricians, who had made a mark in the last decades of the preceding century were still active—G Mauquest de la Motte (1655-1737) Hendrik van Deventer (1651-1724), Johann van Hoorn (1661-1721) and Jean Palfyn (1650-1730)—Ricci, James C The Genealogy Gynecology, Philadelphia, Blakiston Company 1943

## RECENT TRENDS OF LEPROSY IN THE UNITED STATES

REPORT OF SEVEN HUNDRED CASES AT THE NATIONAL LEPROSARIUM

RALPH HOPKINS, MD

Consulting Dermatologist United States Marine Hospital Carville La,  
and Emeritus Professor of Diseases of the Skin Tulane University  
of Louisiana School of Medicine

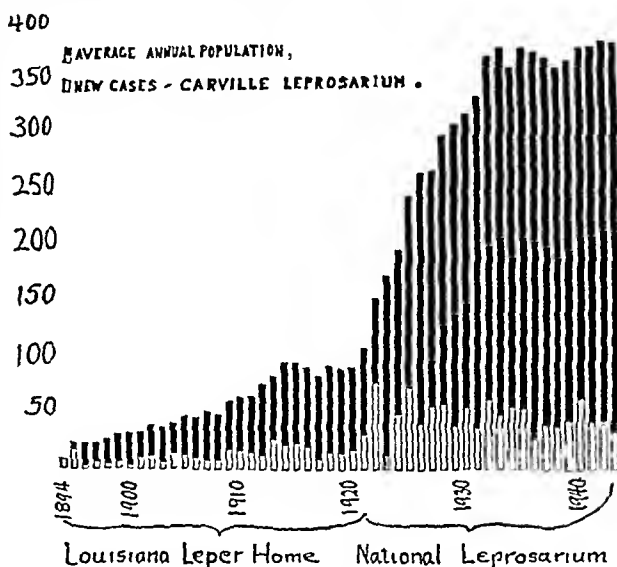
NEW ORLEANS

AND

G H FAGET MD

Medical Officer in Charge United States Marine Hospital  
CARVILLE, LA

In June 1928 a report was read to the Section on Dermatology and Syphilology of the American Medical Association by Dr Oswald E Denney, then officer in charge of the National Leprosarium<sup>1</sup> In that statistical report special reference was made to the epidemiology of leprosy in the United States, and the



Yearly admissions of new cases and average daily population for fifty years

trend of the disease in other respects was noted After a decade and a half this supplemental report is made to show in what respects the present trends are in conformity with those reported fifteen years ago and what new developments have occurred

#### INCIDENCE

The number of patients admitted to the National Leprosarium from July 1928 to January 1944 has been 723 This number can by no means be taken as an exact index of the total number of individuals afflicted with leprosy in the United States, nor does the number admitted from any particular geographic area indicate accurately the comparative prevalence of leprosy in that area However, the large number of cases admitted continuously over long periods of time from some localities do show in a general way a trend toward

Authority given for publication by the Surgeon General of the U S Public Health Service Washington D C

Owing to lack of space this article has been abbreviated for publication in THE JOURNAL The complete article appears in the authors reprints 1 Hopkins R and Denney O E Leprosy in the United States A Statistical Study of Seven Hundred Cases in the National Leprosarium J A M A 92 191 (Jan 19) 1929

is significant, as during that time many opportunities for spreading the infection, especially in the home, can be presumed to have existed

#### RACE

Of the inmates of the Leprosarium 577 were of the white race, 66 were Negroes, 40 were Filipinos, 10 were Hawaiians and 30 were of the yellow race

A comparison in native born Louisianians of the incidence in the Negro and the white races shows that there were 34 Negroes and 142 white persons admitted to the Leprosarium during the fifteen year period. The total population of Louisiana in 1940 was 2,363,880. The Negro population amounted to 849,303 and the white to 1,484,467.

The percentage of Negroes in the entire Louisiana population, therefore, was 37.1. The percentage of Negroes admitted to the Leprosarium from Louisiana was 19.3. It seems from these figures that there are approximately half as many Negroes with leprosy in the state in comparison with white persons as might be expected from the ratio of the races to each other in the entire population.

TABLE 7—Types of the Disease

|             | July 1928 to January 1944 |            | 1894 to 1928 |
|-------------|---------------------------|------------|--------------|
|             | Number of Patients        | Percentage | Percentage   |
| Mixed       | 379                       | 45.5       | 49.9         |
| Lepromatous | 908                       | 28.6       | 39.1         |
| Neural      | 155                       | 21.5       | 11.0         |
| Tuberculoid | 31                        | 4.3        |              |
|             | 723                       | 100.0      | 100.0        |

#### SEX

In the report made in 1928 there were 72.3 per cent males and 27.7 per cent females admitted to the Leprosarium. This percentage is approximately the same as that from almost all countries in which leprosy has been reported, and the incidence in males and females admitted to the National Leprosarium since 1928 is in nearly the same ratio; there were 499 males and 224 females admitted during the last fifteen years, a proportion again of more than two males to one female.

At variance with the almost universal rule of two male leprosy patients to one female patient is the exception found among the native born Negroes, of whom there were admitted 25 men and 27 women. Native born admissions of all races other than Negro showed 246 males and 122 females.

No satisfactory explanation is offered for the almost universal preponderance of males over females nor for the exception found in regard to the Negro race. A correct explanation perhaps would add important knowledge concerning the epidemiology of leprosy. The number of our cases is so small that conclusions should not be drawn from them, but similar findings of an equal incidence in the sexes have been reported by Saunders and Guinto<sup>6</sup> in the

exceptions cited to the rule of incidence in the different sexes have all occurred either in foreign countries with predominating Negro populations or in the United States in the Negro race.

#### TYPES OF LEPROSY

For the purpose of this report, the classification of cases according to type is given as recorded at the time of admission of the patient.

The recognition of tuberculoid leprosy as a separate type was adopted at the Leprosarium only five or six years ago, and consequently cases reported of this type are less in number and not comparable numerically with those of the other types which are reported for a period of fifteen years.

Table 7 shows the number of cases of each type admitted during the last fifteen years. Percentages of each type for this period are also calculated for comparison with the percentages reported in 1928. In both reports the percentage of cases of the mixed type almost equals the total percentage of lepromatous and neural cases, and in both reports are found a greater percentage of lepromatous than of neural cases.

#### FAMILY HISTORY OF LEPROSY

Patients admitted to the Leprosarium are usually reticent about disclosing their family relationship because of the fear that, should the information that leprosy existed in their families become generally known, the public knowledge would be detrimental to all their relatives. To avoid this cruel publicity<sup>7</sup> patients in the Leprosarium often live under assumed names, and complete family histories are not always given. Such information as has been obtained, however, is not meager and leads to the conclusion often stated that leprosy is largely a family disease, occurring in closely related persons to an extent that suggests that either there is an inheritable familial predisposition or that the intimate contacts in family life account for the familial incidence. It seems to us probable that both factors play a part in the transmission of leprosy in families.

There were 147 patients with a family history of leprosy. Of these 74 had only one other member of the family afflicted with the disease, 42 had two, 17 had three, 11 had 4, 2 had five and 1 had eight other members of his family with leprosy. The family relationship of the contacts to the patients included 25 fathers, 24 mothers, 2 fathers-in-law, 64 brothers, 36 sisters, 4 sisters-in-law, 1 brother-in-law, 23 uncles, 9 aunts, 19 cousins and 7 grandparents.

In addition to the foregoing there were 24 children, 2 stepsons, 13 nephews and nieces and 7 grandchildren. For statistical purposes these cannot properly be considered as probable sources of family transmission of the disease, though the children and grandchildren might be considered from the point of view of hereditary predisposition.

Besides these there were 16 husbands and wives reported with leprosy, but these do not all indicate marital transmission, as, in all instances except two, persons had the disease prior to marriage. In only a few instances of marital transmission, even prolonged and intimate, was the transmission of leprosy observed. From this view that leprosy is most



ected in childhood is accepted, and if it is an inherited predisposition plays an important role in transmission, the comparatively few cases of conjugal infection is readily

#### OCCUPATION

of patients previous to their admission one hundred and thirty different occupations occurred from common laborer to physician were in the unskilled labor group, but not larger than would be expected in a preponderance in normal community group. There were 123 patients in the collar group. As was stated in a previous report, the majority of patients in the stages in social status, education, and occupation were not insured immunity against

#### MANIFESTATIONS

those in which a clear history of the disease is included in the statistics

was recalled as a macule or papule. The situation of the initial lesions was as follows: the face in 52 patients, the arms in 27, the elbows in 16, the legs in 47, the buttocks in 16, and the ankles or feet in 7. The lesions were more widely distributed in the face and buttocks than on the arms and legs, and less generalized on the trunk.

Primary lesions by 193 patients, the nose being affected in 90 patients, the body in 8, the knee by 1, the elbows by 5

as first lesions on the face and limbs on body and on the feet and areas by

a first complaint of numbness in the hands and feet by 23 and

symptom by 3 of the feet

There were 4 instances in which the patients reported a paresthesia or peculiar crawling sensation beneath the skin as the first symptom.

Painful neuritis occurring in the limbs was stated to be the earliest indication of leprosy by 4 patients. Loss or thinning of the eyebrows was noted as the first evidence by 4 patients. Two patients reported anhidrosis of the hands and 1 anhidrosis of the feet as the initial manifestation.

There were 26 patients who recalled a chronic nasal catarrh with bleeding, discharge, crust formation and blockage of the nares as their first symptoms. Chills and fever with the outcropping of the lesions similar to those of erythema nodosum was the mode of onset reported by 12 patients.

There is no evidence in the histories of the sites of the initial macules and nodules that would indicate that any one region of the body was the probable port of entry for the infection. The diverse areas enumerated in which the first lesions appeared were the same as those for which the disease showed a predilection as it became more advanced and lesions increased in size and number.

TABLE 8—Positive Blood Serologic Reactions in Leprosy

|             | Kolmer              |                            |                             | Kahn                |                            |                             | Combined            |                            |                             |
|-------------|---------------------|----------------------------|-----------------------------|---------------------|----------------------------|-----------------------------|---------------------|----------------------------|-----------------------------|
|             | Num<br>ber<br>Cases | Num<br>ber<br>Posi<br>tive | Per<br>Cent<br>Posi<br>tive | Num<br>ber<br>Cases | Num<br>ber<br>Posi<br>tive | Per<br>Cent<br>Posi<br>tive | Num<br>ber<br>Cases | Num<br>ber<br>Posi<br>tive | Per<br>Cent<br>Posi<br>tive |
| Mixed       | 312                 | 151                        | 48.4                        | 314                 | 153                        | 48.7                        | 321                 | 151                        | 46.4                        |
| Lepromatous | 203                 | 110                        | 54.6                        | 199                 | 110                        | 55.3                        | 206                 | 124                        | 60.2                        |
| Neural      | 145                 | 15                         | 11.8                        | 150                 | 21                         | 14.0                        | 152                 | 27                         | 17.7                        |
| Tuberculoid | 30                  | 2                          | 6.7                         | 30                  | 3                          | 10.0                        | 31                  | 4                          | 12.9                        |
| Total       | 690                 | 281                        | 40.8                        | 693                 | 287                        | 41.4                        | 710                 | 336                        | 47.3                        |

#### SEROLOGIC TESTS

There is no serologic test of value in the diagnosis of leprosy but tests intended for the detection of syphilis yield interesting results. That the Wassermann complement fixation reaction and the Kahn precipitation test are frequently positive in leprosy in the absence of syphilis is not sufficiently well recognized by the medical profession.<sup>9</sup> It is not generally known that the serologic reaction is found to vary widely with the different types of the disease.

Table 8 gives the results in the Kolmer and Kahn reactions in different types of leprosy in the group of patients under study. The Kolmer and Kahn tests through long years of experience have been adopted in this institution because they were found to give the least number of false positive reactions in leprosy.

There are 178 patients in whom two or six Kolmer and Kahn tests were made during the course of institutional treatment. All tests were run by the same laboratory technician. It was observed that in the majority of cases the tests remained unchanged throughout the course of the disease, but in 69 patients there was either an increase or a decrease in the degree of the reaction in one or both serologic tests.

It is significant that these changes in serum reaction are closely correlated to changes in the clinical

<sup>9</sup> Fox was one of the first in this country to point out that the Wassermann reaction is frequently obtained in cases of leprosy with no history or symptom of syphilis. Fox H. The Wassermann Complement Fixation Test in Leprosy. *Am J Hyg* 1910.

the spread of the disease in those places, while the fact that from other regions few or no cases have been sent to the Leprosarium may be interpreted as showing that in other communities leprosy seldom, if ever, has occurred and that when it did occur it has shown no tendency to spread

The accompanying chart illustrates graphically the yearly admissions of new cases and the average daily population for each year during the fifty years of existence of a leprosarium at Carville, La

Table 1 shows the most notable shift in trend has been the increase in the number of cases from Texas, from which more cases have been admitted for the last period than from any other state and from which the annual

TABLE 1—States from Which Patients Were Admitted

|                      | 1921 to 1928<br>Report |                     | July 1928 to<br>January 1944 Report |                     |
|----------------------|------------------------|---------------------|-------------------------------------|---------------------|
|                      | Admis-<br>sions        | Average<br>per Year | Admis-<br>sions                     | Average<br>per Year |
| Alabama              | 2                      | 0.08                | 2                                   | 0.13                |
| Arkansas             | 2                      | 0.25                | 0                                   | 0.00                |
| Arizona              | 1                      | 0.14                | 6                                   | 0.40                |
| California           | 73                     | 10.71               | 132                                 | 8.80                |
| Colorado             | 3                      | 0.42                | 5                                   | 0.33                |
| Connecticut          | 1                      | 0.14                | 0                                   | 0.00                |
| District of Columbia | 0                      | 0.00                | 3                                   | 0.20                |
| Florida              | 34                     | 4.85                | 49                                  | 3.25                |
| Georgia              | 3                      | 0.42                | 2                                   | 0.14                |
| Idaho                | 1                      | 0.14                | 0                                   | 0.00                |
| Illinois             | 11                     | 1.57                | 17                                  | 1.13                |
| Indiana              | 0                      | 0.00                | 6                                   | 0.40                |
| Iowa                 | 1                      | 0.14                | 0                                   | 0.00                |
| Kansas               | 1                      | 0.14                | 2                                   | 0.06                |
| Kentucky             | 1                      | 0.14                | 2                                   | 0.13                |
| Louisiana            | 423*                   | 12.44               | 173                                 | 11.55               |
| Massachusetts        | 17                     | 2.42                | 6                                   | 0.40                |
| Maryland             | 2                      | 0.42                | 2                                   | 0.13                |
| Michigan             | 8                      | 1.14                | 7                                   | 0.46                |
| Minnesota            | 6                      | 0.86                | 4                                   | 0.13                |
| Mississippi          | 8                      | 1.14                | 5                                   | 0.33                |
| Missouri             | 9                      | 1.28                | 3                                   | 0.20                |
| Montana              | 3                      | 0.42                | 0                                   | 0.00                |
| Nebraska             | 1                      | 0.14                | 1                                   | 0.06                |
| New Jersey           | 5                      | 0.71                | 3                                   | 0.20                |
| New Mexico           | 0                      | 0.00                | 1                                   | 0.06                |
| New York             | 41                     | 5.85                | 79                                  | 5.27                |
| North Carolina       | 1                      | 0.14                | 0                                   | 0.00                |
| North Dakota         | 1                      | 0.14                | 0                                   | 0.00                |
| Ohio                 | 2                      | 0.28                | 5                                   | 0.33                |
| Oklahoma             | 1                      | 0.14                | 3                                   | 0.20                |
| Oregon               | 4                      | 0.57                | 2                                   | 0.13                |
| Pennsylvania         | 3                      | 0.42                | 8                                   | 0.53                |
| Rhode Island         | 0                      | 0.00                | 1                                   | 0.06                |
| South Carolina       | 2                      | 0.28                | 1                                   | 0.06                |
| South Dakota         | 1                      | 0.14                | 0                                   | 0.00                |
| Tennessee            | 1                      | 0.14                | 1                                   | 0.06                |
| Texas                | 31                     | 4.42                | 185                                 | 12.20               |
| Virginia             | 4                      | 0.57                | 2                                   | 0.13                |
| Washington           | 3                      | 0.42                | 5                                   | 0.33                |
| Wisconsin            | 2                      | 0.28                | 1                                   | 0.06                |
| Wyoming              | 0                      | 0.00                | 1                                   | 0.06                |

\* This figure is the number of cases from Louisiana admitted from 1924 to 1928 and is not comparable with the figures in the same column from other states. During the period 1921 to 1928 107 patients were admitted from the state of Louisiana a yearly average of 14.57

average of admissions is almost three times as great as it was for the first period. Johansen<sup>2</sup> states that there are four main foci of leprosy in Texas: Galveston, San Antonio, Brownsville and Corpus Christi. The number of admissions from Texas now exceeds the number from Louisiana. In former years the largest numbers of cases always came from Louisiana.

From California, New York, Florida and Illinois the average yearly number of admissions, though comparatively large, as may be seen in table 1, has been, like that of Louisiana, remarkably constant for each state for the two periods reported. In New York and Illinois the new cases may have been imported, but from Florida and California there were enough native born admissions to argue for an endemic origin.

In regard to the remaining states, there is not sufficient evidence to show a definite trend in any direction, it can, however, be said that no trend toward the spread of leprosy in these states can be inferred from the small number of admissions to the Leprosarium. In Massa-

TABLE 2—Nativity of Foreign Born Patients Admitted  
July 1928 to January 1944

|                     |     |                |     |
|---------------------|-----|----------------|-----|
| Mexico              | 132 | British Guiana | 1   |
| Philippines         | 50  | Costa Rica     | 1   |
| British West Indies | 22  | San Domingo    | 1   |
| China               | 17  | Panama         | 1   |
| Russia              | 9   | Malta          | 1   |
| Hawaii              | 8   | Morocco        | 1   |
| Puerto Rico         | 7   | Turkey         | 1   |
| Cuba                | 6   | Syria          | 1   |
| Greece              | 6   | Portugal       | 1   |
| Italy               | 5   | Poland         | 1   |
| Dutch Guiana        | 4   | Norway         | 1   |
| Virgin Islands      | 4   | Hungary        | 1   |
| Spain               | 4   | Yugoslavia     | 1   |
| Brazil              | 3   | India          | 1   |
| Colombian           | 2   | Korea          | 1   |
| Canada              | 1   | Tahiti         | 1   |
| Germany             | 2   |                |     |
| Japan               | 2   | Total          | 303 |

chusetts from which the yearly average declined from 2.42 to 0.40, and in Minnesota, with a decline of 0.85 to 0.13, there is reason to believe that the original foci established by imported cases have now disappeared or are rapidly disappearing.

Table 2 shows that from July 1928 to January 1944 the total number of foreign born patients admitted was 303 and that of this number 132 were born in Mexico. The latter number is greater than that of those born in any other foreign country and, considered with the increased number of cases from adjacent Texas, is significant in that it may indicate that much of the leprosy in Texas is directly or remotely of Mexican origin.

From the remaining foreign communities listed in table 2, the majority of patients came from the Philippines, the British West Indies, China, Russia, Hawaii, Puerto Rico and Cuba. In all these countries leprosy is indigenous, and it could well be that patients from them as well as from the other foreign countries where leprosy is prevalent, could have entered the United

TABLE 3—Native Born Patients Admitted from July 1928  
to January 1944

|                |     |                |     |
|----------------|-----|----------------|-----|
| Louisiana      | 176 | Indiana        | 2   |
| Texas          | 125 | Oregon         | 2   |
| Florida        | 34  | Arkansas       | 1   |
| California     | 23  | Maryland       | 1   |
| Ohio           | 8   | Oklahoma       | 1   |
| Georgia        | 7   | North Carolina | 1   |
| Alabama        | 5   | North Dakota   | 1   |
| Mississippi    | 4   | Colorado       | 1   |
| South Carolina | 4   | Kansas         | 1   |
| Kentucky       | 4   | Iowa           | 1   |
| Pennsylvania   | 4   | Massachusetts  | 1   |
| Arizona        | 3   | Michigan       | 1   |
| Missouri       | 2   | New Jersey     | 1   |
| New York       | 2   | Wisconsin      | 1   |
| Virginia       | 2   |                |     |
| Total          |     |                | 420 |

States and become naturalized citizens while having leprosy in an unrecognizable stage.

Table 3 shows the states in which patients were born. A comparison of this table with table 1, which shows from which states patients were admitted, indicates that a number of patients born in one state have been admitted to the Leprosarium from another state, for instance, 176 patients were born in Louisiana but only 173 were admitted from that state. Three, therefore,

<sup>2</sup> Johansen, F. A. Leprosy as a Public Health Problem. Texas State J. Med. 35: 629 (Jan.) 1940.

departed from Louisiana and were admitted from other states

The difference between the number of patients born in a state and the number of patients admitted from that state is to some extent an indication of the tendency of leprosy to spread. In New York, for instance, with 2 native born admissions and 77 from other states or countries, there is little or no reason to believe that leprosy is endemic.<sup>3</sup> Besides Louisiana, Texas with 125 native born, Florida with 34 native born and California with 23 native born are the other states in which leprosy shows a tendency to spread.

The figures from the state of Texas, which show 58 more patients admitted than were born in that state, are significant when correlated with the great number of patients of American birth but Mexican ancestry admitted from that state. The conclusion seems warranted that a fairly large percentage of these 58 persons contracted the disease in Mexico before their residence in Texas, even though its presence was not discovered until their sojourn in Texas.

Table 4 shows that there have been admitted more patients of Mexican ancestry than patients of other foreign descent. This is additional evidence that leprosy has been introduced from Mexico into Texas and California and, to a less extent, into some other states.

In Table 4 also is to be found evidence, in the large number of patients of Philippine, Chinese and Hawaiian

TABLE 4—*Racial Ancestry of Patients*

|                                |     |                            |    |
|--------------------------------|-----|----------------------------|----|
| Americans (white 127 Negro 52) | 179 | Chinese                    | 26 |
| Mexicans                       | 212 | West Indian                | 49 |
| French Canadian                | 57  | South and Central American |    |
| Philippine                     | 52  | (Spanish American)         | 11 |
| German                         | 41  | Hawaiian                   | 10 |
| Italian                        | 12  | Asiatic                    | 8  |
| Other Europeans                | 36  |                            |    |
| Total                          | 723 |                            |    |

ancestry, that leprosy has been introduced directly or indirectly into California from the Philippines, China and Hawaii as well as from Mexico. There is also indication that leprosy has been introduced into Florida, New York and possibly some other Eastern and Southern states from the British West Indies, Cuba, Puerto Rico, Virgin Islands and some Latin American countries.

No admissions are reported of patients born in France, but there are reported 87 of French-Canadian ancestry. The immigrant Acadians, and not the immigrant French, are believed to have been one source of the spread of leprosy in Louisiana. It has been stated that the occurrence of leprosy has been traced back through generations to some of the original Acadian settlers.<sup>4</sup> The continued occurrence of leprosy through many generations of Acadian descendants is considered strong evidence that leprosy is indigenous in Louisiana.

## LEPROSY IN THE MILITARY SERVICE

Of significance as to the source from which leprosy is contracted is the different way in which soldiers of the last three wars were exposed to contagion and contracted the disease. There were admitted to the Lepro-

sarium 32 Spanish-American War veterans, 59 veterans of World War I and 10 veterans of World War II. As pointed out by Hasseltine,<sup>5</sup> practically all Spanish-American War Veterans came from nonendemic states and contracted the disease while on military duty on such foreign soil as Cuba, the Philippines and other

TABLE 5—*Age on Admission*

| Ages        | No. of Cases |
|-------------|--------------|
| 0-9 years   | 6            |
| 10-19 years | 68           |
| 20-29 years | 170          |
| 30-39 years | 168          |
| 40-49 years | 133          |
| 50-59 years | 95           |
| 60-69 years | 58           |
| 70-79 years | 23           |
| 80-89 years | 2            |
| Total       | 723          |

countries in which leprosy is endemic. On the contrary, those World War I veterans in whom leprosy developed were enlisted into the armed forces from endemic areas in the United States and probably received their infection prior to their entry into military service, which was not to any great extent in countries in which leprosy was prevalent.

Admissions up to the present time of World War II veterans are, like those of World War I, from states or countries in which leprosy is endemic. Two patients were born in Louisiana, 2 in California, 2 in the Philippines, 2 in Texas, 1 in Mexico and 1 in Puerto Rico. Men in the present military service have not yet been exposed for a sufficiently long time for leprosy contracted in foreign fields to have developed, but the past experience of the Spanish-American War teaches that with the lapse of years, when the long incubation period of leprosy has come to an end, at least a small number of those who have served in countries where leprosy is prevalent will become its victims.

## AGE

Table 5 gives the number of patients in each of nine age groups of one decade each. The age is that given at the time of admission and varies in individual cases from 4 to 84 years. The greatest incidence is seen in the twenties and thirties. The average age on admission is 35.5 years.

The average age at onset was computed at 30.4 years, which approximates remarkably closely the average of 30.2 calculated in the 1928 report.

TABLE 6—*Duration of the Disease Before Admission*

|                   |     |                     |     |
|-------------------|-----|---------------------|-----|
| Less than 1 year  | 121 | From 5 to 10 years  | 146 |
| From 1 to 2 years | 128 | From 10 to 15 years | 55  |
| From 2 to 3 years | 90  | From 15 to 20 years | 30  |
| From 3 to 4 years | 81  | 20 years and over   | 16  |
| From 4 to 5 years | 51  |                     |     |
| Total             |     |                     | 723 |

Table 6 gives the duration of the disease before admission, which was from a few weeks to over forty years according to the histories obtained from the patients. There is calculated to be a lapse of approximately five years in the average case between the onset of the disease and admission to the Leprosarium. This

<sup>3</sup> McCoy G. W. Observations on the Epidemiology of Leprosy. Pub Health Rep 57 1935 (Dec 18) 1942.

<sup>4</sup> Aycock W. L. Familial Susceptibility as a Factor in Propagation of Leprosy in North America. Internat J Leprosy 8 137 (April June) 1940.

<sup>5</sup> Hasseltine H. E. Leprosy in Men Who Served in United States Military Service. Internat J Leprosy 8 501 (Oct Dec) 1940.

is significant, as during that time many opportunities for spreading the infection, especially in the home, can be presumed to have existed

#### RACE

Of the inmates of the Leprosarium 577 were of the white race, 66 were Negroes, 40 were Filipinos, 10 were Hawaiian and 30 were of the yellow race

A comparison in native born Louisianians of the incidence in the Negro and the white races shows that there were 34 Negroes and 142 white persons admitted to the Leprosarium during the fifteen year period. The total population of Louisiana in 1940 was 2,363,880. The Negro population amounted to 849,303 and the white to 1,484,467.

The percentage of Negroes in the entire Louisiana population, therefore, was 37.1. The percentage of Negroes admitted to the Leprosarium from Louisiana was 19.3. It seems from these figures that there are approximately half as many Negroes with leprosy in the state in comparison with white persons as might be expected from the ratio of the races to each other in the entire population.

TABLE 7—Types of the Disease

|             | July 1928 to January 1944 |            | 1894 to 1948 |
|-------------|---------------------------|------------|--------------|
|             | Number of Patients        | Percentage | Percentage   |
| Mixed       | 329                       | 45.5       | 49.0         |
| Lepromatous | 208                       | 28.6       | 39.1         |
| Neural      | 155                       | 21.5       | 11.0         |
| Tuberculoid | 31                        | 4.3        |              |
|             | 723                       | 100.0      | 100.0        |

#### SEX

In the report made in 1928 there were 72.3 per cent males and 27.7 per cent females admitted to the Leprosarium. This percentage is approximately the same as that from almost all countries in which leprosy has been reported, and the incidence in males and females admitted to the National Leprosarium since 1928 is in nearly the same ratio, there were 499 males and 224 females admitted during the last fifteen years, a proportion again of more than two males to one female.

At variance with the almost universal rule of two male leprosy patients to one female patient is the exception found among the native born Negroes, of whom there were admitted 25 men and 27 women. Native born admissions of all races other than Negro showed 246 males and 122 females.

No satisfactory explanation is offered for the almost universal preponderance of males over females nor for the exception found in regard to the Negro race. A correct explanation perhaps would add important knowledge concerning the epidemiology of leprosy. The number of our cases is so small that conclusions should not be drawn from them, but similar findings of an equal incidence in the sexes have been reported by Saunders and Guinto<sup>6</sup> in a field study of leprosy in the Virgin Islands. They cite surveys in Nigeria by Davey and in the Belgian Congo by Degotte, which also showed that prevalence in the sexes was very nearly equal in those countries. It will be noted that the

exceptions cited to the rule of incidence in the different sexes have all occurred either in foreign countries with predominating Negro populations or in the United States in the Negro race.

#### TYPES OF LEPROSY

For the purpose of this report, the classification of cases according to type is given as recorded at the time of admission of the patient.

The recognition of tuberculoid leprosy as a separate type was adopted at the Leprosarium only five or six years ago, and consequently cases reported of this type are less in number and not comparable numerically with those of the other types which are reported for a period of fifteen years.

Table 7 shows the number of cases of each type admitted during the last fifteen years. Percentages of each type for this period are also calculated for comparison with the percentages reported in 1928. In both reports the percentage of cases of the mixed type almost equals the total percentage of lepromatous and neural cases, and in both reports are found a greater percentage of lepromatous than of neural cases.

#### FAMILY HISTORY OF LEPROSY

Patients admitted to the Leprosarium are usually reticent about disclosing their family relationship because of the fear that, should the information that leprosy existed in their families become generally known, the public knowledge would be detrimental to all their relatives. To avoid this cruel publicity<sup>7</sup> patients in the Leprosarium often live under assumed names, and complete family histories are not always given. Such information as has been obtained, however, is not meager and leads to the conclusion often stated that leprosy is largely a family disease, occurring in closely related persons to an extent that suggests that either there is an inheritable familial predisposition or that the intimate contacts in family life account for the familial incidence. It seems to us probable that both factors play a part in the transmission of leprosy in families.

There were 147 patients with a family history of leprosy. Of these 74 had only one other member of the family afflicted with the disease, 42 had two, 17 had three, 11 had 4, 2 had five and 1 had eight other members of his family with leprosy. The family relationship of the contacts to the patients included 25 fathers, 24 mothers, 2 fathers-in-law, 64 brothers, 36 sisters, 4 sisters-in-law, 1 brother-in-law, 23 uncles, 9 aunts, 19 cousins and 7 grandparents.

In addition to the foregoing there were 24 children, 2 stepsons, 13 nephews and nieces and 7 grandchildren. For statistical purposes these cannot properly be considered as probable sources of family transmission of the disease, though the children and grandchildren might be considered from the point of view of hereditary predisposition.

Besides these there were 16 husbands and wives reported with leprosy, but these do not all indicate marital transmission, as, in all instances except two couples, both persons had the disease prior to marriage.

The comparatively few instances of marital transmission indicate that contact, even prolonged and intimate, is not the only factor in the transmission of leprosy. If the widely entertained view that leprosy is most

6 Saunders G. M. and Guinto R. S. A Field Study of Leprosy in the Virgin Islands. *Internat. J. Leprosy* 10: 20 (Dec.) 1942.

8 Leper Loose Time 42: 46 (Dec. 6) 1943.

easily contracted in childhood is accepted, and if it is granted that an inherited predisposition plays an important part in familial transmission, the comparatively small number of cases of conjugal infection is readily explained

#### OCCUPATION

Employments of patients previous to their admission were listed under one hundred and thirty different occupations, which varied from common laborer to physician. A large majority were in the unskilled labor group, but this majority was not larger than would be expected from the numerical preponderance in normal communities of persons in this group. There were 123 patients classed in the white collar group. As was stated in a previous report advantages in social status, education, wealth and culture has not insured immunity against leprosy.

#### INITIAL MANIFESTATIONS

Not all cases, but only those in which a clear history of the onset was obtained are included in the statistics that are now presented.

The first manifestation was recalled as a macule or macules by 259 patients. The situation of the initial macule or macules was on the face in 52 patients, the neck in 4, the body in 29, the arms in 27, the elbows in 2, the wrists or hands in 5, the legs in 47, the buttocks or hips in 9, the knees in 14 and the ankles or feet in 7.

Macules, more numerous and more widely distributed, were remembered as occurring as first lesions on the face and body by 5 patients, on the face and buttocks by 10, on the body and limbs by 16, on the upper and lower limbs by 21, and more or less generalized on various parts of the body by 11.

Nodules were remembered as primary lesions by 193 patients. Of these the face was remembered by 90 patients as being the first site affected, the nose being primarily involved in 14. The ear lobes were reported as the location of first nodules by 4 patients, the body by 7, the buttocks by 1, the legs by 18, the knee by 1, the ankles and feet by 4, the arms by 9, the elbows by 5 and the wrists and hands by 8.

Nodules in multiple sites were recalled as first lesions on the face and body by 4 patients, on the face and limbs by 18, on upper and lower limbs by 15, on body and limbs by 1 and on more or less generalized areas by 8 patients.

Numbness of the hands and feet was the first complaint of 77 patients. Of these 12 first noticed numbness of the fingers, the little and ring fingers being usually the first to be involved. Numbness of the hands and forearms was the first symptom noticed by 23 and numbness of the feet and legs by 42.

Painless burns were noted as the initial symptom by 14 patients—of the fingers or hands by 9, of the feet or legs by 3, of the forearms by 1 and of the elbow by 1.

Swelling of the feet and hands was the mode of onset reported by 23 patients. Swelling of the feet occurred primarily in 7, swelling of the feet and legs in 3, swelling of the hands in 4 and swelling of the hands and feet in 9.

Blisters were the earliest manifestation of leprosy reported by 11 patients, blisters on the fingers or hands being noted by 4, blisters on the feet or toes by 5 and blisters on both hands and feet by 2.

Plantar tropic ulcers were said to be the initial lesion by 5 patients.

There were 4 instances in which the patients reported a paresthesia or peculiar crawling sensation beneath the skin as the first symptom.

Painful neuritis occurring in the limbs was stated to be the earliest indication of leprosy by 4 patients. Loss or thinning of the eyebrows was noted as the first evidence by 4 patients. Two patients reported anhidrosis of the hands and 1 anhidrosis of the feet as the initial manifestation.

There were 26 patients who recalled a chronic nasal catarrh with bleeding, discharge, crust formation and blockage of the nares as their first symptoms. Chills and fever with the outcropping of the lesions similar to those of erythema nodosum was the mode of onset reported by 12 patients.

There is no evidence in the histories of the sites of the initial macules and nodules that would indicate that any one region of the body was the probable port of entry for the infection. The diverse areas enumerated in which the first lesions appeared were the same as those for which the disease showed a predilection as it became more advanced and lesions increased in size and number.

TABLE 8—Positive Blood Serologic Reactions in Leprosy

|             | Kolmer              |                            |                             | Kahn                |                            |                             | Combined            |                            |                             |
|-------------|---------------------|----------------------------|-----------------------------|---------------------|----------------------------|-----------------------------|---------------------|----------------------------|-----------------------------|
|             | Num<br>ber<br>Cases | Num<br>ber<br>Posi<br>tive | Per<br>Cent<br>Posi<br>tive | Num<br>ber<br>Cases | Num<br>ber<br>Posi<br>tive | Per<br>Cent<br>Posi<br>tive | Num<br>ber<br>Cases | Num<br>ber<br>Posi<br>tive | Per<br>Cent<br>Posi<br>tive |
| Mixed       | 312                 | 151                        | 48.4                        | 314                 | 153                        | 48.7                        | 321                 | 151                        | 50.4                        |
| Lepromatous | 203                 | 110                        | 54.6                        | 199                 | 110                        | 55.3                        | 206                 | 124                        | 60.2                        |
| Neural      | 145                 | 18                         | 12.8                        | 150                 | 21                         | 14.0                        | 152                 | 27                         | 17.7                        |
| Tuberculoid | 30                  | 2                          | 6.7                         | 50                  | 3                          | 10.0                        | 31                  | 4                          | 12.0                        |
| Total       | 600                 | 281                        | 46.8                        | 603                 | 287                        | 47.4                        | 710                 | 336                        | 47.3                        |

#### SEROLOGIC TESTS

There is no serologic test of value in the diagnosis of leprosy, but tests intended for the detection of syphilis yield interesting results. That the Wassermann complement fixation reaction and the Kahn precipitation test are frequently positive in leprosy in the absence of syphilis is not sufficiently well recognized by the medical profession.<sup>9</sup> It is not generally known that the serologic reaction is found to vary widely with the different types of the disease.

Table 8 gives the results in the Kolmer and Kahn reactions in different types of leprosy in the group of patients under study. The Kolmer and Kahn tests through long years of experience have been adopted in this institution because they were found to give the least number of false positive reactions in leprosy.

There are 178 patients in whom two to six Kolmer and Kahn tests were made during the course of institutional treatment. All tests were run by the same laboratory technician. It was observed that in the majority of cases the tests remained unchanged throughout the course of the disease, but in 69 patients there was either an increase or a decrease in the degree of the reaction in one or both serologic tests.

It is significant that these changes in serum reactions were closely correlated to changes in the clinical

<sup>9</sup> Howard Fox was one of the first in this country to point out that a positive Wassermann reaction is frequently obtained in cases of leprosy in which there is no history or symptom of syphilis. Fox, H. The Wassermann and Noguchi Complement Fixation Test in Leprosy. *Am J U Sc* 139: 725 (May) 1910.

manifestations of the disease. We believe that this argues for the presence in the serum of leprosy patients of a reagin which reacts positively with Kolmer or Kahn antigen in the absence of syphilis. These figures confirm the previous findings of Badger<sup>10</sup> in this respect and are reported elsewhere in detail.<sup>11</sup>

#### TREATMENT

All patients with few exceptions received some type of treatment directed against leprosy. More or less routine treatments consisted of chaulmoogra oil given by mouth and intramuscularly, the iodized esters of hydnocarpus intramuscularly, solution of potassium arsenite by mouth cod liver oil in varying doses, vitamins in various combinations and strychnine sulfate.

Experimental treatments included gold sodium thio-sulfate, mercurochrome intravenously, smallpox vaccine, hirudin fever therapy in the Kettering hyperthermia cabinet, diphtheria toxoid, sulfanilamide, sulfathiazole, sulfapyridine, sulfadiazine, promin, Internal Antiseptic 307, diasone, pooled human plasma, Karwinska latifolia and penicillin. None of the experimental treatments proved specific but best results with least harmful effects were produced by promin<sup>12</sup> and diasone.

Until a more specific drug can be developed, general hygienic measures including institutional and nursing care, physical therapy, judiciously adjusted hours of rest and outdoor exercise and especially a well balanced nutritious diet must continue to play an important role in overcoming the disease.

#### DURATION OF LEPROSY

For all the types of leprosy combined, the average duration of the disease from the time of its onset until death was estimated at 10.3 years for those patients under study who died in the hospital during the period covered by this report. This estimate is approximately four years less than that calculated for the 1928 report, but the shorter period of observation, fifteen years in comparison to 34 years, explains this difference.

Duration of life after contracting the disease varied in the different types of leprosy as follows: neural cases

TABLE 9.—Disposition of Patients

| Types of Disease | Number of Cases | Paroled Patients |                  |   |                             | Absconded Patients |                        |                                   | Deaths | Patients Remaining in Hospital (1928-1943) |
|------------------|-----------------|------------------|------------------|---|-----------------------------|--------------------|------------------------|-----------------------------------|--------|--|
|                  |                 | Discharged       | Disease Arrested | Remaining in Hospital, Disease Arrested | Readmitted Disease Relapsed | Total              | Readmitted to Hospital | Aliens Deported to Native Country |        |  |
| Mixed            | 379             | 19               | 3                | 5                                       | 51                          | 74                 | 13                     | 117                               | 161    |  |
| Lepromatous      | 208             | 16               | 2                | 2                                       | 42                          | 19                 | 13                     | 62                                | 108    |  |
| Neural           | 100             | 70               | 9                | 8                                       | 13                          | 3                  | 0                      | 90                                | 46     |  |
| Tuberculoid      | 31              | 20               | 2                | 0                                       | 5                           | 2                  | 0                      | 1                                 | 9      |  |
| Total            | 723             | 145              | 16               | 16                                      | 111                         | 48                 | 30                     | 190                               | 374    |  |

14.5 years, mixed cases 10.6 years and lepromatous cases 9.3 years. In tuberculoid cases there was only one death eighteen years after onset.

The average duration of life in the different types shows, as do other figures in regard to type, that the best prognosis is in the tuberculoid type and that the prognosis is better in the neural cases than it is in either the lepromatous or the mixed cases.

TABLE 10.—Causes of Death

|   | Mixed | Lepromatous | Neural | Total |
|---|-------|-------------|--------|-------|
| Nephritis   | 20    | 18          | 2      | 40    |
| Tuberculosis  | 21    | 10          | 6      | 37    |
| Leprosy   | 8     | 1           | 0      | 9     |
| Leprous laryngitis (asphyxia)                               | 17    | 4           | 0      | 21    |
| Heart diseases  | 9     | 6           | 0      | 15    |
| Pneumonia   | 9     | 3           | 1      | 13    |
| Sepsis (including gangrene)                                 | 4     | 1           | 2      | 7     |
| Malignancy  | 1     | 4           | 3      | 8     |
| Peritonitis (postoperative)                                 | 4     | 0           | 1      | 5     |
| Diabetes mellitus   | 1     | 2           | 0      | 3     |
| Sulfide   | 2     | 1           | 0      | 3     |
| Montagitis (pneumococcal)                                   | 1     | 1           | 0      | 2     |
| Syphilis (cerebrospinal 1)<br>(cardiovascular 1)            | 1     | 0           | 1      | 2     |
| Cirrhosis of liver  | 1     | 0           | 1      | 2     |
| Hemorrhage cerebral   | 1     | 0           | 0      | 1     |
| Hemorrhage (gastric ulcer)                                  | 1     | 0           | 0      | 1     |
| Malaria (pernicious)  | 1     | 0           | 0      | 1     |
| Cavernous sinusitis   | 1     | 0           | 0      | 1     |
| Lymphatic leukemia  | 1     | 0           | 0      | 1     |
| Abscess of lung   | 1     | 0           | 0      | 1     |
| Asthma (bronchial)  | 1     | 0           | 0      | 1     |
| Pericarditis, purulent                                      | 0     | 1           | 0      | 1     |
| Scarlet fever   | 0     | 0           | 1      | 1     |
| Arteriosclerosis (gangrene of foot)                         | 0     | 0           | 1      | 1     |
|   | 117   | 52          | 20     | 189   |
| Calculus obstruction of ampulla of Vater (tuberculoid case) |       |             |        | 1     |
| Total   |       |             |        | 190   |

#### DISPOSITION OF PATIENTS

Table 9 shows that 145 of the 723 patients hospitalized, or 20 per cent, have been paroled as having the disease in an arrested form and being no longer a menace to public health.

Criteria in this institution for parole are twelve consecutive monthly negative bacterioscopic examinations of cutaneous and nasal smears and an inspection by the medical staff to determine whether or not there are any visible or palpable signs that the disease is still active.

The better or worse prognosis in the different types of the disease show clearly in the percentages of each type paroled, in the percentages of relapsed paroled patients and in the percentages of deaths occurring in each type.

Table 10 shows the primary causes of the 190 deaths occurring in the Leprosarium among the 723 patients included in this study. The mortality rate was 26.7 per cent, but leprosy was responsible for only a small percentage of the deaths. While nephritis and tuberculosis were the direct cause of almost half the fatalities, it is probable that leprosy was responsible for the occurrence of these two diseases and that the lepromatous and mixed types were more prone to develop these fatal complications than was the neural type. Necropsies confirming the primary cause of death were performed in 75.3 per cent of deaths.

At present there are remaining in the Leprosarium 324 patients who were originally admitted subsequent to July 1, 1928, the date on which the period of the

10 Badger, L. F. Significance of Positive Wassermann and Kahn Reactions in Leprosy. Pub. Health Rep. 46: 957 (April 24) 1931.

11 Faget, G. H., and Ross, H. Evaluation of Positive Kolmer and Kahn Tests in Leprosy. Ven. Dis. Inform. 25: 33 (May) 1944.

12 Faget, G. H., Pogge, R. C., Johansen, F. A., Duman, J. F., Prejean, B. M., and Eccles, C. G. The Promin Treatment of Leprosy. A Progress Report. Pub. Health Rep. 58: 1729 (Nov. 26) 1943.



present study commenced. Of these patients there are 16 in whom the disease is arrested but who have elected to remain in the hospital or have returned after conditional release because of disabilities resulting from leprosy which prevent their gaining a livelihood and because they have no home to which to go nor the means to live elsewhere. That none of these patients have relapsed in spite of continuous exposure to infection can be interpreted as a hopeful sign that the disease can be eradicated, at least in some cases, and that it is possible thereafter for a permanent resistance to leprosy to be established.

#### SUMMARY

This report is based on data accumulated during the last fifteen years from 723 patients in the National Leprosarium. The Leprosarium does not continuously hospitalize any but citizens of the United States. The foreign born patients admitted are either naturalized citizens or subject to immigration regulations and deportation. Of the total number of patients 303 are foreign born and 420 native born. Of the foreign born more than 72 per cent are of Mexican, Philippine, British West Indies or Chinese nativity. Many of these probably had contracted the disease before their arrival in the United States and may have established foci which could account for the occurrence of some of the cases in native born citizens, especially in Texas, California and Florida.

From Texas the average yearly admissions are 12.2, nearly three times as many as formerly and greater than from any other state.

From Louisiana the average yearly admissions are 11.53, a little less than formerly but greater than from any other state except Texas. Formerly the admissions from Louisiana exceeded those from Texas.

From California and Florida there are enough admissions of native born to argue for an endemic origin, but there are also evidences of imported cases.

From New York and Illinois there are not enough natives of these states admitted to establish evidence of an endemic origin. Almost all cases are probably imported.

From Minnesota and Massachusetts the decline in admission warrants the belief that leprosy is not indigenous in those states and the foci established by immigration have disappeared or are rapidly disappearing.

Thirty-two Spanish-American War Veterans have been admitted, all of whom presumably contracted the disease in foreign countries in which leprosy is endemic.

Fifty-one veterans of World War I have been admitted who probably were infected before their induction into the Army.

Ten veterans of World War II have been admitted who were enlisted from endemic areas in the United States or were born in the Philippines, Mexico or Puerto Rico and presumably contracted the disease before their induction.

It is safe to predict from the experience of the Spanish-American War that a small number of those who serve in the armed forces in foreign countries where leprosy is prevalent will become its victims.

The average age on admittance is 35.5 years, and the greatest incidence is in the twenties and thirties.

The average age at onset of the disease is 30.4 years.

The duration of the disease before admission is from a few weeks to over forty years and averages five years.

The incidence in Louisiana of leprosy in the white race as estimated from admissions to the Leprosarium is twice that in the Negro race.

The proportion, including all races, of males to females is more than two to one.

There is not the usual proportion of two males to one female in the Negro race; there are approximately an equal number of Negro men and women.

The number of cases of the mixed type of leprosy almost equals the total of lepromatous and neural cases, and there are more lepromatous than neural cases.

There are 147 patients with a family history of leprosy, including 25 fathers, 24 mothers, 64 brothers, and 35 sisters and others less closely related.

The small number of cases in which there may have been marital transmission (only two couples) seems to indicate that contact is not the sole requisite for the transmission of leprosy.

No evidence is disclosed that any occupation is a predisposing cause. The employments of patients previous to admission are listed under one hundred and thirty different occupations, some of high and some of low rank in the social scale.

The first lesion is described as a macule by 259 patients and a nodule by 193. Both lesions occur primarily on regions that later are to be the sites of predilection for the eruption in the advanced stage of the disease. No probable port of entry is disclosed by the situations of the first lesions.

Other patients report sensory disturbances, of which anesthesia is the most common, as the earliest manifestations, a few recall blisters, painless burns and plantar ulcers, and some remember symptoms less characteristic of leprosy.

The usually employed serologic tests are of no value in the differentiation of leprosy from syphilis but are of value as an index of the prognosis and of the progress of leprosy.

During the period of study among the numerous experimental treatments investigated promin and diasonone prove to be the most beneficial.

The average duration of life after the onset of leprosy is calculated as 10.3 years, but this average is derived from individual cases and is limited to a group of patients during a fifteen year period. In the tuberculoid type there is only one death eighteen years after the onset of leprosy. The duration from onset to death is longer in the neural cases than in either the lepromatous or the mixed cases.

Twenty per cent of the 723 patients admitted have been released conditionally as having the disease in arrested form and being no longer a menace to public health.

No patient with the tuberculoid type relapsed, but 9 per cent with the neural type, 12.5 per cent with the lepromatous type and 26 per cent with the mixed type relapsed.

In the table showing the causes of deaths it is seen that leprosy directly is responsible for only a small percentage of the deaths, while nephritis and tuberculosis are the direct cause of almost half of the fatalities.

# "GAMMA GLOBULIN" AND "PLACENTAL GLOBULIN"

A COMPARISON OF THEIR EFFECTIVENESS IN THE PREVENTION AND MODIFICATION OF MEASLES

MORRIS GREENBERG, MD

SAMUEL FRANT, MD

AND

DAVID D RUTSTEIN, MD

NEW YORK

Three agents are currently recommended for the prophylaxis of measles—convalescent human serum, placental globulin (immune globulin-human) and gamma globulin derived from normal human serum (human immune serum globulin). Concentrated, pooled ascites fluid<sup>1</sup> has also been suggested but has not come into general use and will not be discussed here. The prophylactic effectiveness of convalescent serum has been recently summarized in a well controlled study of 502 household contacts between the ages of 6 months and 15 years by Stillerman, Marks and Thalheimer.<sup>2</sup> These authors obtained complete protection in 50 per cent modified measles in 49 per cent and regular measles in 1 per cent of the individuals studied. While the effectiveness of convalescent serum is not questioned its lack of ready availability and the comparatively large doses which are necessary make its use impractical. This study is directed toward the comparison of the effectiveness and incidence of untoward reactions of the remaining two agents—placental globulin (immune globulin-human) and normal human serum gamma globulin (human immune serum globulin). The characterization of normal human serum gamma globulin (human immune serum globulin) has been published by Cohn and his co-workers.<sup>3</sup> This material will be referred to hereafter in this paper as gamma globulin. Placental globulin (immune globulin-human) will hereafter be referred to as placental globulin.

In evaluating the literature on the prophylaxis of measles, those studies in which household contacts were used are the most significant. The smaller number of secondary cases occurring following the casual exposure of contacts in hospitals, schools or playgrounds, compared with the larger number occurring among those intimately exposed in the home has been

pointed out by a number of observers<sup>4</sup> and has been particularly stressed by Karelitz and Schick.<sup>5</sup> The latter authors also pointed out that the contact is more intimate in the homes of the poor than in the homes of the well-to-do.

The use of immune globulin obtained from human placentas in the prophylaxis of measles was first introduced by McKhann and Chu<sup>6</sup> in 1933. In one of his later papers McKhann<sup>7</sup> analyzed a group of 2,704 contacts in whom the exposure was both casual and intimate. Two groups of contacts were said to be intimately exposed, but no statement was made indicating place of exposure. One of these groups, totaling 585 cases, was given placental globulin for protection, the other group of 1,263 cases for modification. The exact doses and time of injections were not given, but it would appear from the text that in the latter group the doses, ordinarily effective for prevention when given early in the incubation period, were injected on the eighth day following initial exposure to obtain modification. When the results of the two groups were combined, there was obtained complete protection in 48.5 per cent, modification in 44.4 per cent and failure in 7 per cent. Reactions occurred in somewhat less than half the cases and were severe in approximately 5 per cent. Karelitz, Greenwald and Klein<sup>8</sup> treated 64 contacts exposed in homes with good hygiene with 10 to 20 cc of placental globulin on the second to fifth day of exposure. Protection was obtained in 40 per cent, modification in 48 per cent and failure in 12 per cent. Among the 64 cases there were 34 severe reactions, of which 8 were general and 26 local. In a study conducted by the Chicago Department of Health<sup>9</sup> a group of 678 household contacts under the age of 10 were treated with placental globulin in doses of 2 to 3.35 cc. Complete protection was obtained in 52.1 per cent, modification in 43.2 per cent and failure in 4.7 per cent. More than 60 per cent of the children injected were under 1 year of age in whom there would still be some inherited passive immunity. Blossom<sup>10</sup> reported the results in private practice of a study of 107 children, most of whom were between the ages of 1 and 8, who were exposed either in their homes or in the bus going to and from school and who were injected with 2 cc of placental globulin during the period from the fifth to the ninth day after exposure. Measles developed in 31.8 per cent, among whom it was mild in 68 per cent, moderate in 29 per cent and severe in 3 per cent. Reactions occurred in 95 per cent of the total group, 81 per cent of which were mild and 14 per cent severe.

Two reports on the prophylactic use in measles of gamma globulin have appeared. Stokes, Maris and

Dr. William Thalheimer put his experience at our disposal and gave valuable aid in planning the investigation.

From the Bureau of Preventable Diseases and the Bureau of Laboratories, Department of Health City of New York.

The physicians of the Bureau of Preventable Diseases of the New York City Department of Health performed the field work in this study and followed up the contacts.

The American National Red Cross cooperated in this study in order to determine the effectiveness of gamma globulin in the prophylaxis of measles on a community basis.

The products of plasma fractionation employed in this work were developed from blood collected by the American Red Cross by the Department of Physical Chemistry, Harvard Medical School, Boston, under a contract recommended by the Committee of Medical Research between the Office of Scientific Research and Development and Harvard University. Dr. Edwin J. Cohn and Dr. J. L. Oncley of the Department of Physical Chemistry and Dr. Charles A. Janeway of the Department of Pediatrics of Harvard Medical School gave their cooperation.

1. Thalheimer, W., and Stillerman, M. Prevention and Modification of Measles with Concentrated Pooled Ascites Fluid and with Its Globulin Fraction. *Proc Soc Exper Biol & Med* 42: 683-687 (Dec) 1939.

2. Stillerman, M., Marks, H. H., and Thalheimer, W. Prophylaxis of Measles with Convalescent Serum. *Am J Dis Child* 67: 114 (Jan) 1944.

3. Cohn, E. J., Oncley, J. L., Strong, L. E., Hughes, W. L., Jr., and Armstrong, S. H., Jr. Chemical, Clinical and Immunological Studies on the Products of Human Plasma Fractionation. I. The Characterization of the Protein Fractions of Human Plasma. *J Clin Investigation* 23: 417-432 (July) 1944.

4. Park, W. H., and Freeman, R. G., Jr. The Prophylactic Use of Measles Convalescent Serum. *J A M A* 87: 556-558 (Aug 21) 1926.  
Levinson, S. O., McDougall, C., and Thalheimer, W. Use of Convalescent Serum for the Prevention and Attenuation of Measles, Illinois. *J M* 63: 258-265 (March) 1933.  
McKhann, C. F., Green, A. A., and Coady, H. Factors Influencing the Effectiveness of Placental Extract in the Prevention and Modification of Measles. *J Pediatr* 6: 603-614 (May) 1935.  
Eley, R. C. Placental Extract (Immune Globulin Human) with Special Reference to Its Use in Prevention and Modification of Measles. *J Michigan M Soc* 35: 769-772 (Dec) 1936.

5. Karelitz, S., and Schick, B. Epidemiologic Factors in Measles Prophylaxis. *J A M A* 104: 991-994 (March 23) 1935.

6. McKhann, C. F., and Chu, F. T. Antibodies in Placental Extracts. *J Infect Dis* 52: 268-277 (March-April) 1933.

7. McKhann, C. F. The Prevention and Modification of Measles. *J A M A* 109: 2034-2038 (Dec 18) 1937.

8. Karelitz, S., Greenwald, C. K., and Klein, A. J. Placental Fluid in Measles Prophylaxis. *J Pediatr* 10: 170-174 (Feb) 1937.

9. Bundesen, H. N., Fishbein, W. I., Ahrens, I. R., and Miller, R. D. Clinical Use of Immune Human Placental Globulin in Chicago. *J A M A* 115: 104-107 (July 13) 1940.

10. Blossom, A. Clinical Evaluation of the Use of Immune Human Placental Globulin in Attenuation of Measles. *Texas State J Med* 37: 302-304 (Aug) 1941.

Gellis<sup>11</sup> reported the results of prophylaxis with gamma globulin in 891 household contacts of all ages in the private practice of a number of physicians. They obtained 71.4 per cent protection and 28.6 per cent modification, using doses between 0.5 and 5.0 cc. Ordman, Jennings and Janeway<sup>12</sup> used a dose of 2 cc for infants between the ages of 6 months and 1 year, 2.5 cc for children between 1 and 5 years and 5 cc for children over 5 years of age. In 139 household contacts among underprivileged families in Boston they obtained complete protection in 71 per cent, modification in 27 per cent and typical measles in 2 per cent.

#### PLAN OF STUDY

Gamma globulin and placental globulin were studied under the same conditions in household contacts of similar age distribution (table 1) and at similar periods following exposure to the source case (table 2). The contacts were all in the age group from 6 months through 6 years, most of whom were between the ages of 6 months through 3 years (table 1). All contacts were known not to have had measles previously, and therefore all contacts referred to in this study are considered to be susceptible contacts.

All contacts were seen by physicians trained in the diagnosis of acute communicable disease on the staff of the New York City Department of Health. Private physicians reporting cases of measles were interviewed by one of these physicians questioned about the number and ages of household contacts and an offer of gamma globulin or placental globulin for passive immunization of contacts was then made to them. They were advised that the injections of the material might be given by them or if they preferred by physicians of the department of health. The offer was conditioned by permission from the private physician to the physician of the department of health to visit and examine the source case and to make follow-up visits to the contacts for a period of twenty-one days following the first exposure. Where there was no physician in attendance the offer was made directly to the parents. As soon as a case of measles was reported and the offer of immunization of contacts was accepted by the physician or parents, the physician of the department of health visited the home, examined the source case and completed a form on which were listed the name, age, sex and home address of the patient as well as the presence or absence of coryza, conjunctivitis, rash (with date of onset), Koplik spots and fever. In addition there were listed the names and ages of all household contacts, and a note was made on the degree and adequacy of isolation of the case. If the diagnosis of a primary case was confirmed, the gamma globulin or placental globulin was injected subcutaneously into the contacts or, where arrangements had been previously made, the material was left at the home for injection that day by the private physician. A separate form was then made out for each household contact injected on which were listed the name, age, address, sex and relationship of the contact, the nature, the lot number and amount of material used, the date of injection, the symptoms of measles, if any, and the date of appearance of the rash in the source case.

In 49 per cent of homes economic conditions were such that no attempt could be made to carry out any sort of isolation in the primary case. Furthermore, all children with primary measles remained at home so that there were frequent opportunities for contact between them and the other children of the family. Since diagnosis was rarely made before the appearance of the rash, which is considered in this study to be the fourth day of illness, there was continuous contact between the patient and the contacts for at least four days of the period of greatest communicability even in those homes where attempts were made to isolate the contacts after the diagnosis had been made. All the contacts studied were exposed to cases in the same household. Those contacts living in the same house but not in the same household as the source case were excluded.

TABLE 1—Percentage Distribution of Children Injected with Gamma Globulin and with Placental Globulin by Age

| Age          | Gamma Cases | Globulin, per Cent | Placental Cases | Globulin per Cent |
|--------------|-------------|--------------------|-----------------|-------------------|
| 6-9 months   | 86          | 10.6               | 9               | 10.0              |
| 10-12 months | 84          | 10.1               | 7               | 7.8               |
| 1 year       | 26          | 29.0               | 25              | 27.8              |
| 2 years      | 169         | 20.7               | 14              | 15.6              |
| 3 years      | 129         | 16.0               | 19              | 21.1              |
| 4 years      | 61          | 7.4                | 10              | 11.1              |
| 5 years      | 41          | 5.0                | 4               | 4.4               |
| 6 years      | 8           | 1.1                | 2               | 2.2               |
| Totals       | 514         | 100.0              | 90              | 100.0             |

TABLE 2—Percentage Distribution of Children Injected with Gamma Globulin and with Placental Globulin by Day of Exposure on Which Injection Was Made

| Day of Exposure Injected | Gamma Cases | Globulin per Cent | Placental Cases | Globulin per Cent |
|--------------------------|-------------|-------------------|-----------------|-------------------|
| 1                        | 0           | 0.0               | 0               | 0.0               |
| 2                        | 2           | 0.2               | 2               | 2.2               |
| 3                        | 13          | 1.6               | 2               | 2.2               |
| 4                        | 172         | 20.7              | 21              | 23.3              |
| 5                        | 295         | 36.7              | 30              | 33.3              |
| 6                        | 263         | 32.8              | 19              | 21.1              |
| 7                        | 61          | 7.4               | 5               | 5.5               |
| 8                        | 29          | 3.6               | 3               | 3.3               |
| 9                        | 8           | 1.0               | 2               | 2.2               |
| 10                       | 10          | 1.2               | 1               | 1.1               |
| Totals                   | 514         | 100.0             | 90              | 100.0             |

Follow-up visits were made by the physicians of the department of health two days after the appearance of the rash in the source case to rule out primary measles in the contact. The next visit was made seven days after the appearance of the rash in the source case and thereafter visits were made every other day until the seventeenth day after the appearance of the rash in the source case. Since the rash usually occurs on the fourth day after onset of symptoms it was considered that the contacts were followed for twenty-one days after the onset of the disease in the source case. If no measles developed by that time, the follow-up was terminated and the contact was considered to have been completely protected. If measles developed in a contact, the physician revisited once or twice to determine the degree of severity of symptoms and to complete the form. The date of onset of measles in the contact was noted and the severity of measles was evaluated (modified from the classification of Stillerman, Marks and Thalheimer<sup>2</sup>) on the basis of the severity of four symptoms: (1) coryza and conjunctivitis, (2) cough, (3) fever and (4) rash. Each of these symptoms was divided into three categories, A, B and C. For coryza and conjunctivitis, A represented mild

11 Stokes, J. Jr., Maris, E. P. and Gellis, S. S. Chemical Clinical and Immunological Studies on the Products of Plasma Fractionation. VI. The Use of Concentrated Normal Human Serum Gamma Globulin (Human Immune Serum Globulin) in the Prophylaxis and Treatment of Measles. J. Clin. Investigation 23: 531-546 (July) 1944.  
12 Ordman, C. W., Jennings, C. G. and Janeway, C. A. Chemical Clinical and Immunological Studies on the Products of Plasma Fractionation. VII. The Use of Concentrated Normal Human Serum Gamma Globulin (Human Immune Serum Globulin) in the Prevention and Attenuation of Measles. J. Clin. Investigation 23: 541-549 (July) 1944.

B moderate and C severe redness and discharge. For cough, A indicated occasional, B moderate and C frequent cough. For fever, A represented a temperature of 99 to 101 F, B 101 to 102.5 F and C 102.5 F and higher. For the rash, A signified occasional lesion, B a moderate number of scattered spots and C a generalized rash. To obtain a quantitative value for mild, moderate and severe measles, all A's were given a numerical value of 1, all B's a value of 2 and all C's a value of 3. The disease was considered mild if the sum of the values did not exceed 6, moderate if the sum was 7 or 8 and severe if the sum was 9 or over.

In the cases of gamma globulin the material in solution at a concentration of twenty-five times that of pooled adult serum from which it was derived was rebottled in the Bureau of Laboratories of the New York City Department of Health so that each vial contained 2 cc.<sup>13</sup> The dose for each case was the total contents of the vial. The same dose was used for all contacts regardless of age (6 months through 6 years). In the case of placental globulin the material was distributed in 5 cc vials<sup>14</sup> and the total contents of the vial were injected into each contact. A total of 814 household contacts were injected with gamma globulin and 90 contacts were injected with placental globulin.<sup>15</sup>

TABLE 3—Comparison of Gamma Globulin and Placental Globulin in Prophylaxis of Measles in Household Contacts

| Material Used      | Number Injected | No Measles |      | Mild Measles |      | Moderate Measles |      | Severe Measles |      |
|--------------------|-----------------|------------|------|--------------|------|------------------|------|----------------|------|
|                    |                 | No         | %    | No           | %    | No               | %    | No             | %    |
| Gamma globulin     | 814             | 641        | 78.7 | 160          | 19.7 | 13               | 1.6  | 0              | 0    |
| Placental globulin | 90              | 35         | 38.9 | 4            | 20.6 | 10               | 11.1 | 1              | 22.3 |

#### RESULTS OF THE STUDY

Among the 814 contacts injected with 2 cc of gamma globulin 641, or 78.7 per cent, did not develop measles, 160, or 19.7 per cent, developed mild measles and 13, or 1.6 per cent, developed moderate measles. None developed severe measles. In contrast, among 90 receiving 5 cc of placental globulin 35, or 38.9 per cent, did not develop measles, 4, or 20.6 per cent, developed mild measles, 10, or 11.1 per cent developed moderate measles, and 1, or 23.3 per cent, developed severe measles (table 3). It will be noted that the results obtained with gamma globulin are significantly better than those obtained by the use of placental globulin.

Among the 814 contacts injected with gamma globulin, reactions occurred in 7, or less than 1 per cent of the group. Two of the reactions were general, consisting of fever which rose on the day following injection to 104 F in one and to 100 F in the other. The five local reactions consisted of slight induration about the site of the injection, which lasted a few hours. In contrast, among the 90 cases in which placental globulin was administered, reactions occurred in 37, or 41 per cent. There were 18 general reactions, 10 of these

consisting of anorexia, restlessness and sleeplessness and 8 with the aforementioned symptoms plus fever, under 101 degrees F in 3 and over 103 F in 5. Local reactions occurred in 23 and consisted of pain, swelling, redness and induration about the site of the injection, lasting from one to two days.

TABLE 4—Results of Immunization with 2 Cc of Gamma Globulin by Age

| Age         | Number Injected | No Measles |      | Mild Measles |      | Moderate Measles |      |
|-------------|-----------------|------------|------|--------------|------|------------------|------|
|             |                 | No         | %    | No           | %    | No               | %    |
| 6-9 months  | 86              | 84         | 97.6 | 2            | 2.3  | 0                | 0.0  |
| 9-12 months | 84              | 77         | 91.7 | 7            | 7.1  | 1                | 1.1  |
| 1 year      | 236             | 189        | 80.0 | 44           | 18.0 | 3                | 1.3  |
| 2 years     | 169             | 132        | 78.1 | 35           | 20.7 | 2                | 1.2  |
| 3 years     | 129             | 92         | 71.3 | 35           | 27.1 | 2                | 1.6  |
| 4 years     | 61              | 39         | 64.0 | 19           | 31.1 | 3                | 4.0  |
| 5 years     | 41              | 25         | 61.0 | 15           | 36.5 | 1                | 2.4  |
| 6 years     | 8               | 3          | 37.5 | 4            | 50.0 | 1                | 12.5 |
| Total       | 814             | 641        | 78.7 | 160          | 19.7 | 13               | 1.6  |

The result of the immunization of gamma globulin was analyzed by age (table 4). It will be noted that the older the child, the less the degree of complete protection. The high degree of complete protection obtained by infants under 1 year of age probably represents a combination of passive immunization acquired from the mother and passive immunization artificially conferred by the gamma globulin. The drop in protection in the older children might be explained by the fact that a constant dose of gamma globulin was given regardless of body weight. This is probably a desirable situation, since the experimental dosage attempted in this study conferred complete protection on infants and small children and tended toward modification in the case of the older children.

It is of interest to compare these results with an additional 38 similar contacts with similar age distribution who were injected with 1 cc of gamma globulin. In this group 20, or 52.6 per cent, were completely protected, 11, or 28.9 per cent, developed mild measles, 6, or 15.8 per cent, developed moderate measles and 1, or 2.7 per cent, developed severe measles.

TABLE 5—Results of Immunization with 2 Cc of Gamma Globulin by Day of Exposure on Which Injection Was Made

| Day of Exposure on Which Injection Was Made | Number Injected | No Measles |      | Mild Measles |      | Moderate Measles |      |
|---|-----------------|------------|------|--------------|------|------------------|------|
|   |                 | No         | %    | No           | %    | No               | %    |
| 1st   | 0               | 0          | 0.0  | 0            | 0.0  | 0                | 0.0  |
| 2d  | 2               | 1          | 50.0 | 1            | 50.0 | 0                | 0.0  |
| 3d  | 13              | 10         | 76.9 | 3            | 23.1 | 0                | 0.0  |
| 4th   | 172             | 136        | 79.0 | 33           | 19.1 | 3                | 1.7  |
| 5th   | 290             | 232        | 79.3 | 51           | 20.6 | 3                | 1.0  |
| 6th   | 203             | 170        | 83.7 | 31           | 15.2 | 2                | 0.9  |
| 7th   | 81              | 60         | 71.0 | 19           | 23.4 | 2                | 2.4  |
| 8th   | 29              | 22         | 75.9 | 5            | 17.2 | 2                | 6.9  |
| 9th   | 8               | 3          | 37.5 | 5            | 62.5 | 0                | 0.0  |
| 10th  | 10              | 7          | 70.0 | 2            | 20.0 | 1                | 10.0 |
| Total                                       | 814             | 641        | 78.7 | 160          | 19.7 | 13               | 1.6  |

In table 5 the results of immunization of the 814 contacts given gamma globulin were analyzed by day of injection following first exposure to measles. If those injected on the second, ninth and tenth days are excluded from consideration because of the small number of cases in those categories, it will be noted that there is no significant difference in the amount of complete protection obtained after the injection of gamma globulin from the third to the eighth day following initial exposure.

<sup>13</sup> The vials actually contained 2.2 cc to allow for loss on withdrawal of material from the vial.

<sup>14</sup> The placental globulin in part was obtained from a commercial source and in part from a noncommercial source.

<sup>15</sup> This experiment was performed in part (171 injected contacts) with five experimental lots of gamma globulin each of which was prepared in a slightly different manner from that of the standard lots. In four of these experimental lots (147 injected contacts) results were similar to those obtained with standard lots and are included in the report. One of these lots (S 11) produced results quite different from that of the remaining lots and those results are not included in the tabulation. The results obtained with this lot are as follows: 24 contacts were injected, 16 did not develop measles, 4 developed mild measles, 1 moderate measles and 3 severe measles.

In evaluating the results obtained by prophylactic materials, it is necessary to know the secondary attack rate of household contacts to cases when no immunizing procedures are used. The rate in measles has been shown to be fairly uniform in different communities, particularly for ages under 14. Stillerman and Thalheimer<sup>16</sup> have listed the secondary attack rate of regular measles among susceptible contacts as reported in the literature and have added rates of their own. From their table we have calculated the secondary attack rates for children up to the age of 7, from the figures of Chapin in Providence, R. I., 88 per cent (1917-1923), Wilson in Providence, R. I., 88 per cent (1929-1934), Fales in Baltimore, 82 per cent (1936-1937), Top in Detroit, 80 per cent (1935) and Butler in Wilesden, England, 84 per cent (1908-1911). In the age group under 7 Stillerman and Thalheimer obtained a rate of 78 per cent in New York City.

In this study all family contacts from 6 months through 6 years of age whose physician or parents refused to have them inoculated were followed in the same fashion by the same personnel as the contacts receiving prophylaxis. Among 65 such contacts 54 developed measles, an attack rate of 83 per cent, which is similar to the secondary attack rates as calculated from the summaries of Stillerman and Thalheimer<sup>16</sup>. Among those 54 cases the measles was mild in 11, or 20 per cent, moderate in 12, or 22 per cent and severe in 31, or 57 per cent. It is evident that the results obtained in this study, particularly with the use of gamma globulin, are strikingly different from the secondary attack rates of measles in this age group when no prophylactic agent is used.

#### COMPARISON OF THE PHYSICOCHEMICAL AND IMMUNOLOGIC CHARACTERISTICS OF GAMMA GLOBULIN AND PLACENTAL GLOBULIN<sup>17</sup>

In table 6<sup>18</sup> it is evident that the concentration and total amount of gamma globulin and the titers of the various immunologic tests performed show that the lots of gamma globulin used in the study had a consistently higher potency than the lot of placental globulin tested. Since there is no laboratory method for determining the concentration of measles antibody, it is not possible to make a direct comparison between the clinical results obtained in this study and the laboratory studies of the materials. However, since the concentration and the amount of gamma globulin and the concentration of all the other antibodies studied are consistently less in the placental globulin, the concentration of measles antibody might also be expected to be less in the placental globulin.

#### COMMENT

The morbidity of measles has not declined over the years, as has that of diphtheria. In New York City in 1941 there were 80,000 cases reported, more cases than in any previous year. Although there has been a decline in mortality, deaths still occur. For the five year period 1939-1943 there were 49 deaths in New York City, 80 per cent of which occurred in the first five years of life. These statistics suggest that in the

absence of an effective active immunizing agent, passive prophylaxis should be administered to household contacts during the first five years of life.

Since convalescent serum is not generally available, and the dosage required is large, the results of this study would indicate that gamma globulin is the agent of choice in the prophylaxis of measles. Gamma globulin can be produced in large quantities, it confers adequate protection in small doses and the number of untoward reactions is minimal. Further studies are needed to determine the minimal protective or modifying dose in each age group.

#### SUMMARY AND CONCLUSIONS

1. Gamma globulin was administered in a uniform dose of 2 cc to 814 household contacts (between the ages of 6 months through 6 years) of cases of measles. None developed regular measles, 78.7 per cent were completely protected and 21.3 per cent had modified measles. Among those cases of modified measles,

TABLE 6—Comparison of Chemical and Immunologic Determinations on the Lots of Gamma Globulin and Placental Globulin Used in This Study

| Measurement                      | Gamma Globulin<br>Range of Lots † | Placental<br>Globulin ‡ |
|----------------------------------|-----------------------------------|-------------------------|
| <b>Chemical</b>                  |                                   |                         |
| Protein concentration Gm /100 cc | 15.3-22.4                         | 4.4                     |
| Electrophoretic analysis         |                                   |                         |
| Albumin and                      |                                   |                         |
| Alpha globulin, per cent         | 0.4                               | 29                      |
| Beta globulin, per cent          | 0.14                              | 38                      |
| Gamma globulin, per cent         | 83-89                             | 33                      |
| <b>Immunologic *</b>             |                                   |                         |
| Diphtheria antitoxin             | 0.4-1.1                           | 0.074                   |
| Influenza A                      |                                   |                         |
| Complement fixation              | 0.7-4.0                           | <0.04                   |
| Hirst test                       | 0.5-2.0                           | 0.06                    |
| Mouse protection                 | 0.8-1.7                           | 0.033                   |
| Mumps complement fixation        | 0.7-1.4                           | <0.04                   |
| Typhoid                          |                                   |                         |
| H agglutinin                     | 0.2-2.0                           | 0.07                    |
| O agglutinin                     | 0.5-1.0                           | 0.5                     |
| Streptococcus antitoxin          | 0.5-1.1                           | Not done                |

\* Immunologic measurements are expressed as a ratio of the titer of the solution to the titer of reference lot IIG-66 of human immune serum globulin<sup>18</sup> the value for lot IIG-66 being considered as one.

† Data on human immune serum globulin is presented in terms of the range of determinations in the various lots used (lots IIG-84, IIG-74B, IIG-120, IIG-137, S-1, S-4 and U-874-2).

‡ Lot number 41 (Immune Globulin Human).

92 per cent were mild measles and 8 per cent moderate measles. There was a tendency for the effectiveness to decrease with age, but the amount of complete protection was not affected by the day of exposure on which the injection was made from the third to the eighth day following initial exposure to the original case. Untoward reactions were rare.

2. Placental globulin was injected into 90 similar contacts in a dose of 5 cc. Severe measles occurred in 23.3 per cent, 38.9 per cent were completely protected and 37.7 per cent had modified measles. Among the cases of modified measles 70 per cent were mild and 30 per cent were moderate. Reactions occurred in 41 per cent of those injected.

3. In a group of 65 contacts of similar age distribution who received no prophylaxis 54, or 83 per cent developed measles. Of these 31 per cent were severe, 12 moderate and 10 mild. This experience is consistent with that of similar groups reported elsewhere.

4. Physicochemical and immunologic studies of gamma globulin and placental globulin demonstrated that gamma globulin is the more potent of the two agents.

5. Gamma globulin (human immune serum globulin) is the material of choice in the prophylaxis of measles.

16. Stillerman M and Thalheimer W. Attack Rate and Incubation Period of Measles. *Am J Dis Child* 67: 15-21 (Jan.) 1944.

17. Dr J. W. Williams of the Department of Chemistry of the University of Wisconsin, Dr J. L. Oncley of the Department of Physical Chemistry, Harvard Medical School made the chemical studies and Dr J. F. Enders of the Department of Bacteriology, Harvard Medical School made the immunologic studies on these materials. Dr Williams worked under contract OECM-142 and Dr Oncley and Dr Enders under contract OECM-139 recommended by the Committee on Medical Research.

18. Enders J. I. Chemical, Clinical and Immunological Studies on the Products of Plasma Fractionation. The Concentrations of Certain Antibodies in Globulin Fractions Derived from Human Blood. *J Clin Investigation* 23: 510-530 (July) 1944.



TREATMENT OF HUMAN ANTHRAX  
WITH PENICILLIN

## REPORT OF THREE CASES

FRANKLIN D MURPHY, M D  
ALFRED C LA BOCCETTA, M D  
AND  
JOHN S LOCKWOOD, M D  
PHILADELPHIA

Human anthrax, although not a widespread disease continues to be an important medical problem among workers in the wool and leather industries. The introduction of more rational and effective methods of prophylaxis and treatment have lowered the incidence and death rate in anthrax but the disease continues to carry a significant mortality. In the five year period 1938 to 1942, exclusive of West Virginia, there were 390 cases of human anthrax reported in the United States, with a mortality rate of 13.8 per cent, which compares favorably with a mortality rate of 15.1 per cent during the period 1933 to 1937 and which represents a distinct advance over the period 1928 to 1932, when among 394 reported cases 106, or 26.8 per cent, ended fatally.<sup>1</sup>

The epidemiology and prophylaxis of anthrax, which are important problems in industrial hygiene, are discussed in great detail in the report of the symposium on anthrax,<sup>2</sup> held by the Department of Health of the State of Pennsylvania in 1941. Suffice it to say here that great strides have been made in attempting to reduce the incidence of this disease in industry.

There is still not full agreement among authorities as to the treatment of choice in human anthrax. In 1941 Lucchesi and Gildersleeve<sup>3</sup> in a report on the treatment of 67 patients at the Philadelphia Hospital for Contagious Diseases concluded that the administration of neoarsphenamine is the method of choice in most cases but that serum is the preferred agent when (1) the lesion is on the face or neck, (2) the blood stream has been invaded and (3) the patient has the "internal" type of anthrax. Furthermore, these authors felt that some patients with cutaneous anthrax "will get well without treatment if the lesion is left alone." Gold,<sup>4</sup> reporting on the treatment of 60 cases of human anthrax, states that "sulfonamide compounds are a safe and reliable substitute for antianthrax serum" but presents several cases in which the sulfonamides appeared ineffective and serum was required for recovery. All authorities agree that attempts at destruction or removal of the lesion are fraught with grave danger and are strictly contraindicated.

From the Harrison Department of Surgical Research, University of Pennsylvania School of Medicine and the Philadelphia Hospital for Contagious Diseases.

The penicillin was provided by the Office of Scientific Research and Development from supplies assigned by the Committee on Medical Research for experimental investigations recommended by the Committee on Chemotherapeutics and Other Agents of the National Research Council. The work was done under a contract recommended by the Committee on Medical Research between the Office of Scientific Research and Development and the University of Pennsylvania. This paper was prepared for publication in March 1944 but not released by the Committee on Medical Research until September 26, 1944.

1. Communication from the United States Public Health Service, January 1944.

2. Symposium on Anthrax, Department of Health, Commonwealth of Pennsylvania, Harrisburg, 1941.

3. Lucchesi, P. F. and Gildersleeve, N. The Treatment of Anthrax. *J A M A* 116: 1506 (April 5) 1941.

4. Gold, H. Anthrax: A Review of Sixty Cases with a Report on the Therapeutic Use of Sulfonamide Compounds. *Arch Int Med* 70: 780 (Nov.) 1942.

In his epoch making paper in 1929, announcing the discovery of penicillin, Dr. Alexander Fleming<sup>5</sup> observed that the growth of *Bacillus anthracis* was inhibited in vitro by a penicillin concentration of 1:10. This compared with the inhibition of *Staphylococcus aureus* at a concentration of 1:400 and lack of inhibition of some gram negative bacilli at a concentration of 1:5. Abraham and his collaborators<sup>6</sup> found that the growth of one strain of *B. anthracis* was inhibited in vitro at the same concentration as that which inhibited four different strains of *Staphylococcus aureus*. It seemed, therefore, that penicillin might be effective in the treatment of human anthrax. The 3 cases reported here are all of the nonbacteremic, cutaneous type and were proved bacteriologically. They were consecutive and unselected, and penicillin was the only specific medication administered.

## REPORT OF CASES

**CASE 1—History**—S. G., a white woman aged 34, a wool worker, first noticed a whitish "pimple" on her left forearm on Oct. 29, 1943. The lesion increased in size, became painful and on November 1, the third day of the disease, she was admitted to the Philadelphia Hospital for Contagious Diseases. On admission the temperature was 99 F., the pulse rate was 102 and the patient appeared slightly toxic and anxious. The lesion, which was on the flexor surface of the left forearm 9 cm. from the wrist measured about 2 cm. in diameter and consisted of a central black eschar surrounded by a zone of small vesicles. Almost the entire flexor surface of the forearm from the wrist to the antecubital space was indurated and erythematous. The history and physical examination were otherwise noncontributory.

A continuous intravenous infusion containing penicillin was started on admission and continued for five hours, at which time, owing to technical difficulties, the infusion was stopped, so that the patient received approximately 25,000 units initially. Examination of the lesion at this time revealed that the area of erythema and induration about the lesion had almost completely disappeared. The intravenous infusion was then restarted and continued for twenty-four hours, during which time the patient received an additional 150,000 units of penicillin. The intramuscular route was then used and the patient received 12,500 units intramuscularly every two hours for forty-eight hours. The course of therapy lasted a little over three days and the patient received a total of 475,000 units of penicillin, of which 175,000 was given intravenously and 300,000 units intramuscularly.

The temperature remained normal after eighteen hours of therapy. The pain disappeared almost immediately and examination four days after admission showed that the erythema and induration had disappeared while the vesicles had become dry. The patient was discharged in good condition on the ninth hospital day.

**Laboratory Studies**—Blood examination revealed hemoglobin 12 to 13 Gm. and white blood cells 6,400 to 8,400, with 68 per cent neutrophils, 20 per cent lymphocytes and 11 per cent monocytes. Kolmer and Kahn tests were negative. Blood culture on admission was negative. Culture of the local lesion on admission and before penicillin was started was positive for *B. anthracis*. Cultures taken on the third, seventh and eighth days after admission were negative.

**CASE 2—History**—D. S., a Negro woman aged 18, a wool worker, was admitted to the Philadelphia Hospital for Contagious Diseases on Nov. 20, 1943, four days after she had

5. Fleming, A. The Antibacterial Action of Cultures of a Penicillium with Special Reference to Their Use in the Isolation of *B. Influenzae*. *Brit J Exper Path* 10: 226 (June) 1929.

6. Abraham, E. P., Chain, E., Fletcher, C. M., Gardner, A. C., Heatley, N. G., Jennings, M. A. and Florey, H. W. Further Observation on Penicillin. *Lancet* 2: 177 (Aug. 16) 1941.



first noticed a small papule on the left side of her face. This papule had increased in size so that on admission to the hospital examination revealed a circular lesion on the left side of the face above the zygoma measuring 2 cm in diameter. It consisted of a central black eschar covered with a serosanguineous discharge and surrounded by small clusters of vesicles. Just peripheral to the lesion was an area of erythema and induration measuring 2 cm in width. An enlarged and tender left preauricular lymph node was palpable. The temperature was 99.4 F. The history and physical examination were otherwise negative.

A continuous intravenous infusion of penicillin was begun, and during the first fifty-three hours the patient received 225,000 units in this manner. Then, because of the development of a mild thrombophlebitis, a change to the intramuscular route was made and the patient received injections of 8,333 units every two hours for twenty-four hours. The course of penicillin therapy lasted a little over three days and the patient received a total of 325,000 units, of which 225,000 units was given intravenously and 100,000 units intramuscularly.

Twelve hours after the onset of therapy the erythema was less, the serous discharge had disappeared, the vesicles had become dry and the preauricular lymph node was no longer tender. At the end of seventy-two hours of treatment all edema and erythema had disappeared, and the lesion was quite dry and appeared innocuous. The thrombophlebitis resulting from the intravenous infusion cleared up rapidly under conservative measures and the patient left the hospital on the ninth hospital day.

**Laboratory Studies**—Hemoglobin was 77 to 87 per cent, white blood cells numbered 11,900 to 8,200, with 63 per cent neutrophils, 35 per cent lymphocytes and 2 per cent monocytes. Kolmer and Kahn tests were negative. Blood culture on admission was negative. Smear and culture of the local lesion were positive for *B. anthracis* on admission (before the administration of penicillin) and on the day following admission (after about 50,000 units of penicillin had been administered). Cultures and smears taken on the second, third, fourth, eighth and ninth days after admission were negative.

**CASE 3—History**—L. D., a white woman aged 34, a wool worker, on Dec. 10, 1943 noticed a small 'pimple' on the ulnar aspect of her left forearm. On December 14 she received 0.3 cc of staphylococcus vaccine. A smear of the lesion made on the following day showed *B. anthracis*, and she was admitted to the Philadelphia Hospital for Contagious Diseases on December 15, five days after the onset of the disease.

Physical examination revealed a temperature of 99.8 F and a normal pulse, respiratory rate and blood pressure. On the ulnar aspect of her left forearm just above the wrist was a round, purplish red partially crusted, oozing lesion measuring 2 cm in diameter. Just peripheral to the lesion were a few clusters of vesicles, and the entire lesion was surrounded by a zone of erythema and induration. There was no adenopathy and the history and physical examination were otherwise negative.

A continuous intravenous infusion of penicillin was started and continued for forty-eight hours, so that she received a total of 100,000 units intravenously at the rate of 50,000 units per day.

After she had received about 40,000 units, examination revealed that the erythema and induration about the lesion had decreased considerably. After 100,000 units had been administered the lesion looked dry and the erythema had completely disappeared. The patient was discharged on the tenth hospital day.

**Laboratory Studies**—Hemoglobin was 80 per cent, white blood cells numbered 9,200 to 7,600, with 72 per cent neutrophils, 20 per cent lymphocytes and 8 per cent monocytes. Kolmer and Kahn tests were negative. Blood culture on admission was negative. Smear and culture of the local lesion on admis-

sion were positive for *B. anthracis*. Smear and culture taken on the first and second days after admission were also positive. Smear taken on the third day, after the administration of 100,000 units of penicillin showed a few organisms but the culture was negative. The same was true on the fourth day. On the fifth, sixth, seventh, tenth and eleventh days after admission both smear and culture were negative.

#### COMMENT

The clinical response of these cases of anthrax to penicillin was rapid and definite. In each instance the inflammatory reaction about the lesion showed very prompt regression and the lesion itself underwent rapid involution.

The clinical response was paralleled by the disappearance of *B. anthracis* from the lesion. The organism in case 1 could not be seen or cultured after the administration of 475,000 units of penicillin. In case 2 culture and smear were positive after 50,000 units of penicillin had been given but were negative after the administration of 150,000 units. A small dosage of penicillin was deliberately given in case 3 and here

#### Comparative Susceptibility of *B. Anthracis* to Penicillin

| Concentration of Penicillin<br>in Culture Medium<br>Units per Cc | Organism                     |                     |         |
|--|------------------------------|---------------------|---------|
|  | <i>Staphylococcus aureus</i> | <i>B. Anthracis</i> | E. Coll |
| 0.01   | ++                           | ++++                | ++++    |
| 0.025  | 0                            | ++++                | ++++    |
| 0.05   | 0                            | ++++                | ++++    |
| 0.1  | 0                            | ++++                | ++++    |
| 0.25   | 0                            | +++                 | ++++    |
| 0.5  | 0                            | ++                  | ++++    |
| 1.0  | 0                            | +                   | ++++    |
| 2.5  | 0                            | 0                   | ++++    |
| 5.0  | 0                            | 0                   | ++++    |
| 10.0   | 0                            | 0                   | ++++    |

++++ indicates luxuriant growth    +++ moderate growth    ++ slight growth    + very slight growth    0 no growth

it was seen that after 50,000 units culture and smear were still positive. After 100,000 units the smear remained positive but showed few organisms, and the culture was negative. Twenty-four hours after the administration of 100,000 units of penicillin the smear was still positive and culture was negative, but in forty-eight hours both smear and culture were negative. In none of the 3 cases did the organism reappear in smear or culture after its initial disappearance.

On the basis of these bacteriologic and clinical data it would seem that a total of 100,000 units of penicillin is certainly the minimum effective dose in the uncomplicated case of cutaneous anthrax. At least a total of 200,000 to 400,000 units of penicillin, given at the rate of 100,000 units in twenty-four hours, should be administered to the average adult, and this amount should effect a prompt and satisfactory therapeutic response. Continuous intravenous infusion is probably the most efficient route of administration, although intramuscular injections every two to three hours might be just as effective. No case of visceral anthrax or severe cutaneous anthrax with bacteremia has been treated with penicillin to our knowledge. In these cases larger doses should undoubtedly be administered by the intravenous route and perhaps serum should be given in addition.

The strain of *B anthracis* isolated in case 3 was tested in vitro for its sensitivity to penicillin by Miss Marjorie Wiley and was compared to *Staphylococcus aureus* and *Escherichia coli*. As may be seen in the table, the growth of *B anthracis* was completely inhibited by a concentration of 25 units of penicillin per cubic centimeter, the growth of *Staphylococcus aureus* was completely inhibited by a concentration of 0.025 unit per cubic centimeter, but the growth of *E coli* remained uninhibited in all concentrations. In other words, this strain of *B anthracis*, although sensitive to penicillin, was one hundred times less sensitive than *Staphylococcus aureus*. Fleming's strain<sup>5</sup> was forty times less sensitive than *Staphylococcus aureus*, while the organism of Abraham and his collaborators<sup>6</sup> appeared to possess the same sensitivity as *Staphylococcus aureus*. Allowing for possible differences in the resistance of the various strains of *Staphylococcus aureus* used in each study, it nevertheless appears likely that different strains of *B anthracis* may vary widely in their sensitivity to penicillin in vitro. This study also suggests that one must exercise some caution in predicting the clinical response of a disease to penicillin therapy on the basis of in vitro response of the etiologic agent to penicillin, for in this instance we have an example of a disease which shows pronounced clinical response to the administration of penicillin in small dosage and yet is caused by an organism which has been observed to possess a relatively low sensitivity to penicillin in vitro.

The place of penicillin in the therapy of anthrax and its relation to the other agents already used in this disease cannot be finally determined on the basis of 3 cases. Suffice it to say that penicillin is a chemotherapeutic agent of low toxicity which, in relatively small doses, appears to be remarkably effective in the treatment of cutaneous human anthrax. We believe that penicillin will acquire a prominent place in the treatment of this disease and that further clinical trial is warranted.

#### SUMMARY AND CONCLUSIONS

1 Three cases of uncomplicated cutaneous human anthrax without bacteremia were treated with penicillin. As far as we know, this is the first report on the use of penicillin in the treatment of patients with cutaneous anthrax.

2 Exceedingly prompt and excellent clinical response to penicillin was observed in every case.

3 Bacteriologic studies showed that there was rapid disappearance of *B anthracis* from the cutaneous lesions after administration of penicillin.

4 In vitro studies of the strain of *B anthracis* isolated in 1 case showed it to be sensitive to the action of penicillin, but one hundred times less sensitive than a strain of *Staphylococcus aureus*.

5 A total of 100,000 units of penicillin is certainly the minimum effective dose, and a total of 200,000 to 400,000 units, given at a rate of 100,000 units per day, should serve to evoke a satisfactory therapeutic response in the average uncomplicated case of cutaneous anthrax.

6 Penicillin is a valuable agent in the treatment of human anthrax and deserves further clinical trial in this disease.

## THE ROENTGEN DIAGNOSIS OF TRAUMATIC LESIONS OF THE CERVICAL SPINE

MAJOR GILBERT W. HEUBLEIN

Assistant Chief of X-Ray Section, Percy Jones General Hospital  
Battle Creek, Mich.

MEDICAL CORPS, ARMY OF THE UNITED STATES

Twenty-five hundred years B. C. a certain author stated that "one having a crushed vertebra in his neck, he is unconscious of his two arms and his two legs and he is speechless." Thus, according to Stinchfield,<sup>1</sup> began the history of fractures of the spine. As recently as 1917 an eminent radiologist said "On account of the technical difficulties in making plates laterally, most of us have been content to make stereoscopic plates in the anteroposterior projection."<sup>2</sup> Present day technique of cervical spine radiography is not difficult, if done with care.

In Percy Jones General Hospital we have been fortunate in having one of the newer developments in



Fig. 1—Conventional projections of cervical spine showing spina bifida occulta, calcified intervertebral disk and congenital fusion of second to third cervical and sixth to seventh cervical. Abnormal 8 shaped foramen at a normal for comparison at b. Note the narrow intervertebral disk between sixth and seventh cervical. This is a frequent finding in patients without symptoms. (Courtesy of Capt. A. P. Dado).

technical equipment—the Morgan meter.<sup>3</sup> This is valuable in making both simple and difficult projections of the spine. The operation of the meter depends on the fact that intensity  $\times$  exposure time = a constant. Thus, if the intensity reaching the film is known in advance, the time for proper exposure can be determined algebraically. The Morgan meter does away with mathematical computations and the exposure time is read off directly from a calibrated scale on the meter. We have found the meter particularly valuable in taking various parts through casts and in other such cases where the examination for one reason or another may be considered technically difficult or where contrasty films are needed for any reason. With the aid of the Morgan meter excellent films of the cervical spine can be obtained through heavy plaster.

Read before the joint Section on Orthopedic Surgery and the Section on Radiology at the Ninety Fourth Annual Session of the American Medical Association, Chicago, June 16, 1944.

1 Stinchfield, F. E. Fractures of the Vertebrae. *A Five Year Collective Review*. Surg., Gynec. & Obst. 70: 378-388 (April) 1940.

2 Hickey, P. M. Lateral Roentgenography of the Spine. *Am. J. Roentgenol.* 4: 101-106 (March) 1917.

3 Morgan, R. H. A Photoelectric Timing Mechanism for the Automatic Control of Roentgenographic Exposure. *Am. J. Roentgenol.* 48: 220-228 (Aug.) 1942. Studies in Roentgenographic Exposure Meter Design. *ibid.* 48: 88-98 (July) 1942.

In children one must bear in mind appearances mimicking fractures as a result of numerous ossification centers or areas of incomplete fusion<sup>4</sup>. In adults running vertically in the region of the dens, one encounters radiolucent lines due to the superimposed interproximal space of the central incisor teeth. Separate ossicles

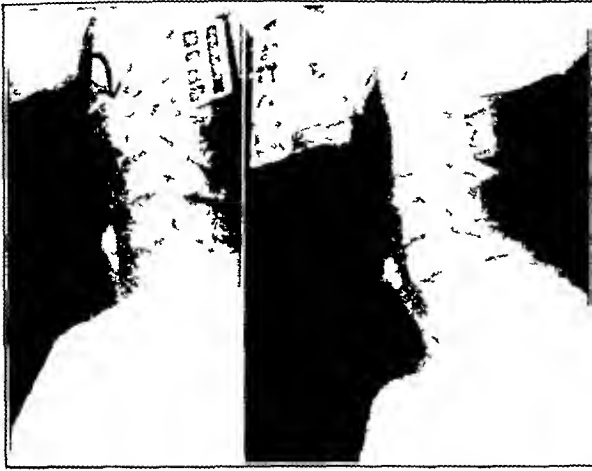


Fig 2—Gunshot fracture of second and third cervical vertebrae. A 0.25 caliber Jap bullet struck this patient in the mandible and the missile lodged in the neck. Twenty-four hours later he spat the bullet from his mouth. Note retrovisceral soft tissue swelling and bone spicules on the left. On right soft tissue swelling has returned to normal. Hypertrophic changes bridge the injured vertebral bodies. Very little ultimate disability resulted from this injury.

in the ligamentum nuchae may cause confusion, as will also the wedge shaped epiphysial deformity encountered with limbus vertebra. These are normal variants or at most the result of a disturbance of the ossification of the vertebral plates.

In addition to routine anteroposterior and lateral views made at 6 feet we often make films through the open mouth, oblique projections (50-55 degree rotation) and those in the Jackson position, which



Fig 3—P. C. S., a private first class aged 21, was injured when thrown from a truck. Films showed fracture through the base of the odontoid with posterior displacement. Following head traction the deformity was completely corrected.

is similar to an exaggerated Waters view used in paranasal sinus examinations. It should be emphasized that the transoral view is essential in every case of neck injury. The less well known Jackson view is often helpful. The oblique views, as in figure 1, show the interver-

tebral foramina to best advantage. In certain instances fracture lines can be detected only in such projections. A normal intervertebral foramen has a smooth, oval appearance, while one with hypertrophic changes along its margins has an 8 shaped outline due to projecting osteophytes in its midportion. Hypertrophic changes may be of importance as a cause of symptoms and if located at or above the fourth cervical vertebral level may give rise to the swollen atrophic hand<sup>5</sup> without local cervical spine symptoms. Often numerous views are required before fractures in hypertrophic spurs can be demonstrated<sup>6</sup>.

Fractures of the cervical spine comprise 23 per cent of the cases of vertebral fractures examined in our department. They can be divided into two categories:

- 1 Those which affect the cord protecting portion of the spine, i.e., the neural arch and its processes.
- 2 Those which affect the weight bearing structures of the spine, i.e., the vertebral bodies. Vertebral body fractures may vary from minute spicules projecting

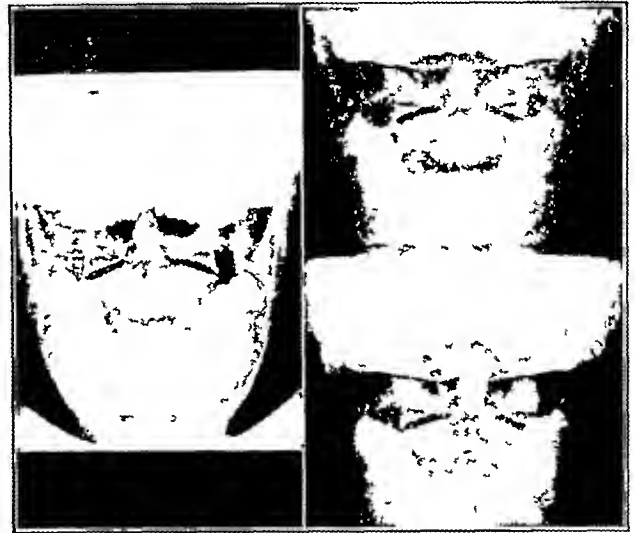


Fig 4—Transoral films showed the fracture line well visualized one month after the accident (see right hand illustration). This is due to presence of a rarefying osteitis.

anteriorly or a moderate bulge along the anterosuperior margin of the body to considerable compression of the spongy portion, with or without detached fragments. In the cervical spine—a relatively unprotected portion of the vertebral column—dislocations are often present and may or may not be associated with fracture. In sharp contradistinction is the dorsolumbar region, where dislocations are almost invariably associated with fracture. The soft tissues adjacent to the vertebral bodies must be carefully inspected. Any swelling of these structures indicates the presence of hemorrhage, edema or infection. In fractures of the arches, callus formation may be a prominent feature<sup>4</sup>.

The following case illustrates a compression fracture due to gunshot wound.

A private aged 23 was wounded by a sniper in New Guinea in December 1942. He crawled to a first aid station and twenty-four hours after the injury he spat a 0.25 caliber bullet out of his mouth. A comminuted compression fracture associated with pronounced swelling of the retropharyngeal structures

<sup>5</sup> Oppenheimer A. Swollen Atrophic Hand. Surg. Gynec. & Obst. 67: 446-454 (Oct.) 1938.

<sup>6</sup> Severance R. D. in Discussion of Injuries to the Cervical Vertebrae. New York State J. Med. 42: 615-619 (April 1) 1942.

<sup>4</sup> Fancourt H. K., Pendergrass E. P. and Schaeffer J. P. The Head and Neck in Roentgen Diagnosis. Springfield, Ill. Charles C. Thomas Publisher, 1940. pp. 311 and 145-159.

resulting from hematoma was seen. A year later the fracture was well healed and bridged by osteophytes. On physical examination minimal disability in flexion and extension was observed (fig 2). Fortunately this patient escaped osteomyelitis, a not infrequent complication of gunshot wound in this area.

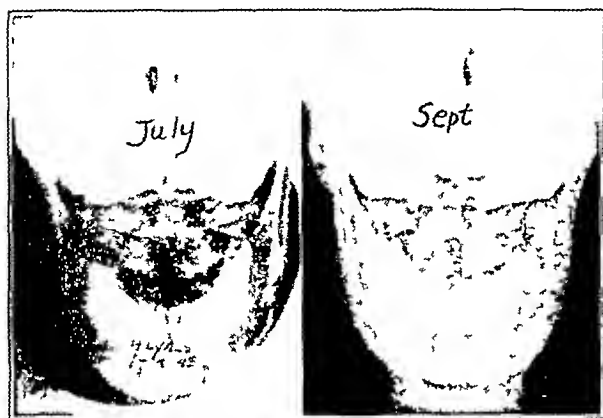


Fig 5—Abnormal distance between the lateral masses of the first cervical vertebra and the dens. This space should ordinarily not exceed one half the transverse diameter of the odontoid process.

An important consideration in examining the cervical spine is the use of the films made in the lateral direction with the neck in flexion and extension. This has been known for many years, but its importance should not be overlooked. Exposures made in flexion may show a subluxation not demonstrable in conventional views.

The first and second cervical segments represent a very special area. Fractures through the base of the odontoid process may not be shown at the initial examination and may be revealed only some weeks later, when additional studies indicate the presence of a rarefying osteitis along the fracture line. Delayed films may be necessary before proper diagnosis is made. The patient should not be accused of malingering on the

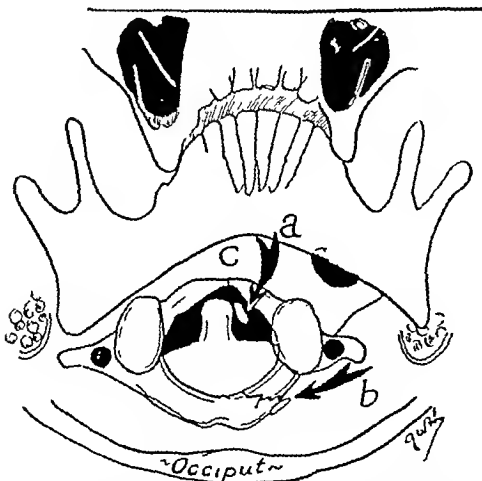


Fig 6—While walking in North Africa a private aged 24 was struck by a car. He was unconscious for six hours. A special film in the Jackson position showed a chip fracture of the odontoid at *a* and a fracture of the arch of the atlas at *b*. Same case as figure 5.

basis of a single early negative examination. Fractures here may give rise to symptoms simulating those produced by the cord changes of primary pernicious anemia.

7 Pendergraft E. P. Personal communication to the author. *Wat on Jones R. Fractures and Other Bone and Joint Injuries*. Edinburgh E & S Livingstone 1940.

The roentgenologist must be conservative in interpreting films of this region, taking care to recognize definite abnormalities and by the same token avoiding false positive diagnoses. In the next case (figs 3 and 4) there was a fracture of the dens with posterior luxation adequately corrected by head traction after six days. Seven months after injury the fracture line was still well shown because of a rarefying osteitis along the fracture cleft. These lesions usually heal by fibrous union. Isolated fractures of the atlas are relatively rare, only 99 having been reported since 1822.<sup>8</sup> The bilaterally symmetrical wide separation of the lateral masses of the atlas seen in figure 5 might be easily overlooked. The space normally present on each side of the dens does not ordinarily exceed one-half the transverse diameter of the odontoid process. In this particular individual, by means of the Jackson position shown in figure 6, we were able to identify two definite abnormalities in the region of the atlanto-odontoid joint. These included a chip fracture lateral to the dens and definite evidence of fracture in the posterior arch of the atlas. This



Fig 7—Two types of vertebral fracture: that of the posterior processes shown at *a* and crush fracture of the twelfth dorsal vertebral body at *b*.

patient made a satisfactory recovery and was returned to duty.

Recently Nachlas<sup>9</sup> suggested that arm pain of parachute jumpers may be attributed to the whiplash effect of the sudden opening of the parachute, particularly when the soldier holds his neck in an awkward position. In a review of 57 cases in the Royal Air Force, Hall and Morley<sup>10</sup> make the following significant statement: "Aircraft accidents may on occasion be appallingly destructive in their effects, yet it is surprising how much the human frame can tolerate and how often the pilots and co-pilots are uninjured when the machine may be totally wrecked. Conversely, slight accidents may have tragic results through sheer misfortune." Only 1 case of cervical spine fracture resulting from a flying accident is reported by them. Cervical spine fractures in parachutists are much less common than one might expect—approximately 2 in 10,000 jumps.<sup>11</sup>

The following case illustrates both categories of spinal fractures (injury of the posterior processes plus crush

8 Hatchette S. Isolated Fracture of the Atlas. *Radiology* 36: 233 (Feb.) 1941.

9 Nachlas W. I. Brachialgia: A Manifestation of Various Lesions of the Cervical Spine. *J. Bone & Joint Surg.* 26: 177-184 (Jan.) 1944.

10 Hall P. A. and Morley G. H. A Review of Cases of Injury to the Vertebrae Occurring in the Royal Air Force. *Brit. M. J.* 1: 159-163 (Feb. 3) 1940.

11 Engelman A. A. Personal communication to the author.

fracture of the centrum), showing a break through the seventh cervical spinous process and a crush fracture at the dorsolumbar junction (fig 7)

A staff sergeant was flying over New Georgia, when his plane was forced down by Japs. He parachuted to earth with his co pilot, who had a broken arm due to gunshot wound

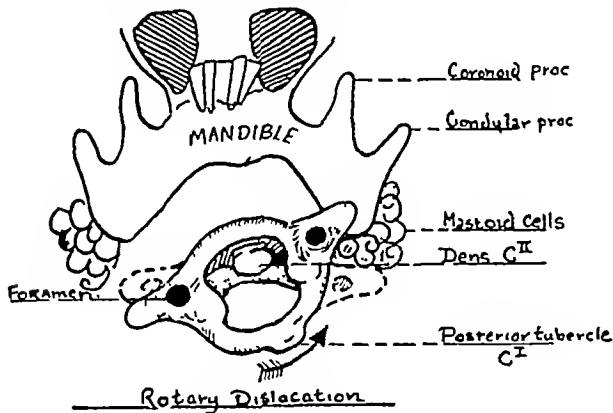


Fig 8—Roentgen anatomy of the Jackson position showing the appearance of a proved case of rotary dislocation. Dotted lines indicate the approximate normal position of the transverse processes prior to dislocation

They landed in enemy territory and heard Japs all around them but managed to crawl 500 yards through the jungle to the ocean and started swimming. The sergeant's abdomen became greatly distended because of ileus and both men were in a critical condition. They were rescued by friendly natives, who took them by canoe to a nearby island. Here they were able to communicate by radio with an army base and were picked up by a flying boat. Four weeks later the patient was receiving treatment in our hospital. This type of cervical spine fracture requires no surgical intervention. The dispatch with which this soldier was transferred to the zone of the interior needs no comment.

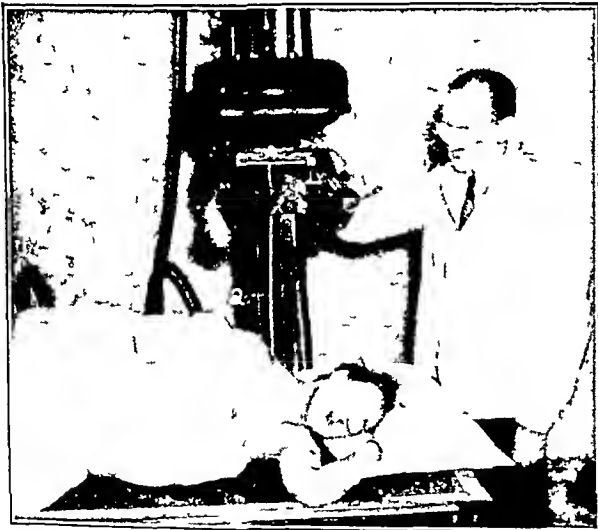


Fig 9—Position employed for cone down study of cervicodorsal junction. Pointer at a showing position of central ray is directed to the base of the cervical spine. For the left lateral projection as indicated here the left hand is placed on the head and the right shoulder is depressed. A satisfactory average technic with rotax tube is 60 70 80 kilovolt peak 100 milliamperes (one second at 100 milliamperes) medium sized telescopic cone. Buck's focal distance 36 inches.

Another cervical spine lesion of importance is that of rotary dislocation of the atlas (fig 8). This may be aggravated by trauma but often is the result of upper respiratory tract infection, especially when a cervical lymphadenitis is present. It is stated also to occur

as a result of muscle spasm in poliomyelitis or when there is congenital absence of the dens or asymmetrical development of facets.<sup>12</sup> An illustrative case follows.

A private aged 23 who had two previous episodes of neck trauma had a tonsillectomy in February 1943. One week later he was returned to duty. In the latter part of March he complained of stiffness of the neck. Physical examination showed muscle spasm and enlarged cervical lymph nodes. A pronounced torticollis was present. Our x-rays showed a rotary dislocation of the axis on the atlas. Traction was employed, and in four days the muscle spasm subsided. Examination then showed the displacement corrected. While in traction he had radiculitis in the left arm and pain radiating to the front of the chest. A pantopaque myelogram failed to reveal evidence of a ruptured disk. In November the patient was up and comfortable but considerable restriction of the motion of the neck was still present and roentgen examination showed some narrowing of the atlantoaxial joint.

Pathologic fractures of the cervical spine are of interest because of their rarity and must be differentiated from those caused by trauma.

A white man aged 56 complained of minimal pain at the base of his neck following a cystoscopy. The cervicothoracic junction was somewhat prominent. No point tenderness was noted.



Fig 10—Film on left shows metal brace obscuring the odontoid. Film on right shows complete obliteration of brace as the result of laminographic study—section made at level of external auditory meatuses. There is an alteration in the normal contour of the dens due to fracture. (Courtesy High M. Wilson, M.D.)

Twenty-three days after cystoscopy a narrowed interspace was seen in the cervical spine films and the patient had an alternating low grade temperature with increasing pain in the distal cervical region. Special films were secured employing the technic shown in figure 9. These demonstrated a definite dislocation of the facets of the sixth and seventh cervical vertebrae. Films made after traction showed the segments in normal position with slight residual compression of the seventh cervical. These changes were felt to be the result of an osteomyelitis.

This case is included to stress the difficulties faced by the radiologist unless an adequate clinical history is available. The lower cervical segments are often difficult to visualize in short necked patients with heavy shoulders.

In certain instances the planigraph, or laminagraph, is of definite value. No dogmatic stand can be taken regarding such examinations, so much depends on the type of conventional films secured and their interpretation. The laminagraph is of importance in obliterating the shadow of metal braces or other orthopedic paraphernalia which in conventional films may obscure the anatomic detail.<sup>12a</sup>

In cases of pain referable to the cervical spine the diagnosis of a ruptured nucleus pulposus must be con-

sidered. The intervertebral disk buffer may be disturbed by minimal traumas often repeated or by a single severe injury. Myelograms are done in our hospital in some such cases, Pantopaque (ethyl iodophenylundecylate) being the contrast medium used. The case illustrated in figure 11 presented a large filling defect at the level of the sixth cervical vertebra. This was proved at operation to be due to a herniated nucleus pulposus.

Experience with myelography indicates that successful delineation of such lesions is not always easy. Accurate diagnosis is dependent on several important factors:

1. Proper apparatus, including the use of a canvas support and a special attachment for obtaining lateral films in the prone decubitus.
2. Adequate extension of the neck to prevent the escape of the opaque material into the basal cisterns.<sup>13</sup>
3. Accurate spinal puncture by a neurosurgeon experienced in this type of procedure. This cannot be too strongly emphasized.



Fig. 11—Defect produced by a large ruptured disk is shown on the right. Pain in shoulder and neck radiating down into first three fingers was made worse by coughing and straining. Minimal herniation is shown at left. Such a lesion could not be diagnosed without the aid of multiple films and close correlation of all the clinical findings. A small laterally placed disk was removed between the sixth and seventh cervical vertebrae with complete relief of symptoms. (Courtesy of R. Glen Spurling, lieutenant colonel M. C. and Benjamin B. Whitcomb, captain M. C.)

4. Proper withdrawal of the opaque medium at the completion of the examination to be checked by a scout film of the area examined.<sup>14</sup>

5. Lastly, and perhaps of most importance, the close correlation of clinical and radiographic findings.

#### CONCLUSIONS

1. The cervical spine, as the result of its relative lack of protection, is subject to many different types of injury.
2. The roentgen examination is an invaluable aid in diagnosis and differential diagnosis.
3. A thorough knowledge of the anatomy plus the roentgen technic indicated in the demonstration of various lesions is essential if the accurate diagnosis is to be attained.

## POLYCYTHEMIA VERA

### FINAL REPORT ON A CASE UNDER CONTINUAL TREATMENT WITH PHENYLHYDRAZINE HYDROCHLORIDE FOR ELEVEN YEARS

CLAIR L. STEALY, M.D.

AND

HAROLD S. SUMERLIN, M.D.

SAN DIEGO, CALIF.

This is a final report on a case of polycythemia vera which was under observation for seventeen years, and for eleven of these years under continual treatment with phenylhydrazine hydrochloride. It is presented (1) because of the long period of treatment with the drug, (2) to record the changed blood picture during the last six years of life and (3) to report the autopsy findings.

Until a year before the patient died at the age of 72 years she led a useful and normal life. For the first eleven of the seventeen years the patient was under our observation the disease was successfully controlled, from the standpoint of the blood picture and subjective symptoms, by phenylhydrazine hydrochloride. Then, six years before death, a leukemoid type of blood picture developed. Three years before the change in the blood picture occurred a carcinoma of the cervix had developed which was effectively treated with radium. The radium had only temporary, if any, effect on the blood picture. The physical findings remained much the same as at the time of our last report in 1932.<sup>1</sup> In appearance the patient had aged. Her color, even up to the time of her death, would have led a trained observer to suspect the presence of polycythemia vera. The heart apparently became somewhat enlarged and there was evidence of mild myocardial and vascular degeneration, the blood pressure remained within normal limits. There was slight enlargement of the liver but no more than would be expected with the heart and circulatory changes or with an enlarged spleen. The spleen extended to the midline and almost to the crest of the ilium but this represented no appreciable change in size since the patient was first seen in 1924. The kidney function as determined by the phenolsulfonphthalein test and the liver function as determined by the hippuric acid test were normal in 1938, as were the icterus index and the van den Bergh reaction. Analysis of the gastric contents after the Ewald meal revealed an absence of free hydrochloric acid and a total acid content of 9 degrees. During the last few months of life an edema and an abdominal ascites which required removal of fluid by paracentesis at frequent intervals developed.

The blood picture began to change in 1935 after eleven years of treatment with phenylhydrazine hydrochloride. With the red cells numbering about 7 million the patient started her medication as usual. This time the number of red blood cells dropped from 7 million to 4 million, a slightly greater response to the drug than had been normal for her. Then, instead of the usual gradual increase in red cells with the withdrawal of the drug, there was a continued decrease to between 2 and 3 million, at which level they remained for the remaining six years of the patient's life. The hemoglobin concentration of the blood, which had varied from 12 to 17 Gm per hundred cubic centimeters, fell in like

<sup>13</sup> Spurling R. G. and Hampton, A. O. Personal communication to the author.

<sup>14</sup> Kubik C. S. and Hampton A. O. Removal of Iodized Oil by Lumbar Puncture. *New England J. Med.* 224: 455-457 (March 13) 1941.

From the Rees Stealy Clinic.  
1. Stealy C. L. Polycythemia Vera. Report of Case Treated with Phenylhydrazine Hydrochloride over Period of Seven and One Half Years. *J. A. M. A.* 98: 1714-1716 (May 14) 1932.



manner to a level of 7 to 9 Gm per hundred cubic centimeters. The presence of normoblasts was noted and poikilocytosis, polychromatophilia and achromia appeared. The leukocyte count, which had previously maintained a high level of 15,000 to 20,000 with occasional jumps to 25,000 and 30,000, dropped with the red cell count and during the last five years ranged between 5,000 and 10,000 with an occasional rise to 12,000 or 13,000. The first myelocytes appeared in the blood smear at sporadic intervals two years before the red cell count dropped and became a constant finding during the last six months of phenylhydrazine therapy. The possibility of the development of a primary anemia was considered in view of the lack of gastric acid even though the blood picture was not typical, but there was no reticulocyte response to liver therapy. It has been observed by others that the gastric acid falls with increasing polycythemia<sup>2</sup> but that the antianemic principle of Castle which is absent in pernicious anemia is present in excessive amounts in polycythemia vera.<sup>3</sup>

The blood picture suggested the development of a leukemia, but microscopic examination of the blood smear did not bear out such a diagnosis. Dr. Charles A. Doan of the Department of Medicine at the Ohio State University College of Medicine, who examined some of the blood films wrote

I was particularly impressed by the changes in the red blood cells. There was marked variation in size and shape of the erythrocytes, and a definite polychromatophilia and achromia. There was an unusual number of red cells showing punctate basophilia, sometimes 2 or 3 being seen in a single oil immersion field. There were many microcytes and occasional macrocytes. The average diameter as revealed by the Eve halometer was 7.64 microns. The blood platelets were, for the most part, sparsely scattered as single units and varied strikingly in individual size, there being microthrombocytes as well as macrothrombocytes. As far as the white cells are concerned, I should feel that the findings were indicative of a definite myeloid hyperplasia of the marrow, primarily of the neutrophilic granulocytes. The percentage of myeloid elements together with the very definite "left shift" principally to the band form stage, with only 6 per cent actual myelocytes present, and no increase in basophils or eosinophils, does not bespeak an active leukemic process. Furthermore, the quality of the myelocytes is not suggestive of a leukemic anaplasia. The lymphocytes show a moderate degree of "left shift" not pathognomonic. The presence of an occasional nucleated red cell, the very marked polychromatophilia, and especially the degree of punctate basophilia, when coupled with marked size and shape changes, and 12 per cent of toxic granule neutrophils among the white cells, could only be interpreted as a reflection of a toxic hemolytic destructive agent.

A year later blood films were again sent to Dr. Doan. He saw no change in the general hematologic picture and interpreted the findings as "representing very active myeloid and erythroid activity in the bone marrow under some disadvantages, toxic or otherwise, together with an accompanying disturbance in the normal function of the megakaryocytes, that is to say, an abnormality which affects all of the active hemopoietic elements in the bone marrow."

There was little change in the blood picture from this time until the death of the patient in 1941. The following is a representative blood count of this period: hemoglobin concentration of the blood 9 Gm per hundred

cubic centimeters, erythrocytes 2,900,000 and leukocytes 7,800. The leukocytes were differentiated as follows: neutrophils 80 per cent, of which 53 per cent were band forms, 25 per cent segmented forms and 6 per cent myelocytes, lymphocytes 14 per cent, eosinophils 1 per cent, and basophils 1 per cent. There was 1 normoblast to every 100 erythrocytes.

The necropsy report is given in its entirety.

The arterially embalmed body was that of a quite emaciated white woman, 67 inches (170 cm) long and weighing about 90 pounds (41 Kg). The abdomen was distended and showed an old low midline scar. There was moderate edema of the feet and legs. The superficial lymph nodes were not enlarged. The tissues gave the appearance of anemia.

The brain showed moderate atrophy of the convolutions with widening of the sulci but otherwise was normal. The meninges appeared normal. The arteries were moderately sclerotic. The pituitary gland appeared normal.

There was a small amount of clear fluid in both pleural cavities. The lungs showed only hypostatic congestion. The heart was normal in size. The epicardium showed an area of edema at the apex but otherwise the heart was normal. The aorta was moderately sclerotic. The mediastinal lymph nodes were not enlarged.

The abdominal distention was due to a large quantity of clear yellow fluid. The mesenteric, gastric, splenic and esophageal veins were greatly enlarged. A segment of small intestine was adherent to the old scar. The peritoneum was smooth but somewhat opaque. The spleen extended to the brim of the pelvis (1,950 Gm, 25 by 5 by 10 cm). The surface was rough and dull gray with several yellow patches (2 to 5 cm) which were the sites of infarcts. The consistency was firm and fibrous. The cut surface was dull brown with white fibrous bands. The capsule was 2 mm thick. The liver was somewhat enlarged (1,820 Gm) and firm, and the edge was rounded. The surface of the right lobe was fairly smooth. A great part of the left lobe showed a nodular surface. It cut with increased resistance, the cut surface being pale in appearance and homogeneous. The capsule was thickened. The gastrointestinal tract and pancreas appeared normal. The surfaces of the kidneys were granular, the capsules adherent. On the cut surfaces the markings were distinct, but the cortex was reduced in thickness. The adrenals appeared normal. The bladder and ureters were normal. The uterus, tubes and ovaries had been surgically removed in the distant past. The mucosa over the vault of the vagina was smooth. There was a fibrous nodule which was regarded as the remnant of the cervix uteri, the os having been destroyed by radium treatment.

There were no enlarged pelvic lymph nodes. The aortic chain of nodes and the hilar nodes of the spleen were quite large (25 by 15 by 1 cm), firm and of fibrous consistency. Those about the spleen were brownish red (pigment). The marrow in the middle third of the tibia and femur was deep red and quite firm. The vertebral marrow was similar in appearance.

On microscopic examination, the spleen showed marked fibrosis. The follicles were widely separated. Myeloid cells, including an occasional megakaryocyte, were present but not in large numbers. There was a considerable quantity of phagocytized pigment. The lymph nodes were quite fibrotic, with thickened capsules. The lymphoid tissue appeared as islands separated by fibrous bands. The germinal centers were small and inconspicuous. There were myeloid cells including an occasional megakaryocyte scattered through the sections. There was considerable phagocytized pigment. This was quite extensive in the splenic nodes. The reticulum was not increased.

The bone marrow presented the picture of myelosclerosis with fibrosis and vascularization. It was relatively deficient in hemopoiesis except for megakaryocytes of all sizes, which were present in great excess. Phagocytic cells with ingested pigment were fairly numerous. The marrow was engorged with erythrocytes.

Periportal fibrosis in the liver varied in intensity in different areas. It was most marked in the left lobe. There was atrophy of the liver cells and many areas of fatty degeneration. Small

2 Apperly, F. L., and Cary, M. Katherine. The Relation of Gastric Acidity to the Erythrocyte Content of the Blood. *Am J Digest Dis* 3: 466, 1938.

3 Adamson, W. B., and Storey, J. E. Observations on Etiology of Polycythemia Vera. *Texas State J Med* 36: 26-29, 1940.

infiltrations of myeloid cells and lymphocytes were most prominent beneath the thickened capsule

Numerous sections through the stump of the cervix showed nothing to indicate a previous malignancy. The kidneys, pancreas, adrenals, heart, lungs, brain and hypophysis showed nothing noteworthy. The infiltrations of myeloid cells in the spleen, liver and lymph nodes were regarded as being not extensive enough to suggest a leukemic process. No sections showed anything suggestive of metastatic carcinoma.

Summary: cirrhosis of the liver with ascites, splenomegaly with fibrosis and infarction, myelosclerosis, lymphadenopathy, myeloid infiltrations in liver, spleen and lymph nodes, healed carcinoma of cervix uteri.

#### COMMENT

After eight years of treatment with phenylhydrazine hydrochloride in this case, we concluded<sup>1</sup> (1) that, once the necessary dosage was established for an individual patient, the patient would respond to that dosage consistently, (2) that the patient does not acquire a tolerance to the drug and (3) that the drug apparently produces no deleterious effect on the liver and kidneys. Observation of the patient for the remaining nine years of her life, during the first three of which treatment with phenylhydrazine hydrochloride was continued, did not change the first two of these conclusions. The final outcome of the case and the necropsy findings make it impossible to say conclusively that the drug had no deleterious effect on the liver. However, neither can we hold the drug responsible for the cirrhosis which finally developed, for serious liver damage is known to occur in cases of polycythemia in which the drug has not been used. We can only state that after eleven years of treatment with phenylhydrazine hydrochloride no evidence of liver damage, aside from palpable enlargement of the liver, which is a frequent accompaniment of an enlarged spleen, could be demonstrated. Changes in the hemopoietic system such as those which took place in this case have been reported also in cases not treated with phenylhydrazine, so that these cannot be considered effects of the drug. From our observation of this case, in the light of our present knowledge of the disease and its control, we feel that, in the absence of the usual contraindications to the use of the drug, phenylhydrazine hydrochloride offers a satisfactory form of treatment for polycythemia vera.

The possible relationship between polycythemia and leukemic processes, their concurrent presence in the same patient and the apparent shift from one to the other in some cases have been discussed in many excellent articles. The necropsy findings in our case, both on macroscopic and on microscopic examination, were no more diagnostic of a myelogenous leukemia than were the changes in the blood picture. We can describe them only as leukemoid rather than leukemic in character. Dr. Doan, whose interpretation of the blood films in the case we have already quoted, and Dr. Roy R. Kracke of Emory University reviewed these sections. Both concurred with our conclusions. Dr. Doan wrote "I certainly can find no evidence in any organs studied or in sections available of anything that would lead me to make a diagnosis of myelogenous leukemia." In commenting on the bone marrow he said "I had rather the impression of exhausted or 'burned out' or toxically inhibited myelopoietic activity in the marrow." Dr. Kracke's impression was "that this was a case of polycythemia vera of years' standing which terminated with a leukemoid reaction and anemia."

Based on a review of 163 cases of polycythemia vera, Tinney, Hall and Giffin<sup>4</sup> felt that the degree of splenomegaly and the presence of a leukemoid reaction were directly correlated with the duration of the polycythemia, although they did not consider their data in this series sufficient to prove this. We are inclined to believe that the change in the blood picture of our patient represents the usual outcome of all cases of polycythemia vera of sufficient duration. The true nature of the underlying process remains to be determined.

#### PRACTICAL CONSIDERATIONS

A case of polycythemia vera was under observation for seventeen years. For the first eleven years of this period, until a definite change in the blood picture occurred, the disease was apparently controlled by phenylhydrazine hydrochloride. The extensive liver damage which was found at autopsy six years later was not evidenced until the last year of life. Since both hemopoietic changes and liver damage have been reported in cases not treated with phenylhydrazine hydrochloride, the possibility of the development of these conditions would not appear to be a contraindication to the use of the drug. The changes in the blood picture, which may constitute a part of the disease process in cases of sufficient duration, are not clearly understood at the present time.

## Clinical Notes, Suggestions and New Instruments

### ACUTE EPIDURAL ABSCESS OF THE SPINAL CANAL

COMPLETE RECOVERY FOLLOWING EMERGENCY LAMINECTOMY AND PENICILLIN

EARL R. DONATHAN, M.D., KNOXVILLE, TENN.

Death from acute epidural abscess of the spinal canal is needless. It is important, however, that an early diagnosis of the abscess be made and decompressive laminectomy effected. This obviates the pressure which produces in the lumbar region, if unrelieved, rapid paralysis of the legs and urinary bladder. If many hours are lost after paralysis and anesthesia of the legs have become complete, permanent paraplegia, if not death results.

An observing doctor will seldom miss an epidural spinal abscess. The patient, recovering from multiple boils, begins to have an unexplained fever. There next develops a severe pain in the back. If a blood count is made, a pronounced leukocytosis is present. The fever continues and soon there is tenderness over the spine. Urinary retention ensues and there develops a complete paraplegia with loss of all sensation below the level of the lesion. All these signs and symptoms have occurred within forty-eight hours of the onset of pain in the back.

Surgical intervention must now be employed, else the patient dies from an extending infection, i.e., pyemia or ascending pyelonephritis. At this stage, spinal puncture can verify the presence of an abscess of the spinal canal. A very cautious tap, however, is necessary with repeated removal of the obturator and aspirating as the needle advances. If pus is encountered the needle is withdrawn and steps for an immediate laminectomy are taken. If the site where the puncture is made is free of pus, the needle can be advanced into the subarachnoid space. The demonstration of a spinal fluid block is indicative of an

<sup>4</sup> Tinney, W. S., Hall, B. E. and Giffin, H. Z. The Liver and Spleen in Polycythemia Vera, Proc. Staff Meet. Mayo Clin. 18: 46-48, 1943.

From the Division of Neurosurgery, University of Tennessee School of Medicine and the Fort Sanders Hospital Surgical Service at Fort Sanders Hospital.

extradural abscess and not an infection of the cord, per se. The pus and granulation tissue removed, plus the decompressive measures afforded by laminectomy, relieve the pressure on the cord and help the circulation to reestablish itself.

The incidence of the epidural spinal abscess is unknown. In 1926 Dandy<sup>1</sup> stated that he had had no patients with an epidural abscess nor had he seen the condition at necropsy. He found, after reviewing the literature, 25 cases which had occurred and been reported. Many more cases have been reported since Dandy made his survey and made his worthwhile contribution to knowledge of the anatomy of the epidural space.

#### ANATOMY

The epidural space is dorsal to the spinal roots, there exists no space ventrally as the dura is firmly adherent to the vertebrae in this location. Only a potential space exists in the cervical region. From the seventh thoracic to the second sacral vertebrae, where the space ends, the size is variable, being widest in the midthoracic and midlumbar region. These anatomic facts are cited to explain the frequency with which inflammatory processes localize in either the midthoracic or the midlumbar region. Fat, areola tissue and blood vessels fill the epidural space.

#### ETIOLOGY

The majority of abscesses arise by metastasis from furuncles of the skin via the blood stream. It is possible, however, for them to occur by direct extension from suppurating lesions in the adjacent tissue. While boils are the most common etiologic factor, as reported by Gasul and Jaffe<sup>2</sup> the source of the organism was unknown in 179 per cent of these cases, but there was history of trauma.

The staphylococcus is the organism that is responsible in the majority of cases; however, Delearde<sup>3</sup> reported a case caused by the streptococcus and Schick<sup>4</sup> reports 1 caused by the pneumococcus.

#### DIAGNOSIS

An epidural abscess of the spinal canal should be suspected when a patient with furuncles or a history of trauma begins to show an elevated temperature and have root pains in the back and weakness of the legs. Weakness of the legs alone forces us to rule out tumors of the canal with compression of the cord. Pott's disease must also be considered. All these conditions are afebrile. If, on the other hand, elevated temperature exists and epidural abscess is ruled out, then one considers infectious myelitis and poliomyelitis. To rule out the latter two conditions in which no block exists a Queckenstedt test is done using the simple manometer which measures pressure in millimeters of water.

To determine the level at which to operate one depends on tenderness of the spine on palpation and establishment of a definite sensory level by careful neurologic examination. In epidural abscesses of the cord a lumbar tap is not without danger. The cautions just mentioned should be rigidly adhered to else there is the possibility of the point of the needle being carried into the subarachnoid space with resultant meningitis.

#### TREATMENT

No time is left for procrastination, once diagnosis of an epidural abscess with compression of the cord is made. Since destruction of the spinal cord is out of proportion to the amount of compression, the laminectomy is extended in both directions until the lesion is exposed in its entirety. When the upper limit of the pathologic area has been reached and the area is cleared of pus and granulation tissue, the cord will begin to pulsate. The dura is not opened. After removal of as much of the granulation tissue and pus as possible has been accomplished, adequate drainage of the epidural space is assured

by placing a small penrose drain on the surface of the dura. The wound is frosted with sulfathiazole powder and closed loosely, thus encouraging granulation from the bottom. I feel that when the causative organism is the staphylococcus, the streptococcus or the pneumococcus, as determined by direct smear, penicillin is of prime importance and should be started immediately.

#### PROGNOSIS

Cases in which recovery occurs without the benefit of surgery are the exception and very rare. When surgical intervention has been carried out before the paralysis has been complete for more than a few hours, there is a chance for some recovery. In 60 cases of Abrahamson,<sup>5</sup> survival occurred in 20 of the 30 cases in which operation was performed. Of the 30 patients not operated on, none survived. If operation is delayed until paralysis has been complete for a number of days, Echols<sup>6</sup> states that operation is usually contraindicated.

Patients operated on after paralysis has been complete for as long as twelve hours usually recover enough to walk and control the sphincters, yet usually retain residual motor disturbances.

#### REPORT OF CASE

M. W., a white girl aged 12 years, was admitted to Fort Sanders Hospital in Knoxville, Tenn., June 6, 1944 complaining of pain in the lower part of the back radiating into the chest. About three weeks before, the patient had a severe blow to her buttocks, the result of a fall from a teeter board. One week before entering the hospital she was confined to bed because of pain in the buttocks. A few days later the pain was in the lower part of the back and was very severe. The night before admission to the hospital the patient was still ambulatory, but there was a noticeable foot drop and walking was difficult. It was necessary to catheterize her to obtain a specimen of urine, as she was unable to void spontaneously. Eight hours after admission to the hospital the child had developed a complete paraplegia and a paralyzed bladder. A neurologic consultation was then requested.

Examination divulged an oral temperature of 103 F., nuchal stiffness, abdominal distention and tenderness, flaccid paralysis of the lower extremities and anesthesia downward from the level of the inguinal ligament bilaterally, with pronounced tenderness over the twelfth thoracic and first and second lumbar spinous processes. A cautious lumbar puncture was done with negative pressure being maintained by using a 2 cc Luer syringe attached to the spinal needle. When thick pus was aspirated extradurally, the needle was immediately withdrawn.

Three hours later, under general anesthesia, the spines and laminae of the eleventh and twelfth thoracic and first, second and third lumbar vertebrae were removed. As soon as the ligamentum flavum was incised, pus welled up into the wound. The area exposed was cleaned of granulation tissue and pus at the end of this procedure the cord was pulsating nicely. A rubber tissue drain was placed in the wound and on the dura, the operative site sprinkled with sulfathiazole and closed loosely. Four hundred thousand units of penicillin was given intramuscularly, 12,500 units every three hours until the temperature was normal for a period of twenty-four hours.

On the eleventh postoperative day, the patient was able to move the toes of both feet and could discern a pinprick to just below the knee bilaterally. On removal of the indwelling catheter the patient was able to void after being given an ampule of a preparation of carbaminoylcholine chloride. Three days later urination was normal. Twenty days postoperatively sensation was normal in both legs and there remained only slight muscular weakness of the lower limbs. By the twenty-fifth postoperative day the wound had healed by secondary intention and the child was dismissed from the hospital. The patient was seen on the thirty-first postoperative day and no muscular weakness remained. Sensation was normal in both legs in their entirety.

1004 Medical Arts Building

<sup>1</sup> Dandy, W. E. Abscesses and Inflammatory Tumors in the Spinal Epidural Space (So-Called Pachymeningitis Externa). *Arch Surg* 13: 477 (Oct.) 1926.

<sup>2</sup> Gasul, B. M. and Jaffe, R. H. Acute Epidural Spinal Abscess. *A Clinical Entity*. *Arch Pediat* 52: 361 1935.

<sup>3</sup> Delearde, A. De la perimeningite aigue spinale. *Gaz hebdomadaire* 42: 493 1900.

<sup>4</sup> Schick, K. Pachymeningitis spinalis externa purulenta als Metastase nach Diphteriebronchitis. *Wien klin Wchnschr* 22: 1185 1909.

<sup>5</sup> Abrahamson, L., McConnell, A. A. and Wilson, G. R. Acute Epidural Abscess. *Brit M J* 1: 1114 1934.

<sup>6</sup> Echols, D. H. Emergency Laminectomy for Acute Epidural Abscess of the Spinal Canal. *Surgery* 10: 287 1941.

# COUNCIL ON PHARMACY AND CHEMISTRY

## REPORT OF THE COUNCIL

*The Council has authorized publication of the following report. The outline in this report is offered as an objective, a pattern and not a regulation. However, it has been adopted for publication with the belief that it will be of help to manufacturers and scientists who undertake the investigation of new drugs.*

Austin Smith M D, Secretary

### LABORATORY AND CLINICAL APPRAISAL OF NEW DRUGS

WALTON VAN WINKLE JR, MD

ROBERT P HERWICK PH D, MD

HERBERT O CALVERY, PH D

Members of the Food and Drug Administration  
Federal Security Agency

WASHINGTON, D C

AND

AUSTIN SMITH, MD

Secretary of the Council on Pharmacy and Chemistry  
CHICAGO

A new drug should pass through several phases of investigation before it is declared suitable for distribution in commerce. It should be studied in the laboratory and in the clinic, the details of the study depending on the nature of the ingredients and the intended uses, but all investigations should follow a general plan which will permit a thorough understanding of the usefulness and toxic properties of the drug.

In considering new drug applications in the enforcement of the Federal Food, Drug and Cosmetic Act, the Food and Drug Administration is concerned primarily with evidence of safety. The Council on Pharmacy and Chemistry is concerned not only with the evidence of safety but also the evidence adduced to support the claims made for new drugs. Too frequently this evidence is found inadequate and the sponsors of new preparations, if they wish to provide the missing data, may find it necessary to repeat some of the more time consuming and expensive procedures and at other times find it advantageous to proceed along entirely new lines of thought. If the manufacturer has adequate facilities for laboratory and clinical appraisal, he can usually obtain the desired information within a reasonable period. Frequently however such facilities are not immediately available and much effort must be spent in searching for appropriate channels for investigation. If a comprehensive outline had first been prepared and then closely followed, loss of time and expenditure of needless effort might have been avoided.

At the same time it is an advantage for physicians and allied scientists to know by what standards a new drug has been evaluated. When the physician is urged to use this agent, he should have available such evidence as will satisfy his questions concerning safety and efficacy.

The activities of the Council on Pharmacy and Chemistry of the American Medical Association in this

field have recently been described.<sup>1</sup> Certain phases of the activities of the Food and Drug Administration which bear on this problem have also been published or are in press.<sup>2</sup>

The Council on Pharmacy and Chemistry has provided for almost forty years a set of rules to guide manufacturers for the submission of articles for inclusion in New and Nonofficial Remedies. At periodic intervals it has enlarged on these rules to provide criteria such as those found acceptable for the evaluation of skin disinfectants and contraceptives.<sup>3</sup> Usually the criteria have been concerned with one special agent or class of agents. The Federal Food Drug and Cosmetic Act provides that applications for new drugs shall contain "full reports of investigations which have been made to show whether or not such drug is safe for use," and the Food and Drug Administration provides a form in which are set forth suggestions concerning the scope and character of these reports.

If the utmost of possible benefits with a minimum of possible dangers is to result when a new drug is introduced for experimental trial and later in commerce, it is necessary to develop methods of appraising the therapeutic usefulness and potential harmfulness of new drugs and to organize these methods into a logical system which, if followed, will give reasonable assurance that the new preparation will not be offered to the medical profession or to the public before the extent of its usefulness or the potentialities for harm are understood. The present paper outlines the principles which have been helpful in making such an appraisal of new drugs.

### PRELIMINARY OBSERVATIONS

The preliminary experimental observations with a new agent give the clue to the possible field of usefulness. In dealing with chemotherapeutic agents, these preliminary observations consist usually of tests of the efficacy of the agent in combating or preventing some experimental infections. In the case of drugs that might be termed "symptomatic agents," the preliminary observations should include tests of the possible pharmacodynamic actions of the drug. These observations "set the sights," so to speak, and indicate the course to be pursued in subsequent and more detailed investigations.

### LABORATORY OBSERVATIONS

Assuming that a new drug has shown promise in the preliminary tests, more extensive inquiry must now be made into the mechanisms of its action and its

<sup>1</sup> Smith Austin. Membership Activities. Method of Operation. Attainments of the Council J A M A. 124: 433 (Feb. 12) 1944.

<sup>2</sup> Woodard Geoffrey and Calvery Herbert O. Acute and Chronic Toxicity. Industrial Med. January 1943. Calvery A. Van Winkle G. Draize Woodard and Calvery.

<sup>3</sup> Contraceptive Agents. Report of Council on Pharmacy and Chemistry J A M A 123: 1043 (Dec. 18) 1943. Criteria for Evaluation of Skin Disinfectants. ibid 121: 593 (Feb. 20) 1943.

The authors wish to express their appreciation of the helpful comments offered by Dr. Torald Sollmann, Dr. P. J. Hanzlik, and Dr. A. L. Tatum.

toxicity In order for the clinician to use a drug intelligently he must know the manner in which its effects are brought about The plan of procedure and the details of the tests to be employed should be formulated in accordance with the type of agent to be investigated, e g single chemical entity, complex extract, hormone, serum or vaccine The conditions in which the drug is thought to be useful and the observations made in the preliminary testing will also modify the plan of investigation and the details of the test procedures Nevertheless we feel that the following general types of study should prove to be applicable to most new drugs keeping in mind that these are suggestive and not necessarily exhaustive

(A) *Biochemistry*—General properties of drug, including solubility, stability, studies of absorption, reabsorption, fate, distribution and excretion of the drug, quantitative data on these points where possible, mode of detoxification (excreted unchanged, oxidized, reduced, acetylated?), effect on enzymes, blood and tissues, chemistry of body fluids and tissues, production of toxic products during course of metabolism

(B) *Pharmacodynamics*—Local Tests of irritation on skin, eye, alimentary canal, intradermal irritation, sensitivity or anesthesia, tests of protoplasmic depression or toxicity, and reversibility of effects on cilia, nerve trunks, mucosa, hemolysis, antihemolysis and blood pigment changes

Systemic Action on blood pressure, respiration, muscles, nervous system, cardiac functions, secretions, temperature, voluntary activity, organ perfusion, isolated tissues, effects of vasomotor agents, proteins, fats, metals, solvents and other agents on the actions of the drug, cumulative effects, development of tachyphylaxis, quantitative and qualitative differences in action in different species of animals

(C) *Experimental Functional Pathology*—Effects in experimentally induced pathologic states, e g smooth muscle spasm, hypodynamic hearts, fibrillations and arrhythmias, hypertension, respiratory depression, edema, shock, burns, anemias

(D) *Chemotherapeutic*—Effects in preventing specific experimental infections, effects in combating experimental infections or actions of toxins, antagonists of chemotherapeutic agents, e g pus, serum, tissue products, distribution in inflammatory states, e g meningitis, dermatitis, minimal effective dosage (ED50)

The data obtained from these studies will serve as a guide in the clinical application of the product and doubtless will also show evidence of undesirable or potentially harmful effects If such effects are not observed, a careful search must be made for them This involves the very important study of the toxicology of the preparation Woodard and Calvery,<sup>2</sup> Calvery<sup>4</sup> and Draize, Woodard and Calvery<sup>5</sup> have set forth in considerable detail the approach to the study of the acute and chronic toxicity of drugs and other chemical agents Certain of the principles which they have formulated bear repetition here, and the original publications can be consulted for more detailed discussions

Depending on the conditions for which the product may be used, on its biochemical and pharmacodynamic actions and on the methods of its use, adequate studies of its toxicity must be made The following outline sets forth in general terms the scope that these studies should embrace

(A) *Acute Toxicity*—Dosage response curves in three or more species, objective symptoms, statistical calculations for comparative studies, simultaneous comparative determinations of other substances, variations in toxicity with method of administration

(B) *Subacute Toxicity*—Large daily doses to one or more species for six to twelve weeks, microscopic pathology

(C) *Chronic Toxicity*—Three or more species, at least one species for the life of the animal, several dosage levels graduated to produce from no effect up to pronounced lesions, and possibly shortening life span, microscopic pathology, effects on voluntary activity, e g running or other performance as evidence of more subtle functional changes

(D) *Local Effects*—Sensitization, skin irritation, mucous membrane irritation, photosensitization

(E) *Special Studies*—Reproduction, distribution and storage, effect of diet, effect of environment, kidney and liver function tests

In selecting animals for investigation of new drugs it is important to use several distinct species, since it is well known that qualitative as well as quantitative differences exist between animal species in their reactions to drugs Some species are wholly unsuited for demonstration of certain effects, e g methemoglobin is not readily produced in rodents and if the drug is suspected of causing this reaction rats, rabbits and guinea pigs are not suitable test animals Rabbits are not usually satisfactory animals for blood pressure studies and often react atypically, e g histamine produces a rise of pressure instead of a fall Emetics cannot be tested in rodents, since vomiting does not occur in these species Many other examples could be cited, but these suffice to demonstrate the need for careful selection of suitable test animals

Each investigator, including those concerned with clinical as well as laboratory investigations, should realize from the beginning where each specialty fits in the over-all plan of study, e g chemistry, pharmacology, physiology, pathology He should keep a careful record of all data and not be guided solely by impressions The records should include actions not seemingly connected with the immediate project and dramatic response, for example, micturition, defecation, vomiting, pulse, respiration

After completion of the experimental studies, a critical review of the accumulated data should be made The purpose in this review is to reach a decision as to whether clinical trial of the drug is justified It is difficult to set forth criteria on which this decision should be made, since the judgment of the investigators must always be an important factor However, without any claim for completeness, the following points should be considered

1 Has the drug definite and desirable pharmacodynamic or chemotherapeutic actions?

2 Are its actions constant and reproducible?

3 Are these actions observed in different species of animals?

4 Is the mechanism by which its actions are produced a desirable one, or are the actions the result of an ultimately undesirable reaction of the animal?

5 Are the effects obtained in animals in which experimentally produced pathologic or functional changes comparable to human diseases have been made?

6 What is the therapeutic index of the compound (ratio of effective dose to toxic dose ED50/LD50)?

<sup>4</sup> Calvery Herbert O. Safeguarding Foods and Drugs in Wartime, *Am Scientist* 32 103 119 1944

<sup>5</sup> Draize John H., Woodard Geoffrey and Calvery Herbert O. Methods for the Study of Irritation and Toxicity of Substances Applied Topically to the Skin and Mucous Membranes to be published



7 Are the undesirable side actions of sufficient importance and severity to militate against its clinical use?

8 Is there an adequate margin of safety in its use?

#### CLINICAL OBSERVATIONS

When sufficient information regarding the experimental actions of a new drug has been obtained to permit a logical decision to be reached that clinical trial is indicated, such studies may be commenced cautiously. The primary objectives to be reached in clinical investigation are twofold (1) to determine the therapeutic efficacy and (2) to detect all signs of clinical intolerance or toxicity. The secondary, but nevertheless important, objectives are (1) to establish the effective dosage range for different age groups and conditions, (2) to determine the type and extent of collateral treatment necessary to obtain the maximum benefit from the drug, (3) to determine the best method of minimizing any undesirable side actions incident to the use of the drug and (4) to determine the contraindications and precautions to be observed in the use of the drug. Each clinical investigator should keep these objectives clearly in mind throughout his investigation in order that nothing may be overlooked.

Frequently the pharmaceutical manufacturer concerned with the development of a new product has neither the facilities nor the personnel to investigate the drug adequately. This is particularly true of clinical investigations. This work must be undertaken by others in cooperation with the manufacturer. The selection of the investigator is important and it is a waste of time and money and may even be dangerous to place the investigation of the safety and efficacy of a new drug in the hands of incompetent or poorly trained individuals. Furthermore, it is important to select the investigator who has proper qualifications and training in the particular phase of the problem requiring study. A good pharmacologist is not necessarily a competent pathologist, a specialist in internal medicine may not be in a position to evaluate a product offered for nasal or sinus infections. Furthermore, not all specialists in clinical medicine are capable of conducting acceptable clinical investigations. The caliber and training of each investigator should be carefully considered before putting a problem in his hands. Clinical investigation of a new drug presents many very difficult problems. The heterogeneity of the persons under observation, the difficulty of securing adequate controls, the many extraneous and uncontrollable factors, the constant presence of subjective effects influenced by conscious or unconscious bias and many other unique conditions hamper the investigator in his efforts to secure the truth. Regardless of these, it is possible to suggest certain factors to be given consideration in conducting clinical investigations.

(a) *The Selection of Individuals to Be Observed*—Cooperation from subject, absence of complicating factors, age, sex, emotional and psychic factors.

(b) *Diagnosis*—Objective proof of diagnosis if possible, such as isolation and identification of infecting organism, x-ray evidence or other informative laboratory data, accurate description of lesion, differential diagnosis.

(c) *Control Observations*—Preliminary control observations on the individuals, concurrent observations of untreated controls, alternation of treatment, alternation of treated and control subjects, post-treatment control observations.

(d) *Observation During Treatment*—Repeated physical and laboratory examinations, hematology, urinalysis, blood chemistry, x-ray, functional tests, precise objective measurements of improvements alleged to be produced by drug, determination of concentration of drug in blood, urine and other body fluids and the correlation of levels so observed with the dosage and the effect.

(e) *Number of Subjects*—Sufficient number of treated individuals to minimize chance or other uncontrollable factors from influencing results, sufficient number of untreated control subjects. The results should be subjected to statistical analysis in order to determine their reliability.

(f) *Carefully Planned Administration of Drug*—Controlled variation in dosage, frequency, method and duration of administration, effect of other drugs, and so on.

(g) *Criteria of Benefit*—Establishment of criteria whereby the effects of the drug may be evaluated, objective tests, subjective observations, comparison with control treatments, comparison with natural course of disease.

(h) *Separation of Subjective and Objective Observations*—Use of "blind tests" (neither investigator nor subject knows which of several samples being administered is control or test product) or other methods to eliminate conscious or unconscious bias on part of observer and subject, careful separation of symptomatic reactions from objective findings, psychologic appraisal of subject.

(i) *Duration of Observation*—Treatment to continue until any intrinsically undesirable or harmful manifestations have had time to develop as well as until sufficient time has elapsed to demonstrate beneficial effects, comparison of rapidity of cure or improvement with that of other methods of treatment.

(j) *More Than One Clinical Investigation*—Several different investigators working independently, conclusions to be made independent of one another's results.

When the investigator is satisfied that he has a therapeutic agent which may be given satisfactorily by one route he should not by conjectural reasoning alone decide that it may be given safely and effectively by some other route. For example, if a product is safe and efficacious for oral use it may not be so when administered by rectum or by injection.

If it is decided to have several persons working on the clinical aspects of the problem, each one should provide a complete picture of the phase under investigation and not just a piecemeal study. Above all, it should be realized that summaries of case histories unless accompanied by the full report from which the summaries were derived are of little significance. A multiplicity of fragmentary case reports provide less information than a few complete and detailed reports of cases carefully and critically studied.

On completion of the clinical investigations it should be possible to provide definite answers to the questions implied in the statement of the objectives which were set forth at the beginning of this section. If these answers are not forthcoming from the data, more investigation is necessary. However, with the fulfillment of the objectives it is now necessary to decide whether the new drug has sufficient merit to be used in the alleviation of human suffering and in the treatment, prevention or cure of disease. At the same time thought should be given to providing adequate warnings against use in certain pathologic conditions or against unsafe dosage or methods or duration of administration or application.



## EVALUATION OF RESULTS

Two factors enter into the decision with regard to the merits of the drug 1 Is it efficacious? 2 Is it dangerous? Neither of these factors can be separated one from the other and considered alone This has been emphasized by Van Winkle<sup>6</sup> in discussing the evaluation of new drug applications submitted under the new drug provisions of the Federal Food, Drug and Cosmetic Act It has been emphasized that there is no arbitrary standard of safety, it is a relative matter in which the toxicity of the drug must be weighed against the therapeutic benefits which its use will bring about Drugs with potentialities for harm and with only slight therapeutic effectiveness may be too dangerous for use, whereas another drug with the same potentialities for harm but with exceptional therapeutic usefulness may be relatively safe Therefore, in evaluating the results of the clinical and experimental studies of a new drug, the following factors should be considered

- 1 For what conditions is the drug to be offered?
- 2 How effective is it in these conditions?
- 3 Is it superior to other drugs and methods of treatment?
- 4 What is its inherent toxicity?
- 5 Does its toxicity outweigh the therapeutic advantages, keeping in mind the seriousness of the conditions for which it is being offered?
- 6 If there are other drugs equally or more effective in the same conditions, is the new drug less toxic or does it offer advantages in ease of administration, duration of action and so on?
- 7 How extensive will the use of the drug be, are its applications limited?

## SUMMARY

A study of this outline for the therapeutic and toxicologic appraisal of new drugs may leave the impression that the task which has been set is far too complex and difficult, requires too much time and expenditure of energy and money and can be circumvented by briefer and less thorough investigations While this may be true in a few isolated instances, it is not true in the majority of cases of really new drugs Recent history contains too many instances of disastrous results that have followed incomplete or inadequate investigations on new drugs This outline is an objective toward which investigations of new agents should be directed It need not apply in full to all cases, but the reasons for omitting any part should be that the omitted parts of the program are not necessary and not merely that they are troublesome It should also be borne in mind that new methods and new criteria may be developed and these should, of course, be applied when indicated

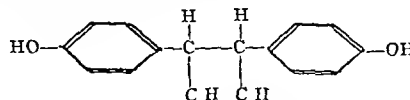
Finally it is necessary to exercise sound judgment in deciding whether a product deserves recognition, and the only basis on which such a judgment can be made is by a careful appraisal of the data obtained through a systematic study Investigations of new therapeutic agents are perhaps the most exacting of all scientific investigations since human health, and even life, may depend on the thoroughness of these investigations Furthermore, failure to interpret correctly the results of the tests conducted and criteria for their evaluation may be disastrous

## NEW AND NONOFFICIAL REMEDIES

The following additional articles have been accepted as conforming to the rules of the Council on Pharmacy and Chemistry of the American Medical Association for admission to *New and Nonofficial Remedies* A copy of the rules on which the Council bases its action will be sent on application

AUSTIN SMITH, M.D., Secretary

**HEXESTROL**—Meso-3,4-di-parahydroxyphenyl-n-hexane,  $C_{18}H_{20}O_2$  (M W 270.36) Hexestrol may be represented by the following structural formula



It may be prepared from anethole in ether solution by (a) treating with anhydrous hydrogen bromide to form anethole hydrobromide, (b) conversion of the anethole hydrobromide to 3,4-dianisylhexane by means of metallic magnesium aluminum, copper or zinc turnings and (c) hydrolysis of the 3,4-dianisylhexane to form hexestrol The product thus obtained may be purified by recrystallization from dilute alcohol

**Actions and Uses**—Hexestrol is used for the same conditions for which estrogenic substances are employed It is claimed to cause a lower incidence of toxic symptoms than those which follow diethylstilbestrol administration

**Dosage**—As is the case with all estrogenic substances, the dosage of hexestrol must be adjusted to the individual case As a guide the following dosages may be satisfactory For menopausal symptoms, 20 to 30 mg daily by mouth until symptoms are under control, and then 0.2 to 10 mg daily as a maintenance dose, or by injection, 10 mg in oil three times weekly with similar lowering for maintenance of control For gonorrheal vulvovaginitis the drug may be given orally in 30 mg doses three times daily for seven days, senile vaginitis and kraurosis vulvae, 2 to 3 mg daily by mouth, or 1 mg in oil three times weekly by injection suppression of lactation, 150 mg one to three times daily for two or more days, or 150 mg in oil daily for two or more days by injection

**Tests and Standards**—

Hexestrol occurs as an odorless white crystalline powder which melts at 185-188°C It is freely soluble in ether soluble in acetone ethanol and methanol slightly soluble in benzene and chloroform practically insoluble in water and in dilute mineral acids It may be dissolved in vegetable oils and in dilute solutions of sodium or potassium hydroxide When recrystallized from diluted alcohol hexestrol appears in the form of thin platelike crystals of irregular serrated outline

Dissolve about 10 mg of hexestrol in 10 cc of dilute alcohol and add three drops of 1 per cent ferric chloride solution a yellowish green color develops which changes to yellow Add a few drops of 50 per cent solution of antimony pentachloride in dry alcohol free chloroform to a very dilute solution of hexestrol in the same solvent a red colored solution is produced Dissolve 10 mg of hexestrol in 5 cc of concentrated sulfuric acid no color is produced (distinction from diethylstilbestrol which yields an orange color)

The hexestrol diacetate obtained in the assay given below melts at 137-139°C

Dry an accurately weighed specimen of hexestrol to constant weight at 100°C the loss does not exceed 0.5 per cent Ignite an accurately weighed specimen of hexestrol after the addition of concentrated sulfuric acid the sulfated ash residue is not more than 0.05 per cent Dissolve 0.1 Gm of hexestrol in 10 cc of warm normal sodium hydroxide solution the solution is clear and colorless dilute to 20 cc with distilled water and add 5 drops of 10 per cent sodium sulfide solution the darkening produced does not exceed that of a control to which has been added 0.02 mg of lead

Transfer to a suitable flask about 0.5 Gm of dried hexestrol, accurately weighed and add 2 cc of acetic anhydride and 4 cc of dry pyridine Boil the mixture under a reflux condenser for fifteen minutes cool add 50-60 cc of distilled water and shake the flask and contents thoroughly Stopper the flask and place it in the cold for one to one and one-half hours Collect the precipitate on a suitable filter and wash it with four 20 cc portions of distilled water Dry the precipitate at 75-80°C overnight cool and weigh the weight of the dry hexestrol diacetate obtained when multiplied by 0.7628 corresponds to a hexestrol content of not less than 98.5 per cent and not more than 100.5 per cent

LOESER LABORATORIES, INC., NEW YORK

Ampul Solution Hexestrol in Oil 1 mg per cc 20 cc  
Prepared with 0.5 per cent chlorobutanol

THE WM S MERRELL COMPANY, CINCINNATI

Tablets Hexestrol 0.2 mg, 1.0 mg and 3.0 mg

PENICILLIN (See THE JOURNAL, Oct 7, 1944, p 367)

The following dosage form has been accepted

SHARP & DOHME, INC., PHILADELPHIA

'Lyovac' Penicillin Sodium 20 cc vials containing 100,000 Oxford units

<sup>6</sup> Van Winkle Walton Jr The Safety of New Drugs Stanford M Bull 2 103 107 1944

# THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

535 NORTH DEARBORN STREET - CHICAGO 10, ILL.

Cable Address

Medic Chicago

Subscription price

Eight dollars per annum in advance

*Please send in promptly notice of change of address giving both old and new always state whether the change is temporary or permanent. Such notice should mention all journals received from this office. Important information regarding contributions will be found on second advertising page following reading matter.*

SATURDAY, DECEMBER 9 1944

## RESEARCH ON BRUCELLOSIS IN LATIN AMERICA

Two monographs recently published indicate that attention is being paid to brucellosis by Latin American workers. One, issued in 1942, is by Dr M Ruiz Castañeda,<sup>1</sup> the Mexican author better known for his studies on typhus fever, the authors of the other are Drs Purriel, Rizzo and Espasandín from Montevideo, Uruguay.<sup>2</sup>

One may wonder whether after such recent and comprehensive monographs on the same subject as those by Huddleson (1940) and Harris (1941) from this country such publications were really necessary. The answer is emphatically in the affirmative. The natural tendency of the authors to emphasize the contributions of their fellow countrymen and to describe more in detail what they have themselves observed makes of their writings precious documents for the knowledge of the history and geographic distribution of a particular disease. Thus one learns from the book by Purriel and his collaborators that in Uruguay, as in England and Denmark, the melitensis variety of Brucellosis is absent whereas the abortus variety is quite prevalent, a fact explainable on account of the great prevalence of bovine over caprine herds. Morbidity for the population at large is rather low while mortality is nil. The disease in nearly all cases is of a professional type, the incidence varying in direct relation to the association of men with cattle slaughtered in the several slaughtering houses or packing houses in the republic. The infection among cattle is high, the incidence being in a direct ratio with the degree of domesticity of the animals. Milk-producing cows show 50 per cent of infection. Keeping in mind that abortion occurs at least once during the lifetime of an infected cow, and the considerable subsequent diminution in milk secretion, one will realize the economic importance

of the disease in a country having a bovine population of from 7 to 8 million and where the milk of 50,000 cows is needed to supply the needs of its capital.

From Castañeda's monograph one learns that the state of affairs in Mexico is entirely different from that in Uruguay. In Mexico the vast majority of cases of human brucellosis are induced by the melitensis variety (95.2 per cent) whereas 3.5 and 1.3 per cent were induced by abortus and suis respectively. The infection in goats is suspected to be high although exact data are lacking, that of cattle varies from 25 to 50 per cent and that of swine is about 35 per cent. Human infection in Mexico is of a widespread and patchy type. Precise data are lacking but it may be assumed that at least 3 per cent of the population has been or is infected.

The increasing social importance of brucellosis is being now realized throughout the world, and Latin American republics are not found napping in this respect. Brucellosis in Mexico and Uruguay was first demonstrated only in 1920 and 1928 respectively. Despite that, a special commission appointed by the government has been functioning in Uruguay for several years, while three medical meetings devoted exclusively to brucellosis have been held in Mexico.

Besides supplying the information on which we have commented, the monographs are valuable in several other respects. The bacteriologic, immunologic and clinical angles of the disease are exhaustively covered, valuable data are given on the choice of the best laboratory methods and new personal techniques are described.

## A NEW VECTOR FOR ST LOUIS ENCEPHALITIS

The experimental transmission of the virus of St Louis encephalitis to chickens and pigeons by nine species of mosquitoes,<sup>1</sup> coupled with demonstration of the virus in local *Culex tarsalis* during epidemic periods, suggested to earlier investigators that mosquitoes are the main if not the sole insect vectors of this disease. In a survey for the presence of type specific antibodies in the human and animal populations of the St Louis area, however, Smith<sup>2</sup> and her associates of Washington University School of Medicine observed that few individuals who had come into St Louis County since 1937 showed specific antibodies while a large percentage of the local domestic fowls approximately 1 year of age were carriers of neutralizing antibody. This suggested that some blood sucking vector that does not bite man is mainly responsible for the spread of the virus among domestic fowls.

<sup>1</sup> Hamman W M and Reeves W C. J Exper Med 78 241 (Oct) 1943.

<sup>2</sup> Hamman W M, Reeves W C, Braakman B and Izumi E. J Infect Dis 70 263 (May-June) 1942.

<sup>3</sup> Smith Margaret G, Blattner R J and Heys Florence M. Science 100 362 (Oct 20) 1944.

<sup>1</sup> Ruiz Castañeda M. Brucelosis Mexico D F. Ediciones de la Revista medicina 1942.  
<sup>2</sup> Purriel F, Rizzo R and Espasandín J. Brucelosis. Estudio de esta enfermedad en el Uruguay. Montevideo. Editorial Independencia 1944.

Blattner<sup>4</sup> had previously shown that certain ticks (*Dermacentor variabilis*) are capable under experimental conditions of becoming infected with the virus of St. Louis encephalitis and of transmitting it by bite to susceptible animals. Smith therefore turned her attention to the common chick mite *Dermanyssus gallinae*, a frequent parasite on fowls of the St. Louis area. This mite belongs to the same order of Arachnida as the tick. Its life cycle is similar to that of the tick, since both require a blood meal before molting and before egg laying by the female. Mites were therefore collected from coops in which there were 2 or more chickens whose serums contained specific neutralizing antibodies. The mites were stored in test tubes for from seven to thirty days without feeding.

In one experiment at the end of seven days' storage, 60 mites were triturated in an agate mortar in tryptose broth, and 0.1 cc of the supernatant fluid was inoculated intraperitoneally into 11 to 19 day old Swiss mice. In a typical group 2 of the 6 inoculated mice showed signs of illness with slight twitchings or beginning convulsions on the eighth to the ninth day. These 2 mice were killed and their brains emulsified in 10 volumes of tryptose broth. After centrifugation 0.03 cc of the resulting supernatant fluid was inoculated intracerebrally into each of 8 mice. Three days later all 8 mice developed convulsions, from which 5 died before the close of the day. From the bacteriologically sterile brains of the 3 remaining mice (now moribund) the infection was passed by the same technique to a second group of 8 mice, all of which developed convulsions by the third day.

Egg membranes inoculated with brain supernate were bacteriologically sterile but appeared slightly thick and opaque by the third day. Mice inoculated intracerebrally with a Berkefeld filtrate from such membranes developed typical convulsions by the third day. Microscopic examinations of the brains of these mice show an encephalitic process indistinguishable from the pathologic picture of St. Louis encephalitis in the mouse. Neutralization tests with specific antisera showed that the virus in the chick mite is qualitatively identical with the standard laboratory strain of the virus of St. Louis encephalitis originally isolated from a human case.

Blattner<sup>4</sup> found that ticks infected with encephalitis can transmit the virus to their offspring for innumerable generations. Assuming that a similar hereditary transmission of the virus takes place in infected mites, Smith concludes that infected mites may well account for the permanence of the viral infection in domestic fowls of the St. Louis area. From these fowls sporadic human cases of mosquito borne encephalitis might readily occur. Recognition of the mite as an inter-fowl vector, therefore, may well lead to practical methods of reducing the number of sporadic human cases.

## CONGENITAL MALFORMATIONS

The embryologic explanation of a common congenital malformation, even if known, is often not readily accessible to the pathologist or surgeon. Three recent important contributions to early human embryology have just been reported by Bremer of Harvard.

The first of the series,<sup>1</sup> on the embryology of congenital aneurysms of the cerebral arteries, was the outcome of interest inspired by the untimely death of Dr. Soma Weiss. Two types of congenital aneurysms of the cerebral arteries are described by Bremer and their origin is traced. The first type he ascribes to the consequence of the rapid growth of the cerebral hemisphere during fetal life, which spreads the forks of the branches of the cerebral arteries which approach from the lesser curvature of the expanding hemisphere. If the forks of these branches of the cerebral arteries should lack media, the rapid spread may cause local aneurysms. The second cause Bremer found to be enlargement of the proximal portion of the plexuses formed from branches of the cerebral arteries which dip into the brain substance. If the enlargement persists while the distal communications degenerate, aneurysmal pouches from the main vessels may be formed.

The second paper,<sup>2</sup> on the diaphragm and diaphragmatic hernias, was the outcome of Dr. Bremer's attendance at clinical pathologic conferences at the Children's Hospital, Boston. This important contribution to its embryology opens with a detailed consideration of the development of the diaphragm. "of which there is, to my mind, no adequate description."

The defects of the diaphragm are divided into several groups. The first is concerned with the last step in the development of the membranous portion: fusion of the two sets of diaphragmatic muscles (costal and lumbar) peeled off the body wall. Irregularities in the growth of pleuroperitoneal membrane produce a hernia recognized by its position lateral to the dorsal lobe of the liver, failure of the normal cutting off by the crural muscles of the infracardiac bursa may leave an open communication from the superior recess of the lesser peritoneal cavity into the right pulmonary ligament. These are true congenital hernias. Through additions to our knowledge of the development of the diaphragm, Bremer has completely classified the nature of its congenital defects and has provided an accurate nomenclature to replace the confusion so often characterizing discussions concerning hernias of the diaphragm.

The third paper,<sup>3</sup> on anomalies of the intestinal tract, "duplication" or "reduplications," "enteric cysts" or "enterogenic cysts," "ileum duplex" and "giant diverticula," is also the result of investigations inspired by attendance at clinical pathologic conferences. Bremer divides these abnormalities of the intestinal tract into

1. Bremer J. L. Congenital Aneurysms of the Cerebral Arteries. An Embryologic Study. *Arch. Path.* 35: 819 (June) 1943.

2. Bremer J. L. The Diaphragm and Diaphragmatic Hernia. *Arch. Path.* 36: 539 (Dec.) 1943.

3. Bremer J. L. Diverticula and Duplications of the Intestinal Tract. *Arch. Path.* 38: 132 (Sept.) 1944.

4. Blattner R. J. and Heys Florence M. J. *Exper. Med.* 79: 439 (April) 1944.

two groups on the basis of embryologic origin. Most of the spherical cysts are derived from true diverticula, which are found frequently on the antimesenteric surface of the intestine in embryos of eight to nine weeks. When normal absorption of these diverticula does not take place they may continue to grow and so bulge within the lumen, if restricted by muscle layers, or expand outside the bowel if the muscle wall is pierced. In the second group are a few spherical and most of the tubular "cysts," and these Bremer regards as true duplications. These originate by an abnormal persistence of the vacuoles among the massed cells or 'solid stage' of the intestine, a phenomenon found under normal conditions in the embryo of six to seven weeks. By confluence of a chain of vacuoles a new channel is formed parallel to the original lumen. The intestinal layers grow between the two. These duplications which contain all the layers of the normal intestine, lie usually between the leaves of the mesentery. They may be isolated and cystic or they may communicate with the parent lumen. A study of the structure and origin of these duplications makes clear why it is impossible in most instances to remove the duplication without resecting the adjacent bowel.

The direction of Bremer's research activities in the freedom following academic retirement has been influenced by his realization of the kinds of knowledge most in current demand by pathologists and clinicians. These important advances in embryology have immediate practical application.

## Current Comment

### CELLULAR TRANSFORMATION

Under the influence of carcinogenic agents normal cells may be changed into cancer cells with the power of autonomous growth. This change is permanent and inheritable. So far no way has been found to turn cancer cells back into normal cells, hence success in the treatment of cancer depends on the removal or destruction of the cancer. Are there examples in biology of more or less similar cellular transformations? The answer is yes. In his instructive review of the mechanisms of cell transformations Haddow<sup>1</sup> discusses irreversible and inheritable mutations studied recently by different investigators in plants, in *Paramecium aurelium*, in tumor producing viruses and in pneumococci. The interconversion of specific pneumococcus types was first described by Griffith.<sup>2</sup> Now Avery and his co-workers<sup>3</sup> have found that the transforming agent is a thymonucleic acid—a discovery of far reaching implications in biology. "Once transformation has occurred," writes Haddow, "the newly acquired characteristics are thereafter transmitted without any further addition of

the transforming agent." In other words, a change has taken place in the pneumococcus cells much like that in normal cells when transformed into cancer cells. Haddow concludes by pointing out that relationships like those mentioned "seem more than mere analogies and strongly suggest an underlying unity of principle in the growth and differentiation of organisms of the most highly diverse kinds."

### PROGRESS IN THE TREATMENT OF TYPHUS FEVER AND OF ROCKY MOUNTAIN SPOTTED FEVER

The conditions caused by specific rickettsias, such as typhus and Rocky Mountain spotted fever, present striking etiologic, pathologic and clinical similarities. The course and the symptoms result largely from the widespread localization of the rickettsial organisms in the vascular endothelium. In a detailed study of the circulation in severe epidemic typhus in French Morocco Woodward and Bland<sup>1</sup> obtained evidence that circulatory collapse in typhus is mainly peripheral in origin and not due to primary cardiac failure. They demonstrated reductions in the blood volume and in blood proteins, especially albumin, and other alterations, all of which are explainable as due to the vascular lesions of typhus and increased capillary permeability. Emphasis is placed on the importance of general supportive measures to restore the volume and the quality of the blood. Harrell and his co-workers<sup>2</sup> have pointed out that supportive measures are not used as much as they should be in the treatment of Rocky Mountain spotted fever. They too emphasize the loss of volume and of proteins by the blood on account of the vascular lesions which may lead to peripheral circulatory collapse if the proper treatment is not given. Yeomans and others<sup>3</sup> have reported on the effect of para-aminobenzoic acid in epidemic typhus in Cairo, Egypt. Under well controlled conditions they compared the clinical course of 20 treated cases with that of 44 control cases. Beginning with 4 to 8 Gm of para-aminobenzoic acid by mouth, 2 Gm was given every two hours or enough to maintain the concentration of the acid in the blood between 10 and 20 mg per hundred cubic centimeters until the rectal temperature remained at 99.5 F or less for twenty-four hours. These amounts were taken with ease by the patients and without any serious untoward effects. In patients who received the acid in the first week of illness the course of the attack was much less severe and considerably shorter than in "untreated" patients. The fact that para-aminobenzoic acid may have curative effect in human as well as in mice typhus<sup>3</sup> directs attention to many problems for investigation. What effect will para-aminobenzoic acid and related compounds have on Rocky Mountain spotted fever and other rickettsial diseases?

1 Haddow A. Transformation of Cells and Viruses. *Nature* 154: 194 (Aug. 12) 1944.

2 Griffith F. J. J. H<sub>2</sub>O 27: 113 1928.

3 Avery O. T., MacLeod C. M. and McCaskey M. Studies on the Chemical Nature of the Substance Inducing Transformation of Pneumococcal Types. *Exper. Med.* 79: 137 (Feb.) 1944.

1 Woodward T. E. in collaboration with Bland E. F. Clinical Observations in Typhus Fever, with Special Reference to the Cardiovascular System. *J. A. M. A.* 126: 287 (Sept. 30) 1944.

2 Harrell G. T., Venning William, and Wolff W. A. The Treatment of Rocky Mountain Spotted Fever. *this issue* p. 929.

3 Yeomans Andrew, Snyder J. C., Murray E. S., Zarafonitis C. J. D. and Ecker R. S. The Therapeutic Effect of Para-Aminobenzoic Acid in Louse Borne Typhus Fever. *J. A. M. A.* 126: 349 (Oct. 7) 1944.

# MEDICINE AND THE WAR

## ARMY

### QUARANTINE BRANCH ESTABLISHED IN PREVENTIVE MEDICINE SERVICE

A quarantine branch, under the direction of Lieut Col Phillip T Kmes and in cooperation with the U S Public Health Service and the Navy, has been established in the Preventive Medicine Service of the Surgeon General's Office, to afford all possible protection against diseases and harmful pests which might be brought from foreign countries by military traffic. The new Army quarantine policy takes advantage of the Army immunization program and of the constant medical supervision of the soldier. Modern methods of immunization, it was stressed by the Surgeon General, offer great advantages from the standpoint of preventing the introduction of diseases into this country as well as protecting the health of the soldier. Army personnel routinely receive immunizations for smallpox, typhoid and paratyphoid fever and tetanus. Special immunizations are given, in accordance with instructions from the Surgeon General, for typhus, yellow fever, cholera and plague. The Army program also includes measures to prevent the importation of dangerous insects from abroad. Extensive insect control programs have been carried out about military stations and airports abroad, using the highly effective techniques and agents which have been developed.

Future developments in the field of quarantine will include greatly improved methods for the international notification of disease, along with improved health certification of travelers so that officials at ports of entry will have the necessary medical data for accurate judgment with the least possible delay to travelers. The extensive military program now being developed is expected to go far in demonstrating the value of new methods growing out of wartime medical progress.

### BRIGADIER GENERAL JAMES S SIMMONS AWARDED WALTER REED MEDAL

The Walter Reed Medal was recently presented to Brig Gen James S Simmons, chief of the Preventive Medicine Service in recognition of meritorious achievement in tropical medicine. The Walter Reed Medal was established by the American Society of Tropical Medicine in 1934 to be awarded periodically in recognition of meritorious achievement in tropical medicine by an individual or an institution. The first award was made at the thirty-second annual meeting of the society in 1935, at which time one medal was presented to the widow of Walter Reed and one was awarded to the Rockefeller Foundation for its study and control of yellow fever. In 1939 the award was made to Dr William B Castle of Harvard University in 1940 to Dr Herbert Clark of the Gorgas Memorial Laboratory in Panama and in 1942 to the United States of Brazil 'for outstanding work in the eradication of Anopheles gambiae in Brazil' and posthumously to Dr Carlos J Findlay of Havana, Cuba.

### HONOR DEAD OF SECOND A E F DIVISION

Armistice day ceremonies, sponsored by the Second Division A E F Association were held at the Second Division monument (17th Street and Constitution Avenue), Washington, D C, to commemorate the attack launched on June 6 1918 by the Second A E F Division which saved Paris and paved the way for the march to the Rhine. The fourth brigade of the division made up of Marines, Navy physicians, dentists, hospital corpsmen and chaplains spearheaded the attack against the Germans at Belleau Wood.

Veterans of the Second A E F Division, composed of Army, Navy and Marine Corps units, are now serving as officers of the fifth and sixth regiments which fought at Guadalcanal,

Tarawa, Saipan and elsewhere. The ninth and twenty-third regiments, Second Division, U S Army, also officered by Second A E F Division men, fought in Normandy and are still in action in Europe.

Rear Admiral Alexander C Lyle (DC), USN winner of the Congressional Medal of Honor in the first world war while serving with the Fifth Marines, Second Division, A E F represented Vice Admiral Ross T McIntire, Surgeon General of the Navy, at the Armistice day ceremonies. Major Gen Dewitt Peck, assistant commandant of the U S Marine Corps, spoke in behalf of the veterans of the three services who comprised the Second Division, the first combined unit under a single command in American military history.

### GENERAL LULL ADDRESSES GRAY LADIES

Speaking recently before the first graduation class of the hospital course for Gray Ladies held at the station hospital at Fort Belvoir, Virginia, Major Gen George F Lull, Deputy Surgeon General, emphasized the important relationship between hospital personnel and the sick soldier, with special reference to the soldier returning from overseas. The Gray Ladies constitute a Red Cross volunteer organization that perform various services for hospitalized men in the armed forces.

### ARMY AWARDS AND COMMENDATIONS

#### Major Lloyd W Taylor

Major Lloyd W Taylor, formerly of Washington D C, has been awarded the Legion of Merit by Major Gen James L Frink, commanding general of the U S Army Services of Supply in the Southwest Pacific. The honor was bestowed on Dr Taylor for his work in late 1942 and early 1943 as supply officer of a medical unit serving combat troops in New Guinea. Suffering from illness and fatigue, Dr Taylor obtained badly needed medical supplies for American and Australian hospitals other than his own, in addition to doing his regular work caring for wounded men. He is now assigned to the Office of Chief Surgeon of the Southwest Pacific area, helping in the evacuation of patients from battle zones to Australia and the United States. Dr Taylor graduated from the University of Oklahoma School of Medicine, Oklahoma City, in 1941 and entered the service June 1, 1942.

#### Lieutenant Colonel Willis B Johnson

Lieut Col Willis B Johnson, formerly of Everett, Wash, was recently presented the Bronze Star Medal. The citation accompanying the award read "From July 30 to Aug 28, 1943 at New Georgia, British Solomon Islands, he was in command of a medical battalion which moved from Guadalcanal into close support positions on New Georgia under enemy air and ground attacks. The effective evacuation and field treatment of casualties under the most trying conditions of terrain and weather during this operation were largely due to his high professional and military knowledge as well as his determination." Dr Johnson graduated from the College of Medical Evangelists, Loma Linda-Los Angeles in 1937 and entered the service Sept 16, 1940.

#### Captain Mark W Dick

The Bronze Star Medal was recently awarded to Capt Mark W Dick, formerly of Grand Rapids, Mich. His citation read "On March 12, 1944, at Bougainville, Solomon Islands, while enemy mortar shells exploded around him, he ran 40 yards and crawled under a barbed wire entanglement."

to reach a seriously wounded soldier. Finding that the nature of the man's wounds made it impossible to move him to the protection of a pillbox, he unhesitatingly exposed himself and stood in an upright position to administer medical treatment during the intense mortar barrage.' Dr Dick graduated from the University of Michigan Medical School, Ann Arbor in 1932 and entered the service May 6 1942.

#### Captain Richard D Roys

Capt Richard D Roys formerly of Seattle and now a company commander of a medical unit on an island north of New Guinea has been decorated with the Bronze Star for bravery in caring for the wounded under fire. Dr Roys already held the Silver Star awarded for bravery in action in New Guinea last year. He graduated from the University of Oklahoma School of Medicine Oklahoma City in 1939 and entered the service Nov 14 1940.

#### Colonel Benjamin M Baker

Col Benjamin M Baker, formerly of Baltimore, has recently been awarded the Legion of Merit by General Douglas B MacArthur for 'exceptionally meritorious conduct in the performance of outstanding services in the South Pacific Area from April 20 1942 to June 13 1944.' Dr Baker graduated from Johns Hopkins University School of Medicine, Baltimore, in 1927 and entered the service in 1940.

#### Captain Salvatore L Pernice

The Bronze Star Medal for meritorious service in the Solomon Islands was awarded recently to Capt Salvatore L Pernice, formerly of Brooklyn. Dr Pernice was cited for his work in accompanying tanks into combat in order to study problems concerned with the evacuation of casualties from tanks. Dr Pernice graduated from Long Island College of Medicine, Brooklyn in 1928 and entered the service June 18 1942.

#### Lieutenant Colonel Byron B Cochrane

The following citation was recently conferred on Lieut Col Byron B Cochrane formerly of St Paul, previous to his promotion to that rank. For meritorious service in connection with military operations against the enemy from Jan 30 to Feb 8 1944. During the training stages for the Kwajalein operation Major Cochrane devised new and ingenious methods for the treatment and evacuation of casualties. His untiring

effort and devotion to duty resulted in a superior organization prepared to handle all casualties in the most efficient manner. During constantly changing situations and numerous attacks he displayed great zeal and initiative, which inspired his officers and men to greater effort in the treatment of the wounded. In order that he might properly supervise and carry out his duties, Major Cochrane made numerous trips to the front lines with complete disregard for his own safety. His resourcefulness made possible the immediate treatment and evacuation of the wounded thus saving the lives of many who would otherwise have died.' Dr Cochrane graduated from the University of Minnesota Medical School, Minneapolis, in 1938 and entered the service in February 1942.

#### Captain Willard E Goodwin

The Soldier's Medal was recently awarded to Capt Willard E Goodwin, formerly of Baltimore. The citation read 'He rescued an army nurse from a rough sea after she had been swept into a gorge on Feb 27, 1944 at New Zealand. He went to the aid of the helpless nurse who was being dragged against the rocks and had suffered painful injuries. Succeeding in swimming to her he assisted her out of the gorge to a sandy beach some 400 yards away. His prompt action was responsible for saving her life.' Dr Goodwin graduated from Tufts College Medical School, Boston, in 1941 and entered the service after completing his internship in 1942.

#### Captain Jarvis M Hyatt

Capt Jarvis M Hyatt, formerly of Dearborn Mich, has been awarded the Bronze Star Medal for meritorious service and disregard for his own personal safety in France on Aug 18 and 19 1944 in connection with military operations against an enemy of the United States. Dr Hyatt graduated from Wayne University College of Medicine, Detroit, in 1936 and entered the service Aug 13, 1942.

#### Captain Weldon T Ross

Capt Weldon T Ross, formerly of McMinnville, Ore has been awarded the Legion of Merit in the European theater of operations for 'exceptionally meritorious conduct in the performance of outstanding services from Sept 10 to Oct 20 1943.' Dr Ross graduated from Duke University School of Medicine, Durham, in 1938 and entered the service in 1941.

## NAVY

### GORGAS MEDAL AWARDED TO COMMANDER JAMES J SAPERO

The Gorgas Medal established in memory of Surgeon General William Crawford Gorgas in 1942 and sponsored by Wyeth, Incorporated Philadelphia was awarded this year to Comdr James J Saperro for distinguished service as an officer of the Medical Corps, United States Navy. The presentation was made by Frank F Law vice president of Wyeth Incorporated at the annual dinner of the Association of Military Surgeons, held at the Hotel Pennsylvania, New York, November 3. Rear Admiral Harold V Smith chief of the Research Division Bureau of Medicine and Surgery, U S Navy, acted as proxy for Commander Saperro.

The Gorgas Medal in 1942 in a threefold award went to Rear Admiral Edward R Stitt of the Navy Medical Corps and Brig Gens Frederick F Russell of Boston and Jefferson R Keen, former army surgeons. In 1943 the medal was awarded to Dr Hugh Smith Cumming surgeon general United States Public Health Service retired.

### NAVY NURSE RECEIVES MEDAL

Lieut Comdr Mary Martha Heck Nurse Corps U S N who recently completed a tour of duty as officer in charge of the contingent of Navy Nurses in England was awarded the Bronze Star Medal for 'meritorious service' and untiring effort. The presentation was made by Admiral Harold R Stark commander Naval Forces in Europe.

### FIRST WHOLE BLOOD BANK ABOARD SHIP

In the past the distances that lay between advanced bases and new combat areas had eliminated the transportation of whole blood by sea. With this knowledge Capt John T Bennett, United States Navy Medical Corps Hattiesburg, Miss made a decision that was to save many lives. That decision created the first known blood bank to be water borne to the fighting front aboard a hospital ship. Success of this experiment depended on the ability of living blood to survive disturbances created by vibrating ship's engines and the rolling and pitching of the ship. It was known that ashore, under proper conditions whole blood could be kept as long as ten days. With the decision made, the commanding officer of shore garrisoned Marines at an advanced base in the Marshall Islands where the ship lay at anchor, was consulted. The medical officer asked for 100 volunteers. Over 300 men from the small marine garrison responded. One hundred were selected, came aboard gave their blood and assured a rich, floating blood bank. The following morning the ship was under way with her precious cargo and anxious hopes for the success of the experiment. The success of their efforts can now be seen. American fighting men who came aboard seriously wounded took the road to recovery. At Guam there was ample whole blood for required transfusions. No wounded fighting man went without whole blood if it was required.



## NAVY AWARDS AND COMMENDATIONS

## Captain Harry L Goff

An award of the Bronze Star Medal was recently conferred on Capt Harry L Goff, formerly of Pembroke, Ga, "for meritorious performance of outstanding services as medical officer on the staff of the commander of an amphibious force in both the preparation and the execution of the amphibious assault on the coast of France, June 6, 1944. Captain Goff was charged with the organization and training of medical staffs and the evacuation and care of both Army and Navy casualties during the assault. The high level of efficiency maintained in this service was due to Captain Goff's able planning and resourcefulness and contributed in a substantial manner to the success of the operation. The sound judgment, initiative and devotion to duty displayed by Captain Goff on this occasion reflect great credit on the United States Naval Service." Dr Goff graduated from Jefferson Medical College of Philadelphia in 1925 and entered the service June 8, 1925.

## Lieutenant Joseph John Connor

The Bronze Star Medal was recently awarded to Lieut Joseph J Connor, formerly of Denver for service as set forth in the following citation: "For meritorious service as medical officer attached to Boat Pool Eleven operating in the Solomon Islands Area on Nov 29 1943. Assigned the hazardous mission of accompanying a boat pool during the evacuation of a Marine battalion from a position several miles behind Japanese lines, Lieutenant Connor worked tirelessly in caring for the injured despite a constant barrage of enemy machine gun mortar and artillery fire. Although forced to work in complete darkness he carried out his task so skilfully and with such exceptional efficiency that no lives were lost. Lieutenant Connor's cool courage under fire and his heroic devotion to duty in the face of grave peril contributed to the saving of many lives, and his gallant conduct throughout the operation was in keeping with the highest traditions of the United States Naval Service." Dr Connor graduated from the University of Colorado School of Medicine Denver, in 1941 and entered the service in July 1942.

## MISCELLANEOUS

BRITISH WOMAN ARMY DOCTOR  
HONORED

Lieut Col Albertine Winner, R A M C, director of the Woman's Medical Services of the British army, was guest of honor at a dinner given recently by Major Gen Norman T Kirk, Surgeon General of the Army. Major Gen George F Lull, Deputy Surgeon General, acted as toastmaster. Colonel Winner spoke on the work of the British women in the British army, and Major Margaret Janeway, Office of the Surgeon General, talked on the activities of women in the Medical Department of the Army of the United States.

Colonel Winner's visit to this country included the annual meeting of the Association of Military Surgeons and an inspection tour of various WAC installations.

GERMANS TOLD TO EXPECT FURTHER  
FOOD RESTRICTIONS

According to a dispatch in the Stockholm *Tidningen* reported recently by the Office of War Information, the German food ministry has stated that another reduction in bread, fat and sugar rations in Germany is imminent because the total supply had declined by one fifth since the loss of the eastern territories. It was also stated that livestock had already decreased to such an extent "that to increase meat rations as a substitute for reduced bread and fat rations was no longer feasible." One fourth of the entire German potato crop this year is needed for the manufacture of fuel, and 3,000,000 tons of sugar beets is necessary for making industrial alcohol, the dispatch also reported.

German weekly bread rations, already low, were scheduled to be cut by 7 ounces per person because of 'decreased imports' and a poor grain harvest, according to a recent Nazi DNB agency dispatch to the German press. Normal consumers were to get 78 ounces a week, or less than three quarters of a pound per day of the basic food staple.

NEW HOSPITAL CAR FOR USE IN  
THE UNITED STATES

The first of a new type hospital car for use in the United States was opened for inspection in Washington, D C, recently. These new unit type cars are not converted pullmans but are designed and built as hospital cars. They are 10 feet longer, are air conditioned and accommodate 38 patients and attendant personnel. Each includes two rows of triple tiered beds, two compartments with 3 beds each, a stainless steel kitchen equipped with refrigeration, ice cream cabinet and coal range, a receiving room with 4 foot side doors for loading and unloading litter patients, two roomettes each with toilet and shower for the medical staff or seriously ill patients and a baggage compartment. The car also carries a modern pharmacy unit and sterilizing equipment, and in case of emergency either the receiving

room or one of the roomettes can be converted quickly into an operating room. The Glennon type, steel frame beds are adjustable and unoccupied center bunks can be dropped to provide seating accommodations for ambulatory patients.

## WARTIME GRADUATE MEDICAL MEETINGS

The following subjects and speakers for Wartime Graduate Medical Meetings have just been announced:

Mayo General Hospital, Galesburg, Ill. Diseases of the Intestinal Tract—Medical and Surgical Diagnosis and Care. Drs Warren H Cole and Michael H Streicher. December 13.

Camp Ellis, Illinois. Malignancies in the Army Age Group—Medical X-Ray and Surgical Diagnosis and Treatment. Drs George J Rukstnat and Alexander Brunswick. December 13.

Chanute Field, Rantoul, Ill. Bone and Joint Infections. Dr Cly Howard Hatcher and Lieut Col Ralph Soto Hall. December 13.

Vaughan General Hospital, Maywood, Ill. Dermatologic Diseases. Drs Francis E Senear and James H Mitchell. December 13.

Fort Sheridan, Illinois. Conditions Affecting Glucose Metabolism. Dr Arthur R Colwell. December 13.

Percy Jones General and Convalescent Hospital, Battle Creek, Mich. Symposium on Convulsive Disorders. Psychiatric Approach, Major I L Turow. Neurosurgical Approach, Major Frank H Mayfield. Neurologic Approach, Lieut D B Foster. December 18.

U S Naval Hospital, Philadelphia. The Epileptic Personality. Dr Harold Palmer. December 29.

HOSPITALS NEEDING INTERNS  
AND RESIDENTS

The following hospitals have indicated to the Council on Medical Education and Hospitals that they have not completed their house staff quota allotted by the Procurement and Assignment Service:

(Continuation of list in THE JOURNAL December 2 page 903)

## CALIFORNIA

Permanente Foundation Hospital, Oakland. Capacity 134 admissions. 3,693. Sidney R Garfield, Medical Superintendent (interns July 1945).

## KANSAS

St Francis Hospital, Wichita. Capacity 450 admissions. 13,721. Sister M Oswaldine RN, Superintendent (2 interns 1 now 1 Jan 15 1945).

## NEW YORK

Our Lady of Victory Hospital, Lackawanna. Capacity 185 admissions. 4,143. Sister M Bathilde, Superintendent (interns).  
Crouse Irving Hospital, Syracuse. Capacity 245 admissions. 7,035. Miss Dorothy Pellenz, Assistant Superintendent (3 interns).

## VIRGINIA

River Side Hospital, Newport News. Capacity 233 admissions. 5,578. Arthur H Perkins, Medical Superintendent (1 resident—mixed).

# ORGANIZATION SECTION

## Council on Medical Service and Public Relations

### Meeting Held in Cincinnati

Representatives of the Medical Societies of Ohio, Kentucky, Indiana and West Virginia met in Cincinnati October 29 in response to an invitation from Dr E. I. McCormick, a member of the Council on Medical Service and Public Relations.

Mr J. W. Holloway, Acting Secretary of the Council, stated the program and activities of the Council, as encompassed in the six directives from the House of Delegates. Namely:

- 1 To make available facts, data and medical opinions with respect to timely and adequate rendition of medical care to the American people.

- 2 To inform constituent associations and component societies of proposed changes affecting medical care in the nation.

- 3 To inform constituent associations and component societies regarding the activities of the Council.

- 4 To investigate matters pertaining to the economic, social and similar aspects of medical care for all the people.

- 5 To study and suggest means for the distribution of medical service to the public consistent with the principles adopted by the House of Delegates.

- 6 To develop and assist committees on medical service and public relations originating within the constituent associations and component societies of the American Medical Association.

Dr Joseph S. Lawrence, director of the Washington office, was asked to outline the program of the Washington bureau which the Council is sponsoring. He said that the objective of the Washington bureau was not to be a lobby or to conduct a lobby but rather to be a center of information through which the states might receive information concerning actions of Congress and of government bureaus. He hopes that the relationship can be so streamlined that each state will through its appointed representatives, at all times be thoroughly informed with what is transpiring in Washington. He called attention to a series of hearings that Senator Pepper, chairman of the Senate Subcommittee on the Nation's Wartime Health Program, is holding. Printed copies of the proceedings of two (parts 2 and 5) of these hearings are available and contain exceedingly valuable information. It was recommended that each physician write to his Congressman requesting a copy of each. The Washington office will expect each of the state societies to discuss matters that are reported from Washington with its Congressmen.

Dr Lawrence urged physicians to give careful thought to legislation in order that there may be unanimity of opinion in the Association. Physicians have the reputation of not being able to agree and Congressmen are inclined to take advantage of this divergence of opinion when it is to their interests. If we as an association are united in opinion we shall be able to effect an influence which cannot be ignored.

The question arose as to how the Council should determine what instructions to give the Washington office on pending legislation and whether the opinion should arise with the states or with the Council. A vote was taken which indicated that it was the sense of those present that the Council should decide whether or not legislation is inimical and that information should be passed on to the states which would then support such action as the Council outlined.

Dr James R. Bloss of the Board of Trustees urged the members to pay more attention to the reports in THE JOURNAL of the Association's various activities. He stated that the Board of Trustees is heartily supporting the Council. Inquiry of the physicians in service, he reported, showed conclusively that they will seek postgraduate opportunities when they are out of the service.

Dr L. Howard Schriver, president of the Ohio society, confessed that the conference put him in an optimistic frame of

mind. He thought it an especially good sign that the American Medical Association had taken this advanced step of learning more intimately the feelings and opinions of its members. In his opinion the profession has been too passive, too academic. We should take a more active interest in social politics and teach our students to do so.

Dr Elmer L. Henderson, a Trustee, replied to a complaint made by one of the physicians that communications directed to the Board of Trustees were not answered promptly and explained that the Trustees are not in continuous meeting and so delays should not be interpreted as showing a lack of interest. The board is a hard working body and gives consideration to every suggestion that is submitted.

Dr Jonathan Forman of Ohio urged that special effort be taken to educate the public in health matters. The people want to be informed on the health conditions of their communities. More knowledge would obviate much muddled thinking and increase a desire for good health.

Dr A. A. Brindley reported that a prepayment plan of insurance began functioning in Toledo on July 1, 1944 and in the first four months over 6,100 contracts were written, 38 per cent on an employee only basis, 19 per cent on the employee and one dependent basis and 43 per cent on the family basis. The total number of people covered is 15,347. Thus far 473 claims have been paid. Maternal care is not included in the plan.

Dr R. L. Sensenich, a Trustee, called attention to the pamphlet on medical service prepared by the Bureau of Medical Economics describing many sickness insurance plans now operating. Obviously no one person is wise enough to draft a plan for the whole United States that would be just the plan to fit any particular county or community. Large insurance companies are still experimenting with their problems. The states which have tried to establish insurance plans have met with varying degrees of success and failure. Before a plan can succeed there must be unanimity of opinion as to the type of plan wanted.

Dr Barney J. Hein made a strong appeal for unanimity and then for leadership.

Dr Robert E. S. Young of Columbus reported briefly on studies he has made of sickness insurance plans and of the philosophy back of them. He pointed out that government plans have a great political value, even industry finds other use for the power it gets in controlling its private plan than that of providing medical care. This control can be modified by the physicians if they unite to preserve their rights and study sympathetically the problems involved in developing a plan.

Dr W. H. Howard reported on the plan Indiana is studying. Two sets of conditions present themselves. Should the plan be administered by the physicians or by an insurance company? Should it be on a service or on an indemnity basis?

At the close of the conference, late in the afternoon, many expressed themselves as feeling that the success of this conference justified the Council's efforts and as hoping that there will be other conferences in the future.

## Society Proceedings

### COMING MEETINGS

American Academy of Orthopaedic Surgeons, Chicago, January 21-24. Dr Myron O. Henry, 825 Nicollet Ave., Minneapolis, Secretary.

American Society of Anesthetists, New York, Dec. 14. Dr McKinnie L. Phelps, 745 Fifth Ave., New York 22, Secretary.

Annual Forum on Allergy, Pittsburgh, January 20-21. Dr Jonathan Forman, 936 Bryden Road, Columbus, Ohio, Director.

Association for Research in Nervous and Mental Diseases, New York, Dec. 15-16. Dr Thomas E. Bamford Jr., 115 E. 82d St., New York 28, Secretary.

Puerto Rico Medical Association of San Juan, Dec. 15-17. Dr E. Martinez Rivera, P. O. Box 3866, San Juan, Secretary.

Society of Surgeons of New Jersey, Jersey City, January 31. Dr Walter B. Mount, 21 Plymouth St., Montclair, N. J., Secretary.

## Washington Letter

(From a Special Correspondent)

Dec 4, 1944

### Labor Plans Social Security Legislation

Plans of the two major labor unions with regard to the Wagner-Murray-Dingell bills now pending in Congress, which provide "everything in social security, including the kitchen sink," are to split the bills into four or five separate proposals, to replace the omnibus measure, according to union spokesmen. These plans, of course, have yet to be cleared with Congressmen who have the say in the matter.

The extension of old age and survivors' insurance to the "missing 20 million" not now covered by social security would be put up to Congress in a separate bill from others dealing with such controversial questions as "socialized medicine" and federalization of state unemployment insurance systems. The Wagner-Murray-Dingell bills have been in Congressional committees for a year and a half without hearings. It is believed that favorable action can be obtained on parts of the bills by divorcing them from the proposals which aroused strong group opposition.

### Civil Services Hire Disabled Vets Quickly

Dr. Verne K. Harvey, medical director of the Civil Service Commission, revealed to the House Committee to Investigate Aid to the Physically Handicapped that Civil Service is now prepared to place disabled veterans in government jobs quickly and effectively. This was accomplished through analyses of 41,823 handicapped persons placed in government jobs since Oct. 1, 1942 and study of thousands of jobs. Duties are classified to the point where it has been determined how many fingers will be required for specific jobs. Positions have been listed which can use persons who have disabilities in arms, legs, vision and hearing. Dr. Harvey said that much had been done through the Coordinating Committee for the Placement of the Physically Handicapped, a joint committee representing the Civil Service Commission, Federal Security Agency, Council of Personnel Administration, Veterans Administration and the Veterans Employment Service.

### Maryland and District in Licensing Squabble

Action of the Maryland Board of Medical Examiners in refusing to grant a Washington doctor a \$1 "borderline" certificate entitling District of Columbia physicians to practice in nearby Maryland has precipitated a controversy here. The District Commission of Licensures may retaliate December 11 by revoking \$1 "courtesy" certificates entitling Maryland doctors to practice in the Capital. Dr. George C. Ruhland of the District health office and the executive board of the District Medical Society have criticized the action of the Maryland board at a time when there is reported to be a grave shortage of licensed physicians in adjacent Prince Georges and Montgomery counties of Maryland.

### Mrs. Roosevelt Praises Epidemic Control

The notable achievement of the American medical profession in keeping down epidemics during this war was mentioned by Mrs. Roosevelt in her address at Pan American Health Day ceremonies here December 2. "In this war," she said, "a remarkable thing has been achieved in keeping us from epidemics which might have taken a heavy toll. By comparison, she recalled the influenza epidemic of the last war, which cost many lives and slowed up the war effort not only in this country but also in others.

Dr. L. S. Rowe, director general of the Pan American Union, said that scientific estimates showed that further health protection throughout the Americas would increase production by more than 30 per cent. Dr. Thomas Parran, Surgeon General of the U. S. Public Health Service, said that a permanent international health organization after the war is essential.

Among its possible functions, he said, would be collection and interchange of epidemic intelligence, standardization of biologic products including international standards of food and drugs, international action to train public health personnel through establishment of international schools of hygiene, commissions of experts to promote control of major diseases, health education, and scientific guidance on nutritional policies.

Charles M. Hay, deputy chairman and executive director, War Manpower Commission, assured delegates from other nations that all facilities of the United States would be available to carry out an international health program. Among Latin American speakers were Julian R. Caceres, Honduras, and Ambassador Don Pedro Beltran, Peru.

### 1944 Version of Townsend Plan Considered

Near the stage where it will be debated in the House is the "1944 version of the Townsend old age pension plan," a bill sponsored by Representative Pat Cannon, Democrat, of Florida. It differs from the Townsend plan in that it would levy a 3 per cent tax on the gross income of every individual and business, with \$100 monthly exemption for personal incomes. Under the earlier plan a 2 per cent tax on every business transaction except payment of wages or salaries was to provide the money. Later a 2 per cent tax on wages, inheritances and gifts and a 10 per cent increase in income tax were added. The old Townsend plan set a maximum pension of \$200 a month, but the Cannon bill does not specify the amount. Eligible for pensions under the Cannon measure would be all over 60, disabled under 60 and mothers taking care of children under 18. Pensioners would not hold jobs and would have to spend every monthly check within thirty days. Economists pointed out that \$200 a month for around 12,000,000 pensioners would cost close to \$35,000,000,000 a year and that taxes would increase retail prices and the cost of living.

### Army Prepares for Heavy Casualties

The Army is anticipating a steady increase in casualties from overseas and is trying to provide a maximum of bed space in its general hospitals, which are equipped for most advanced types of medical and surgical attention. From its general hospitals it has started to move men who can get around and who do not need constant medical and surgical attention. Still unanswered is the question of whether the Army and Navy will continue to operate all the hospitals built for the services when the war is over. Alternative would be to turn them over to the Veterans Administration. Also undetermined is which hospitals will be turned back to civilian uses and which will be kept by the government as the number of hospitalized men decreases. The Army is expected to reveal soon an extensive program of convalescent hospitals for wounded veterans. Its main purpose will be to provide accommodation for thousands of long time convalescents able to walk and exercise.

### Venereal Disease Control Advocated

Favorable editorial reaction to the conference on venereal disease concluded recently in St. Louis was expressed in the press of the Capital, with the Washington Post making a specific proposal that "the problem of controlling the disease seems to lie in finding a way to control it among women." Admitting the difficulties involved, it adds "But since few of the women who are now spreading the infection are professional prostitutes, the thing is much easier proposed than accomplished."

### U. S. Backs Liberian Health Plan

The United States Public Health Service announces that an all Negro United States mission, including physicians, engineers, entomologists and nurses, soon will launch a five year health and sanitation program in Liberia, West Africa. The mission was organized at President Roosevelt's direction on request of the Liberian government and will be headed by Dr. John Baldwin West, senior surgeon, U. S. P. H. S.

## Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES NEW HOSPITALS EDUCATION AND PUBLIC HEALTH)

### CALIFORNIA

**Two Deaths from Mussel Poisoning**—The quarantine established May 1 of all mussels from the ocean shore of California including the Bay of San Francisco has been extended until further notice as the result of 9 cases of mussel poisoning with two deaths in San Mateo County.

**University News**—Francis J. W. Roughton, Ph.D., fellow of Trinity College, Cambridge, and fellow of the Royal Society of London who has been working in the United States on aero medical problems, recently delivered a lecture in Wheeler Hall, University of California, Berkeley, on 'Some Recent Work on Carbon Monoxide as a Poison and a Physiological Tool.'

**School Health Educator Named**—The state department of public health announced the appointment as school health educator of Miss Bernice Moss, recently lecturer in public health education in the University of California School of Public Health. The state department of education is cooperating with the state department of public health in promotion of the school health education program. Miss Moss, who has a master's degree in health education, will be available for consultant service in the state public schools.

**Personal**—Stanley B. Freeborn, Ph.D., United States Public Health Service who after Pearl Harbor organized and administered the program of the public health service for malaria control in war areas has returned to his position as professor of entomology and assistant dean of the University of California College of Agriculture, Berkeley.—Dr. Eberle Kost Shelton, Los Angeles, was recently given the honorary degree of doctor of science by the University of Colorado School of Medicine, Denver, where he graduated in 1911.

### COLORADO

**Personal**—Dr. Alfred Lee Briskman, assistant medical director of the Union Printers Home and Tuberculosis Sanatorium, Colorado Springs, has been appointed medical director at the Jewish Consumptives Relief Society sanatorium in Denver. Dr. James H. Riffey will succeed Dr. Briskman at the printers home.—Dr. William H. Crisp, Denver, was recently presented with a watch by the *American Journal of Ophthalmology* in appreciation of his long service to the journal and for outstanding contributions to ophthalmology.

**Division of Industrial Hygiene Revived**—A. T. Rossano, Jr., M.S., has been lent by the U. S. Public Health Service to the Colorado State Board of Health to serve as director of and to reactivate the division of industrial hygiene. The division became inactive more than two years ago when the entire staff was called into the armed services. The staff of the division will consist of an industrial hygiene engineer, an industrial hygiene chemist and the part time services of an industrial physician and an industrial nursing consultant. A completely equipped industrial hygiene laboratory will be maintained for precise analyses of atmospheric samples, materials and biologic fluids. Special field instruments for the rapid evaluation of occupational hazards will be available.

### FLORIDA

**Physician Fined \$10,000 for Narcotic Violation**—On November 7 the Tampa *Tribune* reported that Dr. Benjamin L. White, St. Petersburg, had the previous day been fined \$10,000 and given a suspended sentence of two years and a day in a federal penitentiary after pleading nolo contendere to 26 charges of illegally selling narcotics. In addition to the fine and suspended sentence the physician was placed on probation for five years, three of them under the supervision of a federal probation officer. Specific provisions of the probation were that he pay the fine within thirty days, surrender his narcotic license and all narcotics and refrain from prescribing or dispensing narcotics in any form during his five years probation. The *Tribune* reported that Dr. White admitted his guilt to a similar indictment of 28 charges ten years ago in Orlando but owing to his past record was allowed

to make a compromise settlement with the government of \$1,500. The case was heard by District Judge William J. Barker, Southern District of Florida, and the \$10,000 fine was said to be the largest criminal fine ever made in that federal court.

### GEORGIA

**New Quarantine Hospital**—October 19 was to be the opening date for the new \$40,000 quarantine hospital in Atlanta. The new unit is located in a remodeled building at the city prison farm and is under the supervision of the city department of health. Dr. James F. Hackney is the city health director.

**Personal**—David F. Marsh, Ph.D., assistant professor of pharmacology, University of Georgia School of Medicine, Augusta, has been appointed associate professor of pharmacology and head of the department at the West Virginia University School of Medicine, Morgantown, effective December 31. Raymond P. Ahlquist, Ph.D., has been appointed assistant professor of pharmacology at Georgia to succeed Benedict E. Abreu, Ph.D.

**Dr. Paullin Honored**—On November 21 the Atlanta Chamber of Commerce awarded its annual Certificate of Distinguished Achievement to Dr. James E. Paullin, former President of the American Medical Association. More than 200 persons were present for the ceremony, which included a dinner in the Onley Hotel. The citation accompanying the award read:

To James Edgar Paullin in recognition of service practical in nature to the welfare of the people of this state and nation. For more than thirty-seven years Dr. Paullin has worked faithfully to improve standards in hospitals in the practice of medicine and in medical education. Testimony to the effectiveness of his work and its value to the medical profession has already been given by the distinguished medical societies of the country. It is fitting that his friends and neighbors show by this certificate that they understand and appreciate the value of his services to his own community.

**Expansive Postwar Hospital Program**—On recommendation by its health panel, the state agricultural and industrial development board of Georgia approved, November 9, a large expansion of facilities for medical care and hospitalization in Georgia as a postwar project. According to the *New York Times*, the program contemplates the expenditure of \$22,545,000 local funds and \$5,275,000 state funds for the purchase or construction of hospitals and the provision of \$3,535,000 local funds and \$7,925,000 state funds for their operation. It also proposes buying 5,660 general hospital beds in fifty-three counties. The panel reported that eighty-six counties had no general hospital beds and only six counties had more than five beds in 1,000 population. It added that two counties did not have a resident physician and seventy-six had only one physician each in 3,000 population. The agricultural and industrial development board was created recently by the general assembly to coordinate existing agencies. Seven panels constitute the board, covering agriculture, education, government, health industry, public works and trade, commerce and business. Members of the health panel include Dr. Thomas F. Abercrombie, Atlanta chairman, and Dr. Rufus F. Payne, Atlanta director. Headquarters of the board are located on the campus of the University of Georgia, Athens.

### ILLINOIS

**Ninety Years of Age**—Dr. James M. Mitchell, Oblong, celebrated his ninetieth birthday, October 19, as the guest of the Crawford County Medical Society. Dr. Mitchell graduated at the Hospital College of Medicine, Louisville, Ky., in 1901.

**Citizens Vote to Establish Health Departments and Tuberculosis Control**—New health departments will be created in Adams and Du Page counties through the vote of the people in the recent election. In Adams County the vote passed by a three to one majority and in Du Page County by a three to two majority. This is said to be the first time that people of any county in the state have by popular vote established a county health department and levied a tax to support it. These two counties were the first to submit the provision to a vote under the new law popularly known as the Searcy-Clabaugh law.—In Clinton and Edwards counties citizens voted favorably for the first time for a tax levy to provide for the care and treatment of their tuberculous citizens as provided by the Glackin and Excess Tax laws. Tazewell County already operating under the provisions of the Glackin law, voted favorably on the levy of a special tuberculosis tax in excess of the ordinary tax limits. Nine other counties also voted favorably on the proposition, some to legalize and some to continue the excess

tax levy for the control of tuberculosis. These counties include Bureau, Champaign, Clay, Hardin, Jasper, McDonough, Rock Island, Sangamon and Shelby. Of the 102 counties in Illinois, 83 have now voted favorably on a tax levy for tuberculosis control. The 19 remaining counties that have not voted a tax, and very few of which have tuberculosis control programs of consequence, include Brown, Calhoun, Edgar, Hancock, Jersey, Jo Daviess, Johnson, Lawrence, Marshall, Massac, Monroe, Perry, Pope, Pulaski, Putnam, Union, Wabash, Warren and Williamson.

### Chicago

**The Fenger Lecture**—Col Esmond R Long, M. C. will deliver the ninth Christian Fenger Lecture of the Institute of Medicine of Chicago and the Chicago Pathological Society at the Palmer House, January 8. His subject will be "Tuberculosis as a Military Problem."

**Symposium on Obstetrics**—The Chicago Medical Society will devote its December 13 meeting to a symposium on obstetrics. The following will participate:

- Dr. Theodore J. Morris: Diagnosis and Treatment of Puerperal Infection
- Dr. William J. Dieckmann: Early Signs and Treatment of Toxemia of Pregnancy
- Dr. Janet E. Towne: Prolonged Labor
- Dr. Frederick H. Falls: Proper Use of Cesarean Section

### MASSACHUSETTS

**District Meeting**—The Suffolk District Medical Society was addressed in Boston, November 18, by Governor Leverett Saltonstall on "Medical Social Security" and Dr. Roger I. Lee, Boston, President-Elect of the American Medical Association, "Health Insurance."

**Seventy-Five Years of Public Health**—The Massachusetts Department of Public Health is this year completing seventy-five years of service. According to Dr. Vlado A. Getting, Boston, state health commissioner, in the *Norfolk Medical News*, the Massachusetts board was the first in America.

**Licenses Revoked**—At a meeting of the state board of registration in medicine, October 18, the license to practice medicine of Dr. Robert E. Conlin, Woburn, was revoked because of gross misconduct in the practice of his profession as shown by his conviction in court and treatment of a patient. The license to practice was also revoked of Dr. Morris J. Kupper, Roxbury, because of gross misconduct in the practice of his profession as shown by collusion.

**Riggs Foundation Observes Anniversary**—The Austen Riggs Foundation, Stockbridge, commemorated its twenty-fifth anniversary with a meeting at the New York Academy of Medicine, November 22. The foundation, directed by a board of trustees, a medical advisory board and the Austen Riggs Associates continues in the village of Stockbridge the medical practice of the late Dr. Austen Fox Riggs which was restricted to the care and treatment of mild nervous or functional disorders. Among the speakers were Dr. Lawrence S. Kubie, New York, who discussed the problem of brief psychotherapy and the training of therapists, Brigadier John R. Rees, British army, and Major General George B. Chisholm, Canadian army.

### NEW YORK

**Graduate Lectures**—Richard C. Arnold, Surgeon U. S. Public Health Service, gave a graduate lecture on "Penicillin Therapy" before the staff of Veterans Memorial Hospital, Ellenville, December 5, and Dr. Julian Rose, Brooklyn, addressed the Saranac Lake Medical Society, December 6, on "Diseases of the Biliary Tract." Dr. William F. Lipp, Buffalo, will address the Jefferson County Medical Society in Watertown, December 14, on "Treatment of Jaundice." These lectures are sponsored cooperatively by the state medical society and the state department of health.

**Personal**—Dr. Gilbert Dalldorf, director of the Grasslands Hospital laboratory, Valhalla, has been appointed director of the new Westchester Health Laboratory, which is to be set up at Grasslands.—Dr. Eugene Kisch, New York, associate in orthopedic surgery, Hospital for Joint Diseases, Far Rockaway, left for Brazil in October to lecture on bone and joint tuberculosis and to attend conferences in Rio de Janeiro, São Paulo and Belo Horizonte as the guest of the Brazilian Society for Tuberculosis.—Dr. Moses A. Stivers, Middletown, has been appointed to the recently created position of medical consultant to the department of public welfare, it is reported.—Dr. John S. Ware has been appointed chairman of the health committee of the Staten Island Council of Social Agencies.

### New York City

**Harvey Lecture**—Dr. Jean R. Oliver, professor of pathology, Long Island College of Medicine, Brooklyn, will deliver the third Harvey Society Lecture of the current series at the New York Academy of Medicine, December 21. His subject will be "New Directions in Renal Morphology: A Method, Its Results and Its Future."

**Lectures to the Public**—On November 9 the New York Academy of Medicine opened its tenth series of lectures to the public with a talk by Dr. Iago Galdston on "Psychiatry in the History of Medicine." The opening address was designated the Linsly R. Williams Memorial Lecture. Other lectures in the series, which this year has been devoted to "Psychiatry in Medicine," include:

- Dr. James H. Wall: White Plains, N. Y. Development of Modern Psychiatry, November 20.
- Dr. G. Canby Robinson: Washington, D. C. The Patient as a Person, December 19.
- Dr. Franz G. Alexander: Chicago. Recent Trends in Psychiatric Thought and Future Outlook, December 28.
- Col. William C. Menninger, M. C. War and Psychiatry, January 11.
- Dr. Edward Weiss: Philadelphia. Psychotherapy in Everyday Medicine (George R. Siedenburg Memorial Lecture), January 25.

**Presentation of Nobel Awards**—On December 10 six of eight winners of the 1943-1944 Nobel Prizes in science and literature will receive awards amounting to \$120,000 at a luncheon in the Waldorf-Astoria Hotel. The occasion, which is being sponsored by the American-Scandinavian Foundation, 116 East 64th Street, will mark the first time that the Nobel Prizes ever have been presented in the United States. The presentations will be made on behalf of King Gustav V by Wollmar F. Bostrom, minister from Sweden. Recipients of the awards will be, among others, Henrik Dam, Rochester, N. Y., and Edward A. Doisy, Ph.D., St. Louis, for their work on vitamin K, Drs. Joseph Erlanger, St. Louis, and Herbert S. Gasser, director of the Rockefeller Institute for Medical Research, for their work on nerves, and Isidor I. Rabi, Ph.D., and Otto Stern, Ph.D., Pittsburgh, for the results of their study of the structure of the atom.

**Medical Societies Coordinating Council Considers Reorganization**—A plan has been presented to reorganize the coordinating council of the five county medical societies of greater New York in order that official representatives of each group may form an authoritative body to represent the organized medical profession in the city. According to the *Journal of the Medical Society of the County of New York*, each county medical society is now completely autonomous, speaking for the profession only within its own boundaries. It may or may not take into consideration the interests of the four other county medical societies in the city. In matters of identical interest each society may take a stand either in agreement or in conflict with the interests of the other county medical societies or the action taken by them. While the coordinating council of the five county medical societies has been of service during the ten years of its existence, the council has, however, lacked the authority and power to do more than advise or suggest. Under the recommendation to reorganize the council, it is proposed that each county medical society retain its autonomy within the state society but that it alter or amend its constitution and by-laws to grant certain definite powers to the coordinating council of the five county medical societies, electing to it annually three representatives, which under the new setup would be enabled to speak with authority on matters involving all the county medical societies generally but excluding matters of purely intracounty interest or import. Each county medical society would retain all powers not granted to the coordinating council. The proposal carries certain stipulations as to the method of action by the council in the handling and commitment of its powers. The functions of the council would be supported by contributions from each of the five county societies on a per capita basis according to the membership of each society and would have a headquarters office with a director and other clerical help.

### PENNSYLVANIA

**Society News**—Dr. Louis H. Clerf, Philadelphia, addressed the Reading Eye, Ear, Nose and Throat Society, November 15, on "Cough Considered from an Otolaryngologic Viewpoint."—The Pennsylvania State Association for Health, Physical Education and Recreation held its annual conference at the Schenley Hotel, Pittsburgh, December 8-9. The address of the association is 231 Administration Building, Forbes Street at Bellefield Avenue, Pittsburgh 13.

**Howard Petry Appointed Director of Mental Health**—Dr. Howard K. Petry, medical superintendent of the Harrisburg State Hospital, has been appointed director of the bureau of mental health of the Pennsylvania Department of



**Welfare** He succeeds Dr William C Sandy who retired from the position July 1 (*THE JOURNAL* August 12, p 1050). Dr Petry, who has been chairman of the committee on mental hygiene of the Medical Society of the State of Pennsylvania for many years and who recently was appointed by the governor as chairman of a committee to make a survey of conditions in the state's mental hospitals will continue to serve as superintendent of the Harrisburg State Hospital.

#### Philadelphia

**Personal**—Dr Harvey Bartle has retired as medical director of the Pennsylvania Railroad after forty-one years of service. Dr John A White, medical examiner for the company in Washington, D C, for a number of years, has been named to succeed Dr Bartle as chief medical examiner.

**Schireson's Trial Scheduled for January**—Hearing on the injunction sought by Dr Henry Junius Schireson to prevent the state from revoking his medical license has been scheduled for the January term of the Dauphin County Court, Harrisburg. The *Philadelphia Record* reported November 22. It was stated that Schireson was ordered by the state board of medical education and licensure last June to appear on July 10 and show cause why his license should not be revoked on the ground that it was obtained through fraud (*THE JOURNAL* May 27, p 297). Subsequent investigation by the state licensing board with the assistance of the attorney general's office disclosed that when Schireson applied for his license to practice in Pennsylvania in 1910 he pretended to medical qualifications he did not have. Schireson obtained a temporary injunction restraining the state from holding a hearing on the show cause order (*THE JOURNAL* September 9 p 116), contending that the state had no authority to revoke a license for fraud, it was stated. This action was taken in July and since then time has been spent in an effort to find a time convenient for the court for the state and for Schireson when arguments could be heard on the issue of whether the injunction should be vacated or made permanent.

#### TEXAS

**State University to Remain at Galveston**—The board of regents of the University of Texas at its recent annual session voted six to one in repudiation of a recent recommendation that the medical school of the university be moved from Galveston to Austin. The board also accepted an offer of the Sealy and Smith Foundation, Galveston to give \$2,000,000 for construction of a new general hospital to provide more clinical material for the medical school.

**Science Meeting**—The Texas Academy of Science met in Galveston November 9-11 under the auspices of the University of Texas Medical Branch. Features of the session included a symposium on age changes in various tissues, symposium on health conditions in the coastal area of Texas, a discussion on the establishment of a marine biologic laboratory, several sessions on the conservation of natural and human resources and a symposium on the biology of the cancer cell.

**Plans Approved for New Medical Building at Baylor**—At a meeting of the board of trustees of Baylor University November 13 tentative building plans were approved for a new college of medicine building to be erected on the 20 acre site in the medical center. The proposed four story building will cost \$1,000,000. It will include an auditorium in the center wing and will house all the preclinical and administrative departments as well as offices for the members of the clinical departments. The \$1,000,000 for the new building and the 20 acre site are gifts to the college by the M D Anderson Foundation which has also provided \$1,000,000 for research to be used in the next ten years. In addition the college of medicine received \$500,000 for the same ten year period as a gift from the citizens and business firms of the city of Houston.

**Personal**—Dr Benjamin F Hambleton, professor of physiology and pharmacology, Baylor University College of Medicine, Houston, was recently awarded the honorary doctor of science degree in recognition of his long service in medical education and research. Dr Hambleton has been with Baylor since 1920. Previously he was professor of physiology and pharmacology at Vanderbilt University School of Medicine, Nashville, Tenn. where he also served as acting dean and secretary of the medical school during World War I.—Dr William W Looney, for many years professor of anatomy, Baylor University College of Medicine, Houston and recently professor and chairman of the department of anatomy, Southwestern Medical College, Dallas has resigned to enter private practice in Greenville.—Dr Edward F Yeager, Mineral Wells, was recently appointed medical director of the Baker Hotel, a newly inaugurated service for guests who register to take the baths and water.

#### VERMONT

**Personal**—Dr James C O'Neil on July 15 resigned as medical superintendent and treasurer of the Vermont State Hospital for the Insane, Waterbury.

**State Medical Election**—Dr Leon E Sample, St Albans, was chosen president-elect of the Vermont State Medical Society in October and Dr Frank J Hurley, Bennington, was installed as president. Other officers include Drs Paul C T Bacon, Springfield, vice president, David Marvin, Essex Junction, treasurer and Benjamin F Cook, Rutland, secretary.

#### VIRGINIA

**Vaughan Memorial Clinic**—The Vaughan Memorial Clinic is now being developed in Richmond as a memorial to the late Dr Warren Taylor Vaughan. The clinic may be considered at the present time as an outgrowth of the Vaughan Graham Clinic, which was established jointly by Dr Vaughan and Dr William Randolph Graham. Dr John Warlick Thomas recently became associated with the clinic.

#### WASHINGTON

**Medical Society Dedicates Bulletin to Doctors Hospital**—The King County Medical Society designated its November 20 Bulletin the Doctors Hospital issue in honor of the recent completion of the hospital. The bulletin contains historical material and illustrations of the new unit as well as a history of the King County Medical Service Corporation, Doctors Hospital according to the bulletin, represents a "milepost in the life journey" of the King County Medical Society. The approximate cost of one million dollars included an allocation of \$665,000 by the FWA. The remainder was provided by the medical service corporation (*THE JOURNAL*, Dec 18, 1943, p 1059 and Nov 25, 1944, p 847).

#### WEST VIRGINIA

**Changes in Health Officers**—Drs Allen E LeHew, Lewisburg and James R Richardson Union, have been appointed part time health officers for Greenbrier and Monroe counties, respectively, succeeding Dr Herbert Duncan, former district health officer, who is now in Nashville, Tenn.—Dr Garnett P Morison, Charles Town, has been appointed as part time health officer of Berkeley County, to succeed Dr Henry R Dupuy, Martinsburg.

#### GENERAL

**Social Hygiene Day**—February 7 has been announced by the American Social Hygiene Association as National Social Hygiene Day. Special educational observances will be held throughout the country.

**Federation for Clinical Research**—Investigators wishing to present papers before the Southern section of the American Federation for Clinical Research in Dallas some time in January are instructed to send abstracts of not more than 200 words to the chairman, Dr Alfred W Harris 1719 Pacific Avenue Dallas 1, by January 1. The Southern section is planning a two day meeting, the exact dates for which have not yet been announced.

**Injuries in Coal Mines**—Final figures on injuries in coal mines in the United States in 1942, the first full calendar year of American participation in the war, reveal that accident frequency rates that year were the lowest since 1930 and that production of coal per man hour of work was the highest in the nation's history according to the Bureau of Mines, Department of the Interior. Compilations by the accident analysis division show that 530,861 men were employed in anthracite and bituminous mines in 1942, a decline of 15,831 from 1941. These employees produced a record total of 640,000,000 tons of which 582,000,000 came from the bituminous fields and 58,000,000 from the anthracite region of Pennsylvania. To produce this quantity of coal, 1,471 men lost their lives and 69,564 men suffered non-fatal injuries that disabled them for more than the remainder of the day on which the accident occurred, the bureau reported in a publication analyzing accidents for 1942. Assuming a uniform payment of \$5,000 for each fatality and \$100 for each nonfatal accident the bureau estimated that injuries cost the nation about \$14,311,400 in compensation payments. Chief causes of accidents in both bituminous and anthracite mines were falls of roof, first, and haulage (transportation), second. Proving that fatalities can be prevented in coal mines, 6,201 of the 6,940 bituminous mines listed in the bureau's compilation worked through 1942 without a death.



**Association for Research in Nervous and Mental Disease**—The twenty-fifth annual meeting of the Association for Research in Nervous and Mental Disease will be held at the Waldorf-Astoria Hotel, New York, December 15-16, under the presidency of Col Franklin G Ebaugh, M C Among the speakers will be

Dr John C Whitehorn Baltimore Changing Concepts of Psycho-neurosis in Relation to Military Psychiatry  
Lieut Col Malcolm J Farrell and Major Norman Q Brill M C Neurotic Reactions in Psychopaths  
Lieut Col Roy R Crinker M C A Dynamic Study of War Neuroses in Fliers Returned to the United States  
Drs Edward A Strecker and Kenneth E Appel Philadelphia, Pa Psychiatric Contrasts in the Two World Wars  
Brigadier John R Rees British Army Development of Psychiatry in the British Army  
Brig Gen Eugen I C Reinartz Research Aspects at the AAF School of Aviation Medicine in Nervous and Mental Diseases  
Major Gen George B Chisholm Canadian Army Psychological Problems of Demobilization  
Col William C Menninger M C Problem of the Discharged Neuro-psychiatric Patient  
Capt Lewis L Robbins M C Mental Hygiene Unit, Army Air Forces  
Major Fred F Sencer Jr M C An Experimental Unit for the Retraining of Psychoneurotic Soldiers  
Lieut Col Guy C Randall and Major Harry C Blair M C and Dr Jack R Ewalt Lieut Col Eston Psychiatric Reactions of Patients with Amputations  
Capt David G Wright M C Anxiety Related to Aerial Combat  
Major Ivan C Berlien and Lieut Col Frederick R Hanson M C Psychiatry in the Combat Division  
Lieut Col Ralph T Collins M C Neuropsychiatry with an Overseas Evacuation Hospital  
Lieut Comdr Herbert I Harris (MC) Importance of the Emotional Outlet in Psychotherapy  
Lieut Comdr Howard I Rome (MC) Psychopathology and Group Therapy  
Comdr George A Rimes, Lieut Comdr Leslie B Hohman and Lieut Comdr Lawrence C Kolb (MC) Methods of Recovery in Combat Fatigue and the Influence of Therapy  
Lieut Manuel M Pearson and Lieut Comdr Robert A Cohen (MC) Psychotherapy in a Naval Convalescent Hospital  
Drs Lawrence S Rubie and Sydney G Margolin New York Therapeutic Role of Drugs in the Processes of Repression Dissociation and Synthesis  
Capt Ephraim Roseman M C Electroencephalography and Head Injury  
Major George M Haas M C Head Injuries in Aircraft Accidents  
Major Frank H Mayfield and Capt John W Devine Jr M C Causalgia  
Drs Lewis J Pollock James G Colseth and Alex J Arief Chicago Electrodiagnosis of Peripheral Nerve Lesions  
Major Herman B Snow M C Psychiatric Procedure at the Rehabilitation Center Second Service Command  
Lieut Col Walter E Britton, M C Convalescent Reconditioning Program for Neuropsychiatric Casualties in the U S Army  
Col John H Baird M C Neuropsychiatric Problems of the Veterans Administration  
Dean A Clark senior surgeon U S Public Health Service Reserve and Victor H Vogel surgeon U S Public Health Service Mental Illness and the Expanded Federal State Vocational Rehabilitation Program  
Dr Leonard E Himler, Ann Arbor Mich Psychiatric Rehabilitation in Industry

**Additional Grants for Physical Medicine**—A new group of seven grants aggregating \$185,000 has been announced by the Baruch Committee on Physical Medicine. The new grants include \$50,000 to the Massachusetts Institute of Technology, Cambridge, Mass. \$40,000 to the University of Minnesota Medical School Minneapolis \$30,000 to Harvard Medical School, Boston \$30,000 to the University of Southern California School of Medicine, Los Angeles \$15,000 to the State University of Iowa College of Medicine, Iowa City, \$15,000 to the University of Illinois College of Medicine Chicago, and \$5,000 to Marquette University School of Medicine Milwaukee. The grants to the Massachusetts Institute of Technology and the University of Minnesota are in addition to the gift of \$1,100,000 made by Mr Baruch in April, at which time grants were made to Columbia University College of Physicians and Surgeons, New York University College of Medicine the Medical College of Virginia, Richmond, and for minor research and fellowship programs for the advancement of physical medicine. The present gift to the Massachusetts Institute of Technology is in support of a five year program of training and research in electronics, instrumentation and physics in relation to medicine to be carried on under the auspices of the department of biology and biologic engineering. It was the conviction of the scientific advisory committee of the Baruch Committee on Physical Medicine that Baruch Fellows and other physicians should have more than a superficial knowledge of the physics and technology underlying the physical methods and instrumentation used in this field and it was suggested that training in this respect might effectively be centered at the Massachusetts Institute of Technology. The program will be under the general supervision of Francis O Schmitt, Ph D head of the department of biology and biologic engineering and under immediate supervision of Kurt S Lion D Eng, assistant professor of applied biophysics who is an expert in physical instrumentation. The

grant of \$40,000 to the University of Minnesota is to support the development of a three year teaching and fellowship program in physical medicine. The primary objective of the program is to be the furtherance of fundamental training of research workers and teachers. The program has as its basis the development of scientists in the field of physical medicine. As an auxiliary to this basic training facilities will be developed for the training of clinicians and technicians. The other grants have been allocated from the fund of \$200,000 given by Mr Baruch in April. The sum of \$30,000 was granted to Harvard Medical School for establishment of a three year program to provide fellowship or residencies to be used for the benefit of qualified physicians who are selected to be trained in this field. This sum will be administered by a strong standing committee on physical medicine recently appointed by Dr C Sidney Burwell, dean of the Harvard Medical School composed of Drs James B Aver, Derek E Denny-Brown William T Green, James H Means Arthur L Watkins and Eugene M Landis chairman. Appointment to the fellowships which generally carry stipends of \$2,500 will be made annually but may be renewed to provide up to three years of specialized study and research. Emphasis will be placed on training a few men in basic research and clinical investigation. Unusual opportunities for clinical experience and research in the psychologic and psychiatric aspects of physical medicine will be available at Harvard. The first year will be wholly or in part devoted to basic research related to physical medicine in one of the preclinical sciences such as physiology, anatomy or biochemistry. The second year will be spent in clinical training in physical medicine at the Massachusetts General Hospital and other hospitals affiliated with the Harvard Medical School. In the third year, fellows will be assistants in physical medicine with clinical responsibilities. For candidates with extensive previous training, one year clinical fellowships will also be granted. Applicants must have an M D degree from an approved medical school and a minimum of one year of internship in an approved hospital. Applications may be obtained from the Dean Harvard Medical School, 25 Shattuck Street Boston 15. The sum of \$30,000 is granted to the University of Southern California to inaugurate a program of teaching and research in physical medicine in its medical school. The sum of \$15,000 is granted to the University of Illinois to inaugurate a teaching program in physical medicine at its medical school. The sum of \$15,000 is granted to the University of Iowa to assist in a joint research and teaching program concerning the effectiveness of different methods of applying heat to the deep tissues of the human body. Finally, the sum of \$5,000 is granted to Marquette University for continuance of research in the physiology and pathology of nerves and muscles as related to physical medicine. In discussing these grants Dr Frank H Krusen director of the Baruch Committee pointed out that Mr Baruch had been particularly interested in the important field of electronics as applied to medicine and he said that the center at the Massachusetts Institute of Technology gave promise of revolutionizing the application of electronics in the diagnosis and treatment of the sick. Dr Krusen announced that the administrative board of the Baruch Committee does not contemplate the recommendation of any further large grants for the establishment of additional departments of physical medicine in our medical schools. Main attention will now be directed to the adequate development of the centers already established and to providing advice in the organization of proper teaching of physical medicine in medical schools and through the committee on war and postwar physical rehabilitation and reconditioning, an attempt would be made to promote proper development of physical medicine in the rehabilitation and reconditioning of both military and civilian casualties of war.

### CORRECTION

**Digitalis Poisoning**—In the article by Herrmann et al which appeared in the November 18 issue of THE JOURNAL, table 2 is a duplication of table 1 table 3 should be table 2 and the following table was omitted:

TABLE 3—Types of Heart Disease Affected by Digitalis Poisoning

| Hypertensive | Hyp A S | Hyp Syph   | A S | Syph             |
|--------------|---------|------------|-----|------------------|
| 21           | 8       | 4          | 0   | 3                |
| Rheumatic    |         | Congenital |     | No Heart Disease |
| 1            |         | 1          |     | 1                |

## Foreign Letters

### LONDON

(From Our Regular Correspondent)

Nov 4, 1944

#### Social Insurance and Family Allowances

The social insurance scheme of the government, which affects the life of every person from the cradle to the grave, has been unanimously approved in the House of Commons. Mr Butler, minister of education, moved that the House 'welcome the intention to establish an enlarged and unified system of social insurance and a system of family allowances.' He said that the various schemes for social betterment expressed the universal desire for a more closely knit society, in which all shared together both the risks and the opportunities. They seemed to concentrate more on the younger generation and on children and also to insist that in the interest of the country and the workers the government must push ahead with the policy of full employment. Every child should be guaranteed the best possible basis of physical health, but it was difficult to calculate or guarantee the nature of the benefits which the child received. The system of family allowances, he said, was intended to help the general economy of the family and was not intended to be based on any question of subsistence. The family was expected to maintain the first child, he explained, because the family should continue to have responsibilities of its own, especially in regard to the first child, and because its inclusion in the benefits would more than double the cost of the scheme. The real argument for family allowances, he said, was that they helped a family to stand the strain where it was felt most. He had been asked whether or not family allowances would raise the birth rate. That was not the government's sole reason for introducing them, he answered, but it hoped that an increase would result. The plan would give greater confidence to our families.

Regarding assistance in kind the provision of meals and milk had already been established on a large scale, but the government's view was that this policy must now be carried to its logical conclusion. In spite of war difficulties the number of children taking their midday meal at school had risen from 300,000 to 1,600,000. But there was a long way to go before all children got their meals at school, the minister stated. The government had decided that when the immediate urgency for house repairing in London was finished school meals should be given an equal priority with the other most urgent needs of the country. School milk could be made free at the same time cash allowances were introduced. School meals on this scale were something new in our social system, he pointed out, giving all children a 'fair start' physically.

Children under 5 years old had been regarded as a gap in the government's policy, Mr Butler stated. The national milk scheme and the provision of welfare foods—orange juice, cod liver oil, and so forth—which was an important part of the war-time plan, would be continued for a while. There was no country in the world, he said, which had been able to introduce such a vast program of social reform as we had done and at the same time defeat one of the greatest tyrants in history.

Few voices of criticism have been heard against this vast system of social insurance and family allowances. Even the conservative *Times* gives the scheme unqualified support in its editorials. Endorsing the government White Paper, it declares that the scheme is a concrete expression of the solidarity and unity which in war have been the nation's bulwarks against aggression and in peace will be its guaranty of success in the fight against individual want and misfortune. The *Times* also endorses the government's decision not to allow any group in

the community to claim exception from insurance. Those who by reason of their own superior security are not willing to share the risks of all are described as claiming the right, which cannot be admitted, to "make a separate peace with want."

#### Professor Ernest W Hey Groves

The death of Professor Hey Groves, at the age of 72 years, has removed a prominent figure in British surgery. He began his medical life as a general practitioner but soon became interested in surgery. He obtained the Fellowship of the Royal College of Surgeons and was appointed to the surgical staff of the Bristol General Hospital. He also became senior demonstrator in anatomy at Bristol University. A mechanical turn of mind led him to specialize in orthopedics, and he invented numerous orthopedic splints and devices. Before the introduction of the Smith-Petersen nail he worked at improving the operative treatment of fractures of the neck of the femur by fashioning pins of beef bone and of the horn of the stag and the rhinoceros. In 1913 he advocated the fixation of fractures by steel pins passed through the bone and attached to outside supports. This required only the use of a drill instead of the more complicated plating then in general use. His work in the last great war increased his reputation, and in 1915 he produced a primer on 'Gunshot Injuries of Bones.' Other successful works from his pen were his "Synopsis of Surgery" (1908), "Modern Methods of Treating Fractures" and "Surgical Operations." He was president of the British Orthopedic Association in 1928-1929 and of the Association of Surgeons of Great Britain and Ireland in 1929-1930. He edited the *British Journal of Surgery* from its inception in 1913 throughout almost its whole career of preeminence in surgical literature, until advancing years compelled him to resign in 1941. His guidance played a large part in its success.

#### Sheltered Employment for the Disabled

Sir Godfrey Ince, director general of man power, has stated in a speech at Manchester that a company controlled and financed by the Ministry of Labor is to be formed to provide sheltered employment for severely disabled persons who cannot hold their own in competitive industry. It was unlikely that the whole employment of the disabled could be dealt with by voluntary organizations, the director stated. The special company and any voluntary organization receiving assistance from the Ministry of Labor must be required to apply its profits, if any, to promoting these objects, it was explained, and will be prohibited from paying any dividend to its members.

#### The Editorship of the Lancet

The proprietors of the *Lancet* have announced with much regret the retirement of Dr Egbert Morland from the editorial chair. He joined the staff of the *Lancet* in 1915 and has been editor since 1937. He has well sustained the reputation of the journal as both a scientific and a political organ of the profession. The Royal College of Physicians and the Royal College of Surgeons have shown their appreciation of his work by admitting him to their fellowship. He is succeeded by Dr T G Fox, who has been for some years assistant editor. He will be assisted by Dr E Clayton-Jones.

#### Oil Cargo Under Red Cross Flag

After the British submarine *Unruly* had engaged in encounter with gunfire which caused the crew to abandon ship, it is reported, the submarine drew nearer and it was then seen that the enemy vessel was flying a Red Cross flag and had red crosses on her bow. The commanding officer of the submarine, Lieut J P Tye, decided to examine her before sinking her. He found that she was not so innocent as she looked. Her cargo consisted of oil in drums and the Nazi ensign was found under the captain's pillow. As she was clearly a supply ship,

she was blown up. Such abuse of the Red Cross was perhaps to be expected, many times during the war the Germans have shown no respect for either the Red Cross or the Geneva Convention, to which they are signatories, by attacking and sinking hospital ships plainly marked as such and by killing medical staff, nurses and patients.

#### Whiter Bread

One of the measures adopted by the government to insure a sufficient supply of food for all was to enforce an 85 per cent extraction of the national flour from wheat. A new order has been made decreasing the rate of extraction to 82.5 per cent. The object is stated to be to improve the national bread. The new flour will produce a whiter and better quality loaf, with no appreciable loss of nutritional value.

### BUENOS AIRES

(From Our Regular Correspondent)

Oct 11, 1944

#### Medical Care and Social Insurance

Dr. Jose Arce of Buenos Aires recently lectured before an audience at the Centro de Estudiantes de Medicina on medical care and social insurance. More than 60 per cent of the Argentine population have an income of less than \$1,200 a year, he said. Families with such incomes have a right to free medical care by the state, he thought. He also recommended a large department for medical assistance, with branches in several provinces. The members of the department would supervise the work of family physicians, hospitals and centers of social medical care. A large number of additional hospital beds are necessary, according to Dr. Arce, 84,000 beds to be given free of any charge to people in need of social aid, 42,000 beds to be given to patients belonging to families with incomes of from \$1,250 to \$3,000 and 14,000 for patients who can pay a reasonable amount. It is advisable to establish medical councils and hospital councils to supervise the medical and hospital work in the country, he added.

#### Thyroid and Metathyroid Diabetes

Dr. Bernardo A. Houssay of Buenos Aires, president of the Argentine Society of Biology, and Dr. Oscar Orias, also of Buenos Aires, recently lectured before the society. According to Houssay, prolonged administration of thyroid does not cause diabetes in normal dogs, whereas it does cause the disease in dogs with normal glycemia and a pancreas experimentally reduced to 25 or 23 Gm. The animals are more susceptible to the disease when they are treated by administration of thyroid or preparations of the anterior lobe of the hypophysis before the administration of thyroid. The disease may be of the thyroid type, which lasts only during administration of thyroid extract, or of the metathyroid type, which persists even after discontinuation of the thyroid treatment.

Dr. Orias reported the results of experiments on normal and partially pancreatectomized rats. Subtotal pancreatectomized rats which conserve 5 per cent of pancreatic tissue tolerate the first diabetogenic dose of alloxan better than normal rats. The latter tolerate repeated subthreshold doses of alloxan with intervals of ten days between the injections, whereas subtotally pancreatectomized rats develop diabetes with relatively small doses of alloxan.

#### Medical Care in Boarding Schools

A law was recently passed by the executive government under which the heads of boarding schools are compelled to give attention to the physical and mental development of the children in the schools. The law provides that schools shall have clinical departments with a physician and a nurse, proper preventive and curative dental care will be given to the children, they will have four daily meals, which will be prepared in accordance

with dietetic standards of the National Department of Public Health. Infractions will be punished by closing the offending schools.

#### Cultivation of Digitalis

*Digitalis purpurea* grows as a native plant in several regions of Argentina. Up to now, several pharmacists have taken the plant free of any cost for preparation of the pharmaceutical product for sale. The government is now in charge of the preservation and cultivation of the plant on a large scale. Free use of the plant is forbidden. The seeds of the plant hereafter will be harvested by the government and distributed to pharmacists.

#### Clinics for Heart Diseases

A polyclinic for heart diseases was recently opened to the public as a department of the Faculty of Medicine of the University of Buenos Aires. The building was constructed and properly equipped with a donation of \$62,000 from the Virgimo F. Grego foundation. The foundation will contribute \$10,200 a year to the support of the polyclinic. The University of Buenos Aires will also provide funds for expenses.

#### Brief Items

Dr. Enrique A. Boero, gynecologist of Buenos Aires, former professor of gynecology and obstetrics of the Faculty of Medicine of Buenos Aires and an active worker in social medicine, died recently at the age of 64 years.—Dr. Arturo Mo, a well known psychiatrist of Buenos Aires, died recently at the age of 62 years.

The General Department of Penal Institutions of Argentina is negotiating with the government to increase the amount of money allowed for food in prisons.

The date of celebration of the second Pan American Congress of Ophthalmology was postponed from November 1944 to November 1945. The congress will be held in Montevideo. Pan American ophthalmologists are requested to send the annual dues to insure uninterrupted reception of the journal *Ophthalmologia Ibero Americana*, which is the official organ of the congress.

Dr. Juan Carlos Llamas Massini, professor of obstetrics of the Faculty of Medicine of Buenos Aires, died recently in Buenos Aires.

## Marriages

WILLIAM L. AINSWORTH, Bay Springs, Miss, to Miss Dorothy Alford of Crystal Springs in Charlottesville, Va, September 1.

JOSEPH PEDEN BAILEY to Miss Louise King Howe, both of Rock Hill, S. C., in Flat Rock, N. C., September 16.

JAMES NELSON HADDOCK, Cape Girardeau, Mo., to Miss Dorothy Mae Vaughan in Toledo, Ohio, June 8.

THOMAS DOYLE GHENT, Lancaster, S. C., to Miss Lydia Epps of Kingstree in Summerville, September 15.

JOHN EDWARD GILICK, Clayton, N. Y., to Miss Ruth Catherine McGovern of New York, October 14.

JAMES YOUNG GRIGGS, Asheville, N. C., to Miss Betty Lee DeBusk in Winston-Salem, September 26.

THOMAS S. BROWNELL, Cleveland, to Miss Mary Miller of Mogadore, Ohio, in Akron, October 7.

GORDON L. NEIGH JR., Grand Island, Neb., to Dr. ROSALIE EVA BREUER of Lincoln, September 28.

EDWARD C. WOLSTON, Springfield, Mass., to Miss Maxine L. Askey of Oil City, Pa., September 28.

COSME JOSE FERRAIOLI, Santurce, Puerto Rico, to Miss Marjorie Whelan of New York, recently.

LEROY B. DENNIS JR., Florence, S. C., to Miss Mary Emily Hinnant of Columbia, October 21.

LESTER J. CANDLER, Brooklyn, to Miss Margaret O'Keefe of Litchfield, Minn., recently.

JOHN MASSEY COBB, Tuskegee, Ala., to Miss Octavia Sadler of Birmingham, October 24.

## Deaths

Charles Morton Rosenthal @ Brooklyn, University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore 1934 fellow of the American College of Surgeons member of the Brooklyn Ophthalmological Society, specialist certified by the American Board of Otolaryngology, assistant ophthalmologist at the Long Island College Hospital and clinical assistant ophthalmologist at the dispensary and senior clinical assistant ophthalmologist at the Brooklyn Eye and Ear Hospital died in the New York Post-Graduate Medical School and Hospital New York, September 1, aged 35 of subacute bacterial endocarditis

Griffin Anderson Allen, Boston Meharry Medical College Nashville Tenn 1913 died August 5, aged 68, of arteriosclerotic heart disease and obesity

Max Bacharach, Maryland, N Y Julius-Maximilians-Universität Medizinische Fakultät, Würzburg Bavaria, Germany 1920 died September 12 aged 49, of chronic nephritis

James Reginald Bailey @ Keysville Va, Medical College of Virginia Richmond 1926 on the associate staff of the Southside Community Hospital, Farmville, died September 13 aged 43

William Thomas Barnette, Springfield Ky Kentucky School of Medicine Louisville, 1900, died in Shelbyville September 23 aged 70

Thompson Mitchel Berry, Baton Rouge, La, Medical Department of Tulane University of Louisiana, New Orleans 1908 died in Our Lady of the Lake Sanitarium September 20 aged 65

Howard Black @ Palo Alto Calif Starling Medical College Columbus Ohio 1896 member of the Pacific Coast Ophthalmological Society died September 21, aged 70, of heart disease and generalized arteriosclerosis

Jacob Peter Bottenhorn, Sigel, Pa, Ohio Medical University Columbus 1904 died in the Warren State Hospital Warren July 12 aged 66 of carcinoma of the prostate

Harry Maxwell Box @ Coral Gables Fla Miami Medical College Cincinnati, 1907, member of the Ohio State Medical Association fellow of the American College of Surgeons for many years practiced in Cincinnati where he had been police and fire surgeon and on the staff of the Deaconess Hospital died September 30, aged 60 of coronary heart disease

William Gerald Brymer, Bandera Texas College of Physicians and Surgeons Dallas 1905 also a pharmacist, past president of the Medina-Uvalde-Maverick-Val Verde-Edwards-Real Kinney-Terrell-Zavala Counties Medical Society served on the staff of the Santa Rosa Hospital, San Antonio while practicing in Dewar Okla served as chief surgeon of the Consolidated Fuel Company examiner for the Selective Service System member of the Lions Club, died August 12, aged 72 of heart disease

Thomas Henry Burke, Pittsburgh Georgetown University School of Medicine Washington D C 1929, served an internship at the Pittsburgh Hospital, died July 2, aged 49 of coronary occlusion

Arthur Alphonsus Chenay, Washington D C Detroit College of Medicine 1897 veteran of the Spanish-American War and World War I medical consultant for the National Rehabilitation Committee of the American Legion for many years died September 17 aged 68 of coronary artery disease

Lucie A Hemenway Cook, Bloomington Calif Northwestern University Woman's Medical School, Chicago, 1897 died September 25, aged 74

Walter C Crysler @ Littleton Colo, Harvey Medical College, Chicago 1901 for many years county physician served as mayor of Littleton on the staffs of the Mercy Hospital and the Porter Sanitarium and Hospital where he died August 4 aged 74 of coronary thrombosis

Grant W Curless, Beloit Wis Atlanta College of Physicians and Surgeons 1900 served during World War I died August 27, aged 69 of coronary heart disease

Bernard Charles Dorset, La Crosse, Wis, University of Pennsylvania Department of Medicine, Philadelphia 1904 served during World War I, formerly practiced medicine in Denver where he had been on the staffs of the Children's St Luke's Presbyterian Denver General Colorado General and St. Joseph's hospitals, died November 1, aged 67, of coronary thrombosis and diabetes mellitus

George G Fitz, Bancroft Idaho State University of Iowa College of Medicine Iowa City 1898 member of the American

Medical Association served as vice president of the Pocatello Medical Society, served during World War I, died in Salt Lake City, September 25, aged 72, of cerebral hemorrhage

Ralsa Marshall Fuller, Greenwood, S C, University of Georgia Medical Department, Augusta, 1899 member of the American Medical Association, served during World War I, died at the Greenwood Hospital September 28 aged 68

Everett Rush Gose, Fayette, Mo Barnes Medical College St Louis, 1907, died August 21, aged 63, of heart disease

Homer Wilford Gough, San Antonio Texas, University of Texas School of Medicine, Galveston 1915, member of the American Medical Association, at one time on the staff of the Southwestern Insane Asylum, died September 21 aged 62 of heart disease

Charles A Hadsell, Alamosa, Colo Missouri Medical College, St Louis, 1885, associate member of the Colorado State Medical Society, honorary member of the Alamosa County Medical Society, died September 3, aged 90 of myocarditis

Sherman Blaine Hibbard, Kansas City Mo Rush Medical College, Chicago 1912 member of the American Medical Association died in Rochester, Minn September 21, aged 56 of general peritonitis and leiomyoma of the stomach

Robert Samuel Jacobs @ Washington D C, Medical College of Virginia, Richmond 1930, died in the Laurel Sanitarium Laurel Md, July 12 aged 39

Harry Charles Kendig @ Mount Joy Pa Jefferson Medical College of Philadelphia 1930, served an internship at the Washington Hospital, Washington member of the Rotary Club died September 20, aged 41

Cornelius C Kepler, Pocahontas, Iowa Chicago College of Medicine and Surgery, 1913, died September 3 aged 55, of carcinoma of the prostate

Jesse Arthur King @ Elaine, Ark University of Arkansas School of Medicine Little Rock, 1918, medical director of the Elaine Hospital, surgeon for the Missouri Pacific Railroad died in Monterey, La, August 7, aged 57, of pulmonary tuberculosis

Robert Harrison Kistler @ Lansford Pa, University of Pennsylvania School of Medicine, Philadelphia 1915 served during World War I, at one time chief surgeon for the Lehigh Coal and Navigation Company formerly on the staffs of the Pennsylvania and Wills hospitals in Philadelphia member of the police commission and a director of the First National Bank died in the Coaldale State Hospital, Coaldale, October 4 aged 55

William Russell Lightbody, Manchester, N H Harvard Medical School Boston 1910 died in Boston August 11, aged 62 of cerebral arteriosclerosis

William W Livingston, Dunlo Pa, Eclectic Medical Institute Cincinnati 1902 member of the American Medical Association served as a lieutenant in the medical corps of the U S Army during World War I medical inspector in his school district for many years died September 2, aged 72 of heart disease

Frank William Maier, Medical Lake Wash Beaumont Hospital Medical College, St. Louis 1892 member of the American Medical Association, formerly health officer of Rocky Ford Colo resident physician, Eastern State Custodial School, where he died August 16, aged 79, of coronary heart disease

Jerome C Malone, Faunsdale, Ala Memphis (Tenn) Hospital Medical College, 1901 member of the American Medical Association died September 26, aged 66 of heart disease

Charles N Martin, Warren Ark., Medical Department of Tulane University of Louisiana New Orleans 1878, member of the American Medical Association died September 7, aged 89 of senility and hiccup

George Scott Martin @ Susanville Calif, University of Louisville Medical Department Louisville, Ky 1909 a major in the medical corps of the U S Army serving in France and England during World War I member of the American Association of Industrial Physicians and Surgeons physician and surgeon for the Southern Pacific Railroad city health officer past president of the Rotary Club formerly medical director and owner of the Riverside Hospital died October 8 aged 57 of coronary occlusion

Edgar Stanley Matthews, Bunkie La Medical Department of Tulane University of Louisiana, New Orleans 1900 served as secretary and treasurer of the Avoyelles Parish Medical Society for eight years mayor of Bunkie formerly a member of the state board of health local surgeon for the

Texas and Pacific Railway, died September 25, aged 71, of arteriosclerosis and bronchopneumonia

Leon Jordan May, Anna, Ill Kentucky School of Medicine, Louisville, 1905, member of the American Medical Association, since July 1941 managing officer of the Anna State Hospital, died September 22, aged 68, of coronary occlusion

Bernard William Meyer, Columbus, Ohio, Ohio Medical University Columbus, 1897, died August 11, aged 80

John Thomas Mize, Wallis, Texas University of Nashville (Tenn) Medical Department, 1898, while practicing in Bryan served as county health officer, died September 22 aged 72, of tumor of the lung

Guilford Dudley Mottier, Patriot, Ind Miami Medical College, Cincinnati, 1900 died in the Good Samaritan Hospital, Cincinnati, September 28, aged 71, of coronary disease

Hans P Nielson, Des Moines Iowa, Linsworth Medical College, St Joseph, Mo, 1899, died September 25, aged 67 of hypertensive heart disease

Ludwig John Oblazney, Simpson, Pa, Jefferson Medical College of Philadelphia 1935, member of the American Medical Association, served an internship at the Allentown Hospital, Allentown, on the staff of St Josephs Hospital, Carbondale where he died August 15, aged 35, of acute dilatation of the heart

Charles Palen, Dubuque, Iowa, Northwestern University Medical School, Chicago, 1902, died September 30 aged 65 of pulmonary edema

Jacob Allen Patton, Los Angeles Rush Medical College, Chicago 1890 retired in 1933 as medical director and second vice president of the Prudential Life Insurance Company Newark, N J, after thirty-eight years of service formerly vice president and president of the Association of Life Insurance Medical Directors, assistant professor of chemistry materia medica and genitourinary surgery at his alma niter from 1893 to 1908, died September 25, aged 77 of heart disease

William Otto Pauli @ Cincinnati, Johns Hopkins University School of Medicine, Baltimore, 1907, a member of the medical staff of the Union Central Life Insurance Company since 1910, serving as assistant medical director from 1913 to February 1942, when he was elected associate medical director at one time demonstrator in clinical microscopy at the Medical College of Ohio died September 16, aged 62

Robert Lee Payne, Monroe N C, Medical Department of Tulane University of Louisiana, New Orleans 1911, served during World War I died September 7, aged 57 of coronary occlusion

Samuel Edward Peden, Perryville, Mo, Barnes Medical College, St Louis 1910 served during World War I died in the Veterans Administration Facility, Jefferson Barracks, September 2, aged 63, of generalized arteriosclerosis and cerebral thrombosis with left hemiplegia

C P Perkins, Batesville Miss Louisville Medical College, Louisville, Ky, 1903, died in St Joseph's Hospital, Memphis, Tenn October 9, aged 67, of ruptured gastric ulcer

Doctor Absalom Pettit, Vicksburg Miss Medical Department of Tulane University of Louisiana New Orleans 1906 member of the American Medical Association, died September 21, aged 60

Norman W Phillips @ Clear Lake, Iowa State University of Iowa College of Medicine, Iowa City, 1887 an affiliate Fellow of the American Medical Association served as health officer, died September 10, aged 85, of cardiovascular renal disease

Harry Pomerantz @ Lancaster Pa, Medico-Chirurgical College of Philadelphia 1909, attached to British Expeditionary Force during World War I on the staffs of the Rossmore Sanatorium, St Joseph's Hospital and the Lancaster General Hospital where he died September 19, aged 57, of carcinoma of the stomach

Alfred R Poole, Milan, Mo, Kentucky School of Medicine Louisville, Ky, 1904 died September 3 aged 66, of chronic glomerulonephritis

Frances Mary Preston-Brown, Los Angeles Woman's Medical College of Pennsylvania Philadelphia 1941 served an internship at the Hospital of the Woman's Medical College of Pennsylvania Philadelphia, and a residency in psychiatry at the New York State Psychiatric Institute and Hospital in New York died suddenly August 18 aged 40

John Robert Priest Jr, Houston, Miss, University of Tennessee College of Medicine Memphis 1937 member of the American Medical Association formerly health director of Kemper, Clarke and Wayne counties served an internship at the Morningside Hospital in Tulsa, Okla, and the City Hospital in Mobile Ala, died October 4, aged 32, of acute cardiac failure

Gideon D Quinn, Springfield, Mo, Louisville Medical College Louisville, Ky, 1896, died in South Bend, Ind September 24 aged 76 of cerebral hemorrhage

Robert Ramroth, Marion, Ohio, Western Reserve University Medical Department, Cleveland, 1895, member of the American Medical Association, died in the Mount Carmel Hospital, Columbus September 2 aged 72 of adenocarcinoma of the ascending colon and coronary occlusion

Howard Jarvis Reger, Vernon, Texas, Fort Worth School of Medicine Medical Department of Fort Worth University, 1902, member of the American Medical Association died July 26 aged 74, of arteriosclerosis

Conrad B Rice, Louisa Ky, Hospital College of Medicine, Louisville, Ky 1898 member of the American Medical Association served as president and member of the board of directors of the Bank of Blaine died in a hospital at Cincinnati, September 25 aged 70, of pneumonia

## PUBLIC HEALTH SERVICE

William Smith Bean @ Medical Director, U S Public Health Service, Washington, D C, University of Virginia Department of Medicine, Charlottesville, 1914, interned at the U S Marine Hospital, Baltimore, commissioned in the regular corps of the public health service in August 1915 served as medical officer on the Coast Guard Cutter *Androscoogun* and with Dr Joseph Goldberger on pellagra investigations in cotton mill villages in South Carolina during World War I did extracantonment work in that state, with the exception of a few temporary assignments had devoted twenty years to the operation of U S Marine hospitals, served as executive officer of the Marine hospitals in New Orleans, New York City and Ellis Island, medical officer in charge of the Marine hospitals at Mobile, Ala Pittsburgh Norfolk, Va, and Baltimore, from June 1944 until his death he was chief of the Hospital Division, Bureau of Medical Services, died suddenly November 26 aged 54, of coronary thrombosis

Edward Cranch Ernst @ Medical Director U S Public Health Service, Washington, D C Columbia University College of Physicians and Surgeons, New York 1911, served an internship at the Southern Pacific Railroad Company Hospital in San Francisco commissioned on Jan 10, 1916, as assistant surgeon in the U S Public Health Service and immediately assigned to duty at the

Marine Hospital in San Francisco during 1917 served as medical officer on the U S Coast Guard Cutter *Baer* served at the San Francisco Quarantine Station in 1918 and later for three years in the Philippine Islands where he gained considerable experience in smallpox, cholera and leprosy, serving as medical officer in charge of the San Lazaro Contagious Disease Hospital in Manila and as extracantonment officer for the Philippine National Guard, in 1921 was detailed to the Division of Industrial Hygiene in Washington, D C, and New York City for twelve years, beginning in February 1922 served as medical director to the U S Employees Compensation Commission in 1934 appointed assistant chief of the division of personnel and accounts at headquarters of the public health service, in 1938 at the request of Dr Hugh S Cumming, director, was made assistant director of the Pan American Sanitary Bureau, a position he had held at the time of his death and in which he traveled widely in Central and South America, working closely with Latin American health authorities in cooperative programs for the improvement of health conditions, member of the Royal Tropical Medical Society American Public Health Association, Far Eastern Tropical Medicine Association Association of Military Surgeons of the United States and the American Hospital Association died suddenly November 3 aged 58 of coronary occlusion



Joseph Esthner Robinson, Memphis, Tenn., Memphis Hospital Medical College, 1911, member of the American Medical Association served during World War I formerly on the staff of the United States Marine Hospital died September 28, aged 58, of coronary thrombosis

Joseph William Robinson ⊕ Lisbon, Ohio, Eclectic Medical College, Cincinnati, 1927, served during World War I, died September 21, aged 50

James Alfred Rolls Jr., Washington D C, University of Michigan Medical School, Ann Arbor, 1923, member of the American Medical Association, died October 5 aged 45

Eli W Rose, Hundred, W Va College of Physicians and Surgeons, Baltimore 1888, died September 29, aged 80

Frank M Rumsey, Conneautville, Pa Cleveland Homeopathic Medical College 1903 died in the Meadville City Hospital, Meadville, July 8, aged 70, of carcinoma of the prostate and myocarditis

Presley Bliss Russell, Carthage Miss, Memphis (Tenn) Hospital Medical College, 1901, died in the Mississippi Baptist Hospital at Jackson September 25, aged 65

Olaf Halvard Rystad, Grand Forks, N D Chicago College of Medicine and Surgery, 1913, member of the American Medical Association, on the staff of the Deaconess Hospital

Charles William Schery ⊕ St Louis, St Louis College of Physicians and Surgeons, 1904 formerly assistant to chair of histology, pathology and bacteriology at his alma mater, for many years city pathologist and bacteriologist died in the Lutheran Hospital, September 9, aged 67, of generalized carcinomatosis

Stuart Harris Sheldon ⊕ Portland, Ore, Rush Medical College, Chicago, 1902, fellow of the American College of Surgeons served during World War I, chief, obstetric service, Salvation Army White Shield Home, on the staff of the Emanuel Hospital, where he died August 26, aged 68, of coronary thrombosis

Frank Morton Sherman ⊕ Newton Mass Harvard Medical School, Boston, 1881 an Affiliate Fellow of the American Medical Association, died September 14, aged 87, of cerebral hemorrhage

Henry Connelly Shurtleff, Philadelphia University of Pennsylvania Department of Medicine, Philadelphia 1888, died in the Presbyterian Hospital, July 23, aged 80, of arteriosclerosis and diabetes mellitus

Mark Harrison Smith ⊕ Glendale, Calif, State University of Iowa College of Homeopathic Medicine, Iowa City, 1895 Rush Medical College, Chicago, 1898, died September 8, aged 73



CAPT ROY E BAZE M C,  
A U S 1910 1944



CAPT JOHN S WILLIAMS M C,  
A U S, 1909 1944



LIEUT HAROLD B THORNBURG (MC),  
U S Navy, 1911-1944

died at Lake Plantaganet, Bemidji, Minn., August 16 aged 68 of coronary thrombosis

Abraham S Sanders, Brooklyn Denver and Gross College of Medicine 1903 member of the American Medical Association formerly on the staffs of the New York Post Graduate Mount Sinai St Marks and People's hospitals all in New York died in the Queens General Hospital, Jamaica, July 28 aged 66 of heart disease

Samuel Reasin Wallis, Armour S D College of Physicians and Surgeons Boston, 1900, member of the American Medical Association county coroner, died August 30 aged 76 of heart disease

Maria Constantine Walsh, Philadelphia, Woman's Medical College of Pennsylvania Philadelphia, 1893 member of the American Medical Association died in the Jefferson Hospital July 1 aged 80, of auricular fibrillation and arteriosclerosis

## KILLED IN ACTION

Roy Ellis Baze, Chickasha Okla University of Oklahoma School of Medicine Oklahoma City 1936 member of the American Medical Association, served an internship at the Hamot Hospital in Erie Pa commissioned a first lieutenant in the medical corps of the Army of the United States on April 9, 1942 later promoted to captain served in the African campaign before going to southern France where he parachuted into occupied territory awarded the purple heart posthumously, killed in action in France August 24 aged 34

John Scott Williams Ridgway, Pa Jefferson Medical College of Philadelphia, 1935 member of the American Medical Association served an internship at the Methodist Episcopal Hospital in Philadelphia and the Burlington County Hospital Mount Holly N J commissioned a

first lieutenant in the medical corps Army of the United States on May 12 1942, later promoted to captain awarded the Bronze Star Medal on July 26, killed in action in France August 14, aged 34

Harold Babcock Thornburg ⊕ Lieutenant (VC) U S Navy Hollywood Calif, University of Southern California School of Medicine Los Angeles, 1942 served an internship at the Naval Hospital Bremerton Wash commissioned a lieutenant (jg) in the medical corps of the U S Navy on July 5 1942 was assigned to a South Pacific squadron after his completion of flight surgeon training in Pensacola Fla promoted to lieutenant on May 1, 1943 killed in action at sea in the South Pacific area September 21 aged 33



**Bureau of Investigation****MISBRANDED PRODUCTS****Abstracts of Notices of Judgment Issued by the  
Food and Drug Administration of the  
Federal Security Agency**

[EDITORIAL NOTE—These Notices of Judgment are issued under the Food, Drug and Cosmetic Act, and in cases in which they refer to drugs and devices they are designated DDNJ and foods, FNJ. The abstracts that follow are given in the briefest possible form (1) the name of the product, (2) the name of the manufacturer, shipper or consigner, (3) the date of shipment, (4) the composition, (5) the type of nostrum, (6) the reason for the charge of misbranding, and (7) the date of issuance of the Notice of Judgment.]

**Alternative Tonic Compound**—Hale Drug Company Birmingham Ala. Shipped Jan 7 1942. Composition essentially methenamine potassium iodide a compound of iron strychnine (0.01 grain per fluid ounce) extracts of plant drugs including a laxative and an alkaloid bearing one with alcohol sugar and water. Misbranded because label falsely represented that product was an efficacious alternative tonic as well as a treatment for irritations caused by impurities of the blood and would aid in the proper functioning of the bowels kidney and bladder. Also misbranded because fabricated from two or more ingredients whereas label failed to declare common or usual names of these or the quantity of strychnine present.—[DDNJ FDC 809 December 1943]

**BI Lets**—BI Lets Inc Nashville Tenn. Shipped March 10 1942. Composition essentially colomel aloe and bile. Misbranded because though a laxative it was not labeled with the warning that it should not be taken in cases of nausea vomiting abdominal pain or other symptoms of appendicitis and further label failed to warn that frequent or continued use might result in dependence on laxatives.—[DDNJ FDC 810 December 1943]

**Blue Ridge Mountain Mineral**—Robert T Sides trading as the C S & W Mineral Company Kannapolis N C. Shipped Feb 21 1941. Composition a natural mineral which when prepared according to directions on label consisted essentially of a dilute solution of ferric sulfate with minute amounts of sulfates of other minerals and some ferric hydroxide in suspension. Misbranded because label falsely represented that it was an effective treatment for high blood pressure pellagra nervous indigestion rheumatism kidney bladder and stomach disorders hemorrhoids blood poison female complaints and many other things.—[DDNJ FDC 823 December 1943]

**Bowel Regulator**—Hale Drug Company Birmingham Ala. Shipped Jan 7 1942. Composition essentially compounds of sodium potassium magnesium and iron tetrates carbonates and extracts of plant drugs including a laxative and an alkaloid bearing drug with sugar and water. Misbranded because label failed to give adequate directions for use of this product as a laxative and the directions given provided for no limitation as to duration of use. Further misbranded because labels failed to warn adequately that a laxative should not be taken in cases of nausea vomiting abdominal pain or other symptoms of appendicitis and that frequent or continued use might result in dependence on laxatives to move the bowels. Further misbranded because label falsely represented that product would efficaciously regulate bowels and stomach and neutralize in acid condition of the body. Misbranded again because fabricated from two or more ingredients whereas label failed to state common or usual names of said ingredients. Misbranded finally because label failed to bear accurate statement of quantity of contents.—[DDNJ FDC 809 December 1943]

**Cos Tal Big C**—Alvin M Hitt trading as Cos Tal Laboratories Company Savannah Ga. Shipped Oct 7 1941. Composition an aqueous emulsion containing volatile oils including oil of sandalwood and resins. Misbranded in that the label statement "Big C is indicated in cases of unnatural discharges" was false and misleading in representing that the product would be efficacious in the cure mitigation treatment or prevention of unnatural discharges whereas it would not.—[DDNJ FDC 825, December 1943]

**Mallitrate F I**—W Warren Walters and Organic Laboratories Inc, Los Angeles. Shipped Dec 8 1941. Composition concentrated apple juice. Misbranded because labels represented that the product was efficacious in the cure mitigation treatment and prevention of disease by reason of the alkalinizing properties of its components that it was of value in preventing or treating gastrointestinal disorders intestinal toxemia diarrhea various forms of nausea and a good many other things.—[DDNJ FDC 827 December 1943]

**Special Formula 833**—Brewer & Company Inc Worcester Mass. Shipped June 15 1941. Composition shown by biologic examination to contain approximately 1 milligram (333 International units) of vitamin B<sub>1</sub> (thiamin chloride) per tablet. Misbranded because of misleading label representation that the product would constitute an adequate or effective treatment for vitamin B deficiency which might cause constipation loss of vigor various nervous and other important symptoms or would be of special value for elderly men and women as claimed.—[DDNJ FDC 784 September 1943]

**Correspondence****A COMPREHENSIVE BLOOD EXAMINATION  
FOR CLINIC ROUTINE**

*To the Editor*—Physicians working in general medicine in busy public clinics can be aided considerably by having in hand at the first visit of the patient as much routine laboratory data as is practicable. At the New York Dispensary we have found it possible, with small cost in time and effort, to determine the hemoglobin, the plasma protein and the erythrocyte sedimentation rate at the first visit of new patients by utilizing a portion of the blood withdrawn for the Wassermann test and employing the new density technic for hemoglobin and plasma protein and a concurrent sedimentation rate determination. The density method was devised last year by Dr Phillips and others at the Rockefeller Institute for Medical Research. Devised especially for the use of medical units in our armed forces, it has proved to be admirably adapted for use in busy civilian clinics. It is accurate, requires the minimum of time and skill and calls for no special apparatus. The method as yet has not been described by its authors, but a description can be found in Peters and Van Slyke's "Quantitative Clinical Chemistry—Methods," 1943 edition, and in Kolmer's "Clinical Diagnosis by Laboratory Methods," 1944 revised edition.

For clinic use I have found the following plan satisfactory. The new patient, except in trivial cases, is sent from the admission interview direct to the nurse who collects blood for the Wassermann test. An extra 3 cc of blood is withdrawn and placed in a 10 cc vial charged with oxalate. The examination is then made by the nurse or the specimen is sent to the laboratory or to the consulting room of the physician. The examination is so easy that the physician himself can complete it without serious interruption of his clinical work. The final step in the examination is made at the end of one hour, or after a half hour if approximate results are sufficient.

This comprehensive blood examination at the first visit has definite advantages. There is less psychologic resistance on the part of the patient than is occasioned by the Wassermann test alone, for he is told that the examination is for general information about his blood. But the chief advantage is that the results obtained indicate to the clinician at the first visit many of the cases of concealed infection or of anemia and thus aid him suitably to apportion his time between the more and the less serious cases.

FREDERICK H HOWARD M.D., New York

**Medical Examinations and Licensure****COMING EXAMINATIONS AND MEETINGS****EXAMINING BOARDS IN SPECIALTIES**

AMERICAN BOARD OF DERMATOLOGY AND SYPHILIOLOGY. New York. June 8-9. Final date for filing application is March 12. Sec. Dr. George M. Lewis. 66 E. 66th St. New York 21.

AMERICAN BOARD OF INTERNAL MEDICINE. Written. Feb. 19. Final date for filing application is Dec. 15. Asst. Sec. Dr. W. A. Werrell. 1301 University Ave. Madison 5 Wis.

AMERICAN BOARD OF NEUROLOGICAL SURGERY. Spring. Final date for filing application is Feb. 1. Sec. Dr. Paul C. Bucy. 912 S. Wood St. Chicago 12.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY. Written. Part I. Various centers. Feb. 3. Sec. Dr. Paul Titus. 1015 Highland Bldg. Pittsburgh 6.

AMERICAN BOARD OF OPHTHALMOLOGY. New York. June 13-16, Chicago. Oct. 3-6. Final date for filing application is Jan. 1. Sec. Dr. S. Judd Beach. 56 Ivie Road. Cape Cottage. Maine.

AMERICAN BOARD OF OTOLARYNGOLOGY. New York. June 5-8. Chicago. Oct. 3-6. Sec. Dr. Dean M. Lierle. University Hospital. Iowa City. Ia.

AMERICAN BOARD OF PEDIATRICS. Oral. New York. April 14-15. Final date for filing application is Dec. 15. Chicago. May 19-20. Final date for filing application is Jan. 19. Sec. Dr. C. A. Aldrich. 115½ First Ave. S.W. Rochester. Minn.

AMERICAN BOARD OF RADIOLOGY. Oral. New York. June 3. Final date for filing application is May 1. Sec. Dr. B. R. Kirshin. 102 110, Second Ave. S.W. Rochester. Minn.





## Bureau of Legal Medicine and Legislation

### MEDICOLEGAL ABSTRACTS

**Medical Practice Acts Revocation of License for Performance of Nontherapeutic Abortions**—After notice and hearing the State Board of Health of Mississippi revoked Johnson's license to practice medicine in Mississippi on the ground that he had procured an abortion not necessary to preserve the life of a pregnant woman which is a cause for the revocation of a license under the Mississippi medical practice act. The physician, by a writ of certiorari brought the matter for review before the circuit court, Hinds County, which reversed the order of the board and remanded the cause for further proceedings. The board then appealed to the Supreme Court of Mississippi.

The physician contended first that the proceedings by which his license was ordered revoked by the board were not lawfully initiated. He argued that the state of board of health took no action itself prior to the hearing that the alleged notice served on him was initiated solely by the executive officer of the board without the authority of the board and that since no charge against him had been lodged with the board the proceedings instituted were unauthorized and illegal. The notice of the proceedings served on the physician, said the court was in the form of a registered letter and was signed by the secretary and executive officer of the board, had attached thereto the seal of the board and notified the physician to appear before the board at the time and place named therein for a hearing on the charges therein set out. The notice purported to be sent by the authority and direction of an order of the executive committee of the board adopted at a called meeting Oct 6 1943, at which only two of the members of the committee were present the order reciting that certain complaints and grievances against the physician had been made known to the committee. The state board of health continued the court by statute, consists of ten members. Nine of those members are appointed by the governor, eight to be licensed physicians and one to be a licensed dentist. The tenth member apparently, is elected and is to be the executive officer and secretary of the board and is vested with all the authority of the board when it is not in session. The physician who signed the notice served on Johnson was the duly elected member of the board who lawfully was the executive officer and the secretary of the board. By statute the board is also authorized to appoint an executive committee of three members and, as stated in the statute

Said executive committee shall have authority to execute all the powers herein vested in said board in the interim of the meetings of said board and any action of said executive committee shall be legal and binding until modified or annulled by said board of health.

Any two members of the executive committee shall be a quorum for the transaction of business. (Code 1942 Section 7027)

Further said the court, by Section 8893, supra the board "may on its own initiative or on complaint suspend or revoke for any cause named below [including the cause alleged as the basis for the action against Johnson] any license' of a physician licensed to practice in Mississippi. Thus it is seen that the executive committee can legally act through two of its members, that the action of that committee and the issuance of the notice to Johnson were the valid acts of the board itself and that no complaint formal or otherwise, to either the board or the committee is essential to the lawful initiation of the proceedings by the board.

The physician next contended that the notice of the charges given him in the proceedings was not legally sufficient in substance in that the charges set out in the notice were vague, general indefinite and inconsistent and did not inform him of the nature and cause thereof so that he could prepare his defense, thus denying him his constitutional right of due process of law. The notice answered the court served on Johnson described the charges against him as 'Procuring or attempting to procure, or pretending to procure an abortion that is not necessary to preserve the life of a pregnant woman'. This was in the exact

language of the statute (Section 8893 (a) (5), supra) and the wording of the order of the executive committee authorizing and directing its issuance. Following the receipt of this notice by Johnson his counsel wrote the board requesting that he be furnished with the cause and nature of the accusation. In reply counsel for the board wrote Johnson's counsel, giving him the names of ten women on whom "unnecessary abortions" had been procured by Johnson with the approximate times when such acts were performed. Construing the original notice and this letter together, they charged, in the last analysis, that Johnson, at different times approximately stated, had procured abortions on ten named pregnant women, which abortions were not necessary to preserve their lives. This eliminated the alternatives of attempting or pretending to procure or aiding or abetting in procuring such abortions set out in the original notice. Was this sufficient to give the physician notice of the nature and cause of the offense? Mississippi has no statute prescribing the form and substance of such notices. The statute does define the offense, as previously noted, and the original notice here was in the words of the statute which itself is usually sufficient, even in criminal charges. However, the essentials of such notices, in the absence of statutes prescribing them, seem well settled. As was said by the Supreme Court of Florida in *State v Whitman* 116 Fla 196 150 So 136

And in such proceedings it is sufficient if the accused is informed with reasonable certainty of the nature and cause of the accusation against him has reasonable opportunity to defend against attempted proof of such charges and the proceedings are conducted in a fair and impartial manner free from any just suspicion or prejudice unfairness, fraud or oppression.

Further as stated in 41 Am Jur 184 "In the absence of statute requiring it, the strict rules of pleading in judicial cases do not apply to revocation proceedings before a board of medical examiners." It is recognized that the members of an administrative board such as a board of health or board of medical examiners are not learned in the law and legal proceedings and more laxity is allowed in their pleading and procedure than in strict law courts provided that no substantive rights of the accused are denied him.

The accusation in this case, continued the court, informed the physician of every element involved in the charge except that it did not describe the means, nor technique used in producing the abortions, or undertake to give a definition thereof. It was not necessary to set out the means. Lacking lawful justification for the act, it mattered not whether it was done by giving medicine or using instruments—it was abortion. Nor was it material that the notice failed to define abortion. As was said in 1 Am Jur 133 "In criminal law the crime of abortion is the wilful bringing about of an abortion without justification or excuse." The only justification or excuse in this case would have been the necessity to save the lives of the women concerned. The charge says that was not necessary. Stripped of all technical niceties, and looked at in a common sense way, it would seem rather absurd to inform a physician that he had performed abortions not necessary to save the lives of the women and at the same time to assume that he did not know the meaning of the word abortion and that he needed to be given a definition and a description of the detailed manner in which an abortion is produced. It is significant that the physician after receiving the additional information requested by his counsel proceeded with the hearing and without requesting further particulars, which, in civil actions, precludes such person from thereafter complaining as to a lack of knowledge of details. While this court is zealous to guard individual rights and would caution quasi judicial tribunals to be careful that such rights are fully protected in proceedings before them, yet it is clear in this case that the physician was informed with reasonable certainty of the nature and cause of the accusation against him, had ample opportunity to defend against them and had a fair and impartial hearing.

The court accordingly, reversed the judgment of the trial court and ordered reinstatement of the judgment or order of the state board of health revoking Johnson's license to practice—*Mississippi State Board of Health v Johnson*, 19 So (2d) 445 (Miss, 1944)

## Current Medical Literature

### AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1934 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (\*) are abstracted below.

#### American Journal of Diseases of Children, Chicago

68 157-230 (Sept) 1944

- Angle of Clearance of Left Ventricle as Index to Cardiac Size. Modified Technic for Its Determination and Range of Values for Normal Children. R L Jackson, R A J Einstein, Alice Blau and Helen G Kelly—p 157
- Unusual Outbreak of Mumps. M Siegel and J L Camp—p 163
- Significance of Complete Preventive Medical Program for Children. C A Aldrich—p 168
- Preparation and Immunizing Properties of Protamine Diphtheria Toxin. V Ross—p 172
- Congenital Anomalies of Lower Part of Rectum. Analysis of 16 Cases. M J Lee Jr—p 182
- Psychogenic Incontinence of Feces (Encopresis) in Children. Report of Recovery of 4 Patients Following Psychotherapy. E Lehman—p 190

#### American Journal of Hygiene, Baltimore

40 109-226 (Sept) 1944

- Results Obtained with Heat Killed Tubercle Bacilli Administered to Persons in General Population. C W Wells and E W Flahiff—p 109
- \*Results Obtained in Man with Use of Vaccine of Heat Killed Tubercle Bacilli. C W Wells, E W Flahiff and H H Smith—p 116
- Local Reactions Following Injection of Heat Killed Tubercle Bacillus Vaccine. C W Wells, E W Flahiff and H H Smith—p 127
- Effectiveness of Ultraviolet Irradiation of Upper Air for Control of Bacterial Air Contamination in Sleeping Quarters. Preliminary Report. R Schmeiter, A Hollaender, B H Caminita, R W Kolb, H F Fraser, H G Du Buy, P A Neal and H B Rosenblum—p 136
- Detection of Vi Agglutinins in Sera of Typhoid Carriers. Ethelinda H Brower—p 154
- Study of Reporting of Paralytic Poliomyelitis in Massachusetts 1928-1941. N B Nelson and W L Aycock—p 163
- Observations on Epidemiology of Jungle Yellow Fever in Santander and Boyaca, Colombia, September 1941 to April 1942. J Boshell Manrique and E Osorno-Mesa—p 170
- Genus *Elebotomus* in California. O Mangabeira Filho and P Galindo—p 182
- Some Epidemiologic Characteristics of Malaria in North Alabama as Determined by Data Collected over the Twenty Year Period 1923-1942. R B Watson and Margaret E Rice—p 199
- Probably New Type of Noninfectious Fermenting Shigella. Maud Gober, Virginia Stacy and Mary Woodrow—p 209
- Tests for Specificity of Tumors and Sera of Rats. G H Bailey and R E Gardner—p 212
- Efficiency of Intranasal Inoculation as Means of Recovering Poliomyelitis Virus from Stools. H A Howe and D Bodian—p 224

**Results Obtained with Vaccine of Killed Tubercle Bacilli.**—Wells and his associates report studies on the protective effect of heat killed tubercle bacilli against human tuberculosis conducted in the Mental Hospital, Kingston, Jamaica, over a period of more than ten years. The average annual patient population of the Kingston Mental Hospital approximated 2,500, with about 540 admissions each year. The number of patients dying from all causes per year averaged 260, and approximately 25 per cent of all deaths were due to tuberculosis. Among 434 persons with tuberculosis under observation during the study, only 61 (14 per cent) had clinical tuberculosis on admission; the remainder developed it while in the institution. Patients were permitted access to large compounds, one for each sex, where practically no restrictions were placed on their freedom of movement. The effect on the spread of tuberculosis of an arrangement of this kind in a population with a high incidence of open tuberculosis is apparent. Certainly the conditions presented a severe test for studies to determine the protective value of inoculations with a heat killed tubercle bacillus vaccine. The authors found significantly lower tuberculosis attack and death rates among recipients of heat killed tubercle bacilli administered intracutaneous than among persons alternately

chosen but not vaccinated, who served as controls. The differences were greatest during the first two years of observation. The attack and death rates for tuberculosis among persons strongly positive to tuberculin on admission to an institution with a high tuberculosis prevalence were consistently and significantly lower than such rates in groups of persons containing weak and negative tuberculin reactors, vaccinated or controls. The results obtained in this study support the suggestion that there is a practical use for this or a similar heat killed tubercle bacillus vaccine in certain groups of individuals who may be subjected to unusual risk of tuberculous infection. Such groups might include medical students, pupil nurses, hospital attendants, household contacts and possibly others.

#### American Journal of Medical Sciences, Philadelphia

208 421-560 (Oct) 1944

- \*Diagnosis of Hemorrhage in Man. Study of Volunteers Bled Large Amounts. H A Shenkin, R H Cheney, S R Govons, J D Ilardy, A G Fletcher Jr and I Starr—p 421
- \*Effect of Artificial Restriction of Activity on Recovery of Rats from Experimental Myocardial Injury. W C Thomas and T R Harrison—p 436
- \*Allodoxan Diabetes in Rabbit. Consideration of Morphologic and Physiologic Changes. O T Bailey, C C Bailey and W H Hagan—p 450
- Acute Yellow Atrophy of Liver in Early Syphilis. Case Report with Summary of Literature. Martha T Leonard—p 461
- Obstruction of Hepatic Veins (Chiari's Disease). Report of 5 Cases. C D Armstrong and W H Carnes—p 470
- Meningococcal Infection. I Meningococcal Meningitis and Septicemia. E R Denny, R G Bausch and M A Turner—p 478
- Burn Trauma Precipitating Acute Leukemia or Leukemoid Condition. D Weiss and K E Haines—p 490
- Use of an Agglutination Inhibition Test in Studying an Epidemic of Influenza. A L Florman and J P Crawford—p 494
- \*Experimental Chronic Carbon Monoxide Poisoning of Dogs. F H Lewey and D L Drabkin—p 502
- Cardiac Changes from Carbon Monoxide Poisoning. W E Ehrlich, S Bellet and F H Lewey—p 511

**Diagnosis of Hemorrhage in Man.**—Shenkin and his associates found that after operations in which much blood was lost some patients showed none of the signs ordinarily expected after profuse hemorrhage. They made observations on 18 volunteers who were bled approximately 500 cc and on 17 who were bled about a liter. Estimations of pulse rate, blood pressure, venous pressure, cardiac output (ballistocardiograms) and hematocrit were made before and after the hemorrhage, during the recovery and often after replacement of the blood. Cardiac output diminished little after the loss of 500 cc of blood; after the loss of a liter it regularly diminished significantly and during syncopal attacks it diminished profoundly. After completion of the bleeding, the cardiac output slowly returned toward the value found before the hemorrhage. The effects of hemorrhage on healthy men may be divided into three stages of severity. In the first stage the subject is symptom free at rest and has a pulse rate and blood pressure within normal limits. On arising, acceleration of pulse rate and some diminution of blood pressure are found. In the second stage there are still no noteworthy abnormalities as long as the subject is recumbent and at rest, but the upright position cannot be tolerated and syncope soon overwhelms the subject if he arises. In the third stage syncopal attacks accompanied by bradycardia occur even though the subject is at rest and recumbent. The old concept that acute hemorrhage can be readily diagnosed by a rapid pulse and a low blood pressure is erroneous. Recumbent subjects may be bled to the point of collapse without exhibiting conspicuous tachycardia, and during the period of severe symptoms profound bradycardia is the rule. The blood pressure usually remains within the normal range until the symptoms of collapse begin, when it diminishes profoundly. Hemorrhages causing no signs or symptoms as long as the subjects are recumbent can be detected by having them sit or stand upright.

**Effect of Restriction of Activity on Recovery of Rats from Myocardial Injury.**—Thomas and Harrison say that, although rest in bed is the most widely used method of treatment of patients with acute myocardial disorders, there have been practically no well controlled clinical or experimental studies concerning its value and its limitations. Opinions vary widely about the length of time during which rest should be applied as well as regarding the strictness of the regimen of rest. The effect of exercise on animals with acute myocardial injury has been studied previously, but experimental attempts

at enforcing rest on animals has not heretofore been attempted. The authors review observations on a large number of rats in which experimental injury was produced by application to from three to five areas on the left ventricular surface of the head of a nail heated almost to redness. The mortality of these rats was decidedly greater when the animals were kept closely confined in small cages which restrict muscular activity. Animals so confined display considerably less activity, as measured by the work adder method than control animals allowed to wander freely about in larger cages. Observations with the optional treadmill have shown that following injury to the heart the rat tends to return to the preoperative level of exercise within a period of three to seven days. Enforced strenuous muscular effort even when carried out within twenty-four hours after cardiac injury did not materially increase the mortality in rats. Likewise such exercise carried out three or more days after the operation did not cause a significant increase in mortality. The authors point out that prolonged rest in bed following myocardial infarction in patients has serious disadvantages as well as some advantages. On the basis of the available evidence it would appear that during the first two weeks the advantages of strict bed rest probably outweigh the disadvantages but that after this time the reverse is probably true.

**Alloxan Diabetes in Rabbits.**—The Barleys and Hagan report pathologic findings in the pancreas and other organs of rabbits at varying intervals after the intravenous injection of alloxan. A single injection of a 5 per cent aqueous solution of alloxan was used. The total diabetogenic dosage was 200 mg of alloxan per kilogram of body weight. Smaller doses were used for the production of transitory diabetes. Lesions induced by alloxan in the islets of Langerhans of the rabbit begin almost immediately after the injection and are degenerative from the beginning. Degenerative changes in the islet cells are already apparent in the initial hyperglycemic stages, while in the hypoglycemic stage they progress to a point where they approach those of the diabetic phase. The pancreatic acini remain normal throughout, and changes in organs other than the pancreas are minimal. The most striking characteristic of the lesion is its specificity for the islets of Langerhans. The beta cells are affected most severely while a certain percentage of the alpha cells remain intact. From the point of view of the investigator it is unfortunate that the alpha cells are not completely destroyed. There are conspicuous species differences in the extent of extrapancreatic lesions induced by the injection of alloxan. The lesions of the kidney in the rat are much more severe than those in the rabbit. The lesions induced by small doses of alloxan are very striking. They resemble more the sequences produced in other organs following administration of certain carcinogenic hydrocarbons than the lesions produced by massive doses of alloxan or those recognized in human diabetes. Injection of alloxan not only provides a useful technique for obtaining diabetic animals in the laboratory and for the study of diabetic complications but also provides a useful technique for the study of numerous problems in general pathology.

**Experimental Chronic Carbon Monoxide Poisoning of Dogs.**—The U S Department of Labor sets the limit of safe concentration of carbon monoxide in air in industrial plants at 0.01 volume per cent (100 parts per million). Lewey and Drabkin state that the amount of carbon monoxide combined with hemoglobin varies greatly even with the same exposure. A person exposed continually for some months to the same carbon monoxide concentration in air may, supposedly by adaptation show a gradual decrease in the percentage of carbon monoxide hemoglobin. Hence safety limits given in terms of carbon monoxide concentration in air give only an approximate idea of the toxicity relationships of the gas in the body. The value of 0.01 volume per cent carbon monoxide in air leads theoretically in man to approximately 16 per cent carbon monoxide hemoglobin. By agreement of the safety engineers of the U S Army the upper permissible limit is set at 20 per cent carbon monoxide hemoglobin. Dogs exposed for five and one-half hours a day, six days a week, over eleven weeks, to an atmosphere containing 0.01 volume per cent of carbon monoxide and reaching daily  $20.1 \pm 1.1$  per cent of carbon monoxide hemoglobin showed a consistent disturbance of postural and position reflexes and of gait. Some of them showed a pathologic electrocardiogram characteristic of anoxia and necrosis of single heart muscle

fibers. Their central nervous systems showed, three months after termination of the experiment, microscopic changes in the cortex and white matter of the cerebral hemispheres, in the globus pallidus and in the brain stem. These alterations corresponded in type and localization to those found in acute carbon monoxide poisoning but were smaller, more scattered and less destructive. They followed in their arrangement the course of the blood vessels, the walls of which were only occasionally damaged. One dog, in which the posterior coronary artery had been ligated one year prior to the exposure for a period of only eighteen days to carbon monoxide, showed the earliest and severest cardiac and cerebral changes of all animals. This suggests that an inadequately functioning heart increases the general risk in carbon monoxide poisoning and may be responsible for a higher degree of brain damage. Chronic carbon monoxide intoxication may occur in dogs at carbon monoxide concentrations which have been regarded as within the safety limits for man. These experiments do not permit conclusions about potential human reactions to the same conditions.

### American Journal of Physiology, Baltimore

142 153-298 (Sept.) 1944 Partial Index

- Circulatory Changes Following Subcutaneous Injection of Histamine in Dogs I J Dwyer—p 158
- Studies on Mechanism of Cobalt Polycythemia C O Warren Q D Schubmehl and I R Wood—p 173
- Blood Picture of Iron and Copper Deficiency Anemias in Rabbit, S C Smith Mary Medlicott and G H Ellis—p 179
- Influence of Glucose Renal Tubular Reabsorption and pAminohippuric Acid Tubular Excretion on Simultaneous Clearance of Ascorbic Acid E E Selkurt—p 182
- Effect of Adrenal Cortical Extract on Resistance of Nonadrenalectomized Rats to Peptone Shock D J Ingles—p 191
- Effect of Various Conditions on Respiration of Rat Heart Muscle in Vitro F Bernheim and Mary L C Bernheim—p 195
- Some Properties of Maximal and Submaximal Exercise with Reference to Physiologic Variation and Measurement of Exercise Tolerance C Taylor with collaboration of G Brown F Crescitelli B Hansen and K Skow—p 200
- Hemolytic Depression of Erythrocyte Number by Feeding of Fat with Choline J E Davis—p 213
- Influence of Muscle Pain on Cortically Induced Movements E Gellhorn and L Thompson—p 231
- Fasting and Gluconeogenesis in Kidney of Eviscerated Rat S Roberts and L T Samuels—p 240
- Diuretic Effect of Gelatin Solutions C E Bridger S F Smathers C W Cotterman J T Dameron and J M Little—p 246
- \*Work in Heat as Affected by Intake of Water Salt and Glucose G C Pitts R E Johnson and F C Consolazio, with the technical assistance of J Poulin A Razojk and J Stachalek—p 253
- Effect of Anemic Anoxia on Motility of Small and Large Intestine F J Van Lier D W Northrup and J C Stuckney—p 260
- Effect of Vitamins of B Complex on Work Output of Perfused Frog Muscles N W Shock and W H Sebell—p 265
- Effect of Dicumarol (3,3 Methylene bis [4 Hydroxycoumarin]) on Platelet Adhesiveness Maryloo Spooner and O O Meyer—p 279
- Oxygen Consumption of Normal Rat Liver and Diaphragm Muscle in Lymph Taken from Dogs Before and After Severe Burns J Muus Esther Hardenberg and C K Drinker—p 284
- Changes in Phosphate of Muscle During Tourniquet Shock J L Bollman and Eunice V Flock—p 290

**Work in Heat as Affected by Intake of Water, Salt and Glucose.**—Pitts and his collaborators investigated the effects of water, salt, glucose and water soluble vitamins on 6 healthy fully acclimatized young men. The best performance of fully acclimatized young men on a good diet, performing intermittent hard work in the heat, was achieved by replacing hour by hour the water lost in sweat. Considerably less than this amount of water led in a few hours to a serious inefficiency and eventually to exhaustion. The replacement of salt hour by hour had no advantage. Replacement of salt loss meal by meal was adequate. Administration of glucose proved of little or no value when compared with the great benefit of large amounts of water. There was no advantage from administering 200 mg of ascorbic acid 20 mg of thiamine hydrochloride, 20 mg of riboflavin or large doses of brewers' yeast, either singly or together either during work or the day before. Water transport and supply are sometimes difficult but when water is available it should not be forbidden on the traditional ground that during work it is bad for one. Men should be encouraged to drink to capacity. When a good daily diet is not available because of failure of supply or is not eaten because of ignorance or anorexia, which is so common in hot environments, it is desirable to ensure adequate intake at least of salt, by means of salted drinking water or tablets and probably of vitamins by means of concentrates.



## American Journal of Public Health, New York

34 931-1048 (Sept) 1944

- War-time Health Picture in an English City A Massey—p 931  
Slum Clearance (Newark Plan) C V Craster—p 935  
Epidemic of Acute Anterior Poliomyelitis in El Salvador J Allwood Paredes—p 941  
\*Epidemic of 3000 Cases of Bacillary Dysentery Involving a War Industry and Members of Armed Forces C H Kinnaman and F C Beelman—p 948  
Dye Concentration in Resazurin Tablets C K Johns—p 955  
Tomorrow's Opportunities in Tuberculosis Nursing Dorothy Deming—p 957  
Problem of Control of Tuberculosis in Mental Hospitals with Reduced Personnel G W Weber R E Plunkett and F MacCurdy—p 962  
Health Education in Nutrition Adapting Business Promotion Techniques to Public Health Education Annabelle Desmond and Leona Baumgartner—p 967  
Gonorrhea Contacts Criteria for Management J H Lade—p 974

**Epidemic of Bacillary Dysentery**—Kinnaman and Beelman describe an epidemic of bacillary dysentery that occurred in Newton, a town with a population of 11,000 in southeastern Kansas. Samples taken from the deep wells showed no contamination, but those from various points on the distribution system were heavily contaminated. A bit of information which proved of extreme importance was received from a Santa Fe Railway water department employee who said that a sewer block had occurred at a Mexican village on the southwest outskirts of the city about the time that dysentery cases developed in the city. Contrary to previous statements by city officials that no change had been made to the distribution system further information uncovered the fact that changes had been made on the two main supply lines entering the city at a point close to this Mexican village. Investigation showed that a service connection came from a main to the Mexican villages. The situation was reconstructed as follows. When the water pressure was off on September 7 and 8, persons in the village attempting to get water apparently opened the valves and, not obtaining water, left them open, this in turn allowed the sewage backed up in the box to flow through the drain opening into the water main. The epidemiologic investigation revealed that the peak onset occurred on September 10 with 743 persons giving this date as the beginning of their sickness. As a result of the epidemic, business in the city was practically at a standstill on Thursday, September 10, when it is estimated about 2,000 persons were ill. Laboratory examination showed the predominating organism recovered from the stools of sick persons and from the intestinal mucosa in fatal cases to have been *Shigella paradysenteriae*, Flexner group. The water supply of Newton also supplies all passenger coaches of the Santa Fe Railroad. There were 2,871 regular passenger cars (Pullman and coaches) supplied with water between the dates of September 3 and the afternoon of September 14. From scattered cases traceable to Newton, it is assumed that there were many cases other than those occurring in the city. A great number of war workers were absent from their jobs for several days, an unknown number of soldiers and civilians were infected, the ordinary business of the city was disrupted for three days. Later, important transcontinental trains many of them troop trains were delayed an average of one hour while taking water at a nearby safe supply. With institution of proper public health protection measures the epidemic quickly subsided.

## Archives of Ophthalmology, Chicago

32 167-260 (Sept) 1944

- Present Status of Eye Exercises for Improvement of Visual Function W B Lancaster—p 167  
Partial Resection of Lid and Plastic Repair for Epithelioma and Other Lesions Involving Margin of Lid A B Reese—p 173  
Experimental Study on Penicillin Treatment of Ecogenous Infection of Vitreous L von Sallmann K Meyer and Jeanette di Grandi—p 179  
Simultaneous Local Application of Penicillin and Sulfacetamide L von Sallmann with technical assistance of Jeanette di Grandi—p 190  
Local versus Systemic Penicillin Therapy of Rabbit Corneal Ulcer Produced by Gram Negative Rod I H Leopold Lida F Holmes and W O LaMotte Jr—p 193  
Treatment of Ocular Tuberculosis F A Knapp—p 196  
Comparison of Oblique Extraocular Muscles W F Krewson II—p 204  
Prostheses for Eye and Orbit A M Brown—p 208  
Detachment of Choroid Clinical and Histopathologic Analysis E Spaeth and P DeLong—p 217

## Journal of Experimental Medicine, New York

80 257-340 (Oct) 1944

- Comparative Effects of Vitamin B<sub>1</sub> Deficiency and Restriction of Food Intake on Response of Mice to Lansing Strain of Poliovirus Virus as Determined by Paired Feeding Technique Claire Foster J H Jones W Henle and Frieda Dorfman with technical assistance of Mabel E Quimby and Dorothy L Alexander—p 257  
\*Studies in Human Immunization Against Influenza Duration of Immunity Induced by Inactive Virus G A Hirst E R Rickard and W F Friedewald—p 265  
Relation of Chemical Structure in Catechol Compounds and Derivatives to Poison Ivy Hypersensitivity in Man as Shown by Patch Test H Keil D Wasserman and C R Dawson—p 275  
Essential Difference Between Two Optimum Proportions Flocculation Ratios W C Boyd and Marjorie A Purnell—p 289  
Preparation of Type Specific Polysaccharide of Type I Meningococcus and Study of Its Effectiveness as Antigen in Human Beings E A Kabat Hilda Kaiser and Helen Sikorski—p 299  
Parallels in Lethal and Hemolytic Activity of Toxin of Clostridium Septicum A W Bernheimer—p 309  
Nutritional Requirements and Factors Affecting Production of Toxin of Clostridium Septicum A W Bernheimer with technical assistance of Margaret T Spencer—p 321  
Kinetics of Lysis by Clostridium Septicum Hemolysin A W Bernheimer—p 333

**Immunization Against Influenza**—Recent evidence on the effect of subcutaneous vaccination with influenza virus showed that the incidence of epidemic influenza was consistently reduced by about 75 per cent when the period between vaccination and an epidemic was short. Hirst and his associates present studies on a similar vaccine in which the period between vaccination and an epidemic was about one year. The PR8 strain of influenza A and the Lee strain of influenza B were used for the production of most of the vaccine. Penal institutions in five widely separated states of the Midwestern, Southern and Eastern United States were chosen for the study. These institutions offered obvious advantages for this type of work, since in each of the groups the medical care was good, there was adequate, readily available hospital space and there were full time physicians in attendance. Seven such institutions were studied. Administration to human beings of formaldehyde killed influenza virus, concentrated from allantoic fluid, resulted in a high order of antibody response within two weeks after injection. Even after one year the great majority of persons vaccinated had antibody levels considerably above their prevaccination titer for the PR8, Lee and a current 1943 strain. An investigation of the occurrence of epidemic influenza A in seven widely separated populations one year after vaccination of part of these groups showed that the attack rate among vaccinated persons was consistently lower than that of control individuals. The average reduction in the attack rate was of the order of 35 per cent.

## Military Surgeon, Washington, D C

95 257-344 (Oct) 1944

- With the American Division at Bougainville I E Sivitt—p 257  
Recurrent Dislocations of Shoulder W W Lasher—p 263  
\*Prophylactic Use of Sulfadiazine in Meningococcal Infections J F Linton—p 267  
Hemolytic Icterus in Negro Male with Special Reference to Differential Diagnosis from Bubonic Plague Case Report G T Smith and E H Drake—p 270  
Meckel's Diverticulum Preoperative Roentgen Diagnosis G D Carlson—p 272  
Veterinary Service at Army Post D M Campbell—p 275  
\*Cardiac Tamponade Report of Stab Wound in Right Ventricle W J Gillesby—p 284  
Value of Electrocardiogram in Acute Rheumatic Fever Report of 3 Cases P P Pease L G Steuer and C H Peters—p 287  
Appendicitis Study of Over 500 Cases Observed During Present Emergency in Army Hospitals W H Gerwig Jr—p 291  
Diagnosis of Appendicitis with Gastroenteritis W H Graham—p 296  
Reevaluation of Sulfadiazine C Lyons—p 301  
Safety Factors in Use of Intravenous Anesthesia J D Marco—p 305  
Erythema Multiforme Illuorificialis (Stevens-Johnson Disease) B D Fryer—p 308  
March Fractures New Concept of Their Etiology and Logical Method of Treatment L W Breck and N L Higinbotham—p 313  
Significance of Persistent Enuresis in History of Psychopathic Personality J J Michels—p 315  
Tannic Acid Fixative Method for Staining Protozoa J H Allen—p 317  
Cancer in Armed Forces W G Cahan—p 319  
Ear and Nose Suction Apparatus P W Stumm—p 321

**Prophylactic Use of Sulfadiazine in Meningococcal Infection**—Pamton states that approximately 18,000 men were given 2 Gm of sulfadiazine at 1 p m 2 Gm at 7 p m and 1 Gm at 7 a m each man receiving a total of 5 Gm in a

period of eighteen to nineteen hours. The only type of reaction noted was a skin eruption, which occurred in 6 cases. Up to eight weeks after the drug was ingested no man with meningococcal infection either meningococcemia or meningococcal meningitis, has been hospitalized since the first day the drug was administered, no case of scarlet fever has been diagnosed since the prophylactic administration of sulfadiazine. The incidence of upper respiratory infection was reduced by approximately 50 per cent for nine days following the administration of the drug. The incidence of contagious virus infection, as measles and mumps, was also reduced for one week following the ingestion of the drug. The results cannot be explained by better climatic conditions. The number of men appearing on sick call was reduced by approximately 33½ per cent for a period of eleven days following the ingestion of the drug.

**Stab Wound in the Right Ventricle**—A soldier was stabbed in the left chest with a pocket knife. Two hours after the injury Gillesby found the patient cyanotic, cold and clammy. His pulse was barely perceptible and his blood pressure unobtainable. All superficial veins were distended. Cheyne-Stokes respiration was present. Heart sounds were muffled, and the apex beat could not be located. Physical findings revealed left pneumothorax. A diagnosis of cardiac tamponade and left pneumothorax was made. An incision was made over the sixth rib from the scapular line to the costochondral junction. The rib was exposed and subperiosteal resection planned. However, because the anesthetist stated that she could no longer feel a pulse, an intercostal incision was rapidly made and the ribs were separated manually. The lung was pushed aside and the pericardium palpated. A faint pulsation could be felt. The pericardium was widely incised, releasing a gush of clots. The heart began to beat violently, and blood could be seen coming from an incision in the right ventricle. A finger was placed on the hole and an apical suture applied. The time consumed from the beginning of the incision to this point was about two minutes. The pulse was better. The wound in the heart was closed with two silk sutures so placed as to avoid the coronary vessels. Bleeding was well controlled. The pericardial sac was cleaned of clots and the heart inspected. The extensive transpleural approach used is advocated as an "all purpose" incision. Hyperventilation was used to prevent pulmonary complications. The pericardium was left open in communication with the left pleural cavity to permit effusion to drain into the pleural cavity. Electrocardiographic tracings taken postoperatively showed only an inversion of the T wave in lead 4.

### Missouri State Medical Assn Journal, St Louis

41 179-196 (Sept) 1944

Venereal Disease Control in Missouri. R R Wolcott—p 179  
Barnard Free Skin and Cancer Hospital Research Report for 1943. E V Cowdry—p 181

41 197-214 (Oct) 1944

Cardiac Disorders in Army General Hospital. J T King—p 197  
Special Problems of Poor Surgical Risks Especially Age. W B Kountz—p 200  
Gastric and Duodenal Lesions. D A Williams—p 202  
Physiologic Management of Burns. V T Williams—p 205

### New Orleans Medical and Surgical Journal

97 151-196 (Oct) 1944

Doctor and Socialized Medicine. W R Metz—p 151  
\*Rabies. Ten Year Survey of Pasteur Institute of Charity Hospital of Louisiana at New Orleans. E E Palik and Emma S Moss—p 153  
Care of Premature Infant at Charity Hospital. Hazel Pierce and W Siko—p 163  
March Fracture in Industry. J H Eddy Jr—p 171  
Fracture of Patella. Analysis of 150 Cases at Charity Hospital. L. K. Loomis—p 173  
Value of Central Field Studies Over Conventional Type of Visual Field Studies. S R Gaines—p 176  
Incidence of Several Etiologic Types of Heart Disease in Charity Hospital. J H Musser and C S Dempsey—p 180

**Rabies**—Palik and Moss present an analysis of 12,237 patients admitted to the Pasteur Institute Clinic in New Orleans and of 3,003 animal brains submitted for examination and diagnosis during the period from Jan 1, 1934 to Oct 31, 1943 inclusive. The Pasteur treatment was given to 4,146 patients. Of 3,003 animal brains submitted for examination 1,003 or 43.3 per cent were positive for rabies. Stray dogs which were

unavailable for examination, were responsible for exposure to rabies in 45 per cent of the patients treated. New Orleans experienced an epidemic of rabies beginning in the latter part of 1936 and continuing until the latter part of 1939. The present epidemic began early in 1943 and has shown a higher human mortality than the previous epidemic. Dogs were responsible for the exposure of 90 per cent of the patients treated and for all of the seven deaths from rabies. Actual injury by a proved rabid animal increases the mortality rate. Injuries about the face, head or neck are more dangerous than are injuries to other parts of the body. Injuries through clothing are less dangerous than injuries inflicted through the bare skin. The mortality from rabies is greater in Negroes than in white patients. Mortality from delay in instituting treatment is not significantly increased until two weeks after the injury. Rabies can be controlled by controlling the dog population.

### North Carolina Medical Journal, Winston-Salem

5 413-476 (Sept) 1944

Recent Experiences in Intensive Treatment of Syphilis. N B Hon—p 413  
Tropical Diseases in Returning Soldier. G T Harrell—p 416  
Endemic Typhus Fever. Report on 133 Cases. T W Baker and J M Alexander—p 421  
Radical Operation for Carcinoma of Ampulla of Vater and Head of Pancreas with Report of Case. H M Schiebel and H Sweeney—p 427  
\*Carotenemia. V S Caviness—p 432

**Carotenemia**—According to Caviness, carotenemia is much more common than is indicated by the number of cases reported in the literature. He suggests that the condition is usually not recognized but is diagnosed as biliary jaundice. The chief differential points between jaundice and carotenemia are that 1 There is no itching of the skin in carotenemia. 2 There is no yellowing of the scleras in carotenemia. 3 Yellowing of the skin in carotenemia is most intense in the palms and soles and about the nasolabial folds. In jaundice it is most intense in the scleras and on the trunk. 4 The urine in patients with jaundice is likely to show a deeper discoloration. 5 Urine chemical tests for bile should be positive in jaundice but negative in carotenemia. 6 In carotenemia there should be a high blood carotene level and no increase in the bilirubin content of blood, the blood bilirubin is high in jaundice. Icterus index changes, however, should be the same in the two conditions. 7 In carotenemia the stools are normal in color, in jaundice they are clay or putty colored. Cantarow and Trumper state that carotenemia occurs most commonly in children and diabetic patients, chiefly because of the prominent part that carotene containing vegetables occupy in their diet. Caviness reports the histories of 2 diabetic men who developed carotenemia. The first patient, a man aged 69 gave a history of having eaten large numbers of carrots daily. The second patient had lived for three weeks on a self prescribed diet of eggs. He was eating 27 eggs a day and was taking no other nourishment.

### Northwest Medicine, Seattle

43 271-312 (Oct) 1944

\*Brucellosis an Unrecognized Menace. R R Staub—p 274  
Orthopedic Aspects of Brucellosis. E G Chumard—p 279  
Use of Stilbestrol in Carcinoma of Prostate. C D Donahue—p 284  
Psychogenic Asthma. S Mayer Jr—p 287

**Brucellosis**—Staub states that less than 10 per cent of the patients with the chronic form of brucellosis have fever. Brucellosis is an important public health problem. Improved state and federal laws are necessary in the control, marketing and distribution of dairy products. A closer fraternity can profitably be developed between the medical and veterinary professions in the control of brucellosis and of other human infections contractible from animals. The medical profession must realize the unbelievable prevalence of brucellosis. The author thinks that 10 per cent of the population have brucellosis but that only about 1 per cent of infected persons are detected and treated. The sulfonamides are almost without value, although some believe that succinylsulfathiazole can benefit cases presenting early intestinal involvement. Penicillin shows only mild laboratory success. Fever therapy is more beneficial in acute than in chronic cases, especially in refractory cases not responding to vaccine therapy. Antiserum treatment is usually restricted to acute, severe attacks or exacerbations. Vaccine therapy seems

most promising in the treatment of acute and chronic brucellosis. The author uses a vaccine made only from the abortus strain. He prefers deep muscular injections and avoids subcutaneous injections. Vitamin therapy is an important supportive measure, as is also iron and liver. Thiamine hydrochloride seems especially beneficial in stimulating the production of opsonins, as does likewise the intravenous injection of nicotinic acid. Pent-nucleotide and bone marrow are both used in cases of extreme leukopenia.

### Public Health Reports, Washington, D C

59 1163-1194 (Sept 8) 1944

Physical Impairments of Members of Low Income Farm Families—11490 Persons in 2477 Farm Security Administration Borrower Families 1940 I Characteristics of Examined Population II Defective Vision as Determined by Snellen Test and Other Chronic Eye Conditions Mary Gover and J B Yaukey—p 1163

59 1195-1238 (Sept 15) 1944

Directory of Full Time Local Health Officers 1943—p 1195.

59 1239-1266 (Sept 22) 1944

Anti plague Measures in Tacoma Washington J M Hundley and K W Nasl—p 1239

### Rocky Mountain Medical Journal, Denver

41 609-696 (Sept) 1944

Pitfalls of General Physician in Ocular Diagnosis W H Crisp—p 626

Salient Health Problems in Denver Area Summary of Findings of Denver Metropolitan Planning Project L B Byington—p 634

Health Problem in Colorado R L Clerc—p 639

Introduction of Exotic Diseases into United States L Florio—p 643

School of Medicine Service to Doctors of Medicine in Colorado M H Rees—p 648

41 697-792 (Oct.) 1944

Medical Education and State Medical Society E R Murgage—p 714

Reconditioning the Soldier Patient A. Thorndike—p 718

Newer Agents in Wound Healing (Antibiotics) with Particular Reference to Penicillin F B Queen—p 721

### Southern Medical Journal, Birmingham, Ala.

37 533-596 (Oct) 1944

Asymptomatic Heart Disease in Young Adults J E Moes—p 533

Complications Following Use of Antirabies Vaccine with Suggestions as to Treatment C R Thomas—p 539

Infectious Mononucleosis in Negro Report of 3 Cases with 1 Complicated by Sickle Cell Anemia E S Ray and R C Cecil—p 543

\*Infectious Mononucleosis of Unusual Severity with Review of Jaundice Cases Occurring in This Disease W P Boger—p 546

Laboratory Tests in Study of Jaundice with Particular Reference to Liver Function Tests Eleanor W Townsend—p 551

\*Vitamin K Therapy in Menorrhagia Consideration of Hepatic Factor in Menstrual Disorders R Gubner and H E Ungerleider—p 556

Incidence of Trichina Infestation in Eastern Virginia A. C. Broders Jr and W B Porter—p 558

\*Nutrition in Convalescence and Rehabilitation Progress Report T D Spies R W Vilter and G Douglas Jr—p 560

Making Human Plasma Available for General Medical and Surgical Practice with Particular Reference to Mobile Bleeding Unit as Means of Establishing and Maintaining Plasma Banks in Several Communities J W Davenport Jr and R N Chapman—p 573

Metatarsal March Fractures H B Kernodle and J E Jacobs—p 579

Dual Plate No Cast Internal Fixation of Shaft Fractures L W Breck and W C Basom—p 582

Radiation Treatment of Gynghia of Wrist R J Reeves—p 584

Motor Driven Screw Holder—Screw Driver G R Dawson Jr—p 587

**Infectious Mononucleosis and Jaundice**—According to Boger infectious mononucleosis is a protean disease whose only constant feature is an increase in the mononuclear elements of the blood at some time during its course. Those cases which present a sore throat and glandular enlargement are regarded as most typical and are diagnosed most frequently. A 19 year old boy presented many unusual features which are seldom encountered in the same patient and the condition would undoubtedly have been erroneously diagnosed if a positive heterophile agglutination had not been obtained. Despite the gravity of the illness the treatment was purely symptomatic. The withholding of sulfonamide medication seems justified in the opinion of others, who have found that the sulfonamide drugs do no good in cases of infectious mononucleosis. The fever reached a height of 105.2 F. The authors think that the high temperature accounted for the patient's amnesia for a week

of his hospitalization. The pertussis-like cough, which was so severe that it produced blood streaked sputum and hoarseness of the voice that has persisted for more than two months is a feature of the disease which has not been commonly observed. Jaundice in infectious mononucleosis has been noted a number of times, but the mechanism of its production needs further investigation. Twenty-seven cases of jaundice are cited from the literature. The reported case illustrates the closeness with which infectious mononucleosis can simulate typhoid. The significant differential point was the generalized lymphadenopathy, which was not evaluated properly by reason of its having been found two and a half months prior to the onset of any acute symptoms.

**Vitamin K in Menorrhagia**—Gubner and Ungerleider state that recent observations indicate that the liver is intimately concerned with the metabolism of the female sex hormones and there is evidence to suggest that disturbances in liver function may be a factor in the genesis of some of the disorders of menstruation. Failure of the estrogen inactivating function of the liver may be contributory in the genesis of menorrhagia. Prothrombin formation occurs in the liver, and the level of plasma prothrombin is a sensitive index of the integrity of hepatic function. Vitamin K is intimately concerned with prothrombin formation and its administration is indicated whenever prothrombin deficiency exists. Observation of striking improvement with vitamin K therapy in a case of severe menorrhagia with prothrombin deficiency led the authors to undertake an investigation of its therapeutic effect in a series of cases. Vitamin K was given to 43 patients with chronic dysmenorrhea and menorrhagia. No medication other than vitamin K was employed. The dosage varied slightly, averaging twenty 5 mg tablets taken over a period of five days. Medication was begun in most cases one or two days before the onset of menstruation or on the first day of the menses. In 8 of 12 cases with a history of prolonged menstrual flow lasting six days or longer the duration of flow was reduced by one day or more. In the other 4 it was unchanged. In several women in whom spotting continued for ten or twelve days the flow was shortened to a normal length of four or five days. Of the 26 women in whom the flow continued for five days or less the duration remained unchanged in 16 was abbreviated in 8 and was prolonged in 2. Twenty-six of the women studied usually had clots during menstruation. The clots disappeared or diminished in 16 cases, were unchanged in 8 cases and increased in 2 cases.

**Nutrition in Convalescence and Rehabilitation**—Spies and his associates state that persons with nutritive failure treated at Lakeside Hospital Cleveland, had a deficient diet which was their only barrier to health and the ability to work. Unless something was done about the prevention of relapses in the treating of these chronically diseased persons, they continued to be dependent on their families or on social agencies. The authors report observations on 500 persons selected from a large group of patients who had recovered following treatment in the Nutrition Clinic. In most instances these patients gained strength promptly following nutritive therapy, but they were kept under close medical supervision until their health was restored and they were able to fulfil discharge requirements, the ability to do a full day's work every day. Precise diagnosis is the first step in shortening convalescence and hastening rehabilitation following nutritive failure. This is not easy, and no formula applies in every case. It is necessary to correlate the detailed information obtained from a nutrition history, laboratory determinations, physical examination and general medical history. The 500 persons rehabilitated or reconditioned included members of the armed forces and agricultural domestic and industrial workers. The following four principles of nutritive therapy are recommended for shortening convalescence and rehabilitating persons who are ill solely from malnutrition. 1 The diet should provide 4000 calories and should contain from 120 to 150 Gm of protein and should be rich in vitamins and minerals. 2 Basic therapy should provide thiamine, riboflavin, niacin, ascorbic acid orally. 3 Synthetic vitamins should be given orally or parenterally. 4 Natural B complex should be given in the form of brewers yeast or extract or rice bran extract and/or liver extract.

## Surgery, St Louis

16 319-476 (Sept) 1944

- \*Myoblastoma C W Howe and S Warren—p 319
- Malignant Papillary Cystadenoma of Sweat Glands with Metastases to Regional Lymph Nodes R C Horn Jr—p 348
- Experimental Observations on Human Ileocecal Valve R E Burge—p 356
- Papilloma of Gallbladder W Greenwald—p 370
- Urobilinogen Test as Additional Aid in Early Recognition of Fecal Fistula I D Baronofsky—p 377
- Acute Physiologic Responses in Experimental Head Injury with Special Reference to Mechanism of Death Soon After Trauma E S Gurdjian and J E Webster—p 381
- Effect of Position on Shock Produced by Hemorrhage A Large—p 399
- \*Spool Cotton as Suture Material J R Floyd and M J Brockbank—p 403
- Cotton Surgical Suture Material T L Hyde—p 407
- Survival of Rhesus Monkey Four Years After Excision of Head of Pancreas with Occlusion of External Pancreatic Secretion A Brunschwig—p 416
- Hemostatic Globulin and Plasma Clot Dressings in Local Treatment of Burns L Miscal and A Joyner—p 419
- Translumbar Aortography An Apparatus for Injecting Radiopaque Media A K Doss—p 422

**Myoblastoma**—Howe and Warren report 10 cases of myoblastoma together with 44 cases collected by Klemperer and 104 additional cases collected from the literature. Myoblastoma is derived from embryonic myoblasts and may be distinguished from the rhabdomyoma group. Fifty-six per cent of the cases reviewed by the authors occurred in the upper respiratory and digestive tracts. Fifty-nine cases involved the tongue, and of these 3 were malignant. Eleven per cent of the total cases were malignant and of these only 3 showed proved metastases. The authors think that whenever a myoblastoma is reported to have (1) atypism of cells (2) excess mitotic figures (3) spindle cell or sarcomatous pattern or (4) local invasion it should be treated surgically as a malignant tumor until more is known of the nature of these growths especially if the patient is over 50 years of age. The degree of radiosensitivity and frequency of metastasis are as yet unknown. Both appear to be low. Tumors under the mucous membrane or the skin have a great tendency to be associated with hyperplasia and epidermoid carcinoma of the overlying epithelium.

**Spool Cotton as Suture Material**—Spool cotton was the only suture material used by Floyd and Brockbank in 1659 general surgical procedures. They believe that spool cotton is an excellent suture material for all types of general surgery including clean and contaminated wounds. It is technically more difficult to handle than catgut and is thus conducive to painstaking surgery. It possesses minimal foreign body danger. Induration, serum accumulation and postoperative wound infections are minimal with cotton.

16 477-632 (Oct) 1944

- \*Prognosis in Acute Hematogenous Osteomyelitis With and Without Chemotherapy W E Kenney—p 477
- Embolic Occlusion of Major Arteries J T Reynolds and F J Jirka—p 485
- \*Ligation of Aorta and Both Common Iliacs for Aneurysm Report of Case and Review of Seven Operative Survivals of Aortic Ligation D T Monahan—p 519
- \*Physiochemical Disturbance in Severe Burn B J Ficarra and E A Naclerio—p 529
- Leontiasis Ossea Complicated by Marjolin's Ulcer Observation of Case for Twelve Years R E Burger and E P Lehman—p 542
- Case of Spontaneous Gastrojejunal Fistula Eight Years After Operative Gastrojejunostomy L R Kaufman and Helen I Heiman—p 557
- Pantopaque Notes on Absorption Following Myelography G M Wyatt and R G Spurling—p 561

**Osteomyelitis With and Without Chemotherapy**—Kenney presents an analysis of the experiences of surgeons with 3176 cases of acute hematogenous osteomyelitis. The mortality before the advent of chemotherapy was 23 per cent on the average, 46 per cent in the toxic cases and around 3 per cent in the nontoxic cases. After sulfonamide was used the mortality was 35 per cent. Previous to the use of sulfonamide early bone decompression was almost prohibited by the severe mortality. Yet early bone decompression yielded the best results from the standpoints of the later integrity of the bone and function of the limb. Neither incision down to the bone aspiration nor withholding operation either before or after the sulfonamides has given as satisfactory results as early bone decompression.

The new drugs, by controlling the initial septicemia and that which may follow operative intervention, have now allowed safe, early procedures. The sulfonamide drugs have not proved of value so far as the local pathologic process is concerned. One must still depend on operation for the best results.

**Ligation of Aorta and Both Common Iliac Arteries for Aneurysm**—Monahan says that Owings ligated the aorta of dogs in three stages three weeks apart and finally tied and severed the aorta. He was able in a small percentage of cases to have the animal survive in a normal state of health. His results encouraged Monahan to apply the same principle of gradual occlusion in a case of aneurysm of the aorta in the human being. Monahan occluded the aorta of a Negro aged 49 in stages by rubber bands proximal to an aneurysm with division of both common iliac arteries. The patient lived approximately five months from the time of the first ligation. Seven cases of aortic ligation are reviewed, 4 partial and 3 total. Of the 3 patients with total occlusions, 2 had collateral circulation established at the time of operation and the third had paralysis of the extremities following ligation and survived probably because of his youth. Occlusion of the lower abdominal aorta is feasible. Man will tolerate division of both common iliac arteries after ligation of the aorta. Cotton tape has been demonstrated as the least noxious material for ligation. It seems reasonable that ligation in stages with cotton tape, plus ligation of both iliac arteries should cure aneurysms of the lower abdominal aorta.

**Physiochemical Disturbance in a Severe Burn**—Ficarra and Naclerio made chemical analysis on a man aged 43 who sustained severe burns and who died on the tenth hospital day. The patient exhibited sodium chloride changes, hypoproteinemia, destruction of body protein, alterations in carbohydrate metabolism and hemoconcentration. The acidosis which usually accompanies the burn syndrome was absent. An unexpected alkalosis occurred following the administration of citrocarbonate on the fifth day after the burn. Emphasis is placed on a study of the blood chemistry on or about the fifth day. At this time a break in the biochemical harmony occurs. This discord is manifested in an elevation of the end products of nitrogen metabolism associated with a fall in serum proteins, plasma sodium and blood chlorides. Of 16,200 cc of fluids administered parenterally, 6,900 cc was of plasma and 3,100 cc of whole blood. Death on the tenth day was attributed to adrenal exhaustion and renal failure. The major cause of death in burns has not been established satisfactorily. It is believed that a severely burned patient dies of physiologic exhaustion. Therefore a study of the organs involved in this disturbed physiology (liver, kidneys and adrenals) will assist in the elucidation of the unknown lethal factor. The exhaustion of the organs may be the cause of death when after the second week the patient seems to be improving. During the third week the initial danger apparently has been overcome. The anxious surgeon considers the patient sufficiently improved for a skin graft. However, the disturbed chemistry has not been restored. In the presence of this metabolic discord the administration of an anesthetic plus the surgical procedure may be sufficient to cause death. The thought is advanced that repeated examinations of the blood are necessary guides to the intelligent management and treatment of the severely burned patient. Whenever possible the laboratory studies should include a daily erythrocyte count, hemoglobin, urinalysis and blood chemistry determinations (proteins, sodium chlorides, nonprotein nitrogen, icterus index and carbon dioxide combining power).

## Wisconsin Medical Journal, Madison

43 1001-1100 (Oct) 1944

- Medical Care and Postwar Adjustment C Fidler—p 1025
- The Liver A Symposium 1 Some Problems in the Physiology of Liver F C Mann—p 1028
- Id 2 Studies of Liver Disease with Correlation of Clinical Features and Liver Function Tests C J Watson—p 1033
- Id 3 Recent Trends in Surgery of Biliary Tract C W Eberbach—p 1037
- Id 4 Jaundice and Its Surgical Aspects Care of Jaundiced Patient Preoperatively and Postoperatively M A McGarty—p 1043
- Id Discussion of Symposium W H Cole—p 1048
- Post War What Shall Medicine Do Then? Mary E Switzer—p 1050

## FOREIGN

An asterisk (\*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

## British Journal of Surgery, Bristol

32 1-108 (July) 1944

- Effect of Ligation on Infection of Patent Ductus Arteriosus O S Tubbs—p 1  
War Surgery in Royal Air Force S Cade—p 12  
\*Treatment of Burns and Wounds with Skin Loss by Envelope Method R P Osborne—p 24  
Diagnosis of Depth of Skin Destruction in Burns and Its Bearing on Treatment D H Patey and R W Scarff—p 32  
Recent Advances in Treatment of Carcinoma of Mouth and Jaws T H Somervell—p 35  
Injuries of Urinary Bladder J C Ross—p 44  
\*Intraperitoneal Chemotherapy R H Gardiner—p 49  
Shock Consideration of Its Nature and Treatment J E Dunphy—p 66  
Cholesteatoma of Petrous Bone J Pennybacker—p 75  
Adrenal Neuroblastoma T A Ogilvie—p 78  
Local Sulfanilamide Treatment of Fresh Wounds in Complete Plasters J Orr Ewing J C Scott F H Masina J Trueta and A D Girdner—p 83  
Miniature Scar Carcinoma of Lung and Upper Sulcus Tumor of Pancoast I James and W Pagel—p 85  
Adrenal Virilism Report of Case with Unusual Features N G B McLetchie—p 90

**Effect of Ligation on Infection of Patent Ductus Arteriosus**—Tubbs states that the persistently patent ductus differs from that found at birth in being relatively shorter. It may have no length at all and be of the so-called window type. The frequency of complicating subacute bacterial infection is unknown. In the past the prognosis after the supervention of infection has been fatal with exceedingly few exceptions, the duration of life after the onset of infection varying from one month to two years. Nine cases of subacute bacterial endarteritis complicating a patent ductus and treated by ligation are described, 6 of these patients are well today, from fifteen months to over four years after the operation. The effect of ligation on infection of a patent ductus has been dramatic. Infection must now be considered an absolute and urgent indication for operation. It is important that the supervention of infection should be diagnosed early, any patient with a patent ductus who has an unexplained fever for more than two weeks should be suspected of this complication.

**Treatment of Burns and Wounds by Envelope Method**—Osborne reports observations with this method in patients admitted to the plastic surgery and jaw injury service of the Stoke Mandeville Hospital. The 31 cases treated fall into three groups: 6 cases of new burns, 12 cases of old burns and 13 cases of unhealed wounds with loss of skin. The author used the technique of Bunyan-Stannard envelope. Application is done under gas and oxygen or some other form of light anesthesia. The previous dressings are removed and a smear is taken for bacteriologic examination. Under a continuous stream of 1 per cent electrolytic sodium hypochlorite in tap water 1-5 at 110 F the wound is cleansed with gauze swabs. All loose sloughs and destroyed soft tissue are removed. The area should be oozing blood at the end of ten to fifteen minutes after 5 to 8 pints has been used for a limb. Then a sterilized envelope sufficiently large to allow free movement of the limb is applied. The same solution is used for irrigating through the inlet, 5 pints being used for a limb. The solution is allowed to escape from the outlet as fast as it runs in so as to get the maximum chemical and mechanical effect. The envelope is allowed to drain for five to ten minutes. The interior of the envelope is dried by means of air blown through a sterile cotton wool filter by an electric hair drier or an electric suction machine. Adhesive seals are applied to the outlets and inlets. Subsequent irrigations are carried out without anesthesia three or four times a day. Several case histories are given. Envelope therapy provides a reliable method of treating burns and wounds with full thickness skin loss. The method seems ideal for eliminating the hemolytic streptococcus and for reducing risk of cross infection to a minimum. Two other striking features have been the dramatic improvement of the general condition and the maintenance of full function.

**Intraperitoneal Chemotherapy**—Gardiner believes that sulfapyridine possesses advantages over other sulfonamides for intraperitoneal use. He has used sulfapyridine in all stages of acute appendicitis over the past two and a half years and the

results have been gratifying. Seemingly hopeless cases of general peritonitis have resulted in rapid recovery, and many less advanced cases have done extremely well. Exudate was either reduced to a thin serous yellow discharge which did not last long or, if purulent, did not continue long. The author recommends the use of a fluid suspension, a solution not being possible owing to low solubility. The suspension is best made by rapidly stirring the finely powdered drug into sterile isotonic solution of sodium chloride. For 10 to 15 Gm of powder about 6 to 8 ounces of the sterile fluid is necessary. The thin emulsion is best squirted rapidly into the peritoneal cavity with a 10 or 20 cc record syringe. This method facilitates absorption and obviates adhesions. In the absence of pus or gross inflammation small doses suffice and 10 Gm in 4 ounces of saline solution is adequate. The author generally uses 15 Gm of sulfapyridine in 6 ounces of saline solution in contaminated cases. In cases with frank suppuration the author has inserted 25 Gm of sulfapyridine with no toxic results. The complications, which are often troublesome when the drug is given by mouth or injection, have been entirely absent. Sulfapyridine shows the slowest absorption rate and the lowest toxicity of any of the sulfonamides so far employed for intraperitoneal use. Contaminated wounds treated with an emulsion of the sulfonamide powders will heal by first intention in the large majority of cases. Intraperitoneal chemotherapy should now be included in the armamentarium of all emergency surgeons.

## British Medical Journal, London

2 297-328 (Sept 2) 1944

- Some General Considerations on Higher or Postgraduate Medical Studies F M R Walshe—p 297  
Use and Abuse of Trichlorethylene G E H Enderby—p 300  
Treatment by Movement J Cyriac—p 303  
Fatal Case of Mustard Gas Poisoning F B Hobbs—p 306  
\*Heparin in Intravenous Infusions Including Penicillin Therapy P Martin—p 308

**Heparin in Intravenous Infusions Employing Penicillin**—Martin has recently used heparin in all infusions of blood (fresh or stored) plasma and solutions of crystalloids. The heparin is added to the infusing fluid by injecting it through the cork of the bottle by means of a hypodermic syringe. The amount used has been 1 unit per cubic centimeter of fluid—equivalent to 1 cc of heparin per liter. Between 50 and 60 patients have received heparinized intravenous therapy. There has been no tendency to a recurrence of hemorrhage, and in postoperative cases there has been no evidence of bruising or hemorrhage in the area of the operation scar. In 8 cases the coagulation time was estimated before infusion and immediately afterward. In no case was there any significant alteration. It is suggested that heparin should be of value in preventing the thrombosis and phlebitis which are frequently seen when penicillin is given by intravenous drip. The impure solution of penicillin available at present irritates the endothelium of veins, causing phlebitis and a subsequent thrombosis. The author has in several cases employed heparin with penicillin. At first he used 1 unit of heparin per cubic centimeter of penicillin solution, but later 3 units per cubic centimeter was used. When the penicillin drip is 35 drops a minute, it does not seem possible to administer enough heparin to affect the clotting time.

2 329-362 (Sept 9) 1944

- \*Retinal Detachment Series of 78 Cases in Middle East Force H B Stallard—p 329  
Nutritional Iron Deficiency Anemia in Wartime Part III Hemoglobin Levels of School Children and Pregnant Women in 1944 Compared with Levels in 1942 and 1943 L S P Davidson G M M Donaldson S T Linday and M H Roscoe—p 333  
Industial Problems in Middle East A M Critchley and I H Hinch—p 334  
Classification of Deaths of Medicolegal Importance I Gordon—p 337  
\*Specific Serum Therapy in Typhoid Fever A E Hodgson—p 339

**Retinal Detachment**—Stallard presents observations on 78 officers and men of the Middle East force who had retinal detachment and were admitted to a military hospital in Egypt for treatment. Seventy-six were operated on for 1 patient surgical treatment was not advised and another made a spon-



**taneous recovery** The operation was a combination of surface diathermy (90 to 100 milliamperes for eight seconds) placed around the edges of a tear or tears and penetrating diathermy, one, two and very rarely more punctures were made in the sclera with the diathermy needle carrying a current of 40 milliamperes for one second. The interretinal fluid was sucked into a glass tube and rubber suction bulb applied to the sclera over the diathermy penetration. The 78 patients included 13 with cystic degeneration, 21 with choroidoretinal degeneration, 3 with myopia and 41 with trauma. The prospect of successful surgical treatment depends much on the type of case. The prognosis is reasonably good in early cases when the retinal tear is relatively small and easily accessible, the ocular tissues are in good condition, and an operation by a skilled surgeon is done within a month of the onset of the detachment. Large and multiple retinal tears are generally unfavorable, but not always so. The prognosis is slightly worse in deep detachments than in shallow ones on account of the distance of the retinal tear from the choroid. This is dealt with by passing penetrating diathermy needles through the sclera and choroid sufficiently long to reach the retina but not perforate it. Interretinal fluid drains away, and the detachment is shallower for subsequent diathermy applications. The prognosis is bad in long-standing cases. The incidence of success falls appreciably three months after the onset of detachment but reattachment may occur after four and even ten years. Detachment on the nasal side is less serious as regards rapid extension than is detachment originating on the temporal side. The prognosis is bad in cases of retinal detachment associated with persistent inflammatory lesions of the choroid, sclera and orbital tissues (orbital cellulitis). Such cases are unfavorable for operation, and if an operation is done through mistaken diagnosis the condition is aggravated. Although the number of cases due to trauma peculiar to war is small (18 in this series) these few afford an indication of the seriousness of the prognosis and the difficulties which confront the surgeon in planning an operation on an eye which is often severely damaged as a result of either contusion or a penetrating wound or both.

**Specific Serum Therapy in Typhoid**—Hodgson points out that the work of Felix and his colleagues at the Lister Institute made possible the elaboration of the Vi + O antityphoid serum in which two antibodies are effectively combined the Vi element conferring protection by suppressing the multiplication of virulent strains of *Eberthella typhosa* and the O antibody by neutralizing the endotoxin of that organism. This serum has been used in 57 cases of typhoid. Seven of the patients died, four deaths occurring within eighty hours of arrival at the hospital. Twenty of the patients disembarked at the port. These seaborne patients had mostly a severe type of typhoid. Patients who on admission showed toxic symptoms (general prostration, hyperpyrexia, threatened delirium, coma or typhoid state or complications such as hemorrhage or pneumonia), numbering 25 in all received serum. Seaborne patients contributed 14 of the 25 serum cases and 4 of the 6 deaths. The patients not treated with serum were not controls but rather had mild infections. The serum is issued in 33 cc. phials, and injection of the contents of one phial intramuscularly (buttock) on three successive days was routine. In the very bad cases an initial dose of 66 cc. was given. This may seem a large amount for one intramuscular injection but if the serum and the syringe have been previously warmed and kept in water at blood heat little discomfort is caused and absorption quickly takes place. Under the influence of the serum conditions due to toxemia, excluding hyperpyrexia, abated rapidly, improvement appearing often within forty-eight hours and continuing to be sustained, with coincident decrease in signs and increase of strength and well being. Six of the severe cases were of the type for which, in other times, but little hope of recovery could have been entertained, they responded promptly. Hyperpyrexia was not affected so quickly, a fall in temperature taking some days and continuing as a moderately steep lysis. Complications such as intestinal hemorrhage or pneumonia, already present when the patient came under treatment, were not influenced by the serum.

## Lancet, London

2 363-394 (Sept 16) 1944

Plasma Fixation of Skin Grafts J. E. Sheehan—p. 363

\*Hepatitis After Yellow Fever Inoculation: Relation to Infective Hepatitis G. M. Findlay, N. H. Martin and J. B. Mitchell—p. 365  
Laboratory and Clinical Trials of Patulin J. M. Stansfeld, A. E. Francis and C. H. Stuart-Harris—p. 370

\*Clinical Trial of Patulin in Common Cold: Report of Patulin Clinical Trials Committee Medical Research Council—p. 373  
Simple Method of Amputating Thigh C. W. G. Bryan—p. 375  
Congenital Malaria in England R. P. Gamble—p. 375

**Hepatitis After Yellow Fever Inoculation and Infective Hepatitis**—Findlay and his associates could find no difference between the two conditions apart from the longer incubation period of postinoculation jaundice. This apparent discrepancy disappears when the incubation period of infective hepatitis following subcutaneous injection and the incubation period of postinoculation jaundice following intranasal instillation are considered. The authors describe epidemiologic and experimental investigations on infective hepatitis and on postinoculation hepatitis. They report possible examples of spread of postinoculation jaundice to contacts who had not been inoculated with icterogenic yellow fever vaccine. The incidence of infective hepatitis in childhood and adolescence in a sample of British troops has been ascertained. Evidence has been deduced that a previous attack of infective hepatitis gives a certain measure of protection against an attack of postinoculation jaundice though the protection is not absolute. A complement fixation test has been developed the results of which tend to show that there is an antigenic relationship between the agents responsible for infective hepatitis and postinoculation jaundice. The authors also describe efforts to transmit postinoculation jaundice to man and to various animals. Evidence is accumulating that the agents responsible for infective hepatitis and the hepatitis that follows inoculation of icterogenic yellow fever vaccine behave in a similar manner and are antigenically related. Until knowledge has further advanced it would be idle to speculate whether these two agents are identical or merely members of a group of icterogenic agents one member of which is responsible for the production of infective hepatitis, a second for the hepatitis that is sometimes found in man after the injection of homologous blood or its products and a third, perhaps, for the jaundice in horses that follows the injection of homologous serum.

**Patulin in the Common Cold**—The Medical Research Council reported in November 1943 on the chemical properties and clinical effects of a metabolic product of *Penicillium patulum* Banner called patulin. It was shown in a clinical trial on the common cold in naval personnel that when 95 patients treated with patulin were compared with 85 controls the advantage to the treated patients was such that it would usually be regarded as statistically significant. Shortly after the publication of the first report an independent group of workers stated that they had been unable to demonstrate any effect of patulin on the common cold. The Medical Research Council undertook then an extensive reinvestigation of the claims regarding patulin. In a large clinical trial of patulin in widely distributed areas in Great Britain lasting from the beginning of December 1943 to the middle of April 1944 no evidence was found that patulin is effective in the treatment of the common cold.

## Monatsschrift f. Geburtshilfe u. Gynäkologie, Basel

116 225-332 (Nov-Dec) 1943

\*Significance of Diencephalohypophysial System for Production of Gonadotropic Hormones A. Westman, D. Jacobsohn and N. A. Hillarp—p. 225

Frequency and Clinical and Etiologic Diagnosis of Ectopic Pregnancy W. Dettling—p. 251

Effect of Estrogens on Anterior Pituitary Lobe of Avitaminotic Rats. C. A. Joel—p. 277

Effect of dl-Alpha-Tocopherol Acetate on Pituitary of E. Avitaminotic Female Rats. C. A. Joel—p. 288

Experimental Studies and Clinical Experiences with Toxic Action of Natural Follicular Hormone and Synthetic Estrogen (Stilbene). K. Pali—p. 297

**Diencephalohypophysial System and Production of Gonadotropic Hormones**—In order to investigate the relationship between the diencephalohypophysial system and sex function, Westman and his associates performed the following experiments on rats. (1) They completely separated the hypophysis from its infundibulum and the surrounding pars tuberalis. (2) extirpated the processus infundibuli and separated



the processus infundibuli from the infundibulum. In the animals of group I the pars distalis showed noticeable microscopic changes. The cells were uniform, and alpha cells were absent. The genital organs exhibited considerable atrophy. In the other two groups of animals in which the connection between the pars tuberalis and the pars distalis was left intact the pars distalis and the genital organs were normal. Determination of the volumes of the pars distalis in the different groups of animals indicated that the genital atrophy was not the result of the reduction in parenchyma. The authors emphasize that the connection between the hypothalamus and the hypophysis consists of two different parts. The one consists of the pars tuberalis with the portal vessels and a specific nerve fiber system, the other is formed by nerve tracts that pass from certain hypothalamic nuclei to the processus infundibuli and to the pars intermedia. The intact connection between the pars tuberalis and the pars distalis is the prerequisite for a normal production of gonadotropic hormones. The impulses which pass from the hypothalamus through the infundibulum and the processus infundibuli are of no significance for the sexual function. The authors think that the contradictory opinions about the significance of the diencephalohypophysial system for the sexual function are partly due to the fact that heretofore the functional differences between the two components of hypophysial attachment have been disregarded.

### Medicina, Buenos Aires

#### 4 391-516 (July) 1944 Partial Index

\*Tests for Function of Adrenal Cortex. Drs. C. Galli Mainini, E. B. del Castillo, J. Reforzo Membrives and M. A. Gambin.—p. 391

**Tests for Function of Adrenal Cortex.**—According to Galli Mainini and his collaborators the diagnosis of diseases caused by hyperfunction of the adrenal cortex is more difficult than the diagnosis of adrenal cortex insufficiency. They describe tests which they carried out on 16 patients with mild forms of adrenogenital syndrome and on the same number of normal persons. Adrenal hyperfunction manifests itself by metabolic disorders of the type which are seen in the Cushing syndrome, namely diminished elimination of chlorides, diminished dextrose tolerance, increased resistance to insulin, increased secretion of nitrogen after ingestion of carbohydrates and fats, and increased elimination of 17 ketosteroids in the urine. The clinical signs of adrenal cortex hyperfunction are sexual and metabolic, either alone or combined. The type of adrenal cortex hyperfunction with clinical symptoms of combined sexual and metabolic disorders is more frequent than that with symptoms of either sexual or metabolic disorders alone.

### Chirurg, Berlin

#### 15 345-375 (June 15) 1943 Partial Index

Treatment of Collapse After Spinal Anesthesia. T. von Matoesky.—p. 345

\*Procaine Hydrochloride Infiltration of Sympathetic Nerve in Early Treatment of Frostbites of Extremities. F. Buck.—p. 347

Unusual Type of Calculus Disorder of Kidney as a Sequel of Fractures. H. von Brucke and O. Dobritz.—p. 352

Sound Methods of Treatment of Gunshot Fractures of Femur. O. Wustmann.—p. 357

Treatment of Gunshot Fractures of Femur and of Humerus. K. Ostermeier.—p. 361

Stable Extension and Gunshot Fracture. W. Ruckert.—p. 362

**Procaine Infiltration of Sympathetic Nerve in Frostbites.**—Buck states that paravertebral sympathectomy, stellectomy and periarterial sympathectomy are contraindicated in early treatment of frostbites because temporary functional impairment should not be combated by producing irreversible anatomic changes. Infiltration of the stellate ganglion with 1 per cent procaine hydrochloride solution in those cases in which the arm is involved and paravertebral infiltration of the sympathetic nerve with the same solution in those cases in which the leg is involved may be performed by any physician in any location and without any special equipment. Infiltration therapy was instituted in cases of fresh frostbite immediately after the cases had reached the author. Infiltration was first performed daily in grave cases and then every second day or at intervals of several days after improvement had been obtained. Bilateral infiltration was performed in cases of bilateral frostbite, and no untoward reactions occurred. Later on infiltration was performed alternately on one side, since a somewhat less accen-

tuated effect was produced likewise at the counter side. From two to fifteen infiltrations were performed until clinical improvement was obtained, pain disappeared and oscillation tracings were restored to normal. Pains will cease immediately for from one to three hours after the first infiltration; they will be less severe and will disappear permanently after repeated infiltrations. Warming and reddening of the skin occur after the infiltration. Single, small, lightly red spots occur on the bluish extremities within five to ten minutes after the infiltration. Their number increases until the entire extremity becomes red except for areas in which the blood supply is definitely injured. Disturbances of sensibility and motor disturbances improved rapidly, sometimes after a single infiltration. A line of demarcation between the dead and the viable tissues became manifest after repeated infiltrations. Amputation should not be performed in the early stage. Moist gangrene did not occur in any of the author's cases. Extensive vascular changes may be prevented in addition to effecting a cure of the local acute frostbite.

### Virchows Archiv f path Anat u Physiol, Berlin

#### 310 257-492 (May 4) 1943

Myocardial Lesions in Horned Cattle With Hoof and Mouth Disease. K. Holz.—p. 257

\*Regeneration of Islands of Langerhans. L. von Bakay, Jr.—p. 291

Deformity of Human Heart with Special Reference to Bulbus and Truncus Arteriosus (Truncus Arteriosus Communis Persistens Transpositiones and Stenoses). W. Doerr.—p. 304

Occurrence of Hemopoietic Tissue in Adrenal Gland of Man. H. Gormsen.—p. 369

Pathologic-anatomic Study of Case of Cushing's Disease with Recovery After Roentgen Therapy. K. Gaertner.—p. 388

Occurrence of Malignant Tumors in Mice Following Autologous Transplantation of Normal Tissue of Mammary Gland. A. Fischer with the assistance of G. Fischer, A. Boysen Møller and E. Middelboe.—p. 395

Acute Yellow Atrophy of Liver in Children. Pathologic-anatomic Study of Epidemic Hepatitis. F. Roulet.—p. 436

Physiologic and Pathologic Deposits of Fat in Liver of Domestic Mammals. Elfriede Overbeck.—p. 458

**Regeneration of Islands of Langerhans.**—Microscopic studies by von Bakay revealed that the regenerative capacity of the islands of Langerhans is striking during fetal life. The capacity of a newborn infant who died during the delivery of a diabetic mother was manifested by the size of the islands, which had a diameter of 500 to 800 microns. The islands were surrounded by a strong capsule of connective tissue. This tissue formation was peri-insular in all the islands. A few argyrophile fibers were seen along the vessels inside the islands in only a few cases. A true glomus resulted from the dilatation of the capillaries inside the islands and represented another characteristic feature of the condition. The polymorphism of the nuclei was striking and was demonstrated by a large number of giant nuclei. Microscopic examination of 30 specimens from adults showed that postnatal island regeneration occurs under pathologic conditions in cases with impairment of the entire pancreas, i.e. in cases of true diabetes, chronic pancreatitis and pancreatic cirrhosis or in cases in which the functional disturbance results from circulatory insufficiency (arteriosclerosis of the pancreas). The absence of any clinical symptoms of diabetes may be explained by the compensating effect of an intensive regenerative process in the islands of Langerhans. In addition to the hypertrophy of epithelium in the excretory ducts, the increase in the insular system is due to the transformation of the acini and to the segmentation of the old islands. Traces of this regeneration could be found in almost all cases of diabetes. From 3 to 4 new islands were sometimes present adjacent to the proliferating excretory ducts. In 1 case the excretory ducts were considerably dilated as a result of the obstruction from the secretion; the high epithelium was completely flattened. The centers of the islands were pierced by dilated ducts. The origin of these islands from the ducts may be safely assumed. The regenerative tendency is suggested by the fact that in addition to the large hydropic islands others may be found which consist of small, dense, dark colored cells. They were surrounded by a ring of connective tissue which was thicker than that found in normal cases. Vessels are not found within these islands. Their rudimentary character explains the absence of clinical improvement in spite of the regenerative process which was demonstrated on microscopic examination. Regeneration in the head of the pancreas in a patient aged 65 suggested that the regenerative capacity is not reduced with advanced age.

## Book Notices

**Plaster of Paris Technic** By Edwin O. Geckeler M.D. Associate Professor of Orthopedic Surgery and Chief of the Fracture Service Hahnemann Medical College and Hospital Philadelphia Cloth Price \$3 Pp 220 with 208 illustrations Baltimore Williams & Wilkins Company 1944

For a long time plaster of paris has been indispensable to orthopedic surgery. Calot considered plaster technic so important that he wrote "Show me your plaster and I will tell you what kind of orthopedist you are." Descriptions of plaster of paris for immobilization are found in ancient history. Various forms of rigid bandages for immobilization were used as early as 1600 B.C. by the Egyptians, who applied gums and waxes to stiffen their surgical dressings in a manner similar to their method of embalming. More than a thousand years later Hippocrates described a similar method of treating broken limbs. The first use of plaster of paris for fractures was reported by Eton, who described a method in which solid gypsum was used by the natives of Basra; this material was poured over limbs in liquid form. In 1852 Matthysen, a medical officer in the Dutch army, described the use of gypsum bandages for treating the wounded in battle.

Although plaster bandages are used almost exclusively in the United States, pattern plaster is preferred by some surgeons abroad. In the latter form the plaster is laid over various parts of the body in shapes already cut out. The "closed plaster" method, popularized by Orr and Trueta, has saved countless lives and limbs in the present world war and permits early evacuation of the wounded with a minimum of hospitalization. The latest development in the use of plaster has been for severe burns. By the early application of plaster of paris to burned limbs, contractures and deformities can be prevented in many cases and minimized in more severe cases. On the modern battlefield plaster of paris can be applied in mobile units without the necessity of hospitalization. Good plaster bandages can be made by almost any one or several brands of ready made bandages may be purchased.

The combination of text and illustrations is a welcome contribution to the use of plaster of paris. It is an art to use plaster of paris skilfully. This book explains the art. The illustrations are unusually instructive. It is especially gratifying to find that such a monograph is suitable for the instruction of both graduate and undergraduate medical students. This book fills a definite need and undoubtedly will be used extensively. A practical knowledge of this work is not only valuable in everyday practice but is especially important in treatment of war injuries.

**The Diabetic A B C: A Practical Book for Patients and Nurses** By R. D. Lawrence M.A. M.D. F.R.C.P. Physician in Charge Diabetic Department King's College Hospital London Eighth edition Boards Price 4s Pp 69 London H. K. Lewis & Co. Ltd 1944

**The Diabetic A B C War Time Supplement** By R. D. Lawrence M.A. M.D. F.R.C.P. Physician in Charge Diabetic Department King's College Hospital Third edition Paper Price 9d Pp 10 London H. K. Lewis & Co. Ltd 1944

This edition of Lawrence's "The Diabetic A B C" is contained in two separate booklets, the manual, "A Practical Book for Patients and Nurses," and a wartime supplement. In the supplement the author demonstrates the means by which the diabetic patient can best meet the difficulties that war has imposed on him. Advice is given to the insulin patient who runs risks from air raids and invasion. The author takes cognizance of the special dangers during wartime to the patient whose life depends on insulin and by the withdrawal of which he would be subject to acidosis and coma. He also discusses in detail insulin supplies, food changes, emergency sugar ration, vitamins and the "Precautions for Diabetes in War-Time" as issued by the Ministry of Health in consultation with the Diabetic Association.

The wartime supplement is timely and of vital interest to all diabetic patients and the author is to be highly complimented for presenting such vital aid in simple form to the patient and nurse.

In the introduction to "The Diabetic A B C" the author states that his book "The Diabetic Life" was written in scientific detail and contained much information unnecessary for the

patient. The present reviewer, who also reviewed "The Diabetic Life" is in agreement with the author's opinion. Thus, in the "Diabetic A B C" the author now confines his reader to practical information which will aid him in cooperating with his doctor, to live more easily with minimum discomfort and to maintain better control of his diabetes. The details are adequately and simply discussed under diet line-ration, a method of diet estimation which is popular in England but not in America. Also included are instructions about diet, recipes, insulin doses and their local reactions, insulin overdose and its effects, home life and traveling, as well as other important facts a diabetic patient should know. As was to be expected, this latest work of R. D. Lawrence is a masterful accomplishment of concision and unquestionable authority.

**Structure and Function as Seen in the Foot** By Frederic Wood Jones D.Sc. F.R.S. F.R.C.S. Professor of Anatomy University of Manchester England Cloth Price \$7.50 Pp 329 with 150 illustrations Baltimore William Wood & Company 1944

This comprehensive monograph is purely anatomic, including comparative anatomy and biomechanics, i.e. function. The illustrations are profuse and highly instructive. The book will be of keen interest to anatomists and physiologists, and although there is no consideration of diagnosis or treatment it will be of much value to orthopedic surgeons. While many persons take a real delight in their hands, for the most part human beings have but little pride in their feet and it is unfortunate that this is so. The establishment of homologies between the bones, ligaments, muscles and other constituent parts of the hand and foot is an attractive study. It is one of the most delightful bypaths of comparative anatomy and has had a wealth of patient work devoted to it. The subject is of interest to every medical student. As an academic study the establishment of homologies has much to recommend it but for the man who would treat the disabilities of the human foot it is far more important that his knowledge of the part should be of that intimate kind by which each bone, ligament, joint and muscle is known as an individual entity and not by reference to corresponding structures in other parts.

**Manual of Psychological Medicine for Practitioners and Students** By A. F. Tredgold M.D. F.R.C.P. F.R.S.E. Consulting Physician to University College Hospital London Cloth Price \$5 Pp 298 Baltimore William Wood & Company 1943

This timely manual by the author of "Mental Deficiency" presents a description and methods of treatment of the various forms of mental abnormality. With the present wartime need for civilian physicians as well as psychiatrists in the armed forces to attack the problems of psychosomatic medicine and neuropsychiatric disorders it brings together in compact form a great deal of material comprehensive in scope. There are twenty-seven chapters ranging from introduction on the normal mind through classification, etiology, symptomatology, neuroses, psychoses, epilepsy and mental deficiency, and final chapters on legal relationships and sociological considerations. The book is written in a scholarly, yet clear and readable fashion from the biologic approach. It gives basic and essential information of value to the general practitioner as well as the clinical psychologist and psychiatrist. It is also recommended as a condensed textbook for medical students, who will find that it presents a thorough logical and accurate description of the facts of psychiatry known today, thereby providing an excellent grounding in this specialty.

**The Electrocardiogram: Its Interpretation and Clinical Application** By Louis H. Sigler M.D. F.A.C.P. Attending Cardiologist and Chief of Cardiac Clinics, Coney Island and Harbor Hospitals New York Cloth Price \$7.50 Pp 403 with 203 illustrations New York Grune & Stratton 1944

Fundamentals are discussed in the first four chapters. The remaining twenty-one chapters are clinical. Frequent reference to original material reflects the personal experience of the author. Recent developments are well presented. Bibliographies following each chapter would be more useful if titles were included. Apical lead IVI is used in most illustrations. Sins of commission in legends to figures 28, 29, 31, 32, 76 and 118; of omission in 32 and 102; of speculation in 40 and 143 and of loose terminology in 36, 44, 60, 72, 73, 74 and 116 may confuse. The index is good. The price is high. Student and practitioner will find this book valuable and readable.

## Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

### MEASURING PHYSICAL FITNESS

To the Editor—I am interested in determining in as quantitative manner as possible a patient's fatigability. This is an individual who alleges disability because of extreme and undue fatigue. I am unable to find any objective testing methods in the literature more recent than the Schneider test of the first world war. Can you describe any newer testing procedures of value? M D Ohio

ANSWER—Valid and reliable measurement of the ability of a person to resist fatigue is more complex than is usually appreciated. The problems involved have received detailed attention and wide consideration since the beginning of the war. A basic introduction to the limitations and possibilities of such testing may be obtained from Burns, David. *The Assessment of Physical Fitness*, Nature, London 144 466 (Sept 9) 1939, Simonson, Ernst, and Enzer. *Norbert Physiology of Muscular Exercise and Fatigue in Disease*, Medicine 21 345 (Dec) 1942, and Taylor, H L, and Brozek, J. Symposium on Physiological Aspects of Convalescence and Rehabilitation-Evaluation of Fitness. *Federation Proc* 3 216, 1944.

The simplest tests of fitness are cardiovascular and respiratory. Many have been described in the physiologic literature of the last two decades. In addition to the Schneider test, the best and most commonly used include the tests described by Cramp-ton, C W. *Am J M Sc* 160 721 (Nov) 1920, Flack, M. *Lancet* 2 593 (Sept 17) 1921, Turner, A H. *Am J Physiol* 87 667 (Jan) 1929, and Master, A M. *Am Heart J* 10 495 (April) 1935. Numerous motor performance tests may be found in the physical education literature. Representative examples appear in Brace's *Measuring Motor Ability*, New York, A S Barnes & Co, 1930. Recent additions should include Cureton's motor fitness screen test (*THE JOURNAL*, Sept 11, 1943, page 69) and the numerous studies of Brouha and his associates (*New England J Med* 228 473 [April 15] 1943, *Am J Phys Anthropol* 1 95 [March] 1943, *Rev canad de biol* 2 86 [Feb] 407, 1943, *Yale J Biol & Med* 15 657, 671, 679, 689 [May], 769 781 [July] 1943). The third type of test evaluates the ability to resist fatigue in terms of the response to sensory stimuli. The most recent development in this field is the fusion frequency of flicker measurement described by Simonson and Enzer (*J Indust Hyg & Toxicol* 23 83 [Feb] 1941).

There is no simple answer to this query. More would have to be known about the case history before specific testing procedures could be recommended as probably capable of reliably differentiating the abnormal person from the normal.

### REFRACTORY PRURITUS VULVAE

To the Editor—A married woman aged 52 has had three attacks of pruritus vulvae within the past year. She was hospitalized during each attack for about three weeks. In addition to the intense itching there was severe pain which required an opiate to relieve. There was also a considerable degree of dermatitis extending upward and outward to the thighs. Therapy involved local applications of various aintments, hot packs, hot baths, douches, heavy doses of vitamins and x rays, apparently nothing has given much relief. Can you suggest treatment for this condition? M D Virginia

ANSWER—It is assumed that a general physical examination has been made in this case and especially that the urine has been examined for the presence of sugar. The most common conditions which cause intractable itching in a woman 52 years of age are *Trichomonas vaginalis* vaginitis, moniliasis infection, kraurosis vulvae or leukoplakia, senile vaginitis, eczema and, of course, some general disorder such as diabetes, leukemia or Hodgkin's disease.

Naturally the treatment depends on the cause, if one can be found. Hanging drop examinations of the fresh discharge from the vagina or stained slides will reveal the presence of *Trichomonas* or *Monilia* if either one is present. Treatment of these afflictions nearly always brings relief from the itching, but recurrences are common. In kraurosis vulvae or leukoplakia the appearance will depend on the stage of the disease. In the first stage the vulva is swollen, red, bruised and painful. Later the tissues atrophy but the skin itself is thickened, indurated and leathery. Still later the skin becomes smooth and glistening and resembles parchment. The treatment of choice is vulvectomy, both because other treatment is temporary and because in

about half the women cancer will develop after a number of years. Temporary treatment with estrogens is most helpful and is the same as for senile vaginitis. In the latter condition the vagina is shorter and narrower than normal, and the introitus is considerably constricted. The mucosa is thinned out and easily traumatized. The best treatment is the use of estrogens to restore the senile vaginal mucosa to that of a normal premenopausal condition but unfortunately the change is not permanent. In four to six weeks after the cessation of treatment the vaginal mucosa rapidly returns to its previous atrophic condition. It is best to treat women having senile vaginitis with an injection of 10,000 rat units (50,000 international units) of estrogenic substance once or twice a week for six or eight weeks. In addition, the patient should insert into the vagina every night a suppository containing 400 rat units (2,000 international units) of estrogenic substance. When itching is intense and the hypodermic and vaginal treatment do not relieve the pruritus quickly enough, a salve containing estrogenic substance should be prescribed. Usually relief is obtained within two weeks after treatment is started. If symptoms reappear, more injections of estrogen should be given. A number of courses may have to be administered. Uterine bleeding may result from this treatment, so the patient should be warned of this possibility.

If a medical disorder is found, specific therapy must be directed against it, of course.

In some cases which do not yield to local or endocrine therapy, the subcutaneous injection of alcohol may be tried according to the method of Jacoby (*Am J Obst & Gynec* 29 604 [April] 1935). If this does not help, one may resort to resection of the sensory nerves of the vulva (Learmonth, Montgomery and Counsellor. *Arch Surg* 26 50 [Jan] 1933) or a vulvectomy may be done.

### HEMOSTASIS AFTER TONSILLECTOMY

To the Editor—Among the staff members at the local hospital there seems to be some difference of opinion as to the proper method of hemostasis after tonsillectomy. Most of them pay little attention to bleeding from the tonsil fossa unless it is profuse. Venous oozing of a small amount is more or less ignored. The intent seems to be to finish as soon as possible without much concern for a dry field. Other doctors contend that hemostasis should be as complete as for any other operation and that the field should be completely dry before finishing. The first group contends that venous oozing from a raw surface as the tonsil fossa is natural and that it will stop spontaneously after the operation which is true in most cases. Isn't post-tonsillectomy hemorrhage within eight hours much less likely to occur if hemostasis has been complete? What percentage of these hemorrhages is the direct result of failure to secure a dry field at the time of operation? Is there tonsillectomy hemorrhage within the first eight to twelve hours in (a) children and (b) adults? In this connection there is also a difference of opinion as to the proper use of a La Force tonsillectome with hemostatic and cutting blades. One group of doctors leaves the hemostatic blade clamped down only long enough to remove and inspect the tonsil. The other group leaves the hemostatic blade clamped for three to five minutes, contending that hemostasis is better. Which technic is the better? What are the most satisfactory hemostatic agents for topical application to the tonsil fossa to control bleeding? An early reply will be appreciated. M D Utah

ANSWER—There should be no great difference of opinion as to the necessity for stopping important bleeding in the tonsillar fossae after tonsillectomy. The only room for debate will be in those cases in which the bleeding is obviously slight. Here it is true that many will rely on experience, which indicates that most of the time this will stop spontaneously. There are others, however, who insist on a dry fossa being present before a patient is allowed to leave the operating room. This care is to be commended, and there is good reason to believe that those who follow this practice will have much less bleeding which requires attention. That this is so may not be apparent over a short period of observation nor will it seem to be so in the practice of an occasional operator. Such care is rewarded in the diminished number of patients who will lose noteworthy amounts of blood, in the smaller number of persons requiring a second anesthetic to carry out this procedure and in undesirable psychologic reactions, particularly in children, who do not take kindly to the necessary handling.

It is not possible to give accurate statistics as to the frequency of primary tonsillar bleeding (i.e. that occurring any time in the first twenty-four hours after operation). It will vary with different methods with different operators and perhaps with different seasons and parts of the country. It has been reduced in the practice of some to much less than 1 per cent. So too the percentage of hemorrhages occurring as a result of failure to secure a dry field cannot be determined for who attempts to gather such figures or who will admit negligence? The important thing is that the surgeon doing tonsillectomies is bound no less than the general body of surgeons to observe the rules that apply throughout this field to the control of bleeding. Hemostasis is an important part of the discipline of surgery, and laxity should never be permitted.

Primary hemorrhage (i. e. that occurring within the first twenty-four hours) occurs both in children and in adults.

The crushing blade of the La Force tonsillectome should be left on for a few minutes before the cutting blade is used, for that is the rationale of its use, namely that crushing tissues promotes hemostasis.

There are many agents for topical applications to the tonsil fossae after operation. A satisfactory one is made of tannic acid crystals to which enough epinephrine hydrochloride solution (1:1000) is added to give a consistency of mustard. Some use gallic acid crystals and others a mixture of equal parts of the two. The iron salts also have been and are popular in various solutions. They leave an undesirable eschar, however, and the tannic acid preparations described are perhaps more desirable. This is especially true if one considers that topical applications cannot be depended on to stop bleeding of note. They are useful for stopping trivial oozing. All other types of bleeding should be handled in the accepted surgical fashion, namely by pressure, clamping or the judicious use of the ligature.

#### PYREXIA OF UNDETERMINED ORIGIN

To the Editor—A boy aged 9 has had a low grade fever for the past three years (98.6 to 100.8 F by mouth). The present illness began with a sudden severe tonsillitis and bronchitis the fever which was high lasted for three weeks. He has continued to have the low grade fever since then. He had lobar pneumonia at the age of 1½ years and measles following intestinal flu at 2½. Raw milk has been used at different intervals since the age of 2. Physical examination is normal except for height 54½ inches (138 cm) and weight 83½ pounds (38 Kg). Examination of the heart reveals a soft systolic mitral murmur not transmitted which has not increased during the past two years. Laboratory examination showed red blood cells 5,200,000, hemoglobin 15 Gm, white blood cell 8,600, polymorphonuclears 55, lymphocytes 41, monocytes 2, eosinophils 1 and transitional cells 1. The sedimentation test repeated several times gave a rate of 10 mm in one hour. The urine is normal. The results of the tuberculin test from 1:1000 up to 1 mg were all normal. Agglutination tests for typhoid, Brucella abortus and Brucella melitensis were normal; there were no heterophile antibodies. Examination of the blood chemistry revealed cholesterol 235, chloride 615, calcium 10.8, phosphorus 4.0, total protein 6.72, sugar 90 and Weltman 9. Negative cultures were obtained from the blood, urine, nose, throat, showed pneumococcus, *Micracoccus flavus* and gamma streptococcus. A skin test performed with Brucella melitensis with 1:1000 dilution was negative with negative control with 0.1 cc of full strength; the test was positive with negative control. A chest plate gave a normal result; the heart is normal in size and outline. X-ray examination of the accessory nasal sinuses revealed no abnormality. Is a diagnosis of brucellosis justified? If so, what treatment is recommended? Has rheumatic fever been ruled out? Should tonsillectomy be performed because this child has two or three severe attacks of tonsillitis a year? Have you any further suggestions for work-up of this case?

William F. Mahaney, M.D., Saco, Maine

ANSWER—If the patient is well active and gaining weight and height normally, there may be no need for particular concern. The boy's temperature, which is higher than the average, may be normal for him and not fever at all (Reimann, H. A. The Problem of Long Continued Low Grade Fever. THE JOURNAL, Oct 3 1936, p. 1089). He is taller and heavier for his age than the average, but the cardiac murmur is probably not of significance. However, as in all cases of this type, continued unobtrusive observation is wise.

The history of repeated respiratory tract infections beginning in infancy brings up the possibility of bronchiectasis in spite of the normal roentgenogram. If cough with sputum develops, it may be desirable to make a bronchogram after injecting iodized oil. If he has chronic brucellosis, one would not expect such an evenness of fever for three years but rather remissions, slight relapses and other signs and symptoms. Furthermore, brucellosis cannot be diagnosed solely from a positive skin test. Without other evidence, rheumatic fever is also an unlikely diagnosis.

A history of repeated attacks of severe tonsillitis is the prime and almost only indication for tonsillectomy generally. If actual tonsillitis continues to recur in this patient, the tonsils should be removed.

#### NEW CURES FOR LEUKEMIA

To the Editor—Is there any new drug that is of benefit in the treatment of an acute lymphatic leukemia? While in Chicago I noticed in one of the daily papers that some new drug was being used on a patient in Ohio but the press did not mention the name of the preparation.

Bernard J. Baute, M.D., Lebanon, Ky.

ANSWER—There is no new drug which offers any hope in the treatment of acute leukemia. Reports of cures or new treatments for leukemia appear frequently in the press. The index of one large newspaper contains seven reports of new treatments for leukemia in the past six years; none of these have proved successful. If a specific agent for leukemia is discovered, it would undoubtedly receive prompt recognition in THE JOURNAL.

#### PAINFUL AXILLARY MASSES IN PREGNANCY

To the Editor—A woman aged 23 is now fourteen weeks pregnant. When she was about eight weeks pregnant she began complaining of pain and swelling in the right axilla. A few weeks later the axilla became swollen and painful. The mass in the right axilla is about the size of a large lemon while that in the left is about the size of a hen's egg. Both masses are tender to pressure and because of the pain the patient is forced to sleep on her back. I can find no suggestion of a nipple or other opening in the region of these masses. I have had 2 patients in the past with swollen axillary masses but they were not apparent until a few days prior to delivery and promptly subsided shortly after delivery. I think I am not allowing the mothers to nurse the babies. What treatment would you suggest? Is it good practice to remove this tissue surgically?

M.D., West Virginia

ANSWER—The masses described are almost certainly accessory mammary tissue which are stimulated to grow by the hormones produced in pregnancy. Generally these masses give no trouble until after delivery but not infrequently they are distressing during pregnancy. There is no need for surgery. In some cases the administration of diethylstilbestrol reduces the size of the swellings and the pain they cause. The patient may be given 5 mg of any one of the Council accepted commercial preparations morning and night for five days. It may be necessary to repeat such a course of therapy one or more times during pregnancy and in the puerperium. The results are comparable to the relief of congestion and pain in the breasts during the first few days post partum obtained by the use of diethylstilbestrol.

#### MERCURIAL DIURETICS FOR PATIENT WITH CONGESTIVE HEART FAILURE

To the Editor—A man aged 56 has hypertensive cardiovascular disease. His cardiac reserve has been diminishing in the past two years. He now develops massive edema of the legs and some fluid collects in the abdomen and chest. This can be made to disappear with a few intramuscular injections of salyrgan and theophylline but soon recurs. Is it safe to continue using the salyrgan and theophylline two or three times a week to keep his edema down? His urine has 3 plus albumin but no cells nor casts. His edema cannot be controlled by bed rest and digitalis. He is uncomfortable when the fluid collects and has to sit in a chair at night. When the fluid is gone he is fairly comfortable.

M.D., New Jersey

ANSWER—It is considered safe to inject a mercurial diuretic more than once a week and for an indefinite period as long as the patient responds with a satisfactory diuresis. It is assumed that the patient is on a salt poor diet and restricted as to fluid intake. The presence of albuminuria is not a contraindication to the use of mercurial diuretics for a patient with congestive heart failure; neither is the presence of a moderately elevated nonprotein or urea nitrogen in the blood provided the creatinine is normal. If ammonium chloride is used in adequate dosage (6 Gm daily in enteric coated capsules) the number of mercurial injections may be reduced to less than two a week.

#### PHYSICAL INFLUENCES ON LOCALIZATION OF SKIN LESIONS

To the Editor—A boy aged 6 years was injured in a fall and received a simple fracture of the left radius without displacement. A supporting plaster splint was applied from just below the elbow to the palm and held in place with a muslin bandage. No stockinet or other material was used between the skin and the plaster. The splint was worn continuously for about three weeks after which it was worn during the day for protection only. About four weeks after the injury the child developed chickenpox and the splint was removed. The rash was fairly heavy and evenly scattered except for that part of the left forearm which had been in contact with the plaster. Over this area the lesions were exceptionally numerous. The illness took the usual course and there were no complications. A dark suntan was present over the upper half of the body except the part of the left arm covered with the bandage. The lesions on the extensor surface of the forearm where only the muslin bandage had covered the skin were no more numerous than elsewhere. What is the basis for the predilection of the pax for the skin area which has been in contact with the plaster splint even though the splint was not worn after the rash began to appear? Ira D. Hirschy, Major, M.C., A.U.S.

ANSWER—Every dermatologist is familiar with instances of peculiar localization and distribution of lesions determined by physical means. Sometimes the influence of these agents is felt long afterward. This has given rise to the expression that the skin has a long memory. An area of sunburn, zones of pressure from suspenders, the site of a chemical irritation or points of trauma may be the ones where a future eruption does or does not occur. It has come to be accepted though not fully understood that the skin may be sensitized by substances such as poison ivy resin. The apparently normal skin between attacks harbors invisible changes that give it certain potentialities. In some manner also physical agents unquestionably leave a durable impress on tissues. What these changes are and how they occur is much less understood than even the phenomena of allergy.

# The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL 126, No 16

CHICAGO, ILLINOIS  
COPYRIGHT 1944 BY AMERICAN MEDICAL ASSOCIATION

DECEMBER 16, 1944

## A STUDY OF THE NATURE AND CONTROL OF AIR-BORNE INFECTION IN ARMY CAMPS

O H ROBERTSON, M D

MORTON HAMBURGER JR, M D

CHICAGO

CAPTAIN CLAYTON G LOOSLI

MEDICAL CORPS, ARMY OF THE UNITED STATES

THEODORE T PUCK, PH D

CHICAGO

LIEUTENANT HENRY M LEMON

MEDICAL CORPS, ARMY OF THE UNITED STATES

AND

HENRY WISE, S M

CHICAGO

The study of air-borne infection is of relatively recent origin. Several circumstances in particular have accelerated investigation in this field during the past two to three years, namely the development of more efficient and quantitative methods for recovering bacteria from the air, progress in methods of aerial disinfection and the war. The fact that between one third and one half of all illness in army camps is caused by diseases of the respiratory tract coupled with the lack of any effective measures for reducing the incidence of such diseases indicated the urgency of intensive study of this problem in the Army. Before the war began, a number of special commissions were set up under the Board for the Investigation and Control of Influenza and Other Epidemic Diseases, Preventive Medicine Service, Office of the Surgeon General, U S Army. Certain of these commissions were assigned to study different specific diseases of the respiratory tract and one to the general problem of air-borne infection. The Commission on Air-Borne Infections<sup>1</sup> has had the opportunity during the past two and a half years to carry on a study of this subject both in the laboratory at the University of Chicago and in the field at Chanute Field, Camp Carson and Peterson Field<sup>2</sup>. While the ultimate aim of these investigations was the development of measures

to reduce the incidence of acute diseases of the respiratory tract in army camps, it was evident that much more knowledge concerning the nature of air-borne disease would have to be obtained before effective means of control could be devised. Such essential information comprised a better understanding of (1) the sources from which infectious agents are dispersed into the air, (2) the relationship of aerial contamination to the spread of disease and (3) the various factors which influence the survival of pathogenic agents in the environment.

In designating an infectious disease as air borne, it should be kept in mind that this descriptive term indicates that the disease may be transmitted through the air or perhaps is acquired principally by this route but does not exclude other modes of transmission. Thus, secretions carrying the etiologic agents of acute respiratory disease may be passed to the new host directly by contact of lips or hands or less directly through contaminated food, eating utensils and other objects. Infection through the air may occur either from exposure, at close proximity to diseased persons who eject large numbers of infectious droplets in sneezing, coughing and talking<sup>3</sup> or as a result of inhaling particulate infectious material floating in the atmosphere of an enclosed space either at a distance from or subsequent to the departure of the diseased person. The area of high atmospheric infectivity resulting from coughing or sneezing is probably a relatively small one. Jennison's<sup>4</sup> stroboscopic photographs of a sneeze show that the droplets are projected not more than 2 to 3 feet and Hare's<sup>5</sup> experiments with cough plates placed in an arc in front of the subject indicate an even shorter distance of dispersion produced by a cough. The larger droplets, constituting the bulk of the infectious secretion, settle out quickly to the floor or other surfaces, and the smaller ones of 2 to 3 microns or less evaporate rapidly and are carried away on air currents. Certain of the earlier workers in this field considered that such small dried "droplet nuclei" (Wells<sup>6</sup>) constituted the principal source of infectious particles in the air. More recently English and Canadian investigators<sup>7</sup> have shown that bedclothes and floor dust in the vicinity of patients suffering from certain diseases of the respira-

3 Jennison's<sup>4</sup> stroboscopic photographs show that the relative numbers of droplets produced by these activities is in the order named. Sneezing is by far the most productive of aerial contamination. Most of the droplets however leave by way of the mouth.

4 Jennison M W. Atomizing of Mouth and Nose Secretions into the Air as Revealed by High Speed Photography. In Moulton F R. Aerobiology. Publication 17. American Association for the Advancement of Science. 1941. pp 106-128.

5 Hare R. The Expulsion of Hemolytic Streptococci by Nasopharyngeal Carriers. Canad. Pub. Health J. 31: 539-555. 1940.

6 Wells W F. Air Borne Infection. II. Droplets and Droplet Nuclei. Am. J. Hyg. 20: 611-618. 1934.

7 Van den Ende M, Lush D and Edward D G F. Reduction of Dust Borne Bacteria by Treating Floors. Lancet 2: 133-134. 1940. Thomas J C and Van den Ende M. The Reduction of Dust Borne Bacteria in the Air of Hospital Wards by Liquid Paraffin Treatment of Bedclothes. Brit. M. J. 1: 955-958. 1941. Willits R E and Hare R. The Mechanism of Cross Infection of Wounds in Hospitals by Hemolytic Streptococci. Canad. M. A. J. 45: 479-488. 1941.

Wholehearted cooperation was extended by many medical and line officers in the army camps in which these studies were conducted.

Read before the Section on Experimental Medicine and Therapeutics at the Ninety Fourth Annual Session of the American Medical Association, Chicago, June 14, 1944.

From the Department of Medicine, the Douglas Smith Foundation for Medical Research and the Bartlett Memorial Fund of the University of Chicago and from the Commission on Air Borne Infections, Board for the Investigation and Control of Influenza and Other Epidemic Diseases in the Army, Preventive Medicine Service, Office of the Surgeon General, U S Army.

1 Previously designated as the Commission on Cross Infections in Hospitals.

2 Much of the unpublished work of the commission is referred to in various parts of the paper. These observations will be reported later in full by the various members of the group.



tory tract constitute reservoirs from which infectious agents are redispersed into the air on agitation. We were able to confirm readily the finding that disturbance of the environment, bedclothes and floor dust of patients suffering from one type of respiratory infection, namely hemolytic streptococcus, caused an increase in the number of these micro-organisms in the air but were then faced with the problem of the relative importance of these sources of pathogenic bacteria as contributing to aerial contamination.

In order to recover bacteria from the air and other parts of the environment in a quantitative manner it was necessary to devise special apparatus for this purpose. Two kinds of bacterial air samplers have been developed. One utilizes the principle of atomization to trap the bacterial particles in broth.<sup>8</sup> It is simple in operation and highly efficient and will recover 90 to 95 per cent or more of bacteria from air sampled at the rate of 1 cubic foot per minute. Aliquots of the

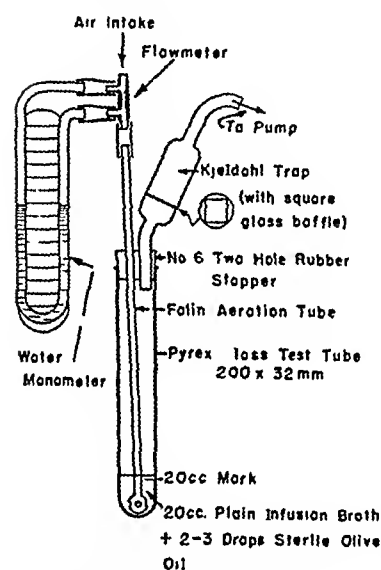


Fig 1—Apparatus for collection of bacteria from the air

broth are plated in blood agar. The other, pictured in figure 1, is of simpler design and operates by bubbling air at an equally rapid rate into a large test tube containing broth, with two or three drops of sterile olive oil added to prevent foaming. The rapid dispersion of the air through the fluid against the test tube walls results in the retention in the broth of approximately 90 per cent of air-suspended bacteria. While the efficiency of this apparatus is slightly less than that of the atomizer sampler, the fact that it requires no special glass blowing skill for construction and can be made up in any numbers from readily purchasable glassware renders it more generally usable.<sup>9</sup> With both types of sampler the air flow is measured by a simple flowmeter designed for this purpose.<sup>10</sup> (fig 1) For culturing bedclothes or the floor a funnel is attached by means of a rubber tube to the inlet of the "bubbler sampler" and it is used in the same manner as a vacuum cleaner. Blood agar plates exposed for varying periods of time were employed as a concomitant means for detecting the presence of air-borne bacteria. The usefulness and limitations of this method are described elsewhere.<sup>11</sup>

Since hemolytic streptococcus infection of the upper respiratory tract constitutes a prevalent and important disease and since this micro-organism is much easier

to isolate and trace than any other respiratory disease agent, our investigations in army hospitals and barracks have been centered principally on the hemolytic streptococcus. We have amplified the field observations by studies in the laboratory on this and other respiratory pathogens, e g pneumococcus, staphylococcus and influenza virus.

#### SOURCES FROM WHICH STREPTOCOCCI ARE DISPERSED INTO THE AIR

As others have previously found and as we have been able to demonstrate clearly in barracks<sup>12</sup> and wards,<sup>13</sup> the bacterial population in the air is in general proportional to the number of persons in the occupied space and the degree of their activity. The total number of bacteria in the air of an occupied barrack is at its lowest when the men are sleeping and may rise from less than 100 per cubic foot at this time to many thousands during the peak of morning activity getting up, dressing, bedmaking and sweeping (fig 3). Similarly, in environments (wards) occupied by patients with active streptococcal nasopharyngitis or scarlet fever, air samples taken while the ward was quiet yielded fewer than 2 hemolytic streptococci per cubic foot of air, whereas during dry sweeping or bedmaking the counts increased frequently to 15 or 20. Cultures of the bedclothes and floor dust in such wards revealed pronounced contamination of several or many of the beds and the floor round about. From 10,000 to 100,000 or more hemolytic streptococci could be recovered from a single sheet or blanket on the beds of certain patients and a million or more from the dust under the bed. Furthermore, it was found that streptococci could be recovered from pajamas and other clothing as well as from the skin of the patient.

Our observations left no doubt that disturbance of bedding clothing and floor contributed greatly to the numbers of hemolytic streptococci in the air but that such increases were temporary, lasting not much beyond the period of disturbance, and hence the question as to whether the bulk of air-borne streptococci present during the quiet periods came directly from the patients as fine droplets or on dust and lint from the secondary reservoirs remained unanswered. A conclusive answer to this question may not be very important, since we have evidence both experimental and clinical<sup>13</sup> that dosage is very important in determining whether or not air-borne infection occurs, and it may well be that infection is much more likely to occur in the relatively brief periods of high concentration of streptococci or other disease agents in the air than at other times. Furthermore, a certain degree of disturbance of the secondary reservoirs is constantly occurring as long as there are occupants in the space. Observations in barracks contaminated with hemolytic streptococci tend to bear this out.

#### RELATIONSHIP OF AERIAL CONTAMINATION TO SPREAD OF DISEASE

Cultures of the air in wards where secondary or cross infections with hemolytic streptococci were occurring have revealed the presence of those streptococcus types causing the infections. Furthermore, when such infections were caused by several different types the

8 Moulton S, Puck T T and Lemon H M. An Apparatus for Determination of the Bacterial Content of Air. *Science* 97: 51-52, 1943.

9 Lemon H M. A Method for Collection of Bacteria from Air and Textiles. *Proc Soc Exper Biol & Med* 54: 298-301, 1943.

10 Lemon H M and Wise H A. Flowmeter for Use in Air Sampling Procedures. *Science* 99: 43-44, 1944.

11 Hamburger M, Puck T T, Hamburger V G and Johnson M A. Studies on the Transmission of Hemolytic Streptococcus Infections. III. Hemolytic Streptococci in the Air, Floor Dust and Bedclothes of Hospital Wards and Their Relation to Cross Infections. *J Infect Dis* 75: 71-78, 1944.

12 Lemon H M, Wise H and Hamburger M Jr. The Bacterial Content of Air in Army Barracks with Especial Reference to the Dispersion of Bacteria by the Air Circulation System. *War Med* 6: 92-101 (Aug) 1944.

13 Loosh C G, Robertson O H and Puck T T. The Production of Experimental Influenza in Mice by Inhalation of Atmospheres Containing Influenza Virus Dispersed as Fine Droplets. *J Infect Dis* 72: 142-151, 1943. Hamburger, Puck, Hamburger and Johnson.<sup>11</sup>



predominant air-borne streptococcus was found to be of the same type as that causing the largest number of infections. Occasionally a series of cross infections were due to a single type and only this type of streptococcus was isolated from the air. In 1 such instance a type 17 hemolytic streptococcus was isolated from the air of a ward housing "common respiratory disease" patients two days before the first infection, scarlet fever due to type 17, occurred. In the ensuing five days, during which time air cultures showed a great increase in the numbers of type 17 hemolytic streptococci, 7 additional patients became infected with this particular micro-organism, some with scarlet fever, others with tonsillitis.<sup>11</sup>

Studies in barracks have shown the same association between air-borne streptococci and the occurrence of infection due to a given type of hemolytic streptococcus. In several instances in which one whole story of a barrack has shown definite contamination of the bedclothes and floor dust with a predominant type of streptococcus (the same as that of the initially infected person) cultures of the air have revealed only this type or relatively few streptococci of another type. In two such barracks, all of the ten or more infections occurring during a brief interval of time were due to this one predominant type.

The relationship of hemolytic streptococcus carriers to aerial contamination and spread of infection until recently has been largely conjectural. Earlier studies showed that the presence of even a high percentage of persons (as many as 50 per cent of the patients in a 32 bed ward) harboring group A streptococci in their throats might not result in secondary infections or new carriers,<sup>14</sup> or more than a minimal contamination of the air with these micro-organisms. On the other hand the introduction into a respiratory disease ward of a single individual carrier (infected, convalescent or well person) of any one of a number of group A hemolytic streptococcus types was sometimes followed by a widespread dispersal of these micro-organisms in the environment and multiple cross infections with the specific type. Quantitative bacteriologic studies of the bedclothes, hands and air in the immediate environment of such individuals have shown that they are capable of rapid and definite contamination of their surroundings. Further investigation showed that the saliva of many of these "dispersers" contained large numbers of hemolytic streptococci but revealed no quantitative relationship between streptococcus saliva content and dispersing capacity. It was not until culturing of the nose as well as the throat was instituted that a means of detection of the "dangerous carrier" was found. An extensive series of observations has shown (1) that patients whose nose cultures were strongly positive expelled hundreds to thousands as many hemolytic streptococci as those individuals whose nose cultures were negative and (2) that all patients or carriers responsible for the infection of other persons were found to exhibit positive nose cultures, although not every individual whose nose culture was positive expelled very large numbers of hemolytic streptococci.

While the foregoing observations provide no conclusive proof that streptococcal infection of the respiratory tract does occur through the medium of the air, a considerable body of indirect evidence strongly supports this assumption. Furthermore, experimental air-

borne transmission to animals of certain human diseases e.g. streptococcal, pneumococcal and influenzal infections, leaves little doubt that human beings may contract these infections in the same manner. This subject has been reviewed in an earlier publication.<sup>15</sup>

#### FACTORS INFLUENCING THE SURVIVAL OF PATHOGENIC AGENTS IN THE ENVIRONMENT

Knowledge of the length of time disease agents of the respiratory tract can survive outside the body under varying conditions is essential to an understanding of the various aspects of air-borne infection. While this field has not been adequately explored certain facts have been brought out. Others<sup>16</sup> have observed that light and heat shorten the life span of certain pathogenic bacteria. In addition we have found that atmospheric humidity plays a very important role in determining the duration of viability of several different disease agents. Hemolytic streptococci suspended in saliva and dispersed as a fine mist into a dry atmosphere can be recovered from the air twenty-four hours later.<sup>17</sup> Blankets contaminated with hemolytic streptococci have been isolated in a dry atmosphere and when sampled at the end of four months still exhibited considerable numbers of these micro-organisms. Although adequate comparative studies in atmospheres of high relative humidity have not been carried out in the case of the streptococcus, preliminary tests indicate that in a moist atmosphere their viability is much briefer. However the effect of varying humidity on air-borne influenza virus has been studied extensively. It was found that in relative humidities of 80 to 90 per cent the virus survived less than one hour but could be detected in dry air of 25 to 30 per cent humidity at the end of thirty-six hours.<sup>18</sup> Furthermore, living influenza virus could be recovered from the air following shaking of a canvas floor covering as long as six days after it had been sprayed into a room with a dry atmosphere.<sup>19</sup> The latter finding indicates that under suitable conditions influenza and not improbably other respiratory disease viruses may accumulate in the patient's environment and be redistributed into the air in the same manner as bacteria.

#### CONTROL OF SECONDARY RESERVOIRS OF INFECTION

It became evident from these studies that a successful attack on the problem of the prevention of air-borne infection must include control of the secondary reservoirs of disease agents in addition to measures for disinfecting the air, such as glycol vapors or ultraviolet radiation.

(a) *Floor Treatment to Hold Dust and Lint*—A number of compounds for floor treatment were tested by means of scattering dust and fine lint on the treated areas and observing through a microscope the holding power of the surface when a strong breeze from an electric fan was directed on it. On wood floors a single coat of pale paraffin oil was found to be highly effective.

- 15 Robertson O. H. *Air Borne Infection Science* 97: 495-502, 1943.  
16 Buchbinder L., Soloway M. and Phelps E. *Studies on Micro-organisms in Simulated Room Environments. III. The Survival Rates of Streptococci in the Presence of Natural Daylight and Sunlight and Artificial Illumination* J. Bact. 42: 353-366, 1941. Enders S. F. and Shaffer M. F. *Studies on Natural Immunity to Pneumococcus Type III. I. The Capacity of Strains of Pneumococcus Type III to Grow at 41°C and Their Virulence for Rabbits* J. Exper. Med. 64: 7-18, 1936.  
17 Robertson O. H. *Sterilization of Air with Glycol Vapors in Harves Lectures 1942-1943* Baltimore: Williams & Wilkins Company, 1943, vol. 38, pp. 227-254.  
18 Loosli C. G., Lemon H. M., Robertson O. H. and Appel E. *Experimental Air Borne Infection. I. Influence of Humidity on Survival of Virus in Air* Proc. Soc. Exper. Biol. & Med. 53: 205-206, 1943.  
19 Loosli C. G., Appel E., Robertson O. H. and Lemon H. M. *The Influence of Humidity on the Survival of Influenza Virus in the Air and Dust* to be published.

14 Hamburger M. Jr. *Studies on the Transmission of Hemolytic Streptococcus Infections. I. Cross Infection in Army Hospital Wards* J. Infect. Dis. 75: 58-70, 1944.

in holding both lint and dust. Tests repeated over a period of many weeks showed this property to be undiminished. Van den Ende<sup>7</sup> and Thomas<sup>7</sup> used spindle oil for this purpose. For highly polished floors and linoleum, which were made somewhat slippery by oil, a compound consisting of urea 5 per cent, ninol<sup>20</sup> 3 per cent and roccal<sup>21</sup> 0.1 per cent was found to be satisfactory. This mixture dried quickly but held enough moisture in the urea crystals and ninol to produce wetting of particular matter falling on its surface. Furthermore, the treated surface exerted a bactericidal action. The disadvantage of the urea-ninol-roccal compound is that it must be reapplied frequently and can be employed only on nonporous surfaces.

(b) *Method for Oil Treatment of Bedclothes*—It seemed obvious that the ideal treatment of bedding would be one that rendered it bactericidal as well as dustless and lintless. However, after a long series of experiments with a considerable number of different preparations both bactericidal and nonbactericidal it became evident that any agent which would simply hold particulate matter in the blanket or other material was just as effective in preventing dispersal of bacteria into the air as one which might exert a germicidal action. It was found that medicinal liquid petrolatum was an excellent agent for this purpose. Oil treatment of blankets was first investigated by certain English workers,<sup>22</sup> but the formulas which they employed contained ingredients that made them unsatisfactory for practical use.

The principal problems were, first, to develop a satisfactory method for applying oil to blankets, sheets and the like and, second, to devise a simple and rapid means for testing the effectiveness of an oil application in retaining lint and bacteria. Oil treatment of bedding was found to be most adequately achieved by means of water-oil emulsions which were employed as a final rinse in the laundering process. These emulsions had

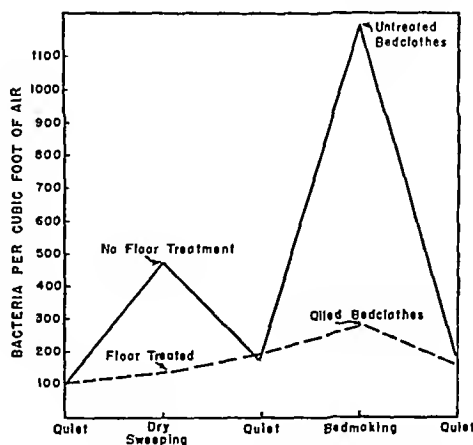


Fig. 2—Reduction in bacterial content of ward air by floor treatment and use of oiled bedclothes. Consecutive air samples twenty minutes each. Solid line control periods; broken line period of treatment.

to meet certain requirements, namely very fine dispersion, stability, lack of any irritation to the skin and absence of odor. A base for an oil emulsion which most nearly met these requirements consisted of mineral oil (Fractol A) 88.0 Gm, oleic acid (purified) 8.9 Gm

20 A synthetic detergent manufactured by the Ninol Laboratories Chicago.

21 The commercial form of Zephiran supplied by the Altha Pharmaceutical Company, New York.

22 Van den Ende, Lush and Edward Thomas and Van den Ende<sup>7</sup>

triethanolamine 3.9 Gm and lecithin 0.01 Gm<sup>23</sup>. When poured into water and mixed well, a milky emulsion results which consists of particles so fine that they exhibit brownian movement. Patch tests on 175 persons with a 25 per cent emulsion of the oil base were all negative<sup>24</sup>. The percentage of oil in the treated material was determined by extracting the oil from the test sample with chloroform and then evaporating the solvent and weighing the residue.

In order to test the effectiveness of the different oil preparations (principally the varying percentages of oil in the fabric) a method was devised in which counts were made of the number of particles released from the treated fabric following a uniform degree of agitation. Blankets treated with 1 or 2 per cent oil emulsions and tested in this manner exhibited a reduction of 95 to 98 per cent in the lint and bacteria released as compared with control pieces of the same blanket. Such treated blankets and other bedclothes were indistinguishable to smell or touch from untreated ones.

It was essential to determine whether oiling of bedclothes, especially blankets, contributed any increased fire hazard. An extensive series of combustion and ignition tests on oil-treated blankets, comforters and sheets undertaken by the National Bureau of Standards showed that percentages of oil considerably above the maximum which we proposed to employ (namely, 3 to 4 per cent) involved no fire risk<sup>25</sup>.

#### TESTS OF THE EFFECTIVENESS OF OILING FLOORS AND BEDDING

(a) *On Bacterial Content of Air*—Tests of these relatively simple means for dust control were carried out in army hospital wards and barracks. In wards it was found that the rise in bacterial content of the air resulting from dry sweeping the untreated floor was almost entirely prevented by previous mopping or by preparation of the floor with the urea-ninol-roccal compound. The dust-retaining effect of the floor compound lasted much longer than did that of mopping alone and resulted in lower bacterial counts during periods of relative quietness in the ward. It was necessary, however, to reapply the floor compound daily. The use of oiled bedclothes brought about an almost equally striking reduction in the aerial dispersion of bacteria which ordinarily occurs during bedmaking. These effects are shown in figure 2. Equivalent reduction in the numbers of air-borne hemolytic streptococci was obtained. The bacterial counts and the percentage of reductions brought about by oiling the bedclothes are given in the accompanying table.

In barracks, which represent a much dustier environment than hospital wards, the results of oiling were even more striking. To determine the maximum effects of these dust control measures it was necessary to secure cultures of the air before, during and after the daily period of greatest activity in the barracks. The first air samples were taken when the occupants were all asleep and continued through a period of two hours while the men were getting up, dressing, making beds and being otherwise occupied. The rise and fall in

23 This is a modification of an emulsion described by the Carbide and Carbon Chemicals Corporation.

24 While this emulsion has been the one principally used in our study and many thousands of bedclothes have been treated by this means with satisfactory results we have found that certain difficulties may be encountered in its routine use in laundry procedures. For this reason we are testing other emulsions which give promise of eliminating these difficulties. Details of this subject together with an account of the laundry procedures involved in oiling bedclothes, will be published.

25 Dr. Lyman J. Briggs, director of the National Bureau of Standards and Mr. S. H. Ingberg, chief of the Fire Resistance Section, made these studies.

the numbers of bacteria in the air of a barracks during this time is shown by the graph in figure 3, which represents the average of more than 300 air cultures taken in treated and untreated barracks housing men of the same company. It will be observed that oiling the floors reduced by approximately 70 per cent the peak in the number of air-borne bacteria which occurred in the control barracks during the same period of maximum

*Effect of Oiled Bedclothes on the Bacterial Content of Ward Air During Bedmaking*

|  | Total Bacteria per Cubic Foot |                  | Hemolytic Streptococci per 10 Cubic Feet |                  |
|--|-------------------------------|------------------|--|------------------|
|  | Quiet Period                  | During Bedmaking | Quiet Period                             | During Bedmaking |
| Untreated bedclothes                     | 118                           | 938              | 6  | 24               |
| Treated bedclothes                       | 75                            | 276              | 0  | 4                |
| Per cent reduction by treated bedclothes | 36.4                          | 70.6             | 100                                      | 83.3             |

Each figure is an average of about ten days tests on a twelve bed ward containing 9 to 12 patients

activity. Oiled bedding plus oiled floors effected a further reduction to about 90 per cent of the bacterial counts in the control barracks. In fact activity of the occupants of the completely oiled barracks caused very little change in the number of air-suspended bacteria. The small early morning rise shown in the graph might well be associated with the liberation of bacteria from the men's clothing during dressing. Though hemolytic streptococci were seldom found in the air of the oiled barracks, very large numbers were not infrequently recovered from the air of untreated ones.

(b) *On Bacteria Recoverable from Blankets*—An extensive series of cultures from oiled blankets in barracks with oiled floors yielded only about one-seventh the number of bacteria recovered from untreated but washed blankets in control barracks. Very few hemolytic streptococci were obtained from the oiled blankets, while in numerous instances great numbers were recovered from unoled blankets. Tests repeated during a period of two months after placing the oiled blankets on the beds showed no apparent diminution in their bacteria-holding property.

(c) *On the Incidence of Acute Respiratory Infection*—In view of these results and the difficulty of utilizing glycol vapors or ultraviolet radiation in a large number of barracks, a study of the effect of oiling floors and bedclothes on the incidence of acute respiratory disease in a considerable body of troops was instituted. The major part of the test consisted in the oiling of every other barracks. In certain areas the company constituted the test and control unit. The number of hospital admissions for acute infections of the respiratory tract was chosen as the index of comparison. At the date of writing the test has not extended over a sufficient period of time to permit final conclusions, nor have the considerable body of data already at hand been adequately analyzed, but it may be said that the results so far obtained point to a significant reduction in the number of hospital admissions for acute respiratory disease from the oiled barracks.

USE OF TRIETHYLENE GLYCOL VAPOR

We have practically no information concerning the minimum concentration of any air-borne disease agent necessary to produce infection of the exposed individual and only very meager data on the numbers of hemolytic streptococci in the air of environments where infections

with this micro-organism are taking place. Certain evidence derived from experimental air-borne infection in animals indicates that dosage is a determining factor and depends on the concentration of the infectious agent in the inhaled air and the length of the exposure or both. It has been found that if the concentration in the air of a given disease agent, e. g. influenza virus, falls below a certain level, animals breathing the air even for a long period of time fail to contract infection, in spite of the inhalation of detectable amounts which can be demonstrated by suitable methods. Thus it seems not unlikely that in certain situations appropriate measures for controlling dispersal of infectious agents from secondary reservoirs might hold their concentration in the air at a sufficiently low level that even highly susceptible persons would escape infection. However, we know from experience that, even though the incidence of respiratory disease in such controlled environments can be reduced, infections may still continue to occur. Whether these are due to a minimum dispersion of disease agents from contaminated surfaces or to droplets ejected directly from the infectious individuals or to exposure outside the living quarters is not known. At any rate it seems evident that more complete control of the transmission of acute infection of the respiratory tract requires some form of aerial disinfection.

Ultraviolet radiation has been employed for this purpose for some time and is now receiving further extensive tests under controlled conditions by one of the other branches of the armed forces. The use of certain glycol vapors offers another method for killing air-borne disease agents. It has been found that some of the glycols, especially propylene glycol and triethylene glycol, when dispersed into an enclosed atmosphere in vapor form, exert a very strong lethal action on pathogenic bacteria of the respiratory tract as well as on influenza virus.<sup>26</sup> The amounts required to produce a germicidal atmosphere are so small that relatively large

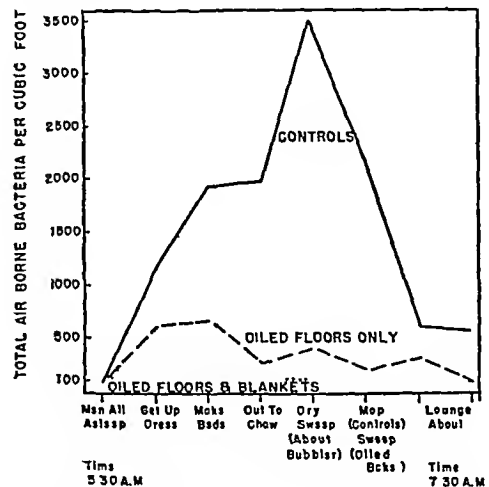


Fig 3—Control of bacterial content of air in barracks by oiling floors and barracks blankets

spaces could be treated at low cost. A concentration of 1 cc. of triethylene glycol vaporized into 10,000 cubic feet of air produces almost immediate death of pneumococci, streptococci and influenza virus previously dis-

<sup>26</sup> Robertson, O. H., Bigg, E., Puck, T. T., and Miller, B. F. The Bactericidal Action of Propylene Glycol Vapor on Micro-Organisms Suspended in Air. I. J. Exper. Med. 75: 593-610, 1942. Puck, T. T., Robertson, O. H., and Lemon, H. M. The Bactericidal Action of Propylene Glycol Vapor on Micro-Organisms Suspended in Air. II. The Influence of Various Factors on the Activity of the Vapor. J. Exper. Med. 78: 387-405, 1943.

persed into the test room. Triethylene glycol vapor in bactericidal concentrations is not detectable in the air and is nontoxic.<sup>27</sup> Practical tests of this method have been delayed because of the lack, until recently, of adequate vaporizing apparatus and the need for an automatic control of the concentration of glycol vapor in the atmosphere. Two types of glycol vaporizers have recently been developed<sup>27</sup> and an apparatus for regulating the amount of glycol vapor in the air (glycostat) has now been devised.<sup>28</sup> With this necessary equipment it has been possible to initiate certain preliminary studies on the effect of triethylene glycol vapor on a specific disease agent present in the air under natural conditions, namely the hemolytic streptococcus. It was found that the continuous vaporization of glycol into wards housing patients with acute hemolytic streptococcus nasopharyngitis resulted in a pronounced reduction in the numbers of air-borne streptococci as compared with cultures of the air made before and after the periods of vaporization. That complete sterilization of the air was not achieved can be accounted for on the basis of certain factors which limit the activity of the glycol vapor, one of the most important being atmospheric humidity. Tests in the laboratory showed that a certain amount of moisture in the air was essential. Relative humidities of 40 to 60 per cent were optimum for the germicidal action of the vapors. With the humidity below 30 per cent little effect on dried bacterial particles was observed, although freshly atomized cultures were killed at much lower humidities. The bacterial particle must contain or acquire a certain amount of moisture before it will attract and hold a sufficient number of the glycol molecules so that a lethal concentration of this substance accumulates around the bacteria. Furthermore, dried bacteria such as are dispersed into the air from surfaces require a certain period of time, ten to twenty minutes, to become adequately moistened even in an atmosphere of 40 per cent relative humidity. Thus in wards such as those we studied, where streptococci were being constantly dispersed from secondary reservoirs, one would not expect to be able to keep the air completely free from streptococci with glycol vapor.

In view of these facts it seemed likely that a combination of dust-lint control measures and glycol vapor would result in more pronounced effect than could be secured with glycol vapor alone. This proved to be the case. Whereas triethylene glycol vapor in the absence of dust control caused a reduction of about 70 per cent in the number of air-borne streptococci as compared with the control periods, vapor in wards with treated floors and oiled bedding brought about a reduction of over 90 per cent.

While studies on glycol vapor could be carried out in hospital wards at satisfactory humidities by means of introducing into the atmosphere sufficient steam from the radiator system, such means of humidification are not available for tests of glycol in barracks, where the relative humidity in many localities in winter time is very low. The introduction of a large amount of water vapor with the glycol might be the solution to this problem in climates of moderate dryness. Other methods of humidification of barracks are under study. Among

the many phases of this subject still to be investigated is that of determining the minimum relative humidity at which a known continuous concentration of triethylene glycol is effective. With the glycostat available this will be possible to determine. It is not unlikely that a relative humidity which is below the optimum for germicidal action on dried bacterial or virus particles would still be highly effective for freshly expelled droplets of infected secretions.

The only published data on the use of glycol vapors for the control of acute respiratory disease are those of Harris and Stokes<sup>28</sup> who observed a considerable reduction in the incidence of colds and other infections of the upper respiratory tract in children occupying wards treated with propylene or triethylene glycol vapor as compared with untreated wards.

#### COMMENT

The reader may well question the assumption implicit in the latter part of this presentation, having to do with control measures, that the greater proportion of upper respiratory tract infections are acquired in the barracks. It must be granted that definite information on this point is lacking. However, there is a good deal of evidence in support of the view that certain specific diseases are spread principally in sleeping quarters. One of the most informative studies of this subject was made by Dudley<sup>29</sup> in 1920, who found in a group of boys, part of whom lived in dormitories and part of whom slept in dispersed quarters outside, that, although all the boys ate together and mixed intimately during the day, an epidemic of scarlet fever and diphtheria affected only those living in the dormitories. Our own observations cited earlier in this study of several instances in which a number of cases of hemolytic streptococcus infection of a single type occurred in barracks heavily contaminated with this micro-organism strongly suggest that these infections were acquired in the barracks. Other accounts of similar episodes, though less carefully studied, support the inference that, at least where the disease rate of these particular infections is high, sleeping quarters constitute an important focus of dissemination. No information is available concerning the proportion of respiratory infections acquired inside and outside the barracks. The usual scattering of cases of the so-called common respiratory disease is generally considered to indicate that most of these infections are acquired by outside contact. Likewise where sporadic cases of streptococcal disease are occurring, no definite locus of infection is evident. Yet further investigation, such as the results of dust control measures in barracks, may show that a considerable percentage of respiratory disease, in general, is communicated in the environment of the sleeping quarters where the soldier spends the greater part of his indoor life and where conditions for accumulation and dispersal of disease agents are optimum.

We wish to point out that the fundamental ideas for the control of the secondary reservoirs of disease agents were proposed by the English workers. Thomas<sup>1</sup> found that oiling floor and bedclothes resulted in a 90 per cent reduction of air-borne bacteria in a hospital

27 One has been made by the Research Corporation of New York and the other by Drs. Biggs and Jennings of the Technological Institute of Northwestern University.  
27a Puck T. Wise H. and Robertson O. H. A Device for Automatically Controlling the Concentration of Glycol Vapors in the Air. *Exper. Med.* 80: 377-381, 1944.

28 Harris T. N. and Stokes J. Jr. Air Borne Cross Infection in Case of Common Cold. Further Clinical Study of Use of Glycol Vapors for Air Sterilization. *Am. J. Hyg.* 63: 635, 1943.  
29 Dudley S. E. The School Test: Diphtheria and Scarlet Fever. Medical Research Council Special Report Series no. 73. London: His Majesty's Stationery Office, 1923. The Spread of Droplet Infection in Semi-Isolated Communities. Medical Research Council Special Report Series no. 111. *ibid.* 1926.

ward, approximately the same result obtained by us in army barracks. Recent observations by Krueger and his associates<sup>30</sup> have corroborated the findings of others that oiling the floors alone brings about a substantial diminution in the number of air-borne bacteria in hospital wards. Also Feasby and Bynoe<sup>31</sup> of the Canadian army have reported a reduction in the number of cases of hemolytic streptococcus infection coming from barracks in which oiled sweeping compounds were used, as contrasted with barracks lacking this means of dust control. We have been able to carry the oil preparation of bedclothes to the stage of practical application and hence test on a large scale the effectiveness of this means of reducing the incidence of air-borne infection.<sup>32</sup> Furthermore, the results of our studies on the distribution and control of certain disease agents in the environment have shown that maximum diminution in the number of air-borne pathogens is brought about by means of aerial disinfection combined with measures for effective dust prevention.

#### SUMMARY

During the past two and one-half years the Commission on Air-Borne Infections, Board for the Investigation and Control of Influenza and Other Epidemic Diseases, Preventive Medicine Service, Office of the Surgeon General, U S Army, has been conducting studies on the transmission and control of acute diseases of the respiratory tract in the laboratory and in the field. Before effective measures for control could be devised, it was necessary to acquire much more information concerning the nature of air-borne infection. Investigation of the sources of air-suspended pathogenic bacteria and viruses revealed the fact that environmental contamination by the diseased individual results in secondary reservoirs of infectious material, in bedding and floor dust, from which desiccated secretions are redistributed into the atmosphere in particulate form. Extensive studies of environments containing hemolytic streptococcus patients or carriers have shown that bed-making and dry sweeping result in a pronounced increase in the numbers of streptococci in the air and probably constitute a more important source of aerial contamination than do "droplet nuclei" expelled directly from the infected person. The finding that hemolytic streptococci may survive for long periods of time (many months) in contaminated blankets added increased significance to the importance of bedclothes as reservoirs of infectious agents. Numerous observations on the relationship of air-borne hemolytic streptococci to the occurrence of streptococcal infection indicated that there was a definite association between the numbers of a given type of hemolytic streptococci present in the air and the incidence of infection with that type.

These findings provided the basis for the institution of certain measures designed to control air-borne infection by (1) preventing the dispersal of infectious mate-

rial into the air and (2) reducing the infectivity of contaminated atmospheres by killing the disease-producing agents in the air. The first of these measures consisted in oiling the floor and treating the bedclothes with an oil emulsion. Studies of the bacterial population of such treated environments, wards and barracks showed a striking reduction in both the total bacteria and the numbers of hemolytic streptococci present in the air and other parts of the environment. A test of the effect of oiling floors and bedclothes in a large number of army barracks has been instituted and, while not of sufficiently long duration to permit statistical conclusions, the study has yielded data indicating a definitely lowered incidence of acute respiratory infections in soldiers occupying the oiled barracks as compared with the controls. For the further control of aerial contamination, triethylene glycol vapor has been employed. Studies thus far have been limited to hospital wards. It was found that the numbers of hemolytic streptococci in the air of wards housing patients with this type of infection could be largely reduced by the presence in the air of triethylene glycol vapor in bactericidal concentrations. Maximum reduction in air-borne streptococci was observed when oiling of bedclothes and floors was employed in conjunction with the glycol vapor.

#### ABSTRACT OF DISCUSSION

DR EDWARD BIGG, Chicago. Dr Robertson and his associates have presented a fundamental basis for an understanding of the problem of the control of cross infections. If it were possible to control the factors of primary source of infection, reintroduction of organisms from secondary reservoirs and to sterilize completely the atmosphere of living groups, one could prevent air borne infection. Since none of these procedures can be effected to the necessary degree, it would appear that a combination of such measures as are available offers the greatest promise in the prevention of infections transmitted by the aerial route. Dr Robertson has shown clearly the effect of dust control. For the past two years our group at Northwestern has been studying the use of triethylene glycol vapors as a means of air sterilization and its application to the control of air borne disease. During the past winter we had an opportunity to carry out a practical test at a military camp. We have developed apparatus for glycol generation and distribution and were able to maintain bactericidal concentrations of glycol and optimum relative humidity conditions in military barracks. The humidity problem was solved by the use of a vaporizer which introduced water vapor along with the glycol. Studies were made on three groups of 640 men observed for six week intervals and equally divided into test and controls, the former sleeping in glycol treated quarters, the latter in untreated dormitories. A simple overall dust control measure was used, namely the oiling of the floors in both test and control barracks. A reduction in air borne disease of 12 per cent was produced for the entire period, but statistics on the final seventeen days of the period showed a reduction of 64 per cent. Unfortunately a longer test period was not possible, so that more conclusive evidence could not be obtained. The incidence of hemolytic streptococci recovered from throat cultures of men exposed to the effect of glycol vapors fell dramatically in contrast to the control individuals. There was a definite prevention of spread of hemolytic streptococci in the test dormitories and practically complete abolition of these organisms from the air in the glycol treated spaces. More effective dust control measures as outlined by Dr Robertson used in conjunction with triethylene glycol vapors will bring about a significant reduction in those diseases which now present one of the greatest problems in both civil and military life.

DR C H RAMMELKAMP, Fort Bragg, North Carolina. The fact that respiratory disease may be spread by dust, lint from blankets and similar vehicles needs to be emphasized, since it has been a common teaching that direct contact, contact with

30 Krueger, A. P. and others. Laboratory and Field Studies of Glycols and Floor Oiling in the Control of Air Borne Bacteria. U S Nav Y Bull 42: 1288-1308, 1944.

31 Feasby, W. R., and Bynoe, E. T. Survey of Hemolytic Streptococcus Infections at Camp Borden, Ontario, 1943. I. Epidemiology. War Med 5: 207-215 (April) 1944.

32 After this paper had been sent in for publication we received the May 6 issue of the British Medical Journal which contained two papers one describing a new formula for the oil treatment of bedclothes and the other its use in a study of the control of air borne streptococcal infection in hospital wards. Harwood, F. C., Ponney, J., and Edwards, C. W. Brit M J 1: 615, 1944. Wright, J., Cruickshank, R., and Gunn, W. Ibid p 611. And on page 616 of the same issue Anderson, P. H. R., Buchanan, J. A., and MacPortland, J. J. reported a reduction in incidence of acute respiratory disease occurring in barracks with oiled floors.



contaminated articles and droplet transmission, are primarily responsible for the spread of respiratory infection. Dr. Robertson's data amply emphasize the importance of dust and blankets in the transmission of streptococcal infection and, in all probability, in the spread of other types of respiratory disease. During the past two and a half years the Commission on Acute Respiratory Diseases now established at Fort Bragg, North Carolina has been studying the problem of respiratory disease in the Army. During this period special emphasis has been placed on methods for determining the incidence of infection by the development of clinical and epidemiologic techniques as well as by studying etiology. With the exception of outbreaks of influenza, the big problem in respiratory disease in the Army lies in the high incidence of illness of unknown cause. Respiratory disease due to known and recognizable bacteria and viruses accounts for a relatively small proportion of the total cases of illness. Moreover, the incidence of total as well as undifferentiated respiratory disease is much greater in new recruits than in seasoned men; the approximate ratio in these two groups being 10 to 1. It has been repeatedly observed that when new recruits are brought together for the first time under the conditions of army life an epidemic of undifferentiated respiratory disease occurs consistently between the second and fifth weeks of army experience. This pattern of epidemic behavior has been quite constant, although the peak of the epidemic has reached higher levels in the winter than in the summer, in accordance with the known seasonal variation of total respiratory infection.

DR. FRANCIS G. BLAKE, New Haven, Conn. There are as Dr. Robertson pointed out, two potential sources of the spread of infection, that is the individual who himself is a dangerous disseminator of respiratory bacterial agents and the environment as represented by contaminated bedclothes and dust. It is highly important to define, if possible, by the experimental approach what is the relative importance of these two factors in the actual spread of epidemic disease. I don't know whether Dr. Robertson plans to approach this problem by having a unit in which the bedclothes and floor are contaminated heavily with hemolytic streptococci, introducing into that unit a group of individuals who are shown not to be carriers of hemolytic streptococci, and a comparable experiment in which the floors and the beds are not contaminated, in which a dangerous human carrier is introduced. Such an experiment might serve to differentiate between the importance of these two possible sources of spread.

DR. TRUMAN S. POTTER, Chicago. The beginning of a line of attack on disease as revolutionary as Dr. Robertson's fully warrants our looking even above and beyond the facts actually in hand. Dr. Robertson has been working chiefly on military diseases and for that reason has been constrained to bypass some of the problems which are of less pressing importance. I have been at the University of Chicago this last winter working in a different laboratory from Dr. Robertson, and I have begun a few brief experiments on the tubercle bacillus. The tubercle bacillus has a much higher lipid content than most bacteria and consequently it could not be taken a priori that the glycols would be equally effective in penetrating this organism. Also there are certain facts in the epidemiology of tuberculosis which are quite different from those of other diseases. The organism is commonly encased in sputum, and the associated mucus might be expected to protect it in a measure, from the action of the glycols. Even now it certainly would be premature to speak of the actual significance of the practical prevention of disease, yet I want to say that it has been my privilege in the last winter to do a few brief experiments on the tubercle bacillus which show that this organism also can be killed both in the test tube and in the air with both propylene and triethylene glycol. In some of these experiments the bacilli were atomized into the test chamber containing the glycols, from a suspension of saliva and were thus coated with a thin film of mucus, as under natural conditions. The result, as determined by the guinea pig inhalation test was that the bacilli were again exterminated. We have, in the glycols, agents which are broader in their action than the sulfonamides. Although purely preventive and not curative in action, I feel that, in the long run the glycols may well strike us as having human importance equal to that of the sulfonamides or even greater.

## ENURESIS

### THE USE OF CYSTOURETHROGRAPHY IN DIAGNOSIS

M. LEOPOLD BRODNY, M.D.  
AND  
SAMUEL A. ROBINS, M.D.  
BOSTON

Our primary purpose in this report is to evaluate cystourethrography as a method for investigation of organic uropathy in enuretic patients. The satisfactory presentation of this objective is dependent on a clear conception of the etiology of enuresis. It will therefore be necessary to interpret and clarify the various causative factors which constitute this problem.

Urinary continence is dependent on four factors:

1. An intelligence quotient adequate to appreciate the social necessity and hygienic desirability of controlling the time and place of voiding.
2. Proper and sufficient habit training to condition urination and voluntary control.
3. The patient must be free of specific neurotic and psychotic symptoms and have an emotional status consistent with his age group.
4. A normal voiding mechanism is essential for normal function. In the child, the anatomic and physiologic development must be accordant with the chronologic age.

Urinary continence may be maintained even though one or two of these components are deficient, provided there is a superior compensatory factor. The following illustrates the counteraction of these forces:

**A. The mentally deficient.** Persons with a very low intelligence quotient may be continent. It is possible to teach the feeble-minded person to be dry by inaugurating unusual conditioning reflexes. Similar techniques are used in house breaking animals.

**B. Inadequate habit training.** Many children without formal habit training develop continence. Their acute intelligence and emotional maturity sets up self-conditioning reflexes.

**C. Emotional disturbances.** An emotionally unstable person may by proper habit training maintain urinary continence. This is accomplished by active deconditioning or antagonistic reconditioning of the psychogenic factors involved.

**D. Organic disease.** The establishment of continence in an enuretic person does not rule out the presence of an organic lesion. Dryness may be maintained in the presence of pathologic structure and function by exceptional cerebral and emotional control or by suitable habit training.

It is not generally recognized that bed wetting and persistent nocturia in children are related and may replace each other. The former is an involuntary, the latter a voluntary reaction to similar stimuli. Their interchangeability depends on the efficiency of the factors of continence. Many parents disregard this nocturia in children. The blame for frequent voiding during the night is often placed on "overindulgence in fluids," "sleeplessness" or "weak kidneys." It is generally believed that the child will outgrow this condition. Unfortunately, some physicians have a similar attitude.

Read before the Section on Urology at the Ninety-Fourth Annual Session of the American Medical Association, Chicago, June 15, 1944.  
Lieut. Comdr. Philip Solomon made it possible to study the enuretic patients from the Habit Clinic for Child Guidance. Douglas A. Thomas, M.D., Director.  
From the Departments of Urology and Roentgenology, Tufts College Medical School, the Beth Israel Hospital, the Boston Floating Hospital, and the Boston Dispensary.



They consider a patient with enuresis is cured when the bed is dry even though he may void in the lavatory two to three times during the night. The same criteria for the cure of enuresis are also found in many reports in the literature.

Enuresis is caused by disturbance of one or more of the factors on which urinary continence is dependent. On this basis enuresis may be divided into four main types.

1 *Intellectual*—In this group are those enuretic persons whose intelligence quotient is insufficient to acquire new habits. Examples are found in mentally ill and defective children.

2 *Conditioned Reflex*—In this group enuresis is due to behavior problems and antagonistic habit reactions and is affected by environment, hygiene, social conditions and problem parents.

3 *Psychogenic*—This group consists of patients with psychoneurosis, psychopathic personalities, emotional disturbances and sexual disturbances.

4 *Organic*—This group consists of those enuretic persons with organic uropathy.

Combinations of the various types of enuresis occur. In fact, the majority of cases are not of a pure type. Enuresis of one type may agitate another type. The patient with primary organic enuresis often develops secondary emotional disturbances. The patient with a primary sexual disturbance may develop secondary organic changes in the prostate.

The proper classification of enuresis demands the investigation of the four factors of urinary continence. It is beyond the scope of this paper to discuss the first three factors. Their importance and relationship have been merely presented and stressed. More detailed discussions can be found in the psychological, psychiatric and psychosomatic literature.

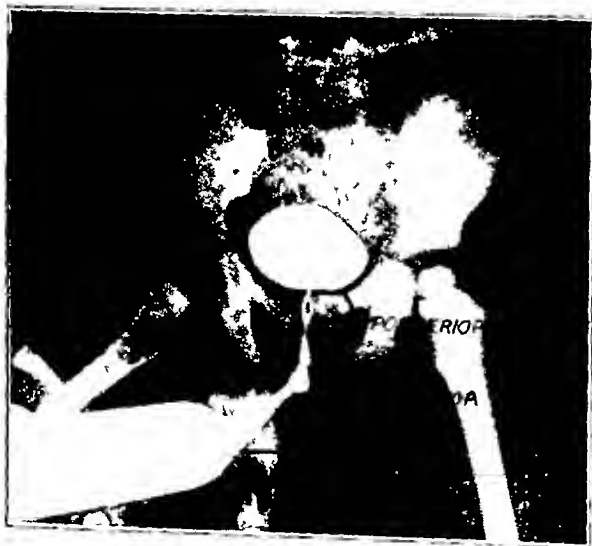


Fig. 1 (a boy aged 3)—Normal cystourethrogram with Visco Rayopaque. The bladder and urethra are clearly outlined. The opaque medium is well distributed and mixed with the urine. Note the sharpness of the ovoid area produced by the verumontanum in the posterior urethra between the constriction of the internal and the external sphincters.

The fourth factor, organic disease, plays an important role in the etiology of enuresis. Campbell<sup>1</sup> found uropathy in 60 per cent of 532 persistent enuretic patients whom he investigated. In spite of this unchallengeable finding, some physicians discourage urologic

investigation. The following is typical and was published less than two years ago: "Some methods to avoid" 1 "Manipulations or operations for enuresis such as cystoscopy, tonsillectomy, circumcision and the like. These operations are essentially irrational, except in very rare instances and often are taken by the patient

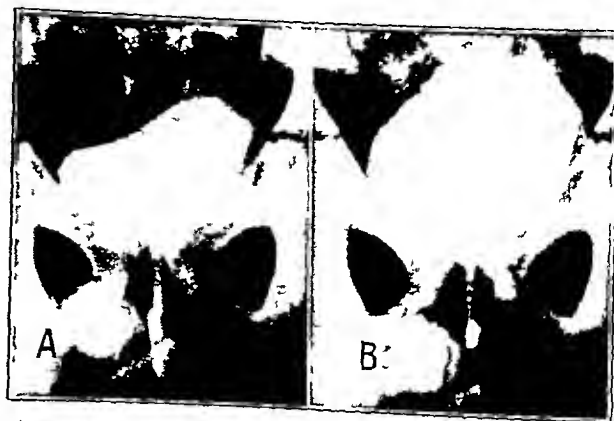


Fig. 2 (S. S., a boy aged 10 enuretic)—The bladder is hypotonic, slightly enlarged and irregular in contour. The base of the bladder is low and pouched. Note the concave defect at the upper border of the bladder (A) which is due to incomplete filling. The pressure is produced by the sigmoid and is often associated with improper bowel habits.

as being punishment for the enuresis." Such a policy if applied to other symptoms becomes absurd.

The Children's Bureau<sup>2</sup> of the U. S. Department of Labor has made the following recommendation: "If a child as old as 3 years has the habit of wetting the bed, consult the doctor and have him give the child a careful examination." This age is too young and we agree with Campbell that children under 4 years of age seldom require urologic examination solely because of enuresis.

How far shall this examination go to rule out organic disease? Certainly a general physical examination and urine analysis are indicated. The bladder and urethra should be investigated, but cystourethroscopy, which is customarily employed, is not simple and there are many factors which deter its wider use. Endoscopy in children usually requires an anesthetic, and there is reluctance among parents and physicians to submit the child to what they consider a major procedure. The examination necessitates special instruments and an observer with experience in pediatric urology. These facilities are often not available.

Cystourethrography is unhampered by these difficulties and is adequate for the routine investigation of enuretic patients. This is a simple office or dispensary procedure which can be carried out without a general anesthetic. It is safe and relatively free from reaction. The size, shape, position and abnormalities of the bladder and urethra are accurately visualized, and progression or retrogression of lesions can be observed and compared.

#### INDICATIONS FOR CYSTOGRAPHY AND URETHROGRAPHY IN THE ENURETIC

Enuresis is often empirically labeled as functional, and we believe this practice is contrary to the welfare of the patient. Every case of persistent enuresis should have a cystogram and urethrogram to rule out organic disease. This simple and safe technique should induce a

<sup>2</sup> Levine M. Psychotherapy in Medical Practice. New York: Macmillan Company, 1942.

<sup>3</sup> The Child from One to Six. Publication 30. United States Department of Labor, Children's Bureau, 1931.

greater number of physicians to submit children with enuresis to urologic investigation

**Opaque Mediums**—It has been our practice to use a 25 per cent solution of sodium iodide for cystography and Lipiodol or Iodochlorol for urethrography. The



Fig 3 (R. B. a boy aged 6)—Enuresis since birth. The base of the bladder is pouched with a wavy outline of the lower and lateral borders. The changes in the bladder are due to a congenital anomaly and edema secondary to infection.

former solution has given satisfactory results, while the latter has many disadvantages.<sup>4</sup>

In recent months we have employed a new substance called Visco-Rayopake, which is superior to the oils for urethrography and cystography. Rubin<sup>5</sup> previously described the properties of this medium and reported its use for hysterosalpingography. Visco-Rayopake contains 3 per cent of a "viscosity base" (a polymeric form of polyvinyl alcohol) and 50 per cent of an opaque organic chemical (2, 4-dioxo-3-iodo-6-methyl tetrahydropyridine acetic acid) rendered soluble by the addition of 17 per cent diethanolamine.



Fig 4 (W. M. a boy aged 9)—Diurnal and nocturnal enuresis. Large atonic bladder with a tolerance capacity of 350 cc. Neurologic examination was negative. Diagnosis spina bifida occulta with neuromuscular vesical dysfunction.

We have used Visco-Rayopake in over a hundred and twenty-five examinations with excellent visualization of the bladder and urethra.<sup>6</sup> This medium is well tolerated

by children, flows easily and gives a homogeneous shadow with sharp outlines. The opacity can be reduced by diluting the Visco-Rayopake with water. The medium does not break up into globules when mixed with bladder urine (compare figure 1 with figure 9). Instruments and catheters are easily cleansed with warm water following their use. It does not destroy rubber or support bacterial growth. Visco-Rayopake is especially valuable for voiding urethrograms. It can be easily voided in a steady stream and still cast a shadow with sufficient opacity for rapid exposure (fig 5). Visco-Rayopake will be the subject of a more complete report at a later date.

#### CYSTOGRAMS

Cystography is considered a useful diagnostic procedure in adults, but its value in children has not been generally recognized. Campbell<sup>7</sup> emphasized its merits

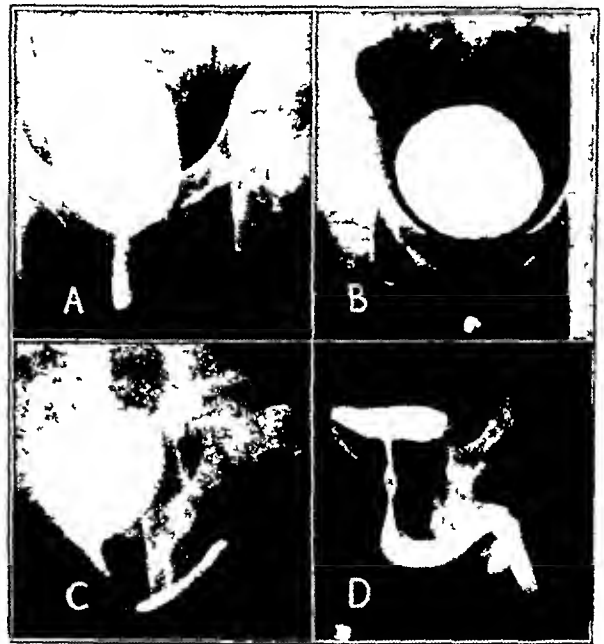


Fig 5 (R. R. a boy aged 12)—Nocturnal enuresis since birth. A voiding cystourethrogram anteroposterior view. B cystogram. C voiding cystourethrogram oblique view. D retrograde urethrogram oblique view. The bladder outline is round and the edges are serrated by trabeculations (B). In the contracting state the bladder elongates vertically and narrows horizontally (A) and the detrusor descends retracting the posterior lip of the vesical neck (C).

when he wrote "properly interpreted these changes in the vesical outline are frequently sufficient to establish the correct diagnosis without further instrumentation." We have followed his cystographic technique.<sup>8</sup> The ease of execution and the informative potentiality make cystography especially useful in the enuretic.

The position of the child's bladder is central and well above the upper border of the symphysis. The normal bladder in the child is elliptic (fig 1) or spherical when completely filled. When incompletely filled it appears flattened on the top (fig 2 A). In the oblique view the cystogram appears elongated in the horizontal diameter. Normally the cystographic outline is smooth. In the presence of chronic infection and obstruction the borders are irregular and the bladder wall is thickened (fig 11).

<sup>6</sup> The contrast substance for this study was supplied by Hoffmann-LaRoche, Inc., Nutley, N. J.

<sup>7</sup> Campbell M. F. *Pediatric Urology*. New York: Macmillan Company, 1937, vol. 1, p. 65.

<sup>8</sup> Campbell M. F. Cystography in Infancy and Childhood. *Am J Dis Child* 39: 386-402 (Feb.) 1930.

<sup>4</sup> Hyams J. A., Kenyon H. R. and Kramer S. E. Urethrocytography in the Male. *J. A. M. A.* 101: 2030-2035 (Dec. 23) 1933.  
<sup>5</sup> Rubin I. C. A New Soluble Viscous Contrast Medium for Hysterosalpingography. *J. Mount Sinai Hosp.* 7: 479-485 1941.

The appearance of sacculations or diverticula is similar to those in the adult bladder.

Increased bladder capacity is a common finding in the enuretic. The atonicity is due to decompensation of the bladder musculature secondary to urethral obstruction or to defective nervous conduction, which causes sympathetic imbalance or diminished sensation to distention (somatic disturbances). The cystogram reveals an immense bladder shadow which is smooth and regular in outline and fills the entire pelvis (fig 4). A dilated bladder is of especial importance in spina bifida occulta. Bohart<sup>9</sup> found 161 cases of spina bifida occulta in 931 symptomless spines, indicating that it is not a disease in itself but a normal deviation of the spinal column. The condition is of clinical importance only if it is associated with changes in the roots from the sacro-lumbar cord. A cystogram and urethrogram will determine whether there is any vesical involvement.

Diminished bladder capacity (hypertonicity) is due to vesical and urethral inflammation or to parasympathetic imbalance. The bladder shadow is small and irregular

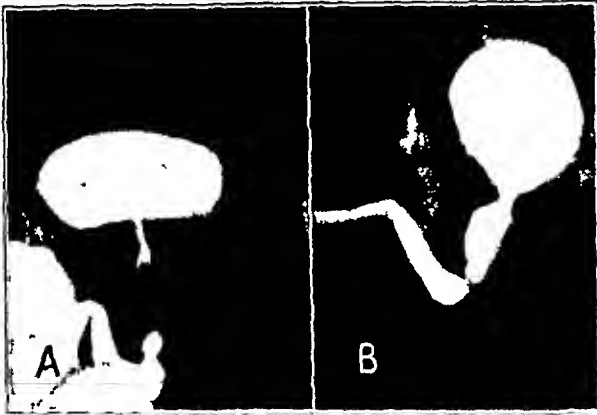


Fig 6 (R I a boy aged 4½) —A retrograde urethrogram. B voiding urethrogram. Enuresis since birth. There is a constriction of the bulbous urethra, constriction of the vesical neck and collicular edema. Note the proximal dilatation of the prostatic urethra (B) and the distal distention of the penile urethra (A).

in outline. Cystography in these irritable bladders may be unsatisfactory because of a rapid expulsion of the medium even when a small amount is used. We have observed severe bladder spasm and leakage around the catheter after the injection of less than 50 cc.

Normally the bladder base is curved with the convexity downward. Vesical neck hypertrophy or prostatic enlargement may protrude into the bladder and distort the base, so that there is a concavity downward (fig 7). Pouching is sometimes observed at the base, resembling a small cystocele (fig 3). The vesical outlet is not seen on the cystogram, but if the internal sphincter is paralyzed the opaque medium leaks into the posterior urethra, giving the appearance of a smooth funnel.

Ureteral reflux is not often observed in enuretic patients but, when present, indicates definite pathologic change. In these cases studies of the upper urinary tract are indicated.

#### URETHROGRAMS

Urethrography in children has been neglected. A careful search of the urologic and roentgenologic literature did not reveal a single report which completely covered this subject. The interpretation of urethrograms in children is too extensive for this paper and will

be presented at a later date. However sufficient description and explanation is introduced to appraise the value of the procedure in the enuretic. Correct interpretation of urethrograms requires correlation with cystoscopic operative and postmortem findings. When sufficient

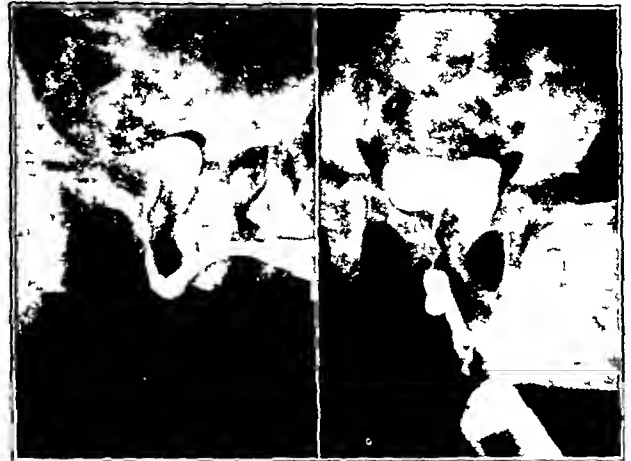


Fig 7 (B C a boy aged 5) —Enuresis since birth. Note the elevation of the bladder base, the spasticity of the external sphincter and the enlarged rounded collicular shadow bifurcating the urethra.

experience has been gained, urethrography will be found as valuable for the study of lower urinary tract disease as pyelography is for the diagnosis of renal pathologic conditions. The technic of urethrography and a specially designed instrument to facilitate this procedure have been previously reported by one of us.<sup>10</sup>

**Urethral Obstruction**—Urethrography is especially valuable to demonstrate strictures of the anterior urethra in children. The small caliber of the canal makes routine urethroscopy difficult and unsatisfactory. On the urethrogram the constriction appears as a narrowing in the continuity of the canal. The secondary changes are also dramatically pictured. On the voiding



Fig 8 (R M a boy aged 6) —Diurnal and nocturnal enuresis. Patient has spina bifida occulta. Urethrogram reveals multiple organic lesions. There are two strictures in the glandular urethra. One is acquired and is at the meatus. The other is a congenital narrowing in the region of the fossa navicularis. Both the internal and the external sphincters are relaxed. The verumontanum is absent.

urethrogram a ballooning of the canal is observed proximal to the stricture visualizing the distention and stasis caused by the obstruction. On the retrograde urethro-

gram the stricture impedes the flow of the injected medium and may produce mechanical distention distal to the obstruction (fig 6)

Stenosis of the glandular urethra is a common finding in the enuretic. Stockwell and Smith<sup>11</sup> found an incidence of 23 per cent and Winsbury-White<sup>12</sup> 27 per cent. The constriction is of two types on the urethrogram: one type is of the pinpoint variety and is a simple cylindric stricture of the lips of the meatus. It is due to scarification secondary to a meatitis and is most common in the circumcised patient. The other type is a uniform narrowing extending from the meatus through the entire portion of the glandular urethra and is congenital in origin (fig 8). Occasionally the stenosis is so tight that filiform dilation is necessary before a catheter can be passed. On the voiding urethrogram narrowing of the stream at the stricture can be observed.

Local congenital malformations and acquired obstructions of the vesical outlet are types of deformities too often unrecognized in enuretic children. Hypertrophy of the internal sphincter (fig 9), contracture of the vesical neck (fig 6), median bar and congenital valves can be diagnosed by urethrography. These lesions disturb the architecture of the posterior urethra in relation to the bladder base. In hypertrophy of the internal sphincter the supracollicular portion of the urethra is elongated and compressed, forming a collar-like structure which by projecting into the bladder concaves the outline of the base. In contracture of the vesical neck the region of the internal sphincter is shortened and

neck. Median bar hypertrophy is best recognized in the oblique views and appears as a notching and elevation of the posterior lip at the urethrovessical junction.

Congenital valves of the posterior urethra occur in enuretic patients. The symptoms are usually those of



Fig 10 (U. M., a boy aged 9).—The base of the bladder is flattened and the vesical neck is constricted. The collicular shadow is bifurcated. The external sphincter is spastic and there is a meatal stenosis.

obstruction, but enuresis may be the chief complaint. Campbell operated "on 9 boys whose valves were discovered during a urological examination for which persistent enuresis was the indication." Early urethrographic examination is essential, since the prognosis is dependent on the removal of obstruction before back pressure has produced irreversible renal damage. On the urethrogram a typical supracollicular funnel shaped dilatation and bifurcation of the canal is observed. The effects of back pressure are evident above the obstruction. A discussion of the cystoscopic, postmortem and urethrographic findings in congenital valves has been previously reported by one of us.<sup>13</sup>

Abnormalities of the verumontanum occur in children and may often cause enuresis. Hypertrophy of the verumontanum may be congenital in origin and cause symptoms of obstruction. A congestive type of enlargement is seen in chronic masturbators. Verumontanitis due to infection is more apt to occur in the older enuretic patients and is associated with prostatitis (fig 7). The normal verumontanum projects into the lumen of the posterior urethra and appears in the contrast shadow as an elliptic area of diminished density (fig 1). With disease, this collicular defect is two to three times normal in size, it is round or pyriform and the outline is irregular (fig 10). Polyps, cysts (fig 9) and edema cause characteristic distortions of the shadow. Occasionally the verumontanum is absent on the urethrogram (fig 8). This may be a congenital anomaly or due to hormonal deficiency. These patients should be examined from an endocrinologic point of view.

**Infections**—Chronic and congestive prostatitis is recognized by characteristic changes in the posterior urethra (fig 12). On the retrograde urethrogram there can be noted compression and narrowing of the canal, enlargement of the verumontanum and elevation of the bladder base. In the presence of urethritis the outline of the anterior urethra is wavy, the channel is



Fig 9 (D. L., a youth aged 18).—Urethrogram with 28 per cent lipiodol. Enuresis since birth. Arrow points to large cyst at the verumontanum. The vesical neck is elongated and tight and the external sphincter spastic. Enuresis was cured by endoscopic fulguration and urethral dilation.

constricted and the bladder base is flattened. On the voiding urethrogram the supracollicular portion of the urethra fails to dilate, owing to the rigidity of the vesical

<sup>11</sup> Stockwell, A. L. and Smith, C. K. Enuresis. *Am J Dis Child* 59:1013-1033 (May) 1940.

<sup>12</sup> Winsbury-White, H. P. A Study of Three Hundred and Ten Cases of Enuresis Treated by Urethral Dilation. *Brit J Urol* 13:149-162, 1941.

<sup>13</sup> Derow, H. A. and Brodny, M. L. Congenital Posterior Urethral Valve Causing Renal Rickets. *New England J Med* 221:685-690, 1939.

narrower than normal and the external sphincter may be spastic. On the voiding urethrogram there is noted rigidity of the lumen of the posterior urethra.

**Neuromuscular Dysfunction**—Enuresis is often associated with imbalance of the detrusor and sphincteric musculature of the bladder. The etiology of this dysfunction is diagnosed by correlation with concomitant neurologic signs and symptoms. However, in many enuretic patients the disturbances of vesical innervation are the only evidence of a neuromuscular disease. Therefore normal neurologic findings in a child do not eliminate the possibility of neuromuscular uropathy.

The vesical dysfunction results from either congenital or acquired lesions of the spinal cord or peripheral nerves. Roentgenologic examination can disclose which muscular elements of the bladder or urethra are involved and whether they are spastic or parietic. The secondary changes due to infection and back pressure can also be observed.

The urethrogram visualizes the state and tone of the vesical sphincters. A spastic internal sphincter causes an hour glass deformity between the urethra and the bladder (fig 10). An atonic internal sphincter appears as a funnel shape dilatation of the supracolicular urethra. When both sphincters are atonic, the normal constrictions at the vesical neck and membranous urethra dilate and the prostatic canal appears as an undifferentiated tube (fig 8).

#### CONCLUSIONS

1 The intellectual, the conditioning, the psychogenic and the physical factors should be investigated in every patient with persistent enuresis over 4 years of age. Several etiologic factors may coexist.



Fig 11 (I. F. a boy aged 10)—Diurnal enuresis. The outline is wavy and scalloped because of trabeculations. The verumontanum is enlarged and edematous. The vesical neck is constricted.

2 The conversion of enuresis to nocturia does not constitute a cure.

3 A general physical and urologic examination is necessary for the diagnosis of organic uropathy in enuretic persons.

4 Cystourethrography should be part of this routine urologic examination.

5 Visco-Rayopaque is a superior contrast medium for cystourethrography.

6 Cystourethrography provides a graphic record of pathologic structure and function of the bladder and urethra.



Fig 12 (J. B. a boy aged 16)—Intermittent enuresis, chronic masturbator for four years. The prostate was large and boggy. The lateral lobes projected into the bladder and compressed the prostatic urethra. The verumontanum was elongated. The external sphincter was spastic.

7 This simple and safe procedure should induce a greater number of physicians and parents to submit enuretic patients to urologic investigation.

#### ABSTRACT OF DISCUSSION

DR. GEORGE H. EWELL, Madison, Wis.—The paper presents a study of many points about the anatomy and physiology of children's bladders about which I was little aware. It calls attention to the fact that there are many different causes of enuresis and that local causes are responsible in the vast majority of them. I believed that enuresis was a behavior problem and that whenever you were consulted by one of these patients you promptly sent him back to the pediatrician, provided, of course, that the urine did not show gross evidence of infection or x-ray examinations did not show those common and gross conditions such as stones, hydronephrosis or other congenital abnormalities. The authors are describing children I have done cystoscopies on a fair number of children with enuresis, both boys and girls. The majority of the cystoscopies that I have made have been on girls, because they are more readily examined. The vast majority of cases of enuresis in girls I have found to be due to inflammatory changes about the bladder neck and in the urethra. I am a believer in Folsom's studies and I approach the subject in the female from that point of view. I know that some of these cases are due to metabolic disturbances and we certainly know that feeble-minded children have enuresis. I have treated feeble-minded patients with enuresis and have relieved them. I believe that if Brodny and his associates and others will continue urologic investigation of cases of enuresis they will put the problem back where it belongs—in the hands of the urologist and not in the hands of the pediatricians or the so-called child guidance clinics.



LIEUTENANT COLONEL DORRIN F. RUDNICK, M. C., U. S. Army. In the Army we do not feel that enuresis is necessarily a habit. It is far more frequently a symptom of an underlying physical or mental condition. We are able to classify most cases in the following groups: (1) organic disease, (2) psychoneurosis, (3) lack of proper training and (4) malingering. We have encountered cases that were a part of a systemic disease such as diabetes insipidus, hyperthyroidism and hypoparathyroidism. These represented a very small percentage and were controlled by treatment directed at the underlying condition. We were especially pleased with the improvement of 1 case under therapy with posterior pituitary injection. Organic lesions of the genitourinary tract have not been encountered as frequently as one would expect. In every case cystoscopy was carefully done and intravenous or retrograde pyelograms made. The lesion that we found consistently present, if any in the genitourinary tract, was an enlarged and sensitive verumontanum. This most frequently was found with a history of masturbation or chronic withdrawal. We feel that masturbation is elaborately indulged in. Whether the edematous, sensitive verumontanum is directly the result of masturbation or withdrawal or not, we are able to say that cauterization has produced a clearing up of the local situation and with its improvement a disappearance of the enuresis. Phimosis of varying degree of severity was encountered but circumcision failed to improve a single case in our series. Excessive acidity of the urine was not frequently found, and its correction was not followed by benefit. Limitation of fluid intake, abolition of fatiguing and exciting factors, position while sleeping and hospitalization have all been repeatedly tried without benefit. Dr. Rose suggested the central character of the stimulation and that it was initiated by a stimulus that resulted when urine arrived in the posterior urethra. This led to his suggestion of the application of perineal pressure. We have tried this in 1 case with good results. However, removal of the pressure after a few nights was followed by recurrence, so apparently a much longer period of reeducation or habit correction will be necessary. Malingering has accounted for a certain number of cases. Incurable enuresis results in a medical discharge from the Army, and each such discharge is usually followed by a series of other cases making their appearance at the clinic in the hopes of likewise getting out. These cases are not too difficult of segregation, however, and firm measures usually result in a rapid and thorough "drying up." The relationship of psychoneurotic and personality defect factors to enuresis is an all important one. Sixty-five per cent of the cases I have seen fall into this group. The cases practically always present a personality problem, unusual shyness or sensitivity, sexual repression or emotional instability. Infantile regression is a terrific problem in the Army, making its appearance in many different forms. The fainting, crying spells and refusal to eat manifested in so many cases is probably a comparable process to enuresis in these young men with personality defect complexes. The stress and strain of adjustment to the Army undoubtedly activates these processes. Adult enuresis is a problem chiefly for the neuropsychiatrist.

DR. REV. VAN DUZEN, Dallas, Texas. I prefer cystoscopy to cystourethrograms. The latter have been inconstant in my hands. I feel that the usual cystoscopy is made too casually. A few years ago it was suggested that enuresis was a problem only for the pediatrician. The experiences of the armed forces has brought it forcibly to our attention that many adults are "bed wetters." I have recently seen a lady of wealth, aged 55, who has been partially incontinent throughout life because she had been told that nothing could be done. Because many feeble-minded patients are "bed wetters," the public has often associated bed wetting with low mentality. This has caused many to conceal the affliction for fear of the added stigma. We have all heard the statements that it would cease at puberty or when sexual relations were experienced. Some cases were cured at puberty or after marriage and were the basis for these conclusions. I am speaking of the persons who asked to consult you after office hours or behind carefully closed doors, the patient who feels it is a disgraceful condition or the one who is threatened with divorce. The recent suggestion of the use of ephedrine sulfate and methyl testosterone should be stressed. Ephedrine sulfate produces an apathy, and the usual stimuli from the bladder fail to produce the normal reflex action and usually

allow the bladder to hold the urine secreted during the night. Many boys have been cured by methyl testosterone. I believe its action is due to engorgement of erectile tissue about the urethra. However, one patient who was decidedly improved by ephedrine sulfate became totally incontinent when methyl testosterone was given and he was very slow to respond to ephedrine when it was resumed. In 1935 I resected the presacral nerve for enuresis, with complete and permanent cure. This has been duplicated in other cases. Presacral neurectomy produces a paralysis of the trigone muscle and these patients have to strain to start the act of urination. This has been sufficient to awaken the patient.

DR. GRAYSON L. CARROLL, St. Louis. The question of enuresis was placed on the program as a result of conversation with medical officers who are in army camps. I was amazed to discover the large amount of enuresis found in these camps. I thought that it was high time that we were finding out something about it, and we as urologists are charged with the responsibility. I found considerable difficulty in having some one write on the subject and to find discussers, because they all frankly admitted that they didn't know enough about it. The contribution of Drs. Brodny and Robins was a splendid one, and I think that out of this discussion will come some constructive ideas.

DR. MEREDITH F. CAMPBELL, New York. We are all agreed that enuresis is a functional condition in at least 95 per cent of the cases. Yet it has been my observation in the study of over 1,500 enuretic children subjected to urologic examination because intensive medical treatment had been ineffectual that organic urologic disease existed in 50 to 60 per cent. The disease is treated on the basis of the demonstrated uropathologic condition. Cystourethrograms effectively illustrate the desirability of carrying out complete urologic examination of enuretic individuals, particularly children, whom three or four months of intensive medical therapy, psychotherapy, gold stars, alarm clocks and atropine fails to cure of enuresis. A physician's son aged 8 years acquired gonorrhea at the age of 2. He had been casually examined by several pediatricians and by eminent urologists. He was said to suffer only a functional condition to be outgrown, but none of these clinicians took the trouble to investigate adequately the boy urologically. A urethrogram beautifully demonstrated the filiform caliber gonorrheal stricture of the bulbous urethra. Simple periodic progressive dilation of the stricture with steel sounds not only cured the enuresis but forestalled subsequent severe back pressure damage of the kidneys. Many cases of so called enuresis will be found on adequate examination to be organic urologic disease. Here the enuresis is merely a symptom, and eradication of the organic disease almost always causes the bed wetting to cease.

DR. M. LEOPOLD BRODNY, Boston. We deliberately refrained from discussing the treatment of enuresis because our subject is primarily a diagnostic problem. A point we wish to emphasize is that the study of an enuretic person demands team work. Our organization is composed of a pediatric psychiatrist, a roentgenologist, a pediatrician and a urologist. We study these patients from four angles—the four factors of continence. Only in this manner can the patient be satisfactorily treated because enuretic persons with organic lesions may also have pronounced emotional disturbances. Consequently the patient may retain his symptom if only the organic condition is corrected. The enuresis remains on a functional basis. As for diabetes, Dr. Joslin informed me that his incidence of enuresis is no greater in the diabetic than it is in the normal child. One of our members inquired about the opaque medium we are using. It is an organic iodide in polyvinyl alcohol and was prepared by Hoffmann-La Roche. It is not yet available for distribution. Rubin has previously reported the substance for use in hysterosalpingography. It has a viscosity very similar to Lipiodol and can be diluted by the addition of water. This characteristic is very valuable for use in children because the viscosity and opacity can be controlled without the use of special oils. It takes a little experience and effort to be able to read urethrograms. However after a period of cystoscopic correlation abnormalities are recognized, and the lesions can be diagnosed directly from the roentgenograms. Some of the lesions observed on the urethrogram cannot be detected by cystoscopy.



THE EFFECT OF PARA-AMINOHIPPURIC  
ACID ON PLASMA CONCENTRATION  
OF PENICILLIN IN MAN

KARL H BEYER, PH D, MD

HARRISON FLIPPIN, MD

W F VERWEY, D Sc

AND

ROLAND WOODWARD, BS

GLENOLDEN, PA

Since the original announcement by Beyer, Peters, Woodward, Verwey and Mattis<sup>1</sup> three reports have been submitted for publication or appear in the literature to the effect that when sodium para-aminohippurate and penicillin were administered simultaneously the former compound competed with penicillin for the same renal tubular excretory mechanism. By doing so the rate of renal elimination of penicillin was much reduced, thereby slowing considerably the rate of fall of the plasma concentration of the antibiotic agent. It was shown further that, in experiments wherein penicillin was administered continuously at a given rate for as long as forty-eight to fifty-four hours, raising or lowering the plasma concentration of para-aminohippuric acid similarly administered produced a concomitant elevation or fall of the plasma concentration of penicillin. A combination of these agents was administered continuously by venoclysis for forty-eight hours to dogs without producing functional or histomorphologic changes attributable to the two agents.<sup>3</sup> Finally, it was shown that the acute toxicity of sodium para-aminohippurate was very low, being less than for sodium hippurate a metabolite.<sup>4</sup>

In view of the widespread interest in this research and the implications of the possible therapeutic efficacy of the combination, it was decided to obtain data on a few patients to determine whether the simultaneous administration of para-aminohippuric acid with penicillin did produce an elevated plasma concentration of the antibiotic agent. Such a program would also permit us to study the patients carefully for any untoward reactions to the therapy so that we might be able to call these effects to the attention of other investigators.

## METHODS

Penicillin was administered continuously by venoclysis at a constant unitage and rate over a period of thirty hours. At the onset the patients were given a priming intravenous dose of 10,000 units of penicillin sodium and were then connected immediately to the "drip" infusion outfit. At the end of six hours the infusion solution was changed from penicillin in 5 per cent glucose to penicillin in 6 per cent sodium para-aminohippurate. At that time the tube was clamped

and 50 cc of 6 per cent para-aminohippuric acid was injected intravenously through the rubber tubing just above the needle adapter. This usually was injected over a period of ten minutes. The tube was then unclamped and the infusion was adjusted to the previous rate. Penicillin in para-aminohippuric acid was administered over a period of twelve hours, at the end of which time the infusion solution was changed back to penicillin in 5 per cent glucose for the remaining twelve hours of the experiment. Thus there were three phases to the test: an initial control (six hour) phase wherein penicillin was administered in glucose solution, a second (twelve hour) phase wherein penicillin was administered in a 6 per cent solution of sodium para-aminohippurate and a third or control (twelve hour) phase during which penicillin was administered again in glucose solution.

A blood sample was taken at the beginning of the test for control hematologic tests, at four and six hours in the first phase of the experiment at six and twelve hours in the para-aminohippuric acid phase and at six and twelve hours in the third period. The patients and the physical equipment were observed continuously by one or the other of the first two authors during the thirty-hour periods.

The penicillin plasma assays were performed by a modification of the Rammekamp method.<sup>5</sup> In the assays on the first 5 patients horse erythrocytes were used as the test object. Since human plasma contains lysins for horse erythrocytes, assays on plasma from the first 5 patients were complicated in the lower dilutions by spontaneous lysis. However, penicillin end points were determined satisfactorily by the microscopic demonstration of streptococcus multiplication. Human erythrocytes were employed quite satisfactorily in the assays on the last 4 subjects. The method for the determination of para-aminohippuric acid in body fluids was simply a modification of the conventional Bratton and Marshall procedure for sulfonamides and has been described in detail elsewhere.<sup>6</sup>

Patients were selected at random without regard to age, sex, severity of illness or diagnosis, except that it seemed best not to complicate the results by using any patient with primarily a renal disease. While the condition of the patients was carefully followed, we shall not attempt to evaluate the experiments in terms of therapeutic results.

## RESULTS

The information and the results of the tests on 9 patients are summarized in the accompanying table. From these data other information may be calculated. Examination of the table reveals that in every instance the administration of para-aminohippuric acid with penicillin caused at least a twofold increase in plasma concentration of the antibiotic agent. Para-aminohippuric acid was effective in producing this elevation at its lowest plasma concentration which obtained in the experiments (7.9 mg per hundred cubic centimeters) but the greatest (over fivefold) accentuation of penicillin plasma concentration was in the case having the highest para-aminohippuric acid plasma concentration (477 to 469 mg per cubic centimeter). Thus there was a definite relationship between the plasma concen-

From the University of Pennsylvania Hospital Philadelphia and the Departments of Pharmacology and Bacteriology the Medical Research Division Sharp and Dohme Inc Glenolden Pa

1 Beyer K H Woodward R Peters L Verwey W F and Mattis P A The Prolongation of Penicillin Retention in the Body by Means of Para-Aminohippuric Acid Science 100 107 108 (Aug 4) 1944

2 Beyer K H Peters L Woodward R and Verwey W F The Enhancement of the Physiological Economy of Penicillin in Dogs by the Simultaneous Administration of Para-Aminohippuric Acid II J Pharmacol & Exper Therap to be published

3 Beyer K H Verwey W F Woodward R Peters L and Mattis P A The Enhancement of the Plasma Concentration of Penicillin in Dogs by the Simultaneous Administration of Para-Aminohippuric Acid III Am J M Sc to be published

4 Mattis P A Beyer K H McKinney S M Patch E A and Yu C H I Pharmacologic and Toxicologic Studies on Para-Aminohippuric Acid to be submitted for publication

5 Rammekamp C H A Method for Determining the Concentration of Penicillin in Body Fluids and Exudates Proc Soc Exper Biol & Med 51 95 (Oct) 1942 Beyer Peters Woodward and Verwey

6 Goldring W and Chasis H Hypertension and Hypertensive Disease 1944 New York Commonwealth Fund pp 203 204

tration of para-aminohippuric acid within this range and the amount to which the penicillin level was elevated. A rate of infusion of about 80 mg per kilogram per hour appeared to be adequate to maintain a para-aminohippuric acid plasma concentration of 10 mg per hundred cubic centimeters or over when normal renal function was present.

A combination of circumstances tended to make the basal penicillin plasma concentration of the last 4 patients considerably higher than was anticipated from the earlier experiments in the first 5. These were the greater basal concentrations of penicillin contained in the solutions administered to patients of lighter weight, and certain differences in handling the plasma. However, there can be no doubt as to the quantitative changes within each test reflecting the effect of para-aminohippuric acid administered.

The second patient who received the same amount of para-aminohippuric solution at a rate of injection of 5 cc per minute also defecated within a few minutes after the injection.

After this experience of intestinal and bladder smooth muscle response to the injection it was decided to warm the solutions for the priming doses to body temperature before their administration and to inject the material over a period of ten minutes (5 cc per minute). After the initiation of this procedure there was only 1 patient (E. R.) who had a bowel movement immediately after the injection of para-aminohippuric acid. This patient also had a sensation of warmth during the injection, which promptly subsided following instigation of the penicillin-para-aminohippuric acid "drip." This was the only patient who had any subjective reaction to the injection. In several instances the change to para-

*A Summary of Data Demonstrating the Effect of the Simultaneous Administration of Sodium Para-Aminohippurate (PAH) in Producing an Elevation of the Penicillin Plasma Concentration of Patients*

| Patient *                          |       | W. E. | J. J. | A. W. | S. P. | J. C. | P. D. | B. C. | A. A. | E. R. |
|------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 1st control phase penicillin u/cc  | 4 hr  | 0.00  | 0.041 | 0.00  | 0.00  | 0.02  | 0.16  | 0.16  | 0.16  | 0.12  |
|                                    | 6 hr  | 0.00  | 0.041 | 0.00  | 0.00  | 0.07  | 0.16  | 0.16  | 0.12  | 0.04  |
| PAH phase penicillin u/cc          | 6 hr  | 0.053 | 0.124 | 0.00  | 0.00  | 0.092 | 0.328 | 0.494 | 0.328 | 0.654 |
|                                    | 12 hr | 0.042 | 0.124 | 0.041 | 0.041 | 0.041 | 0.474 | 0.678 | 0.332 | 0.663 |
| 2d control phase penicillin u/cc   | 6 hr  | 0.00  | 0.041 | 0.00  | 0.00  | 0.02  | 0.087 | 0.332 | 0.163 | 0.164 |
|                                    | 12 hr | 0.00  | 0.041 | 0.070 | 0.020 | 0.00  | 0.082 | 0.083 | 0.163 | 0.244 |
| PAH concentration mg/100 cc plasma | 6 hr  | 17.0  | 9.1   | 10.1  | 44.9  | 20.5  | 26.7  | 42.0  | 20.0  | 47.7  |
|                                    | 12 hr | 9.8   | 7.9   | 11.0  | 1.0   | 27.2  | 17.4  | 46.4  | 31.9  | 46.9  |
|                                    | 18 hr |       |       |       |       |       | 0.2   | 1.2   | 0.5   | 0.4   |
| PAH infusion Gm/Kg/hr              |       | 0.073 | 0.185 | 0.095 | 0.123 | 0.097 | 0.143 | 0.168 | 0.137 | 0.155 |
| Penicillin infusion u/Kg/hr        |       | 42.0  | 63.0  | 55.5  | 74.5  | 56.5  | 172.0 | 159.0 | 159.0 | 185.0 |
| Rate of infusion cc/min            |       | 1.4   | 2.05  | 1.6   | 2.08  | 2.10  | 1.8   | 2.2   | 1.7   | 1.9   |
| Weight of patient Kg               |       | 73.3  | 70.0  | 67.8  | 60.6  | 81.0  | 43.2  | 50.0  | 43.7  | 43.2  |
| Age years                          |       | 58    | 37    | 35    | 37    | 41    | 14    | 69    | 38    | 53    |
| Sex                                |       | ♂     | ♂     | ♂     | ♂     | ♂     | ♂     | ♂     | ♀     | ♀     |
| Race                               |       | White | Negro | Negro | White | White | Negro | White | White | Negro |

\* Diagnosis: W. E. atypical pneumonia; J. J. asthma; A. W. tuberculous peritonitis; S. P. Hodgkin's disease; on Oct. January 1944; J. C. acute pharyngitis; bronchopneumonia; P. D. infectious mononucleosis; B. C. periostitis of femur; A. A. asthma; E. R. lobar pneumonia.

There was no outstanding difference in response due to age, sex, or race. It was not possible in so small a number of patients to note any difference in penicillin response to para-aminohippuric acid attributable to the nature or severity of the diseases, though these two factors varied widely in this series.

*Pharmacodynamic Effects of Sodium Para-Aminohippurate*—These should more properly be considered in two categories: (1) those effects attending the injection of the priming doses and (2) those occurring during or following the para-aminohippuric acid infusions.

The purpose of the initial intravenous administration of 50 cc of 6 per cent para-aminohippuric acid was to saturate the patients quickly and to attain satisfactory plasma concentrations which might be maintained by the subsequent infusions. The administration of the 50 cc volume of material over a period of five minutes to the first patient was followed immediately by defecation and micturition but was attended by no noticeable subjective manifestations. Since none of the patients appreciated that they were receiving anything besides solutions of penicillin, the psychic element in the subjective response to para-aminohippuric acid was mini-

aminohippuric acid, including the priming dose, was made at night during the patients' natural sleep without their knowledge of the procedure.

There was no instance of an objective or subjective reaction to the combined penicillin and sodium para-aminohippuric infusion either during or for several days following the twelve hour infusions other than what has been described to occur in certain instances following the initial intravenous injections. How much of this smooth muscle response following the priming dose was due to a reflex response initiated by the local cooling of the vein for five to ten minutes and how much could be ascribed definitely to para-aminohippuric acid was not certain. However, the sign which has been described was neither serious nor disagreeable. The combination of penicillin and para-aminohippuric acid therapy cannot be said to have influenced deleteriously the physical condition, the blood picture or the illness of any of the patients.

The patients were permitted to continue their regular therapy, to eat their customary hospital diet and to drink water or fruit juice whenever they liked. It should be pointed out that no source of electrolyte other than the para-aminohippuric acid, which has been

adjusted with sodium hydroxide to  $pH$  7.0, was used in the infusion solutions and no edema was noted in any of the patients

## COMMENT

The results of this research are presented herein simply to demonstrate that in man the intravenous administration of sodium para-aminohippurate is capable of elevating several-fold the plasma concentration of penicillin over that which obtains when the latter agent is administered by venoclysis in glucose solution. This was in effect a confirmation in the human being of what has already been found to obtain in dogs. For this purpose only a small number of patients was deemed necessary.

It was found that only when para-aminohippuric acid was administered rapidly at room temperature was there noted any objective or subjective reaction to the drug. The only noteworthy untoward effect occurred following the administration of certain of the priming doses of para-aminohippuric acid, and this was a contraction of the smooth musculature of the large intestine and bladder, unattended by pain or discomfort. The infusion of para-aminohippuric acid and penicillin continuously for twelve hours produced no discernible deleterious effects on the patients who manifested a number of unrelated disease entities.

It would appear from this and previous animal experimentation that, if attention is given to rate of fluid administration and electrolyte balance, one should anticipate no serious consequences to the administration of penicillin in such a solution of sodium para-aminohippurate over a much more extended period of time. It seems reasonable at this stage of our knowledge to suggest that the plasma concentration of para-aminohippuric acid be checked fairly frequently to make sure that the function of kidneys known to be diseased is sufficient to allow excretion of the drug rapidly enough to prevent the blood level of para-aminohippuric acid from becoming excessive. It is probable that should such a circumstance be found to occur the effectiveness of this combination might be greater than ordinarily would be expected at lower plasma concentrations of para-aminohippuric acid than those used in this work. In making this final suggestion we have in mind the observations of Rammelkamp and Keefer<sup>7</sup> that more effective plasma concentrations of penicillin were found to be present in patients who had known renal involvement. This can be interpreted in the light of recent work<sup>8</sup> as probably being due to renal damage wherein there exists a decreased transport capacity of the tubular excretory mechanism.

## CONCLUSIONS

In human beings, as in dogs, one can either effect a considerable economy of penicillin or maintain plasma concentrations of the antibiotic agent not heretofore practicable when penicillin together with sodium para-aminohippurate is administered continuously by venoclysis. Very few secondary effects have been observed to attend the combined use of these compounds in this study.

THE MEDICAL MANAGEMENT OF  
ULCERATIVE COLITIS

J. ARNOLD BARGEN, M.D.

ROCHESTER, MINN.

There are many different types of ulcerative colitis. All forms of ulcerative colitis assume in their very nature the status of chronic disease. Hence the term "chronic ulcerative colitis" is best used to denote general clinicopathologic syndromes rather than to designate one of the several specific disease entities in which these syndromes are present. In medical practice it becomes necessary to study chronic ulcerative colitis according to etiologic types, and the first and most fundamental clinical effort should be directed at determining the specific etiologic factor responsible for the development of the syndrome in a given case. The infection may be caused by one or more of several bacteria or animal parasites, in association with certain dietary and constitutional deficiencies, or by other conditions, some of them still unknown.

## STREPTOCOCCIC ULCERATIVE COLITIS

The most common condition of the group involving primarily the large intestine is that commonly referred to as "nonspecific" or "idiopathic" ulcerative colitis. If physicians using the term would apply it to a single disease entity, well and good, but unfortunately a variety of ulcerative intestinal conditions are included under this designation. In fact, some writers include under it all cases of ulcerative colitis which are not of amebic or tuberculous origin. Consequently the term becomes no longer tenable. The terms "colitis gravis" and "thrombo-ulcerative colitis" are descriptive of the serious nature of the disease and its pathologic inception and go far in depicting a disease entity. However, since in this paper I shall aim to give definite status to each form of ulcerative colitis I shall refer to this type as streptococcic ulcerative colitis.

This disease has characteristic pathologic manifestations and hence typical proctoscopic and roentgenologic features. Its lesions begin in the most distal segment of the rectum, just above the anal canal. Diffuseness of involvement of the bowel is its pathognomonic feature. Whether 1 inch of the lower part of the rectum or 5 feet of bowel are involved, the involved segment always is affected in its entirety, its entire circumference and the deeper layers of the wall and the mucosa secondarily. This gives the granular, easily bleeding mucous membrane so characteristic of this lesion. The disease tends to spread upward until the entire colon, and even the lower part of the ileum in the late stages of the disease, become involved. Since it is primarily a disease of the intestinal wall, a very characteristic roentgenologic picture develops. The bowel becomes diffusely narrowed, haustral markings are erased, the flexures and curves become more angulated than those of the normal bowel and the result is a smooth tube. In this, streptococcic ulcerative colitis differs from all other forms of ulcerative intestinal disease, except perhaps regional enteritis when it is confined to the distal portion of the ileum. The latter condition has, however, many features to distinguish it from streptococcic ulcerative colitis. Because of the

<sup>7</sup> Rammelkamp E. H. and Keefer C. S. The Absorption Excretion and Distribution of Penicillin. *J. Clin. Investigation* 22: 423 (May) 1943.

<sup>8</sup> Earle D. P., Tiggart J. V. and Shinnon J. A. Glomerulonephritis. A Survey of the Functional Organization of the Kidney in Various Stages of Diffuse Glomerulonephritis. *J. Clin. Investigation* 23: 119-127 (Jan) 1944. Smith H. W., Linkelsheim N. and Aluminosa L. The Renal Clearances of Substituted Hippuric Acid Derivatives and Other Aromatic Acids in Dog and Man to be submitted for publication. Goldring and Chasis.<sup>9</sup>

From the Division of Medicine, Mayo Clinic.  
Read before the joint meeting of the Section on Surgery, General and Abdominal, and the Section on Gastro-Enterology and Proctology at the Ninety Fourth Annual Session of the American Medical Association, Chicago, June 16, 1944.

relatively high incidence of the streptococcic form of ulcerative colitis and because of the consistency with which its clinical, proctoscopic and roentgenologic manifestations conform to a certain pattern, I am inclined to use this type of ulcerative colitis as a norm and to describe other types chiefly by noting in what respects they differ from it

This form of ulcerative colitis manifests itself in a variety of ways, but in general the clinical manifestations follow one of three general courses. When the lesions are limited to the lower segments of the large intestine, particularly the rectum and rectosigmoid, the onset of symptoms can be described as insidious. The patient may have normal motions of the bowel but in addition may pass two or three or many bloody, purulent rectal discharges. He may not have any other important systemic symptoms except that he will gradually begin to speak of not feeling well. His complaint of not feeling up to par may increase gradually as the number of rectal discharges increases and ultimately a mild form of diarrhea may develop.

The second common onset may be classified by saying that the symptoms are severe. The patient may start rather suddenly with bloody diarrhea, low grade fever and gradual loss of appetite and with them loss of weight and all the concomitants of a moderately severe illness. All the symptoms may start in a fulminating manner with an onset almost like that of lobar pneumonia or other similar serious illness. There will be a high fever, massive discharges of bloody material from the rectum, great prostration and rapid depletion.

A patient's symptoms may remain in the insidious form for months or years, and then at the time of an infection of the upper part of the respiratory tract some other intercurrent illness or perhaps some severe nervous trauma there may be a sudden exacerbation of the disease and a change to a severe or even the fulminating form.

The question is often raised whether these are different diseases or stages of the same disease. Experience seems to indicate that these are stages of the same disease attacking patients in various ways. Thus one must be ever on the alert for the occurrence of this disease in these several forms so that it may be distinguished carefully from the types of colitis which are to be discussed presently.

The treatment of this well defined entity is not as satisfactory as its clinical and pathologic picture might suggest. Nevertheless, if certain basic principles of therapy are followed the end results will usually be very gratifying. The disease is of the nature of a chronic destructive infection and so an adequate rest program must be devised. This may not necessarily mean rest in bed, for in the case of the milder types, in which the infection is confined to the distal segments of the large intestine, rest in bed would hardly be wise. Furthermore, the dictum that "disease below the diaphragm makes for pessimism" is well illustrated in this condition and therefore restful relaxation or a restful recreation is often more valuable than complete physical rest. However, when the disease advances to more proximal segments of the bowel so that diarrhea is severe, total body rest may be indicated. Reduction of intestinal peristalsis by any available means must be considered. Although minimal amounts of opium and its derivatives are indicated in selected cases, other sedative preparations and powders acting as adsorbents

will often do much to allay intestinal peristalsis and thus create intestinal rest.

The second important measure of therapy is to improve bodily resistance to a severe infection and to replace the tremendous losses of food, especially proteins and vitamins, sustained in an active diarrhea. Thus a diet rich in calories, proteins and vitamins and low in residue is desired, however, it may be necessary to approach this very gradually, because during the fulminating stages of the disease it is often necessary to withhold food by mouth entirely. It may be necessary to begin by feeding perorally, gradually increasing the food intake very cautiously until finally in the more chronic stages of the disease a diet based on the foregoing principles and containing well over 100 Gm of protein and extra amounts of vitamins is allowed.

Further protection against streptococcic ulcerative colitis is achieved by the cautious administration of an antistreptococcus vaccine. This can be given in increasing amounts, the injections being maintained always under the point of any local or systemic reaction.

Since most of these patients will come under the physician's observation after there has been considerable loss of blood, anemia will almost invariably be present and may reach profound degrees, and so the fourth method of combating the condition will be the administration of repeated blood transfusions. The average patient will tolerate a series of small transfusions, for example, 200 to 300 cc of blood, better than the larger amounts of blood commonly given, that is, 500 cc. The various preparations of iron commonly administered to patients suffering from the hypochromic type of anemia are so often intestinal irritants that, when used, they should be given in minimal amounts and administered with great caution.

Various drugs of the sulfonamide series such as azosulfamide, succinylsulfathiazole, sulfaguanidine and sulfathalidine have had ample trial in combating the active stages of streptococcic ulcerative colitis. So far, azosulfamide seems to be the drug of choice of this series for this type of colitis. The average amounts administered may range from 50 to 120 grams (32 to 8 Gm), given in divided doses daily.

Penicillin has not been given an adequate trial in the treatment of streptococcic ulcerative colitis nor is it reasonable to expect this substance to affect more than the severe septic phases of this disease.

The removal of foci of infection such as obvious infections in the tonsils and teeth is of prime importance in combating this infection. Many other measures will come into play in the management of the individual cases of this form of colitis.

#### TUBERCULOUS ULCERATIVE COLITIS

Although infection of the intestine by *Mycobacterium tuberculosis* is primarily of the small intestine, it will commonly involve both small and large intestine, and some recent evidence tends to substantiate the thought that primary tuberculosis of the large intestine may occur. In the average case tuberculous ileocolitis is secondary to tuberculosis of the lungs or tuberculosis elsewhere in the body. The ulcers of this disease will be distributed irregularly and associated with lesions visible on the serous surface of the bowel and with milary tubercles. The infection will commonly attack the ileocecal coil and only in the late stages will the lesions progress sufficiently caudad to be visible through the sigmoidoscope. Thus the roentgenologic examinations will be the essential diagnostic examinations and

will be featured by characteristic irritability with rapid emptying and filling of the ileocecal region, and great irregularity of the intestinal lesions will be observed in the roentgenogram. The smooth contour of the intestinal wall so commonly seen in cases of streptococcal colitis is not present in tuberculous ileocolitis because the disease involves more the mucosa than the wall of the bowel.

Although some chemotherapeutic agents related to the sulfonamide compounds, such as promin and promazole, bid fair to have value in the management of this disease, the accepted treatment is still adequate care in a sanatorium, this to include carefully regulated sunbaths, a high caloric diet including especially large amounts of vitamin C in the form of such substances as tomato juice and a properly planned program of rest. Pneumoperitoneum and oxygenperitoneum have been found helpful in some cases. Roentgen therapy also has its advocates.

#### ULCERATIVE COLITIS DUE TO THE VIRUS OF VENEREAL LYMPHOGRANULOMA

A third form of ulcerative colitis in which the lesions are limited to the large intestine is that caused by the virus of venereal lymphogranuloma. Here again the lesions start in the rectum and distal segments of the large intestine. The disease is also of the wall of the bowel but involves not only the wall but the lymphatic structures around it and so there develops a condition in which a stiff tube having the feel and giving obviously the appearance through the proctoscope of perirectal inflammation exists. There may be multiple small sinuses from the mucous membrane to the deeper structures and so a rather definite proctoscopic and roentgenologic picture results. The disease will be limited to the rectum and rectosigmoid structures and the normal bowel will be reached much more abruptly than in the streptococcal variety. Almost invariably the patient will feel generally well and his complaints will be largely in reference to the local rectal condition. The diagnosis in this type of case will depend largely on the history of previous venereal infection, possibly the presence of buboes and among women very commonly the presence of preceding vulval lesions. The Frei reaction will be positive. But even if these conditions exist the diagnosis of colitis due to the virus of venereal lymphogranuloma is not tenable if characteristic lesions of the rectum do not exist.

It used to be said that "when a patient once has an infection by the virus of lymphopathia venereum he will always die with it but never from it." The advent of the sulfonamide compounds may well change this dictum. Sulfathiazole, succinylsulfathiazole and sulfaguanidine have been particularly efficacious in the treatment of this infection. The latter two because of their lack of toxicity and minimal systemic absorption have been particularly useful since they can be administered in fairly large doses over a long period. Ten to 15 Gm. of one of the drugs has been administered daily for weeks to several months in selected cases, with a gradual reduction of the bloody rectal discharges. The stools have even become soft to formed, approaching normality not only in their consistency but also in their numbers. The intestinal wall has become softer and more pliable and the rectal lumen has gradually enlarged.

#### AMEBIC ULCERATIVE COLITIS

Another type of colitis in which the lesions are limited to the large intestine is that caused by *Endameba histolytica*. Here the lesions are localized pri-

marily to the cecum and possibly the flexures of the large intestine, although the entire large intestine may be involved. If the disease has advanced sufficiently toward the rectum so that lesions are visible in its mucous membrane, they present a very characteristic appearance. The ulcers give the impression of being punched out, with raised edges covered by a fleck of mucus and a hyperemic zone around the individual ulcer. Between the ulcers the mucous membrane is relatively normal. The disease largely affects the mucosa instead of the wall, and there should be little difficulty in distinguishing this type of ulcerative colitis from the streptococcal variety of colitis. Consequently the symptoms are quite at variance with those of the streptococcal variety. Bleeding occurs relatively late in the disease instead of being present as one of the first symptoms. The severe prostration of the fulminating type of ulcerative colitis is observed rarely. The patient is usually in a relatively good condition.

Roentgenologic examinations too show a rather characteristic deformity of the large intestine when the disease is sufficiently advanced. However, even early in the disease there may be the characteristic features in the cecum, namely, some narrowing and irritability when no other colonic lesions exist. With the progress of the disease the cecum becomes coned or narrowed to a point and in the entire ascending colon may be narrowed irregularly. This is not a smooth diffuse narrowing such as one encountered in the streptococcal type of ulcerative colitis. As the rectum is approached there will be less and less roentgenologic evidence of disease except in those cases in which the greatest disease is at the flexures or in unusual segments.

Of all the forms of ulcerative colitis, the amebic is the most amenable to treatment. Without any additional supportive treatment, amebiasis can be controlled or perhaps cured in most instances by the properly timed administration of a suitable combination of preparations of ipecac, arsenic and iodine. A suitable program for the administration of these chemotherapeutic drugs is as follows:  $\frac{3}{4}$  grain (0.043 gm.) of the active principle of ipecac, namely emetine hydrochloride, administered subcutaneously twice daily until 4 grains (0.26 Gm.) of the drug has been given. On the same day in which the emetine is given, 0.25 Gm. of carbarsone should be given three times a day and administered for four days. This is to be followed by 0.25 to 0.5 Gm. of diodoquin for seven days, and this in turn is to be followed by a second course of emetine and carbarsone. A series of stools should be examined after this for the trophozoites or cysts of *Endameba histolytica*.

#### CHRONIC BACILLARY DYSENTERY

There is a form of ulcerative ileocolitis which follows in the wake of severe bacillary dysentery due to one or several of the strains of *Shigella paradysenteriae*. The fact that this condition follows, although very occasionally, an epidemic of acute bacillary dysentery will in itself be suggestive of the diagnosis. However, in the final analysis the diagnosis will depend on the presence in the blood of agglutinins (in significant titer, at least 1:320 or higher) of one or several strains of *Shigella paradysenteriae*. The lesions of this disease will be irregular and disseminated. In the occasional case in which extensive destructive ulcerative disease occurs, secondary invaders may be responsible for the late lesions. When lesions are visible through the sigmoidoscope and irregular as far as size, extent and mucosal appearance are concerned, they are particularly



striking. It has been said that the lesions are characteristic because of their irregular yet extensive distribution. This impression is substantiated by the roentgenologic appearance of the bowel in these cases.

Just as in cases of acute bacillary dysentery, so also in cases of chronic bacillary dysentery the sulfonamide compounds, particularly succinylsulfathiazole and sulfaguanidine, have given very satisfactory results. In mild cases and those caused by organisms of the Sonne type the disease has responded well to large amounts of succinylsulfathiazole. In more severe cases and particularly those caused by the Flexner and Shiga strains of these organisms it has responded better to sulfaguanidine, given again in fairly large doses. Type specific serums and bacteriophages have found little use recently and have been used only in the very severe cases in which every measure of therapy previously found useful has been indicated.

#### ULCERATIVE COLITIS OF UNKNOWN ORIGIN

There still exists a fairly large group of patients who have ulcerative colitis of unknown origin. Those who still cling to the terms "nonspecific" or "idiopathic" might well apply them to these groups of cases, however, the phrase "of unknown origin" can be much more suitably applied.

Here again the ulcerative disease may be extensive, involving long stretches of small and large intestine, or it may involve only the rectum and sigmoid. Whatever segment is involved, the appearance of the lesion is at variance with those of the conditions described having a specific cause and strikingly at variance with the appearance of the bowel in the streptococcic variety of ulcerative colitis. Agglutination of *Shigella paradyserteriae* will be absent. Cultures made from the lesions and examinations of the stools will not be diagnostic. The lesions will be distributed irregularly and tend to resemble those of amebiasis or tuberculosis. Yet, usually one will detect differences. The differences are sometimes hard to describe and it has been said that the ulcers are characteristic by being so uncharacteristic. The same thing will hold true as far as the roentgenologic examination is concerned. This is the group of cases that will particularly tax the physician's ingenuity, and the response to one form of therapy or another will often be minimal.

#### REGIONAL ULCERATIVE COLITIS

Another form of ulcerative colitis which may or may not be of similar origin to the last described has been designated as a regional type of ulcerative colitis. The lesions involve isolated segments of intestine and may involve any segment much in the manner of regional ileitis except that here the site of the disease is the colon. The lesion may be subacute or chronic and usually is quite destructive, but also there may be evidence of hyperplastic changes. Commonly segments of the intestine from 6 to 12 inches long are found to be involved, with perfectly normal bowel distal and proximal to the lesion, and the rectum is never involved. In other words, this segmental type of colitis involves regions of the large intestine above the view of the sigmoidoscope. The wall of the involved segment is also stiff and thickened but the involvement is not as diffuse, regular and smooth as in the streptococcic type of ulcerative colitis. Thus the roentgenologic examination is the most important objective method of establishing a diagnosis.

Usually such a regional type of colitis remains localized to a segment of large intestine for months or years.

Very occasionally, however, it has been known to spread orad and caudad, so that ultimately even the distal portion of the ileum has become involved. The latter has initiated a difficult situation, indeed, and has always brought up the question whether this and so-called regional ileitis may not be the same or closely related conditions. However, the fact that regional ulcerative colitis usually remains localized to the large intestine, whereas regional ileitis commonly spreads from the ileum proximad to involve the jejunum and distad to involve the cecum and ascending colon raises a very definite question of their being separate entities.

In these cases the medical treatment is largely confined to the problem of rehabilitation for future surgical treatment. If the patient has fever and other concomitants of an active infectious disease the preoperative administration of succinylsulfathiazole in large amounts for days or weeks is indicated. If the patient has lost much weight and is anemic, these conditions should be corrected. Every known measure of therapy should be invoked to bring the patient to the best state of nutrition and reduce the infection to a minimum before resection is undertaken.

#### ALLERGIC COLITIS AND AN INTESTINAL DISORDER OF THE NATURE OF A DEFICIENCY SYNDROME

The type of intestinal disorder of the nature of a deficiency syndrome, other than sprue and pellagra, should actually not be discussed here. It is brought up only because there are still some who feel that the deficiency state plays a primary role in some of the types of ulcerative colitis which have been discussed. The history of patients suffering from an intestinal disorder in which a food deficiency is important is usually characteristic. Such persons may have gone for months or years on an inadequate dietary regimen. The result may be atrophy of the intestinal wall. The appearance of the bowel through the sigmoidoscope may suggest diffuse hyperemia. No real ulcers will be present. The roentgenogram may show dilatation of the large intestine with minimal changes of the mucosal pattern in the form of what appears to be a "fuzziness" of the mucous membrane, and in the small intestine a typical pattern of barium puddling and segmentation will be observed.

What has been said about the deficiency syndrome affecting the intestine might also be applied to so-called allergic colitis. Every one will accept the fact that there are patients who exhibit symptoms of intestinal allergy. Few will be impressed by the thought that such allergy is a primary factor in ulcerative intestinal disease. It seems obvious that occasionally in severe cases of intestinal allergy mucosal abrasions may occur, so that ulcers of a transient nature may be present. There is, however, little or no evidence available that these form the basis of a type of ulcerative colitis. It would seem better to consider intestinal allergy as a condition quite apart from the great problem of ulcerative enterocolitis, in the realization that it may play a part in many ulcerative intestinal inflammations but that it is not necessarily causative in any of them.

The treatment of these two conditions would seem obvious.

#### SUMMARY

There are many varieties of ulcerative colitis. It is of the utmost importance that the nature and cause of the disease in a given case be established as nearly as possible. Each form of colitis described has some characteristic features which set it apart from the others.



In the streptococcic variety the diffuseness of involvement and the typical proctoscopic picture together with the finding of the streptococcus are important. In the amebic variety the presence of *Endameba histolytica* is essential. In tuberculous colitis the presence of *Mycobacterium tuberculosis* together with the typical roentgenologic observations is diagnostic. In colitis due to virus of venereal lymphogranuloma the positive Frei reaction and the characteristic appearance of the lesions are essential. In colitis due to *Shigella paradysenteriae*, significant agglutination titer of the blood serum is important. In colitis associated with a deficiency state the history is all important. In so-called allergic colitis the allergic reactions of the patient will be helpful. In the groups of unknown cause and of the regional type, continued and careful study is essential. It is important that cases of the latter types be carefully distinguished from ulcerative colitis of specific cause, for in each type the treatment varies significantly and so one cannot stress too greatly the importance of a careful differential diagnosis.

## INFLAMMATORY LESIONS OF THE COLON

### SURGICAL ASPECT

THOMAS E JONES, M.D.  
CLEVELAND

The generally recognized inflammatory diseases of the colon are appendicitis, tuberculosis, actinomycosis, radiation stricture, lymphogranuloma, chronic ulcerative colitis and diverticulitis. Obviously it is impossible to discuss all of these in any great detail in this short time. Therefore most of the time will be utilized in discussion of the more difficult and distressing ones, namely chronic ulcerative colitis and acute and chronic diverticulitis.

Appendicitis is the most common inflammatory disease of the colon. Certainly, every one agrees that the treatment is surgical—the earlier the better. The optimum time for operation in the delayed case depends on the judgment of the individual surgeon. Yet two things are quite apparent in spite of constant teaching: 1. The diagnosis is not made early enough. 2. The mortality is still too high, chiefly because of delayed recognition. Throughout the United States the mortality is quoted as being between 4.5 and 5 per cent. There is no doubt that the use of sulfonamides has helped to reduce the mortality and especially the morbidity in this disease, but their beneficial value should not lead to any attempt to use them in the so-called early case in preference to surgery.

Owing to public health measures tuberculosis and actinomycosis of the colon are becoming rare. When they occur the cecum is the segment most commonly involved. The diagnosis is generally made by x-ray. The treatment is surgical and involves a right colectomy. The technic should be the one with which one is most adept, namely the one or two stage method with the open or closed anastomosis. I would offer one word of caution. Do not relax your judgment or surgical technic in the hope that sulfonamide will save you. In the past few months reports on the value of penicillin in the treatment of actinomycosis have been rather

encouraging. The disease is chronic and slow, and if recognized a trial with the new medication is certainly indicated before surgery is attempted. At the present time we have under treatment a woman with multiple fistulas into the pelvis, colon and vagina who in a three week period has made excellent progress as evidenced by gain in weight, decreased discharge and normal temperature. The process has been of two years' duration without relief from all other treatments.

Lymphogranuloma chiefly involves the rectum and extends into the sigmoid. The chronic inflammation involves all the coats and produces pain, discharge and stricture. Medical treatment and dilation have failed to cure the disease, and frequently we have resorted to colostomy. Often the patient will improve considerably with a colostomy, but there is still considerable incapacitation from pain and discharge. After considerable experience with this pathologic process Zininger<sup>1</sup> recently reported a series of cases showing that the best results come from abdominoperineal resection of the rectum in two stages with a permanent colostomy.

Radiation stricture of the rectum and sigmoid is always to be considered when a patient complains of bowel trouble following radium and x-ray therapy for carcinoma of the uterus. This may occur months or years after successful therapy and is frequently overlooked (in 1 case eight years). Its recognition is very important because, if it is mistaken for recurrence of cancer and further irradiation is advised, irreparable damage may be caused to normal organs, such as fistula into the bladder or rectum. The rate of recurrence in cancer is so high that almost any abdominal or pelvic pain may quite naturally and logically be attributed to malignant extension or metastasis. Before arriving at this conclusion, thorough sigmoidoscopic and roentgenographic studies should be made to eliminate the possibility of this curable condition.

I have encountered 18 patients with stricture in the small and large intestine, most of whom have been salvaged by recognition and appropriate surgery.

### CHRONIC ULCERATIVE COLITIS

Regardless of the hope offered us for many years by the introduction of scrums, vaccines, diet and sulfonamides, it cannot be said that there is any specific treatment at the present time for chronic ulcerative colitis. Much was hoped from the sulfonamide drugs, and certainly no one prayed for it more than the surgeon. With the failure of one compound another would appear for trial, almost as rapidly as the "one-a-day vitamins." My observation is that the sulfonamides have helped some, but I note that this therapy is not used alone. All other helpful things, diet and so forth, have been used in conjunction, and improvement cannot be attributed solely to specific therapy. We must not lose sight of the fact that the disease varies widely in gravity. It may appear suddenly and its severity be so great that death may occur in a period of a few weeks, or the attack may be less violent with few symptoms despite decided pathologic changes as seen by proctosigmoidoscopy.

The most striking and common clinical characteristic is the tendency to chronicity with recurrent mild to severe exacerbations. One patient may have several recurrences in one year, while another may go five years or longer with freedom from attacks. With this in mind it is readily understood why there exists a

From the Cleveland Clinic.  
Read before the joint meeting of the Section on Surgery, General and Abdominal and the Section on Gastro-Enterology and Proctology at the Ninety-fourth Annual Session of the American Medical Association, Chicago, June 16, 1944.

1 Zininger, M. M. Cancer of Rectum. *Cincinnati J. Med.* 24: 25 (March) 1943.

wide difference of opinion as to the relative merits of various modes of therapy and as to the results obtained by any particular type of treatment. It baffles the surgeon as well as the medical man. How can the surgeon know that colostomy has arrested the process when that particular patient may have had immunity from attack for many years? This might also be true with any new therapeutic agent.

*Pathologic Anatomy*—The disease tends to involve all coats of the bowel. The mucosal surface is denuded to a greater or less extent, and healing results in scar with or without heaping up of mucosal islands, pseudopolyposis, and ultimately stricture. The muscularis becomes thickened and the serosa edematous and injected. Healing of the muscular coat results in fibrosis and narrowing of the lumen of the rectum and colon. These changes alter physiology and result in nutritional deficiency from loss of food and fluids by diarrhea. It may act as a focus of infection, occasionally causing arthritis.

*Complications*—(1) Perforation with general peritonitis or localized abscess with fistula formation (5 per cent), (2) hemorrhage (5 per cent), (3) stricture and narrowing of the lumen, (4) pseudopolyposis with a question of malignant degeneration (1 per cent).

Surgery has a definite place in the treatment. In early cases there is a division of opinion. There is also a division of opinion regarding the acute fulminating variety, if not complicated by hemorrhage. Surgery is definitely indicated for the chronic intractable variety. Cave and Mackie<sup>2</sup> state that when extreme anatomic changes have occurred it is vain to hope for restoration to normal.

Obviously, the only surgical treatment is ileostomy with or without colectomy. After ileostomy most patients improve generally and gain materially in weight but often are annoyed with frequent discharge of mucus and blood by rectum. In these cases it is necessary to do a colectomy. This is not an emergency operation and should be done in two or three stages after the patient is rehabilitated. Even then it has a mortality of 10 to 12 per cent. The optimum time for such a procedure is not less than three months after ileostomy. In a small group of cases (about 5 per cent) this process is limited to one segment of the colon. In such cases resection is advised, using the same technic as for malignant disease. The end results in this group of cases have been very satisfactory.

*Diverticulitis*—In routine examination of the colon one will find about 60 cases of diverticulosis for every thousand cases examined. Of these 60 cases about 8 cases, or approximately 15 per cent, will present complications. I know of no abdominal ailment which calls for more individualization or taxes our surgical ingenuity more than diverticulitis and its complications. For practical discussion diverticulitis may be classified into three groups: (1) diverticulitis with enterospasm, (2) diverticulitis with infiltration and (3) diverticulitis with perforation. Group 1 is the most common of the three groups and is characterized by increasing constipation, change in bowel habits and soreness in the lower part of the abdomen. Frequently an attack may be precipitated by a strong laxative taken for the constipation. There is rarely any elevation of temperature or leukocyte count. In these patients it is possible to palpate a spastic sigmoid which is definitely tender.

The x-ray examination shows a characteristic finding of diverticula with a double saw-tooth appearance of the sigmoid due to spasm of the circular muscle fibers. Treatment in this stage is medical: rest in bed, hot packs, antispasmodics and small doses of phenobarbital. If the process does not subside under this treatment, it may progress to stage 2, namely, diverticulitis with infiltration. X-ray examination shows an increase in the deformity due to inflammation and edema of the bowel wall. The filling defect is quite long. This is a valuable point in differentiating the process from carcinoma, in which the filling defect is limited to a narrower segment. Furthermore, the edema in the bowel wall may close off the ostiums of the diverticula so that they may not fill with barium and consequently are not visualized.

The treatment in stage 2 is medical also until complications arise. Obstruction is the chief complication in this stage. It is due to tremendous thickening in the mesentery and all coats of the bowel. Here clinical judgment alone determines the optimum time for surgical intervention. The duration of the ailment, the general condition of the patient, the degree of distention and the presence or absence of vomiting must all be considered in making the decision. I tend to be conservative. If surgery is indicated in this stage I think it should be limited to a colostomy at some distance above the mass, preferably the transverse colon. This procedure will take care of the emergency, and the process will usually subside. After convalescence, progress studies by sigmoidoscopic and roentgenographic examination will determine the future course. The process may subside entirely so that the colostomy may be closed, but the patient should be encouraged to keep the colostomy for six months to a year to insure complete subsidence.

If the diverticular process is shown by x-ray examination to be limited to a 4 to 6 inch segment, it is wise to consider resection of this segment while the patient has a colostomy. If the process is more extensive, resection may not be feasible, whereupon the patient must be fully informed and must assume part of the risk if he insists on closure of the colostomy. Rigid bowel management should follow closure to prevent further trouble.

In the third stage, diverticulitis with perforation, the perforation may be acute or chronic, and, while fewer cases occur in this group, they present definite difficulties in diagnosis.

In the acute fulminating variety the symptoms are so alarming that it constitutes an emergency, and frequently the diagnosis is not made until after exploration. The preoperative diagnosis is generally acute appendicitis, volvulus or perforation of a viscus. It is not surprising that the diagnosis of acute appendicitis is most commonly made because the involved segment of the sigmoid is frequently in the midline or on the right side. The only responsibility at this time is to save the life of the patient, and, as in any emergency, we must carry out only the simplest surgical procedure, namely incision and drainage. We should not attempt to close the perforated areas with sutures, because they will not hold in the infected edematous wall of the intestine. Furthermore, it is time consuming and traumatizing and may break down protective barriers. Many of these patients die of intestinal obstruction and not of infection, therefore, while the infection may be localizing and may be dealt with later, the use of the Miller-Abbott tube postoperatively is of great value.

<sup>2</sup> Cave H. W. and Mackie T. T. Chronic Ulcerative Colitis. South. M. J. 31: 414 1938.

The judicious use of the sulfonamides intraperitoneally and systemically is valuable. If the surgeon does not see these cases until twelve to twenty-four hours have elapsed, he must use his clinical judgment as to whether operation should be performed immediately or whether he should use symptomatic treatment and wait for localization.

Chronic or, in other words, gradual progressive perforation with formation of a peridiverticular abscess confronts the surgeon with a real problem, from both a diagnostic and a therapeutic standpoint. From the standpoint of differential diagnosis we must consider malignant disease, tubo-ovarian abscess or pathologic conditions of the genitourinary tract when there is frequency of urination and pain referred to the kidney or bladder. In the presence of a diverticular abscess one of the following processes may occur:

- 1 It may perforate into the bowel with discharge of pus.
- 2 It may perforate into the bladder.
- 3 It may perforate into the surrounding tissue and become walled off.
- 4 It may perforate through the pelvic floor and may simulate an ischio-rectal abscess or fistula in ano.

If it perforates into the rectum it is a fortunate and happy sequel. Treatment is symptomatic and should be directed along medical lines. If it perforates into the bladder, a vesicocolic fistula results. This is a miserable complication evidenced by irritability of the bladder and the passage of pus, feces and gas through the urethra. The first step in handling such a condition is to make a colostomy high in the sigmoid or preferably in the transverse colon to sidetrack the fecal current. This should be followed by irrigation of the colon and bladder. If the opening is very small it may close spontaneously, but in this case the colostomy should not be closed for many months, after one is assured by cystoscopy and barium x-ray examination that healing has occurred. In most cases it is necessary to dissect the colon from the bladder and to close the openings. Obviously, it is of great advantage to have a preliminary colostomy before the procedure is attempted. Finally, if the perforation is into the mesentery or surrounding tissue it becomes walled off. Generally the inflammatory process makes its way to the abdominal wall and may be incised extraperitoneally when it points. However, during this waiting process symptoms of obstruction may develop which may cause the surgeon some anxiety. In this case a cecostomy or transverse colostomy should be performed.

Whether the abscess opens spontaneously or is opened surgically, frequently a fistula will result, and the next problem is what to do about this fistula. This will depend on many factors. If the patient did not require a colostomy, I would not do anything about the fistula for a long time. I have seen fistulas close after a year of drainage. If a colostomy has been done, undoubtedly the patient wishes it closed. In this case the fistula should be injected with bismuth to outline the tract, and a barium enema should be given to estimate the extent of the bowel involved in the diverticular process. If a small segment is involved (4 to 6 inches), resection of this segment, including the fistula, should be undertaken before the colostomy is closed. It is not good surgery to dissect out the fistula alone and close the opening, because in most cases it will fail and the fistula will reform.

2020 East Ninety-Third Street

## ABSTRACT OF DISCUSSION

ON PAPERS OF DRs. BARGEN AND JONES

DR. DONOVAN C. BROWNE, New Orleans. Unquestionably to Dr. Borgen must be given credit for our much clearer pathologic and clinical concepts of certain of these entities. Whether one wishes to subscribe to his classification remains a matter of legitimate opinion and stimulates study. With the available data, avoiding the legion of unsupported hypotheses, I find myself somewhat in accord—certainly when viewed purely from the histopathologic and clinical standpoint. Some years of observation in an area where diarrheas and dysentery are not uncommon have failed to yield sufficient evidence in any manner to establish thrombo-ulcerative colitis as a stage of, or aftermath of, bacillary dysentery, either the acute or the chronic form. Coexisting disease entities occur all too frequently with diseases of the colon. This week we have pointed statistically to a 12 per cent incidence of concomitant disease in some 800 cases of amebiasis, which becomes significant in instances of failure to respond to adequate therapy. This may explain many of our failures. A most important feature of this presentation aside from giving an excellent summary of what we know and may well depend on in ulcerative lesions of the colon, it points vividly to what we do not know. With much improved photography, as presented by Dr. Buie, a better understanding may result. Certainly when greater numbers may see and study the same lesion the possibility of interpretations coinciding are increased, also the much more common use of the proctoscope increases the probability of biopsy and pathologic diagnosis. I have never been able to understand the fear and ultraconservatism manifest by so many in taking biopsies. Certainly it is neither difficult nor dangerous. The diagnosis as usual remains the basis for therapy. The sulfonamides in thrombo-ulcerative colitis have been disappointing in our hands and must remain an adjunct to management of the disease, but in lymphopathia I wish to stress that patients after long months of treatment have been rewarded with satisfactory results.

DR. RAYMOND W. MCNEELY, Chicago. There is no standard surgical management which is applicable in every case of chronic ulcerative colitis. Rest of the colon is important in the acute phase. Ileostomy should be done before irreparable damage to the colon has occurred. This operation is delayed too long in most instances. Patients with ileostomies should not suffer from nutritional disturbances—if they are carefully supervised and if the chemical and nutritional imbalances are corrected as soon as they appear. No one regards a colectomy as a curative procedure. It is done in order to remove a useless damaged intestine which by its presence may continue to undermine the health of the patient. It is a source of danger from hemorrhage, stricture, perforation and malignancy. Colectomy should not be done as a heroic procedure when the patient's condition is considered desperate but should be reserved for the chronic cases and then done in stages. One of my keenest disappointments has been the failure of either the sulfonamides or penicillin to have any appreciable effect on this group of patients. Some patients with diverticulitis have few symptoms before perforation takes place. Those who develop a perforation with spreading peritonitis require immediate exploration. A proximal colostomy or ileostomy with exteriorization of the lesion will meet the requirements in most cases. There are some patients in whom a perforation permits a rapid flow of large bowel contents into the free peritoneal cavity. In the absence of restraining adhesions the contents diffuse quickly and cause a widespread fulminating peritonitis which usually destroys the patient. In chronic infiltrative and obstructive types of diverticulitis great care should be exercised in preparing these patients for surgery. I have found sulfonamide drugs very helpful in reducing the morbidity and mortality in these cases. Conservatism should be the rule. Probably a definite transverse colostomy with a spur, not a colostomy in continuity is the treatment of choice. Many of the infiltrative varieties will clear up if set at rest for a long time. Those which do not improve may be prepared adequately with succinylsulfathiazole and then resected. In localizing abscesses there is a tendency to do too much surgery. Simple incision and drainage is the wisest procedure.

DR M H STREICHER, Chicago I agree with Dr Barga about the importance of the classification, so that one is talking about the proper type of case. In the last year and a half, at the University of Illinois, we have worked on sulfathalidine. We have reported bacteriologic, clinical and chemical blood studies in 47 cases. Our results with sulfathalidine have been encouraging. Dr Barga's statistics on the average of good results in ulcerative colitis compare well with ours over an eighteen or nineteen year period. That leaves about 15 per cent which do not get along or which meet with some complications that need surgery. I hope Dr McNealy is right, that a new miracle will cut that 15 per cent down to zero.

DR J ARNOLD BARGEN Rochester, Minn. The indications for surgery for the various types of ulcerative colitis in my experience vary with the type of colitis at hand. For the streptococcal type of ulcerative colitis the only curative surgery would seem to be an ileostomy proximal to the inflammatory intestinal disease followed by subtotal or total colectomy. In the ulcerative colitis of undetermined etiology, not including the segmental variety, this too would be the surgical treatment of choice. This, then, brings up the question of when to advise surgery. From a study of a series of 185 consecutive ileostomies reviewed by Drs Pemberton, Ashburn, Lindahl and myself, a review of which was published in the *Annals of Internal Medicine* in January 1943, and from our experience in observing these patients, it has become apparent that ileostomy and other subsequent surgery is best limited to complication of ulcerative colitis such as extensive perirectal infection with abscess and fistula, intestinal stricture, extensive secondary polyposis, a walled off colonic perforation, secondary malignant neoplasia and the occasional case of severe arthritis. Then, of course, ileostomy is not performed for ulcerative colitis but rather for another condition complicating the ulcerative colitis. Only occasionally will ileostomy be indicated for the so called intractable case of ulcerative colitis. Hardly ever will it be indicated for the severe fulminating case of ulcerative colitis which we have referred to repeatedly and which was also mentioned by Dr Jones. Surgical results with the latter type of case have been most disappointing. The use of one of the sulfonamides, the anticolitis serum, blood transfusions, intravenous feedings, administration of concentrated oxygen and other supportive measures have carried many of these cases through to recovery. Surgery for the regional type of ulcerative colitis or the case of segmental tuberculous colitis is usually in the nature of resection of the diseased segment and establishment of ileocolostomy in some form. Surgery for the ulcerative colitis due to the virus of lymphopathia venereum will rarely require more than a colostomy. For other types of ulcerative colitis, particularly the streptococcal type, colostomy in our hands has been disappointing. Great progress in the management of the various types of ulcerative colitis has been made, not the least important of which is our knowledge of a satisfactory classification of the various forms of ulcerative colitis. The group of diseases which we have referred to here still stands as a challenge to the clinician and medical investigator as well.

DR THOMAS E JONES Cleveland I agree entirely with Dr McNealy's remarks about anastomosis. Most cases of peritonitis result from leakage at the suture line and not from contamination at the time of operation. Therefore this may happen with the closed or open type of anastomosis. That is why I emphasized that one should do the type of operation with which one is most familiar.

**Intelligence Tests**—The inference that laborers are dull as a rule is mistaken. Data from Army intelligence tests show for example that at least one fourth of those who reported their occupations as laborers in the sample population study did better than the median of the total Army population. Tests made in factories showed that scores of workers in certain labor groups varied all the way from 60 to 169 and while the median score was 112 (slightly lower than for any other group in the factory) it was significant that there were among the laboratory group and draftsmen, and also among the foremen those whose scores were below the median.—Davis, John E. *Principles and Practice of Rehabilitation*, New York: A. S. Barnes & Co., Inc., 1943.

## USE OF PENICILLIN IN PREVENTION OF POSTOPERATIVE EMPYEMA FOLLOWING LUNG RESECTION

REPORT OF A CONTROLLED STUDY

WILLIAM L. WHITE, M.D.  
W. EMORY BURNETT, M.D.  
CHARLES P. BAILEY, M.D.  
GEORGE P. ROSEMOND, M.D.  
CHARLES W. NORRIS, M.D.  
GRANT O. FAVORITE, M.D.  
EARL H. SPAULDING, PH.D.  
AMEDEO BONDI JR., PH.D.

AND  
RUSSELL H. FOWLER

PHILADELPHIA

Most attempts to measure the potentialities of a drug in wound infections, whether in terms of prophylaxis or of treatment, suffer from extreme degrees of variation in the lesions studied. The wound variations occur in respect to size, depth, anatomic location, inflicting agents, degrees of contamination, types and numbers of organisms present and the amount of contained foreign matter. Wounds also vary with the individual patient as to age, concomitant disease, nutrition, individual host resistance and healing capacity. Still another source of variation is the management of the wound, the time elapsed between injury and definitive treatment, the extent of debridement and of wound closure, the degree of tension in closed wounds, adequacy of immobilization, frequency of dressings and the duration of hospitalization. In established infection all of these variables are present plus the factors of bacterial invasion, bacterial toxins and bacterial symbiosis, which further complicate the picture. Hence it is considerably more difficult to assess the efficacy of a drug in surgical infections than in the more uniform nonsurgical diseases such as pneumonia, cerebrospinal meningitis or gonorrhea, in which factors relating to the presence of a wound are nonexistent.

In any clinical study it is important to avoid erroneous conclusions based on impression by employing adequate and comparable controls. When the clinical material is variable, controls are difficult to evaluate, however, if similar cases in experimental and control groups are paired, the influence of variation will be reduced. If this method is followed it is essential that the experimental and control cases be observed concurrently.

This study was designed to minimize the factors of variation, to offer adequate and comparable controls and to provide a clearly definable end point as the basis for evaluating the agent. Therefore our objective could be simply stated as follows: "To determine if penicillin is of value in the prevention of empyema following transection of the bronchus."

Several minor considerations have necessarily entered into the project, such as the therapeutic response to penicillin manifested by the underlying disease and the

This work was carried out under a contract recommended by the Committee on Medical Research between the Office of Scientific Research and Development, Washington, D. C. and the University of Pennsylvania. The Responsible Investigator on this contract was John S. Lockwood, M.D. This study was made possible by the cooperation of the surgical, bronchoscopic, bacteriologic and x-ray departments of the Temple University Medical School and Hospital, the Hahnemann Medical College and Hospital and the Abington Memorial Hospital. Technical assistance was given by Miss Cecile Chemerda, Mrs. Catherine Collins, Dietz, Miss Jean I. McKinney and Miss Jean Gates.

effect of systemically administered penicillin on the bacterial flora of sputum and bronchial secretions. This study also presented an opportunity to determine whether bacteria in the bronchi are the source of infection in those cases in which empyema developed and to evaluate the use of penicillin in the treatment of extrapulmonary suppurative infections following lobectomy or pneumonectomy.

In a study of the prevention of infection following elective lung resection, the clinical material is standardized in a rather unique way. With removal of lung tissue a dead space remains, which fills rather promptly with serum and with varying amounts of blood. The only avascular tissue present is that distal to the ligated hilar structures, and this is minimal in amount and more or less constant in extent. There is very little mobile soft tissue to aid in the walling off of infection, and the effectiveness of host resistance alone is quite limited. These conditions offer an ideal situation to permit bacterial growth, namely a collection of enriched body fluid in a rigid dead space containing no omental-like structure to aid in localizing the infection. Thus any organism that becomes established in this fluid will tend to produce an empyema even though it may not be primarily of a highly invasive type. At the same time the pleura provides a partial barrier against extending infection.

It appears that these circumstances offer an excellent opportunity for evaluating the usefulness of penicillin as a prophylactic agent.

#### OUTLINE OF THE PROJECT

1 Patients were considered for this study only after the decision had been made to perform either lobectomy or pneumonectomy. This avoided the influence of penicillin prophylaxis in selecting patients for operation.

2 Cases were paired as closely as possible to minimize the influence of uncontrollable variation, 1 case being assigned to the control series and its mate being placed in the group for treatment.

3 The decision as to whether a patient was to receive penicillin or serve as a control did not rest with the operator but with an impartial observer.

4 Penicillin was given in experimental cases for one week preoperatively and two weeks postoperatively.

5 In experimental cases 150,000 units of penicillin was administered daily with the exception of one 8 year old child, who received 100,000 units daily.

6 The intramuscular route of administration was used in all cases, injections being given every two hours in equal amounts.

7 No local penicillin was used in the pleural space before, during or after operation unless an obvious empyema had developed, in which case the experimental result was already determined.

8 In the event that empyema developed in control cases, penicillin therapy was given by various routes in an effort to control the infection.

9 No sulfonamides or other therapeutic agents were used either systemically or locally in treated or control cases.

10 Three thoracic surgeons participated in this study. Two of them worked together employing identical techniques which facilitated the pairing of cases. The third surgeon worked independently and provided pairs which were kept separate from those of the other two surgeons.

11 One stage procedures were performed in all cases included in the final analysis.

12 A daily record was kept of the amount, character and odor of all sputum.

13 Every patient was examined carefully for the presence or absence of active tuberculosis.

14 Cultures of sputum or bronchial secretions were usually obtained for two days before penicillin was started in treated cases or for two days before operation in control cases. Frequent cultures were made of the sputum of patients in the penicillin series during the week of preoperative therapy. Postoperatively sputum cultures were obtained at frequent intervals for at least two weeks.

15 In one of the collaborating hospitals, bronchoscopic examinations were performed frequently, specimens being obtained for culture.

16 Complete x-ray studies were obtained in all cases.

17 Chest fluid for definitive bacteriologic analysis was usually obtained by needle aspirations, although frequent cultures were made of tube drainage.

18 A comprehensive work-up, including routine and special laboratory studies as indicated, was done in all cases.

The following is an outline of the operative routine of the collaborating surgeons. Two of the men working in one clinic followed procedure A and the other surgeon used procedure B.

*Procedure A*—I Pneumonectomy. Incision was made in the third interspace through the pectoralis muscles and extending from the sternum to the anterior axillary line, with continuation of the incision in the interspace to the paravertebral line. Ribs were spread and not resected. The mediastinal pleura was opened and the pulmonary artery and veins were dissected free. Each was doubly ligated and transected with number 1 chromic catgut and divided between transfixion and distal ligatures. Remaining tissue was dissected from the bronchus, which was doubly clamped with heavy hemostats. The field was isolated with acriflavine gauze and the bronchus amputated at the distal clamp, leaving the stump protruding from the proximal clamp. The stump was then swabbed dry and culture made of this material. The stump was treated with phenol and alcohol and closed with Michel clips. Isolating gauze and all instruments and gloves were discarded, after which the reflected pleura or pleural flaps were closed over the stump with continuous and interrupted 00 chromic catgut. The chest was closed in layers, and air was aspirated to give a mild negative pressure.

II Lobectomy. The differences were only in the approach, which was made through the seventh rib bed. After resection, drainage was instituted through a stab wound by mushroom or straight catheter.

*Procedure B*—I Pneumonectomy. A curved parascapular or posterolateral incision was made and carried through all the muscles in the line of the skin wound. The sixth rib was usually removed. The mediastinal pleura was incised and the main bronchus to the lung was located. This was clamped with a noncrushing clamp close to the bronchial margin. A crushing clamp was then applied distally to this point and the bronchus divided between them. The pulmonary artery to that lung was doubly ligated with one silk ligature and one transfixion suture ligature, it was then divided distally. The pulmonary veins were treated in a similar manner and the lung dissected free and removed. The bronchus was closed with a medium silk ligature or simple end sutures of fine silk. A flap of parietal pleura was mobilized and sutured to the anterior bronchial surface.



with interrupted fine silk sutures. The chest was closed in layers and pressure controlled by aspiration of air. In 8 of the 13 cases done by this method tube drainage by intercostal catheter was utilized.

**II Lobectomy.** The technic is much the same as for pneumonectomy. Closed drainage with an intercostal number 24 French catheter was used in all but 5 cases. The drainage tube was connected to a water sealed bottle.

**Criteria.**—We have chiefly concerned ourselves with the value of penicillin in preventing the development of empyema. Because of this patients who died within four weeks postoperatively from causes entirely unrelated to infection are not considered among the completed cases. Cases that came to operation but were not resectable and those with recent empyema or draining sinuses were likewise excluded from the statistical analysis.

In this study patients with purulent pleural fluid containing viable organisms and demonstrating a systemic reaction characteristic of infection were considered to have empyema. All purulent chest fluids have been studied bacteriologically, and all have produced bacterial growth at one time or another. The mere presence of bacteria without evidence of pus or other signs of infection was not considered to be indicative of infection. A febrile response of some degree is to be expected following lung resection and may often be explained on a basis other than infection. First the operative procedures are exceedingly traumatizing and prolonged and result in a dead space which contains blood and serum, the absorption of which is usually associated with fever. Secondly, there is a disturbance of physiologic equilibrium. Third, patients with suppurative pulmonary infections or tuberculosis usually have some involvement in the remaining lung tissue, and activation of these lesions frequently follows lobectomy or pneumonectomy. When the fever is due to infection the patients appear toxic, the elevation of temperature is usually sustained and the diagnosis is completed with recovery of purulent material and viable organisms from the chest.

Chest fluid for definitive studies was obtained by thoracentesis unless tube drainage from the pleural space revealed copious amounts of pus.

If at the end of four weeks after operation there was no evidence of infection a patient was considered uninfected in this study. The only pyogenic infection which this limit excludes is 1 purulent empyema which developed after seven weeks in a control case. Two patients in the tuberculosis series who received prophylactic penicillin developed tuberculous empyemas after the four week period of evaluation. One of these showed a nonpathogenic staphylococcus after the bronchus had opened.

#### RESULTS

A total of 48 patients had partial, single or multiple lobectomy or pneumonectomy. Of these, 41 are suitable for analysis by the criteria set forth. Seven patients died within four days postoperatively without infection. Six patients who were explored without removal of lung tissue were excluded from the study, since bronchi were not transected.

Pairing of cases has been difficult to achieve. Consequently, only 30 of the 41 have been suitably paired. However, the presence of unpaired cases does not significantly alter the results, since the differences between treated and control groups is so great.

Of the 41 patients 21 received penicillin prophylactically and 20 served as controls. None of the penicillin patients showed evidence of a pyogenic empyema, while 12, or 60 per cent, of the controls developed pleural suppuration. One patient with bronchogenic carcinoma who received penicillin did become infected but is excluded from the statistical analysis, since he died on the fourth postoperative day from causes not related to infection. This case is discussed under postoperative deaths where the reasons for exclusion are explained.

#### BRONCHIECTASIS AND MULTIPLE ABSCESSES

Penicillin demonstrated its greatest value in cases of suppurative pulmonary infections. Twenty-one patients had partial or total lung resection for bronchiectasis or multiple lung abscesses. Seventeen of them had partial single or multiple lobectomies, while only 4 of them had total lung resections. The treated group included 10 lobectomies and 2 pneumonectomies. None of these patients developed any evidence of intrapleural infection. The control group consisted of 7 lobectomies and 2 pneumonectomies, in all of which empyema developed. In 3 of these cases, 2 lobectomies and 1 pneumonectomy, death occurred. Infection was overwhelming in all 3 instances and contributed to ultimate death of the patients.

Surgery was an elective procedure in all 21 of these cases. Preoperatively there was little febrile reaction and the volume of sputum was minimal.

Of the 21 cases, 18 have been appropriately paired. The incidence of empyema remains the same, 100 per cent in control cases and none in treated cases.

Four patients had gross contamination of the pleural space at operation resulting from an unavoidable spill of purulent material. Three of these cases, 2 lobectomies and 1 pneumonectomy, were in the control group. The fourth case, a partial lobectomy included in the penicillin series, showed no evidence of empyema. From this case and 2 of the controls, hemolytic streptococci were recovered preoperatively in the sputum. The same organism was present in the empyema which subsequently developed in the control cases and was present in a large abscess found in the surgical specimen removed at operation from the patient who received penicillin.

The patients who received penicillin for seven days preoperatively were in good condition when the therapy was instituted, therefore there was little evidence of clinical improvement that could be attributed to penicillin. Five of the 12 patients in this series demonstrated a decrease in sputum volume before operation and 2 of them exhibited a change in sputum character recorded as thinning and decrease in purulence. There was little evidence of penicillin effect bronchoscopically other than an occasional decrease in purulence of the bronchial secretions.

The control cases varied considerably in their postoperative course from a slight reaction to infection to a stormy course which resulted in the death of 3 patients (13, 14 and 21). The 12 patients who received penicillin had an essentially uneventful convalescence. The average daily low and high temperatures of the two groups of cases were calculated and plotted, as shown in the accompanying chart. The highest postoperative temperature recorded for a treated patient was 102.4 F., while 4 of the controls exceeded 103 F. Of the 3 patients who died of infection, patients 13 and 21 died on the



fourth postoperative day and patient 14 on the twenty-second postoperative day

The bronchial closure in all of the treated patients apparently remained secure, while 3 of the control subjects developed bronchial fistulas. There were no wound infections in the treated group, while 4 were observed among the control cases. The average number of postoperative days of tube drainage in those in whom drainage was done was 6 in the penicillin group and 38.7 in the controls who survived. The average postoperative day out of bed was 8.4 in treated patients and 24 in the controls. This includes only survivors. The average postoperative day of discharge with prophylactic therapy was 17.4, while the survivors of the nontreated group averaged 37.5 days of postoperative hospitalization. In 6 pairs of patients, all of whom survived, the treated ones remained in the hospital for a total of one hundred and twenty-three days postoperatively, while the controls totaled two hundred and twenty-five. This was a saving of one hundred and two days of hospitalization, or an average of seven-and-two days per patient. Secondary thoracotomy for empyema drainage was necessary in 6 of the control cases. The results are presented in the accompanying chart.

There were 4 patients in the prophylaxis group who demonstrated some degree of contralateral involvement preoperatively. None of these showed any evidence of acute activation of remaining areas of suppuration postoperatively.

#### TUBERCULOSIS

Fifteen patients had partial or total lung resection for tuberculosis. Seven of these were treated and 8 served as controls. Three of the operations in the treated series were lobectomies and 4 were pneumonectomies. The control group consisted of 4 lobectomies and 4 pneumonectomies. These patients were usually selected for lobectomy or pneumonectomy because of endobronchial tuberculosis with resultant stenosis or cavitory pulmonary tuberculosis which had not been amenable to collapse therapy such as pneumothorax, thoracoplasty or revised thoracoplasty. While these patients demonstrated varying degrees of superimposed pyogenic infection, their lesions were fundamentally tuberculous. Eleven of these patients were febrile preoperatively, their temperatures exceeding 100 F and some reaching 103.6 F. Two controls and 2 treated patients were essentially afebrile preoperatively.

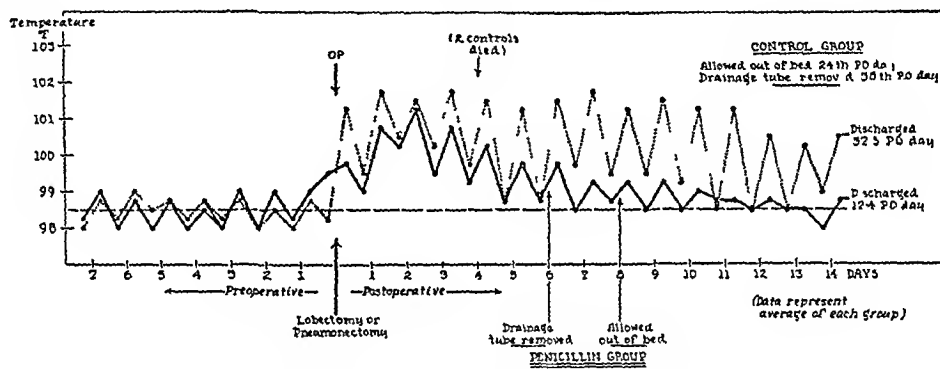
At least 3 of the cases in this series could not be classified as elective, since it was felt that the nature of the disease required early surgical intervention.

All 15 patients were operated on by the same surgeon.

There were 5 treated and 5 control cases which could be suitably paired. The 5 paired controls showed essentially the same incidence of empyema (40 per cent) as the entire control group of 8 patients (37.5 per cent), including the 5 paired and 3 unpaired. Two of the paired prophylaxis patients (22 and 23) developed tuberculous empyema and bronchopleural fistulas after the four week period of postoperative observation. Both were heavily inoculated with tubercle bacilli by the

accidental rupture of tuberculous cavities at the time of operation. Patient 22 was discharged on the twenty-fifth postoperative day but was readmitted six days later with an empyema and a bronchopleural fistula. A biopsy of the pleura revealed tubercle bacilli, while the thin and somewhat purulent chest fluid contained non-pathogenic staphylococci. In spite of thoracotomy and an upper stage thoracoplasty, this man developed a contralateral tuberculous spread and died. Patient 23 displayed acid fast bacilli on smear of his chest fluid shortly after operation. On discharge on the forty-eighth postoperative day this patient returned to the sanatorium. Shortly thereafter a tuberculous empyema drained spontaneously through the healed wound. It was then determined that he had a bronchopleural fistula. No pyogenic bacteria were recovered from the chest fluid, cultures of which were taken on six occasions. The draining sinus is healing slowly.

Of the 7 patients in the treated series, 2 with a predominance of pyogenic infection improved clinically during the week of preoperative administration. Two others with extensive tuberculous involvement had a steady increase in temperature. Two of the 7 had a



Calculated average daily high and low temperatures in bronchiectasis and multiple lung abscesses: solid line penicillin prophylaxis series 12 cases; dotted line control series 9 cases. (Data represent average of each group)

slight decrease in sputum volume. The character of the sputum was not significantly altered in any of the 7.

Two of the 3 pyogenic empyemas (31 and 34) which occurred in the control group were caused by non-pathogenic staphylococci. Both cleared quickly with local and systemic penicillin therapy. The third case (35) demonstrated an untypable pneumococcus, first in the sputum, later in the empyema and subsequently in the pericardium and wound. A bronchopleural fistula developed on the thirty-second postoperative day. Death occurred two weeks later as a result of the extensive infection. Autopsy revealed a pyogenic and tuberculous empyema and pericarditis. One other patient, number 36 in this series, developed a staphylococcal empyema which was not discovered until the fifty-fourth postoperative day. Since it had been more than four weeks postoperatively when the empyema was noted, this patient is considered as an uninfected control.

Bronchopleural fistulas occurred in the 2 penicillin patients who developed tuberculous empyemas, as discussed. Fistulas also occurred in patients 31 and 35, both of whom were infected controls. There were no wound infections in the treated group, while the wounds of 2 of the controls became infected. The average number of postoperative days of drainage given patients who had tube drainage and survived was 4.0 in the treated series and 3.3 in the nontreated. One of the 2

treated patients with a tuberculous empyema required a late thoracostomy, the other pointed, ruptured and drained spontaneously. Three of the controls required early thoracostomy. The average postoperative day out of bed in the treated series was 11.1 and for the controls 16.9. The average postoperative day of discharge was 27.0 for the penicillin group and 35.4 for controls. There were two deaths due to infection, one in the

A tabulation of the results in this series of cases is presented in table 2.

TUMORS

None of the patients with bronchiogenic carcinoma, whether treated or control, developed infectious complications. One patient in this group had a partial lobectomy after tumor biopsy examined by frozen section and reported nonmalignant. However, on examination of

TABLE 1—Bronchiectasis and Multiple Lung Abscesses

|                   |                           |            |                     |                    |              |                         | In Terms of Postoperative Days   |                                      |                               |                 |
|-------------------|---------------------------|------------|---------------------|--------------------|--------------|-------------------------|----------------------------------|--------------------------------------|-------------------------------|-----------------|
|                   |                           |            |                     |                    |              |                         | ↓<br>Drainage<br>Tube<br>Removed | Required<br>Secondary<br>Thoracotomy | ↓<br>Allowed<br>Out of<br>Bed | ↓<br>Discharged |
| Penicillin Series |                           |            |                     |                    |              |                         |                                  |                                      |                               |                 |
| Case<br>No        | Paired<br>with<br>Case No | Age        | Lobe(s)<br>Involved | Lobe(s)<br>Removed | Empy-<br>ema | Wound<br>Infec-<br>tion | Broncho-<br>pleural<br>Fistula   |                                      |                               |                 |
| 1                 | (13)                      | 27         | LL lingula          | LL lingula         | 0            | 0                       | 0                                | 5                                    | 0                             | 10              |
| 2                 | (14)                      | 65         | RM RL LL            | RM RL              | 0            | 0                       | 0                                | 3                                    | 0                             | 8               |
| 3                 | Not paired                | 20         | RL LL lingula       | RM RL              | 0            | 0                       | 0                                | 3                                    | 0                             | 9               |
| 4                 |                           | (15)       | 38                  | LU                 | LU (partial) | 0                       | 0                                | 0                                    | 11                            | 0               |
| 5                 | (16)                      | 8          | RU RM               | RU RM              | 0            | 0                       | 0                                | 6                                    | 0                             | 6               |
| 6                 | (17)                      | 42         | RM RL               | RM RL              | 0            | 0                       | 0                                | 6                                    | 0                             | 6               |
| 7                 | (18)                      | 29         | RL LL lingula       | LL lingula         | 0            | 0                       | 0                                | 12                                   | 0                             | 13              |
| 8                 | (19)                      | 17         | LL lingula          | LL lingula         | 0            | 0                       | 0                                | 4                                    | 0                             | 6               |
| 9                 | Not paired                | 43         | RM RL LL lingula    | LL lingula         | 0            | 0                       | 0                                | 4                                    | 0                             | 10              |
| 10                |                           | Not paired | 42                  | LU                 | LU (partial) | 0                       | 0                                | 0                                    | 6                             | 0               |
| 11                | (20)                      | 62         | RU RM RL            | Right lung         | 0            | 0                       | 0                                | Not drained                          | 0                             | 10              |
| 12                | (21)                      | 26         | LU LL               | Left lung          | 0            | 0                       | 0                                |                                      | 0                             | 6               |
| Totals            |                           |            |                     |                    | 0            | 0                       | 0                                | 60                                   | 0                             | 101             |
| Averages          |                           |            |                     |                    |              |                         |                                  | 6                                    |                               | 8.4             |
| Control Series    |                           |            |                     |                    |              |                         |                                  |                                      |                               |                 |
| 13                | (1)                       | 33         | LL lingula          | LL lingula         | +            | 0                       | 0                                |                                      | +                             | Died            |
| 14                | (2)                       | 14         | RM RL               | RM RL              | +            | +                       | +                                |                                      | +                             | Died            |
| 15                | (4)                       | 56         | LU LL               | LU LL (partial)    | +            | +                       | 0                                | 20                                   | 0                             | 30              |
| 16                | (5)                       | 29         | RL                  | RL                 | +            | 0                       | 0                                | 30                                   | +                             | 26              |
| 17                | (6)                       | 26         | RL                  | RL                 | +            | 0                       | +                                | 4                                    | 0                             | 10              |
| 18                | (7)                       | 56         | LL                  | LL                 | +            | +                       | 0                                | 84                                   | +                             | 25              |
| 19                | (8)                       | 35         | LL                  | LL                 | +            | 0                       | +                                | 90                                   | 0                             | 17              |
| 20                | (11)                      | 44         | RU RM               | Right lung         | +            | 0                       | 0                                | 4                                    | +                             | 11              |
| 21                | (12)                      | 52         | RU RM               | Right lung         | +            | +                       | 0                                | Not drained                          | +                             | Died            |
| Totals            |                           |            |                     |                    | 9            | 4                       | 3                                |                                      | 232                           | 6               |
| Averages          |                           |            |                     |                    |              |                         |                                  | 38.7                                 |                               | 24              |

TABLE 2—Pulmonary Tuberculosis

| Penicillin Series |                     |     |                  |                 |         |                 | In Terms of Postoperative Days |                       |                                |                    |            |
|-------------------|---------------------|-----|------------------|-----------------|---------|-----------------|--------------------------------|-----------------------|--------------------------------|--------------------|------------|
| Case No           | Paired with Case No | Age | Lobe(s) Involved | Lobe(s) Removed | Empyema | Wound Infection | Bronchopulmonary Fistula       | Drainage Tube Removed | Required Secondary Thoracotomy | Allowed Out of Bed | Discharged |
| 22                | (20)                | 40  | RU RM LU         | RU RM           | ++      | 0               | +                              | Not drained           | ++                             | 12                 | 25         |
| 23                | (30)                | 41  | LU               | LU              | ++      | 0               | +                              | Not drained           | ++                             | 26                 | 48         |
| 24                | (31)                | 25  | RU               | RU              | 0       | 0               | 0                              | 2                     | 0                              | 5                  | 14         |
| 25                | (33)                | 26  | RU RM RL         | Right lung      | 0       | 0               | 0                              | Not drained           | 0                              | 10                 | 37         |
| 26                | (34)                | 28  | LU LL            | Left lung       | 0       | 0               | 0                              | 6                     | 0                              | 8                  | 18         |
| 27                | Not paired          | 52  | RU RM RL         | Right lung      | 0       | 0               | 0                              | 5                     | 0                              | 9                  | 33         |
| 28                | Not paired          | 68  | RM               | Right lung      | 0       | 0               | 0                              | 3                     | 0                              | 8                  | 14         |
| Totals            |                     |     |                  |                 | 2+      | 0               | 2*                             | 16                    | 2                              | 78                 | 160        |
| Averages          |                     |     |                  |                 |         |                 |                                | 4                     |                                | 11.1               | 26         |
| Control Series    |                     |     |                  |                 |         |                 |                                |                       |                                |                    |            |
| 29                | (22)                | 23  | LU RU RM         | RU RM           | 0       | 0               | 0                              | 3                     | 0                              | 8                  | 14         |
| 30                | (23)                | 30  | RU RM            | RU RM (partial) | 0       | 0               | 0                              | Not drained           | 0                              | 17                 | 24         |
| 31                | (24)                | 35  | LU RU            | LU              | +       | +               | +                              | Not drained           | +                              | 44                 | 112        |
| 32                | Not paired          | 47  | LU               | LU              | 0       | 0               | 0                              | Not drained           | 0                              | 13                 | 19         |
| 33                | (25)                | 27  | LU LL            | Left lung       | 0       | 0               | 0                              | Not drained           | 0                              | 15                 | 23         |
| 34                | (26)                | 33  | RU RM RL LL      | Right lung      | +       | 0               | 0                              | 4                     | 0                              | 12                 | 35         |
| 35                | Not paired          | 30  | LU LL RU         | Left lung       | ++      | +               | ++                             | Not drained           | ++                             | Died*              |            |
| 36                | Not paired          | 15  | LU LL            | Left lung       | 0       | 0               | 0                              | 3                     | 0                              | 9                  | 18         |
| Totals            |                     |     |                  |                 | 3       | 2               | 2                              | 10                    | 2                              | 118                | 248        |
| Averages          |                     |     |                  |                 |         |                 |                                | 3.3                   |                                | 16.9               | 35.4       |

\* Spontaneous rupture    \*\* Tuberculous

treated series and one in the control series. Both had mixed tuberculous and pyogenic empyemas.

Of the fifteen experimental and control subjects, 11 had a sustained postoperative fever. Nine cases exceeded 103 F, 3 of which reached 105 F. The temperature of 2 patients fluctuated between 101 and 103 F. Four patients, 3 of whom received penicillin, did not exceed 101 F. Four controls and 1 treated patient had definite activation and spread of their tuberculous lesions following lung resection.

The resected lung tissue a malignant tumor was found. This group of patients includes only 5 cases, 2 treated and 3 controls. Only one pairing can be made. The average days of drainage, postoperative dry out of bed and postoperative day of discharge are not significantly different in the penicillin and control series. These results are presented in table 3. Because of the limited number of cases and the absence of infection it is impossible to draw any conclusions as to the effects of penicillin.

## EMPYEMA CASES

Control patients who developed empyema were treated with penicillin. Treatment varied in these patients as to the dosage and route of administration. Patients 17 and 31 received only local therapy. Both had sterile fluid soon after treatment was instituted. In case 17 the clinical response was prompt. Both patients later developed bronchopleural fistulas. The local doses given were 20,000 units and 25,000 units respectively at frequent instillations. The empyema in case 31 was produced by *Staphylococcus albus* while the other infection was due to a nonhemolytic streptococcus.

Three patients were given only systemic therapy, 2 of whom 13 and 35, received a continuous intravenous infusion of 100,000 units daily. Both had pneumococcal empyema and died in spite of penicillin therapy. Patient 35 was later shown to have a tuberculous empyema. The third patient, number 16, was also given 100,000 units daily, but by intramuscular injection. The infecting organisms were hemolytic streptococci and coagulase negative staphylococci. Response to treatment was prompt.

Seven of the infected control patients received both systemic and local therapy. Five of the 7 received

*Hemophilus influenzae*, nonhemolytic *Staphylococcus aureus* and *Bacillus pyocyaneus*. After penicillin had been given a thorough trial it was stopped. A type XXII pneumococcus then made its appearance in the drainage and remained present until the time of discharge. The empyema in this case first became evident with a severe wound infection. The infection in the chest was localized and necessitated surgical drainage. The patient was discharged on his forty-eighth postoperative day, only to be readmitted seventeen days later because of chronic cough and continued drainage.

Patients 14 and 21 died in spite of local and systemic therapy. Both had hemolytic streptococci as well as other organisms in the chest fluid.

No additional penicillin therapy was given to the 2 treated patients who developed late tuberculous empyemas. Both received the full twenty-one day course of prophylactic therapy.

In the presence of a bronchopleural-cutaneous fistula the value of penicillin in the treatment of empyema was reduced. This was due to constant recontamination and the inability to prevent the drug from leaking out of the infected space through the open bronchus or drainage tract. The bronchus of 1 of the infected con-

TABLE 3—Lung Tumors

|                   |                           |     |                     |                    |              |                         | In Terms of Postoperative Days |                                      |                          |            |      |
|-------------------|---------------------------|-----|---------------------|--------------------|--------------|-------------------------|--------------------------------|--------------------------------------|--------------------------|------------|------|
| Penicillin Series |                           |     |                     |                    |              |                         | Drainage<br>Tube<br>Removed    | Required<br>Secondary<br>Thoracotomy | Allowed<br>Out of<br>Bed | Discharged |      |
| Case<br>No        | Paired<br>with<br>Case No | Age | Lobe(s)<br>Involved | Lobe(s)<br>Removed | Empy-<br>ema | Wound<br>Infec-<br>tion | Broneho-<br>pneural<br>Pustula |                                      |                          |            |      |
| 37                | Not paired                | 53  | LU                  | LU (partial)       | 0            | 0                       | 0                              | 5                                    | 0                        | 7          | 18   |
| 38                | (39)                      | 26  | LU                  | Left lung          | 0            | 0                       | 0                              | 2                                    | 0                        | 8          | 17   |
| Totals            |                           |     |                     |                    | 0            | 0                       | 0                              | 7                                    | 0                        | 15         | 35   |
| Averages          |                           |     |                     |                    |              |                         |                                | 3.5                                  |                          | 7.5        | 17.5 |
| Control Series    |                           |     |                     |                    |              |                         |                                |                                      |                          |            |      |
| 39                | (38)                      | 69  | RU                  | Right lung         | 0            | 0                       | 0                              | 2                                    | 0                        | 7          | 10   |
| 40                | Not paired                | 44  | LU LL               | Left lung          | 0            | 0                       | 0                              | Not drained                          | 0                        | 8          | 15   |
| 41                | Not paired                | 43  | LU LL               | Left lung          | 0            | 0                       | 0                              | Not drained                          | 0                        | 11         | 41   |
| Totals            |                           |     |                     |                    | 0            | 0                       | 0                              | 2                                    | 0                        | 26         | 66   |
| Averages          |                           |     |                     |                    |              |                         |                                | 2                                    |                          | 8.7        | 22   |

100,000 units daily systemically while the other 2 received 67,000 units and 50,000 units respectively. Local therapy in these 7 cases varied from 8,000 to 50,000 units daily, the smaller dose being used in case 19. Of the remaining 6, 3 received, locally, approximately 25,000 units per day, 1 received 40,000 units daily and 2 received 50,000 units daily.

Two patients (20 and 24) who received local and systemic therapy had a prompt response. Patient 20 was infected with anaerobic hemolytic streptococci. He was discharged after his empyema had responded to therapy, only to be readmitted a month later with a recrudescence of his infection which necessitated thoracotomy. The empyema in case 34 was produced by nonpathogenic staphylococci. Recovery was rapid.

Three infected patients, 15, 18 and 19, seemed to improve slightly with the use of combined systemic and local treatment. This response was purely clinical in 15 and 18 consisting of a decrease in toxicity. All 3 are still draining at 56, 101 and 102 postoperative days respectively. Patient 19 developed a bronchopleural fistula. He was originally infected with hemolytic streptococci but this organism disappeared soon after penicillin therapy was instituted. Although still draining, the patient has been discharged. Patient 15 is infected with microaerophilic nonhemolytic streptococci which have been repeatedly recovered from his drainage. The empyema in case 18 contained a mixed flora including

control patients opened after complete wound healing had taken place, with a resultant pocket of infection about the bronchus. Local penicillin was given by bronchoscopic instillation through the open bronchus into the infected cavity with considerable success.

Of the 4 patients who died subsequent to pyogenic empyema patient 21 developed a massive streptococcal mediastinitis and patient 13 succumbed following an overwhelming pneumococcal empyema. Patient 35 died as a result of tuberculous and pneumococcal empyema, mediastinitis, pericarditis and wound infection. Patient 14 died suddenly following uncontrollable hemorrhage into the wound, which had become grossly infected.

## DEATHS OF NONINFECTED PATIENTS

Seven patients died postoperatively after lung resection without evidence of infection. Six of these had removal of an entire lung and 1 a right upper lobe lobectomy. The single lobectomy was performed on a white man aged 49 with multiple abscesses of the right upper lobe. He was considered as a control and did not receive penicillin at any time. His postoperative course was uneventful for three days. On the third day after eating his dinner he died very suddenly. No autopsy was obtained.

Of the 6 patients who died following pneumonectomy, 1 was a white woman aged 28 with extensive caseating tuberculosis of the right lung accompanied by bronchial stenosis. This patient received penicillin before and

after operation. Following pneumonectomy x-ray showed a wide contralateral spread. Her course was progressively downhill until she died in great respiratory difficulty on the sixth postoperative day.

The 5 remaining patients had resection because of bronchogenic carcinoma. All 5 were included in the penicillin prophylaxis series. Death occurred in all instances within four days postoperatively. Autopsy was performed on 3 of these patients. Postmortem examination was not permitted on the other 2, 1 of whom developed a left sided hemiplegia about twelve hours before death. The consensus was that he had a cerebral embolus. The other patient, on whom autopsy was not performed, died approximately eight hours after pneumonectomy. He suddenly became very pale, gasped a few times for breath and died. During this episode his blood pressure could not be obtained. It is believed that the patient died from hemorrhage into the chest.

Among the 3 patients on whom autopsy was performed 1 was a man aged 61 who developed a hacking, nonproductive, continuous cough soon after operation. He was quite exhausted at the end of seventy-two hours and died as a result of acute myocardial failure. Autopsy revealed pulmonary congestion and emphysema of the remaining lung. It is of interest that an acute fibrinous pericarditis was found at autopsy, culture of which was sterile. Another patient, a white man aged 22 died following pneumonectomy. Autopsy revealed no metastasis of the bronchogenic carcinoma but acute passive congestion and pneumonitis of the remaining lung. There was evidence of pronounced cardiac dilatation and cardiac insufficiency. Because of a severe anemia the patient received 3,000 cc of whole blood during the preoperative and operative period. This may have predisposed to the development of pulmonary edema.

The last of these patients was referred to previously, since he received penicillin and showed evidence of infection. This patient was a white man aged 53 who had a rather complicated course. The surgeon in this case elected to perform a two stage procedure. At the first operation he determined the resectability of the lung and ligated the bronchus. Two weeks later pneumonectomy was performed. The patient was given penicillin for seven days before the second stage procedure. At the time of resection it was discovered that the bronchus had perforated at the site of the ligature with a resultant collection of pus lying about it. This pus produced the same pneumococcus, type III, which had been present in the sputum for several weeks. Immediately after pneumonectomy the patient had a relatively uneventful course except for evidence of positive pressure at one time. On the second postoperative day, while drinking milk, he choked, became unconscious and died rather suddenly in respiratory distress. Postmortem examination revealed a positive pressure pneumothorax on the left side but no demonstrable leak in the bronchus stump. The stomach, trachea and bronchus contained milk. The right lower lobe was atelectatic, the middle lobe was partially atelectatic. The upper lobe was emphysematous and showed congestion. There was no evidence of neoplastic metastasis or infection. This case is excluded from the analysis of results for the following reasons. Since the first stage of this procedure was done without benefit of the drug and the second was done under penicillin prophylaxis, it is difficult to classify this patient as experimental or control. It is impossible to determine whether the perforation and

subsequent infection took place during the week following bronchial ligation when penicillin was not given or during the week of therapy prior to pneumonectomy. If the perforation and infection took place before the drug was given it is unlikely, in view of our experience in the treatment of postoperative empyema, that the systemic administration of penicillin would eliminate the type III pneumococcus from this localized infection in the presence of an open bronchus. Sputum cultures, which revealed this organism on nine occasions from 14 specimens obtained prior to therapy, showed the disappearance of the pneumococcus from the sputum after three days of penicillin administration. This is in keeping with the absence of evidence of infection at autopsy, which suggests that penicillin was effective in controlling the infection after the bronchus was closed and the lung was removed. There is nothing to suggest, either from the clinical course or from the autopsy findings, that the infection played any significant part in the patient's demise.

It is remarkable that among 22 pneumonectomies there were eight deaths, three of which were due to infection and five showed no evidence of infection. The 5 noninfected patients had been included in a group of 6, all of whom had bronchogenic carcinoma. All 5 had received penicillin before and after operation. Three patients with carcinoma serving as control pneumonectomies had no infectious complications and all survived. These figures seem to indicate that the use of penicillin may predispose to postoperative death following lung resection for pulmonary cancer. However, the lack of conformity of autopsy reports and clinical findings prior to death seems to make this most unlikely. The distribution of the fatalities is probably fortuitous.

#### BACTERIOLOGIC STUDIES

Unfortunately facilities did not permit a complete bacteriologic survey in every instance, however, many of the patients were studied sufficiently to permit some interesting observations and conclusions.

Initially it was our plan to evaluate the effect of penicillin on aerobic and anaerobic sputum flora since this presented a simple procedure with readily accessible material. We also contemplated following the number of organisms per cubic centimeter of sputum. This, however, was soon abandoned, since the figures varied so widely and followed no definite trends.

Later it appeared that cultures of bronchial secretions obtained by bronchoscopic aspiration were of greater value than sputum cultures, since this excluded many of the common mouth organisms. Frequent bronchoscopic specimens were therefore obtained to supplement the sputum studies in one institution. Still later in the study, bronchus biopsy or bronchus swab cultures were obtained from the pathologic specimens as soon as they were removed from the chest. These were usually dropped directly into culture mediums.

Frequent cultures were made of chest fluid. This was especially interesting in the infected control cases in which penicillin was given.

#### RESULTS

Sputum exhibited a highly diversified flora, usually containing mouth organisms such as alpha streptococci, gram negative diplococci, pneumococci and diphtheroids. The penicillin given in experimental cases for seven days before operation exhibited only one consistent bacteriologic effect. Hemolytic streptococci disappeared from the sputum soon after therapy was instituted in

6 cases. Pneumococci and staphylococci were usually unaffected by the systemically administered penicillin, although in an occasional case these organisms disappeared from the sputum. Gram negative bacilli occurred frequently and often persisted throughout the period of hospitalization. *Hemophilus influenzae* was most conspicuous among these.

Bronchus biopsy cultures were obtained in 14 cases. Six of these showed no growth and included specimens not placed directly into culture mediums.

In 9 of the patients who developed empyema we had recovered preoperatively, from either sputum or bronchial secretions, thirteen of the causative or saprophytic organisms. Of the thirteen organisms thus traced between the sputum or bronchoscopic specimens and empyema fluid, seven made an intermediary appearance in bronchus stump cultures. The thirteen organisms thus traced included aerobic and anaerobic hemolytic and nonhemolytic streptococci, pneumococci, nonpathogenic staphylococci, *Hemophilus influenzae* and *Bacteroides*.

Chest fluid for culture was obtained both from tube drainage and by needle aspiration. Cultures obtained from drainage tubes were not considered reliable enough to contribute to the diagnosis of empyema unless there were copious amounts of purulent material, obviously draining from the pleural space. However, tube cultures afforded a ready means of following empyema flora. The appearance of contaminants such as proteus and pyocyaneus was common in these cultures. Many of the specimens obtained by tube drainage were sterile, especially those obtained soon after operation. Fluid aspirated by thoracentesis produced viable organisms in several instances in which the fluid was not purulent and did not become so. We did not consider these patients infected merely on the basis of the presence of organisms, whether in treated or in nontreated patients. We were often able to demonstrate that these organisms were the same as those obtained previously from sputum, bronchial secretions or stump biopsy cultures.

Patients who developed empyema, according to the criteria set forth, were given penicillin therapy. As discussed previously, dosage and route of administration of the drug varied. Response to therapy was by no means constant from either clinical or bacteriologic points of view. From the 12 patients with pyogenic empyema 28 organisms were obtained by culture of chest fluid. These organisms were distributed as follows: 8 streptococci, 5 of which were hemolytic, 6 strains of staphylococci, only 1 of which was hemolytic and pathogenic (determined by coagulase test), 4 pneumococci, 1 tubercle bacillus, 2 *Bacteroides*, and 7 gram negative bacilli. Of the gram positive organisms, anaerobic streptococci and pneumococci appeared most resistant to the penicillin therapy. Patients without fistulas demonstrating an empyema produced by staphylococci or aerobic hemolytic streptococci appeared to respond most promptly. Patients who developed fistulas demonstrated a great variety of organisms in their chest fluid.

It was noted that in several instances certain organisms disappeared from the sputum postoperatively in control cases.

#### PENICILLIN CONCENTRATIONS

The postoperative chest fluid of 4 patients has been tested for the presence of penicillin with negative results, except in 1 instance in which blood was obtained on aspiration. This specimen clotted on standing and showed a concentration similar to that found in blood.

The patients whose fluid was assayed were receiving only intramuscular therapy. The absence of the drug in chest fluid makes it difficult to understand the mechanism of the protection obtained from systemically administered penicillin. This is especially true in 1 case in which there was an obvious spill into the pleural space at operation of approximately 1 ounce (30 cc) of pus which contained hemolytic streptococci. The bronchial secretions of 2 patients were tested for the presence of penicillin. No drug was detectable in either.

Blood samples taken on 4 patients receiving 150 000 units of penicillin daily revealed concentrations varying from 0.030 unit per cubic centimeter to 0.36 unit per cubic centimeter, depending on the method of analysis and the time at which the specimen was obtained in relation to the cycle of injection, absorption and excretion. Apparently the administration of 12 500 units of penicillin every two hours maintains a detectable penicillin concentration in the blood serum.

#### COMMENT

Originally it was our plan to gather 50 treated cases and 50 control cases, feeling that this number would be required in order to establish the value of penicillin in preventing postoperative infectious complications after lobectomy and pneumonectomy. However, 41 experimental and control cases so clearly demonstrate the effect of penicillin that we do not feel that it is justifiable to continue the use of controls. The frequency of hemolytic streptococcus empyema in control cases probably accounts for much of the success obtained with the use of sulfonamides in recent years.

The fact that we have been able to pain 30 of the 41 patients satisfactorily plus the fact that the results in paired cases are not significantly different from those of the aggregates substantiates the validity of the conclusions drawn from this study. Most of the patients were in uniformly good condition when subjected to surgery, which eliminated certain other variable factors.

The occurrence of postoperative empyema in all control lobectomy and pneumonectomy, bronchiectatic and lung abscess cases is very striking when compared with the absence of postoperative infection in those receiving penicillin. Among the 20 control cases the incidence of empyema was 100 per cent in suppurative pulmonary infections, 37.5 per cent in pulmonary tuberculosis and zero in the bronchiogenic carcinoma group. It thus appears that penicillin prophylaxis will have its greatest usefulness in those cases in which there is pyogenic pulmonary suppuration.

In comparing noninfected treated patients and noninfected controls, no appreciable differences are noted as to the number of days of tube drainage, the postoperative day out of bed and the postoperative day of discharge. This demonstrates the limitation of the usefulness of penicillin to the prevention of infectious complications following lung resection for suppurative lesions of the lung. There was no evidence that penicillin was of value beyond this limitation.

It is our opinion that the preoperative administration of penicillin has been a most important feature of this study. The drug given during this period probably serves to control acute and chronic infection in the pulmonary tissues, which reduces the possibilities of postoperative infections. In addition, the preoperative use of penicillin affords maximum therapeutic effect at the time the pleural space is exposed to bronchial contamination. We also feel that it is essential to administer an effective therapeutic dose of penicillin given at fre-

quent intervals by a route of administration which offers technical simplicity and adequate absorption

The routine use of local penicillin therapy applied directly into the pleural space after lung resection admittedly offers attractive theoretical possibilities. In this study we have avoided this method of prophylactic administration since it would constitute another variable factor and make it impossible to separate the effects of systemic and local therapy. It appears that systemic therapy is adequate, however, local therapy may offer an additional mechanism of protection.

#### SUMMARY

1 Penicillin administered for one week preoperatively and two weeks postoperatively in doses of 150,000 units daily given by intramuscular injection appears to be useful in preventing postoperative pyogenic infections following lobectomy or pneumonectomy.

2 Patients with bronchiectasis or multiple lung abscesses who received prophylactic penicillin and were subjected to partial or total lung resection showed no evidence of postoperative infection, had less fever, had fewer days of tube drainage, were allowed out of bed earlier and were discharged sooner than control patients, all of whom became infected.

3 Penicillin is apparently of no value in preventing or controlling tuberculous infections.

4 Penicillin administered systemically and locally was of variable value in treating postoperative suppurative infections which developed in control cases.

5 No toxic reactions have been noted in 41 patients who received a full course of penicillin therapy.

6 In patients who developed empyema the etiologic organism was often recovered from the sputum and bronchial secretions before operation and from bronchus stump cultures taken at the time of resection.<sup>1</sup>

### PENICILLIN X

#### SUCCESSFUL TREATMENT OF GONORRHEA WITH A SINGLE INTRAMUSCULAR INJECTION

HENRY WELCH, PHD

LAWRENCE E. PUTNAM, MD

WILLIAM A. RANDALL, PHD

AND

ROBERT P. HERWICK, MD, PHD

WASHINGTON, D. C.

In a recent issue of *Science*<sup>1</sup> it was reported that gonorrhea had been successfully treated with single injections of 100,000 units of commercial penicillin incorporated in a beeswax-peanut oil base. For the past several months we have had an opportunity to investigate the properties of so-called penicillin X,<sup>2</sup> sometimes referred to as factor X, or allopenicillin. This material was furnished to us by three manufacturers.<sup>3</sup> A small amount of crystalline penicillin X<sup>4</sup> was also made available to us.

1 Since this report was submitted for publication 5 additional pneumonectomies have been performed in accordance with the procedure outlined in this study. All 5 patients received the prophylactic course of penicillin. Four of them were resected for bronchiogenic carcinoma and 1 for a bronchial adenoma. None of these patients became infected and all of them survived.

2 From the Food and Drug Administration Federal Security Agency. 1. Romansky, M. J. and Rittman, G. E. A Method of Prolonging the Action of Penicillin. *Science* 100: 196, 1944.

3 Commercial penicillin and penicillin X in this article refer to the sodium salts of these substances.

4 Obtained through the courtesy of the Upjohn Company, Cutter Laboratories and Cheplin Biological Laboratories.

5 Robert D. Coghill of the Northern Regional Research Laboratory supplied the crystalline penicillin X.

When assayed by the cup-plate method<sup>5</sup> the potency of crystalline penicillin X is approximately 900 units per milligram, while crystalline penicillin<sup>6</sup> has a potency of 1,650 units per milligram. In addition, *in vitro* studies (serial dilution) show that penicillin X is more effective than commercial penicillin against a strain of *Klebsiella pneumoniae* type A and a strain of *Bacillus cereus*. No difference in effect could be shown between penicillin X and commercial penicillin on four strains of *Staphylococcus aureus*. However, preliminary studies indicate that penicillin X is three to five times more effective in protecting mice against 10,000 lethal doses of pneumococcus type I than commercial penicillin.

On the basis of the increased activity of this new preparation against certain organisms in comparison with commercial penicillin, it appeared desirable to determine the effect of penicillin X on the gonococcus. Accordingly, 68 patients with gonorrhea,<sup>7</sup> most of whom were sulfonamide resistant, were treated with a single intramuscular injection of 25,000 units of penicillin X. The group consisted of 35 males and 33 females. Our criterion of cure was three negative cultures obtained one, three and five days after treatment had been completed, although in some cases, because of menses or other factors, cultures were taken at greater intervals and over a longer period of time. Sixty-four patients, or approximately 94 per cent of those treated, were cured. For comparative purposes a group of 58 patients with gonorrhea (31 males and 27 females) were treated with a single intramuscular injection of 25,000 units of commercial penicillin. Using the same criterion, 37 patients, or approximately 64 per cent of those treated, were cured. It is of interest that 3 of the patients in whom we failed to obtain a cure with commercial penicillin were cured by a subsequent treatment with a single injection of 25,000 units of penicillin X.

Studies of the blood concentration were made on 7 patients treated with penicillin X and on 8 patients treated with commercial penicillin. These concentrations were determined with the serial dilution technique using *Bacillus subtilis* as the test organism, one-half hour, one hour and two hours following intramuscular injection. During the first two hours after treatment a consistently higher concentration of penicillin X was maintained in the blood. Urinary excretion studies were made over a period of eight hours on 9 patients, 4 treated with penicillin X and 5 with commercial penicillin. During the first two hour period 59 per cent of the penicillin X injected was excreted, as compared with 68 per cent of the commercial penicillin. After eight hours the total excretion of penicillin X was 71 per cent as compared with 80 per cent of commercial penicillin. Further studies are in progress using larger doses of penicillin X in a single intramuscular injection to determine its efficacy and rate of excretion at higher levels.

Although the number of cases reported here is small, if further work substantiates the fact that a large proportion of cases of gonorrhea can be cured with a single intramuscular injection of penicillin X, the public health control of this disease, which has been materially affected by the use of commercial penicillin, will be further facilitated.

5 Mimeograph "Methods Used by the Food and Drug Administration for the Assay of Penicillin," January 1944.

6 Crystalline penicillin G prepared from commercial penicillin.

7 The clinical work in this study was done at the Rapid Treatment Center, Gallinger Municipal Hospital, Washington, D. C. Drs. Sidney Olansky, A. M. Gamboa and M. L. Cannon aided in these studies.



## Clinical Notes, Suggestions and New Instruments

### AN UNUSUAL CASE OF CUTANEOUS HODGKIN'S DISEASE WITH TERMINAL BLOOD STREAM SPREAD

S R BERSACK M D  
Radiologist Mount Alto Veterans Hospital  
WASHINGTON D C

The patient who is the subject of this report was encountered in a study of 225 cases of Hodgkin's disease.<sup>1</sup> The unusual features of the case and the rarity of cutaneous Hodgkin's disease are deemed sufficient justification for the publication of this report.

**History**—W K, a white man aged 44, a World War I veteran was admitted to the Edward Hines hospital on Nov 4, 1940. His father died at 78 of "old age." His mother died of pneumonia at an age unknown. Two sisters died in infancy and 1 sister died at 21 of pneumonia. Two brothers, his wife and 2 children are alive and well. There was no history of diabetes, tuberculosis or carcinoma in the family. His occupation was that of an auto repairman and lately he held a job as a road tester. He had an appendectomy in 1918. There

was no history of venereal diseases. He smoked ten cigarettes a day and consumed 1 pint of whisky a week.

In March 1939 he first noted a lump on the midposterior aspect of the right calf. For a period of six months this lump gradually grew until it attained the size of a hen's egg. At this point the skin ulcerated and for several weeks there was drainage of a purulent exudate. Soon afterward several more lumps appeared under the skin of the surrounding region as well as on the opposite

nodes were slightly enlarged and firm. The chest and abdomen were negative to percussion and auscultation. The blood pressure registered 106/72. The skin of the left buttock presented multiple shallow ulcers which were more or less confluent, covering an area 10 cm in diameter. The skin of the entire right popliteal space was similarly ulcerated. Many brown and grayish black spots were present on both legs.



Fig 2—Microscopic appearance of section of older skin lesion. The typical Sternberg cells are evident in the corium.

The blood count showed hemoglobin 60 per cent, red blood cells 3,200,000 and white blood cells 9,200, with 79 per cent polymorphonuclears and 21 per cent lymphocytes. Blood Kahn and Wassermann reactions were negative. Urinalysis was negative. Blood culture was sterile on four examinations. Blood smear was negative for malarial parasites. The Widal test was negative. The agglutination test for undulant fever was negative. A roentgenogram of the chest was negative except for elevation of the right dome of the diaphragm.

**Course**—Three days after admission the patient developed several new skin lesions on his right flank. These at first manifested themselves as 0.5 cm erythematous areas. The same day they grew to become slightly raised nodules in the skin. The following day one of these pinkish nodules was excised for biopsy. Microscopically it showed normal epidermis with a minimal reaction about several small blood vessels (fig 1). The reaction consisted of slight endothelial and fibroblastic proliferation. A moderate number of lymphocytes were seen scattered in the corium. It is interesting to note that this skin nodule showed nothing more striking than some scattered lymphocytes, even though it was clinically a well developed erythematous nodule. The microscopic appearance of the specimen from the older and larger skin lesion was typical of Hodgkin's disease (fig 2).

On the eighth hospital day the patient developed a sudden spread of the skin nodule. Literally hundreds of small circumscribed papular nodular erythematous lesions appeared in the skin from head to foot (figs 4, 5 and 6). This was associated with severe chills and stupor. The temperature rose and stayed at 103-104 F. On the last day it reached 105.5 F. The patient died on Nov 20, 1940, sixteen days after admission.



Fig 1—Microscopic appearance of section of one day old erythematous skin nodule from right abdominal wall showing nothing more striking than some lymphocytes in the corium. Also a minimal endothelial and fibroblastic reaction about several blood vessels can be seen.

calf. These new lesions also became ulcerated. On Aug 26, 1939 the patient presented himself to a private clinic, where a diagnosis of idiopathic multiple hemorrhagic sarcoma was made. This diagnosis was thought to have been confirmed by a skin biopsy. The biopsy slide was requested for review purposes but could not be obtained. While under the care of the private clinic the patient received irradiation to the skin lesions all of which responded readily except for the one ulcer in the right popliteal space. This area received a total of 4,023 roentgens.

Early in September 1940 the patient began to experience severe chills approximately every six hours. These were followed by periods of profuse sweating and exhaustion. They were associated with a loss of appetite.

**Examination**—On admission to this hospital the patient appeared well developed and well nourished but acutely ill. The temperature was 101 F, pulse rate 120 and respiratory rate 38. The skin was dry and had a suggestion of a yellow tinge. The pharynx was slightly injected. The gums were tender, with evidence of recent extraction of teeth. The submaxillary lymph



Fig 3—Microscopic appearance of section of a Hodgkin's nodule obtained at autopsy. This shows a moderate amount of fibrosis, many fibroblasts, only a moderate number of lymphocytes and many multinucleated hyperchromatic giant cells of the Sternberg type.

From the Tumor Service Veterans Administration Facility, Hines III.  
Published with the permission of the Medical Director of the Veterans Administration who assumes no responsibility for the opinions expressed or the conclusions drawn by the author.

1. Bersack S R. Hodgkin's Disease. A Pathologic Classification.  
Am J Clin Path 13: 253-259 (May) 1943.

*Autopsy*—The body was 170 cm in length and weighed 160 pounds (73 Kg). The skin of the face and neck presented innumerable small (2 to 4 mm in diameter) pink, slightly raised nodules. They could be felt throughout the scalp. Many nodules were also found in the skin of the back. A small number were present on the chest and abdomen and a few on the thighs.



Fig. 4—Appearance of face in a case of cutaneous Hodgkin's disease with terminal blood stream spread

The skin of the arms presented a moderate number of flat grayish white round scars 5 mm in diameter. No nodules were observed on the forearms, hands and feet. The dura had a few flat nodules. None could be found in the brain substance. Beneath the mucosa of the trachea, larynx, the laryngeal surface of the epiglottis, the esophagus and the stomach were many small pinkish nodules 2 to 3 mm in diameter. The mucosa was not ulcerated. The nodules were fairly uniformly scattered, increasing in number as one proceeded downward.

Many minute nodules were also found in the parietal pleura,

a small number in the lungs, an occasional nodule in the parietal peritoneum and several in the pericardium, spleen and both testes as well as two minute gray spots on the cortical surface



Fig. 5—Trunk of patient

of the kidneys. The liver was studded with numerous small nodules. The mediastinal lymph nodes were small, soft and black. A moderate number of enlarged lymph nodes were found in the retroperitoneal region along the iliac vessels and

in the capsule of the pancreas. The abdominal nodes measured 1 to 3 cm, the pelvic nodes up to 5 cm. Microscopically these nodules showed a moderate amount of fibrosis, many fibroblasts, a moderate number of lymphocytes and many multinucleated hyperchromatic giant cells of the Sternberg type (fig. 3).

The autopsy diagnosis was Hodgkin's disease of the skin with metastases to the abdominal and pelvic lymph nodes, trachea, lungs, pleura, esophagus, stomach, liver, spleen and lumbar vertebrae.

#### COMMENT

The case of cutaneous Hodgkin's disease here reported illustrates a terminal spread through the blood stream. The fact that no malignant cell could be found in the microscopic examination of the early skin nodules caused by blood stream spread is in favor of a virus etiology of Hodgkin's disease. The hematogenous dissemination must have been mediated through the



Fig. 6—Literally hundreds of small circumscribed papular and nodular erythematous lesions covered the skin from head to foot

humoral content of the blood. The only alternative would be to incriminate the few lymphocytes found in the initial stage of a new focus. They might possibly be the vectors of the noxus. The theory of a virus etiology of Hodgkin's disease is an attractive one in that it will explain the early clinical features of an inflammatory nature and also the later development into a seemingly autonomous neoplastic disease. The virus theory deserves further clinical and experimental study. It may be worth while to attempt transmission experiments with blood derived from a patient who, as in the present instance, is exhibiting blood stream spread.

#### SUMMARY

A patient with cutaneous Hodgkin's disease with rapid terminal blood stream spread presented the additional unusual feature of ulceration of Hodgkin's skin lesions.

The occurrence of terminal blood stream spread without any evidence of embolic cellular element dissemination is consistent with a virus etiology of Hodgkin's disease.

THE EFFECT OF STARVATION ON DIABETES  
INSIPIDUS

JOHN P. PETERS, M.D., NEW HAVEN, CONN.

It has recently been demonstrated by Winter Sattler and Ingram<sup>1</sup> that the polyuria of experimental diabetes insipidus in animals is greatly reduced or eliminated by starvation. The following case illustrates the same phenomenon in a woman with diabetes insipidus complicated by vomiting of pregnancy.

M. H., a woman born Jan. 1, 1918, was admitted to the New Haven Hospital March 15, 1944 for pernicious vomiting of pregnancy. Her last menstrual period had been Dec. 31, 1943. She was reported to have been seriously ill with "acidosis" when 3 to 4 years old but knew no details of the illness. At 16 she was treated with injections for amenorrhea. At 18 she suffered for a full summer with intermittent attacks of headache and vomiting. She was, however, able to return to college in the fall and complete her course. Regular, spontaneous menstruation did not begin until she was 21 years old. She was married in February 1943. In addition to this she stated that as long as she could remember she had always imbibed enormous amounts of water, up to 7 or 8 quarts a day, but, because of a large bladder capacity, had never suffered undue inconvenience from urinary frequency.

She was small, well developed and moderately nourished, quite dehydrated, and weighed less than 90 pounds (41 Kg.). Her temperature was 100 F. by mouth, pulse rate 70, blood pressure 108/64. There was a slight exophoria of the right eye associated with a refractive error. The optic disk outlines were slightly blurred, especially along the nasal margins. The knee jerks were extremely hyperactive. Except for this and the signs of pregnancy physical examination was essentially normal. Blood count revealed 3 million red blood cells, 11 Gm. hemoglobin, and normal leukocytes and differential count. The Kahn test was negative. In spite of her dehydration the initial urine specimen had a specific gravity of only 1.004, otherwise it was negative. On March 21 the blood nonprotein nitrogen was 19 mg. per hundred cubic centimeters, serum carbon dioxide 23.0 milliequivalents per liter, chlorides 102.2, serum protein 5.89 per cent, albumin 3.98, globulin 1.91. X-ray films of the skull revealed no abnormalities.

Through March 17 she was permitted nothing by mouth, receiving moderate amounts of isotonic solution of sodium chloride and 5 per cent glucose by infusion. The vomiting ceased and the urine volume was moderate. On the 18th she vomited when attempts at feeding were resumed. For this reason food and fluids were again stopped and she was given on the 19th an infusion of 2,500 cc. of isotonic sodium chloride and glucose solution. On this day, when she received in addition to the infusion only 270 cc. of fluid by mouth, she voided 5,750 cc. of urine, 3,500 cc. during the four hours that the infusion was running. On the 20th and 21st, when she took and retained small amounts of food, the urine volume was 3,550 and 3,200 cc. respectively, with obvious fluid intakes of 2,000 and 2,750 cc. In spite of extreme restriction of salt, as vomiting remained in abeyance and the food intake increased, the urine volume rose steadily to reach 5,550 cc. on March 28 with an obvious fluid intake of 4,350 cc. Attempts to control the diuresis with injections of pitressin or nasal insufflation of posterior pituitary powder were thwarted by abdominal cramps and vomiting which these medications induced. Moreover, as her diet increased her fluid intake rose out of proportion. This forced her to drink more than her stomach could tolerate and provoked a recurrence of vomiting on a profuse scale.

The pregnancy was terminated operatively on March 3. On this day and the next when she received no food, the urine volume again fell to 2,000 cc. per day with intakes of 3,500 and 2,400 respectively. As diet was resumed it rose steadily to reach the magnificent figure of 8,550 cc. with an obvious fluid intake of 6,650 cc. By means of intranasal posterior pituitary

powder, which she was now able to tolerate, it proved possible to reduce the urine volume below 4,000 cc. per day, which relieved her of all inconvenience.

When she was last seen on Sept. 26, 1944 she was subjectively in excellent health, weighing 110 pounds (50 Kg.). By using the pituitary powder two or three times a day she was able to avoid all inconvenience from the polyuria. Both thirst and frequency recurred, however, as soon as she discontinued the therapy. The urine specific gravity was 1.005.

This appears to be an authentic case of diabetes insipidus in which the polyuria was suppressed by starvation, in this instance occasioned by vomiting of pregnancy. The reaction to infusion also illustrated dramatically the diuretic influence of salt in this condition.

## AGRANULOCYTOSIS TREATED WITH PENICILLIN

LIEUTENANT COLONEL LESLIE B. SMITH, MAJOR FRANK COHEN,  
AND CAPTAIN RALPH G. NICHOLS  
MEDICAL CORPS, ARMY OF THE UNITED STATES

Spontaneous leukocytic regeneration has been reported<sup>1</sup> to occur in cases of agranulocytosis when the primary or secondary infections were controlled by specific chemotherapy (sulfonamide).

We believe that the reporting of 2 cases of agranulocytosis successfully treated with penicillin is timely. To date 1 such case has been cited,<sup>2</sup> however, there have been none reported in detail.<sup>3</sup>

## REPORT OF CASES

CASE 1—A Negro aged 18 years was admitted to the Station Hospital, Camp Wolters, Texas, Feb. 28, 1944, complaining of sore throat, fever, cough and pain in his chest.

The history revealed that he had had measles and mumps as a child and "malaria" eighteen months before admission without recurrence. Although he denied having had a penile lesion or other manifestations of syphilis, the syphilitic register revealed that the Kline test had twice been positive in November 1943, that the Kahn and Wassermann tests were positive in January 1944 and that the spinal fluid was normal. The diagnosis was late latent syphilis, for which he had been given seven doses of 0.06 Gm. of mapharsen and four doses of 0.2 Gm. of bismuth subsalicylate during the four weeks preceding this admission. He had had a sore throat and fever for a day following the fourth and fifth doses of mapharsen. These symptoms recurred one day after the seventh dose of mapharsen and became so severe that he was admitted to the hospital three days later.

At the time of admission he was acutely ill. The temperature was 100.4 F., the pulse rate was 98 per minute and the respiratory rate was 22 per minute. The tonsils, oral pharynx and nasal membranes were hyperemic and edematous. The anterior and posterior cervical lymph glands were slightly enlarged and tender, and there were a few coarse rales in the bases of both lungs. The remainder of the physical findings were normal. He was given symptomatic treatment, acetylsalicylic acid and saline gargles during the first twenty-four hours of observation.

The second day he appeared to be critically ill. His temperature had gradually increased to 104 F. and the leukocyte count was 5,390 per cubic millimeter. The first differential blood count, done during the morning of the second day, revealed 0 per cent neutrophils, 95 per cent lymphocytes, 3 per cent monocytes and 2 per cent eosinophils. A second blood study made seven hours after the first, revealed 4,000 leukocytes per cubic millimeter with 1 per cent stab forms and again 0 per cent segmented neutrophilic polymorphonuclear cells. The erythrocyte count was 4,200,000 and the hemoglobin was 80 per cent. Heterophile agglutinins were not present in the blood.

1 Dameshek, W. and Wolfson, L. E. A Preliminary Report on the Treatment of Agranulocytosis with Sulfathiazole. *Am. J. M. Sc.* 206, 819-823 (June) 1942. Nixon, N., Eckert, J. F. and Holmes, K. B. The Treatment of Agranulocytosis with Sulfadiazine. *Am. J. M. Sc.* 206, 713-722 (Dec.) 1943.

2 Keefer, C. S. and others. Penicillin in the Treatment of Infections. Statement by the Committee on Chemotherapeutic and Other Agents, Division of Medical Sciences, National Research Council. *J. A. M. A.* 122, 1217-1224 (Aug. 28) 1943.

3 Keefer, C. S. Personal communication to the authors, April 1944.

From the Department of Internal Medicine, Yale University School of Medicine and the New Haven Hospital.

1 Winter, C. A., Sattler, D. G. and Ingram, W. R. The Relationship Between Salt Intake and the Polyuria of Experimental Diabetes Insipidus. *Am. J. Physiol.* 131, 363 (Dec.) 1940.

Three blood cultures were subsequently reported as showing no growth. A roentgenogram of his chest was essentially normal. A diagnosis of agranulocytosis was made.

On the third day a small shallow ulcer, containing a necrotic exudate, was present on the surface of the right tonsil. Bacteriologic studies of specimens obtained from the ulcer showed mixed organisms and hemolytic streptococci. A differential blood count showed only 15 per cent stab forms and 0.5 per cent segmented neutrophilic polymorphonuclear cells.

Penicillin therapy was begun at 4 p. m. the third day in doses of 20,000 Oxford units, intramuscularly, every three hours. Sixteen hours after the first dose the temperature was normal, general improvement was definite and the ulcer in the right tonsil was clean and much smaller. At this time the leukocyte count was 4,500 per cubic millimeter and the differential count was 37 per cent neutrophilic polymorphonuclear cells, 5 per cent eosinophils, 3 per cent monocytes and 55 per cent lymphocytes. The neutrophilic polymorphonuclear cells were divided as follows: 19 per cent segmented, 10 per cent stabs, 7 per cent juveniles and 1 per cent myelocytes.

Although the patient was definitely clinically improved and a differential blood count revealed 50 per cent neutrophils, the therapy was augmented on the fourth day by pentose nucleotide (40 cc daily) and yellow bone marrow (twelve granules each day).

Convalescence continued to be uneventful. The dosage of penicillin, the leukocytic response and the temperatures are given in chart 1. Continued observations for four weeks revealed that he remained well, that the blood count was normal and that heterophile agglutins were not present in the blood.

This patient was given three small blood transfusions, pentose nucleotide and bone marrow, however, the dramatic improvement was concurrent with the administration of the penicillin and preceded the pentose nucleotide therapy.

**CASE 2**—A Negro aged 31, well nourished, was admitted to the Station Hospital, Camp Wolters, Texas, March 13, 1944 complaining of sore throat and painful swollen gums.

He gave a history of having had measles as a child, typhoid at the age of 20 and some treatment for syphilis ten years previously. The syphilitic register revealed that the Kahn and Wassermann reaction were positive in January and February, 1944, that the spinal fluid was normal and that he had been given six 0.06 Gm doses of mapharsen and three 0.2 Gm doses of bismuth subsalicylate in the three week period preceding

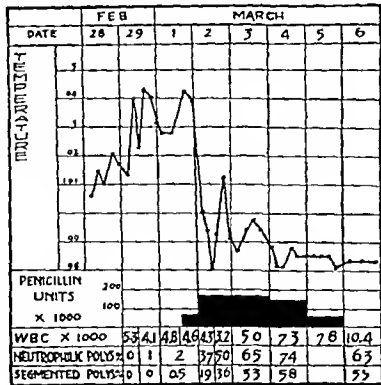


Chart 1—Course in case 1

this illness. He stated "Each arm shot made me quite sick in my stomach." He had a sudden onset of severe "sore throat" on March 9, the day following the seventh dose of mapharsen. His gums became sore, for which he was first seen in the Dental Clinic, March 13. A stained specimen from the lesions of the gums revealed numerous fusiform bacilli and the spirochete *Borrelia vincenti*. A diagnosis was made of moderately severe, acute ulcerative stomatitis due to Vincent's organisms for which he was admitted to the hospital.

At the time of admission he was acutely ill, his temperature was 102.2 F and the pulse rate was 110 per minute, his throat was hyperemic and there were moderate ulcerations of the gums about the lower left molars. These ulcers contained a necrotic exudate. Symptomatic treatment consisting of sodium perborate gargles and acetylsalicylic acid was given. The following morning the temperature was 103.2 F. The ulcerations were more extensive and he was critically ill. The leuko-

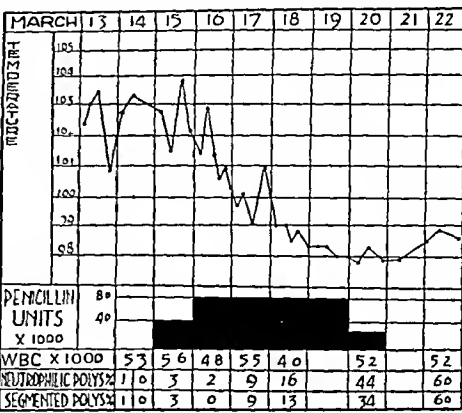


Chart 2—Course in case 2

cyte count was 5,370 per cubic millimeter, with 0 per cent neutrophilic polymorphonuclear cells, 74 per cent monocytes, 10 per cent large lymphocytes and 16 per cent small lymphocytes. The hemoglobin was 75 per cent and there were 4,280,000 erythrocytes per cubic millimeter.

The third day the patient was very listless and apathetic. He could not take food or fluid by mouth. His temperature was 103.4 F and the pulse rate was 112 per minute. The leukocyte count was 5,600 per cubic millimeter, with only 3 per cent granulocytes. Cultures of the mouth lesions revealed nonhemolytic staphylococci.

A diagnosis of agranulocytic angina was made, and penicillin therapy was begun in doses of 10,000 units intramuscularly every three hours. His temperature remained between 103 and 104 F for twenty-four hours and then began to fall by lysis and was normal in thirty-eight hours. He was decidedly improved. The ulcers in the mouth healed rapidly and were absent by the sixth day of therapy. Granulocytes began to reappear in the blood on the second day of the penicillin therapy and continued to increase, as is shown in chart 2.

On March 22 the leukocyte count was 5,200 per cubic millimeter with 60 per cent polymorphonuclear neutrophils, 18 per cent large lymphocytes, 5 per cent small lymphocytes, 15 per cent monocytes and 2 per cent eosinophils.

In addition to the 380,000 Oxford units of penicillin, this patient was given thirty capsules of yellow bone marrow and two transfusions of 250 cc of citrated blood.

Convalescence was rapid and uneventful and he was discharged to duty thirteen days after his admission. Observations made during the next three weeks revealed that he remained well, blood counts were normal and heterophile agglutins were not present in the blood.

CONCLUSION

It is our opinion that the primary suppression of the bone marrow in these 2 cases was due to mapharsen, and that further suppression may have been caused by the secondary infection. The control of the secondary infection by penicillin therapy allowed spontaneous leukocytic regeneration to occur.

Although both of our patients received additional therapy the striking improvements were observed to occur during the first twenty-four hours of the penicillin therapy. From the results obtained in these 2 cases we believe that further trial of penicillin in the treatment of agranulocytosis is indicated.

4 Differential blood stains have been reviewed by Cyrus C. Sturgis, M.D.

COMPRESSION FRACTURE RESULTING FROM ACCIDENTAL  
STIMULATION OF CAROTID SINUS

MAJOR CHARLES U. HAUSER  
Chief of Orthopedic Section AAF Regional Station Hospital  
Langley Field Virginia  
MEDICAL CORPS ARMY OF THE UNITED STATES

An unfortunate complication resulting from a simple office procedure recently occurred in the orthopedic clinic of the AAF Regional Station Hospital Langley Field, Virginia. The cause of the mishap provides interesting speculation and again indicates the seriousness of even the most casual routine office procedures. For these reasons a summary of the case history is presented.

Lieut. Col. J. B. S. reported to the orthopedic clinic because of intense pain and swelling of his right wrist present for three days following a flexion strain incurred during a volley ball game. Examination of the wrist revealed tenderness and swelling of the sheath of the extensor carpi radialis with crepitation on wrist flexion, increased local heat and intense pain on any motion. A diagnosis of traumatic tenosynovitis was made and plaster immobilization of the hand and forearm in a position of comfort was advised. No preliminary medication, injection or manipulation was performed. While sitting on an office stool, the patient was instructed to hold his hand in a comfortable position for the application of a light plaster cast over several layers of sheet wadding. During the application of the cast the patient complained of faintness, and his head slumped forward against his moderately tight neck band. Before the nurse could revive him with aromatic spirit of ammonia or loosen his collar band a strong convulsion gripped him, causing his back to flex sharply with all his flexors tightening in a tetanic spasm, which lasted for a few seconds. The convulsion was not unlike that which is induced in metrazol or insulin shock therapy. Unfortunately, neither the blood pressure nor the pulse was recorded during the excitement of the convulsion. He was immediately lifted from the stool and laid on the examining table, where he remained limp and unconscious for about five minutes. There was no loss of sphincter control. On recovery the patient immediately complained of terrific pains in the dorsolumbar spine, and subsequent x-ray films revealed compression fractures of the eleventh and twelfth dorsal vertebrae, resulting in about 25 per cent reduction in the width of the anterior portion of the bodies. The fractures were treated in the conventional manner, satisfactory reduction being obtained by the method of Davis, with the application of a hyperextension cast. The cast controlled his symptoms and he was able to resume his administrative duties within two months, his back supported by the body cast. The innocent appearing tenosynovitis disappeared after two weeks of plaster immobilization followed by a course of physical therapy.

In the absence of a history of similar attacks, it must be assumed that several factors contributed to the convulsion. The right carotid sinus was found to be hyperirritable, as subsequent pressure over the sinus produced dizziness and faintness. His normal fasting glucose level was 93 mg, although there was a normal response to the Evan and Rose sugar tolerance test. Since the accident occurred around 11 a. m. after the patient had foregone his breakfast, it was felt that his blood sugar at that time was abnormally low. Fatigue from several sleepless nights, apprehension over the original injury, pain in his wrist and the usual hospital aroma, added to the low glucose level, all helped to lower the threshold for stimulation of his normally hypersensitive carotid sinus. The pressure of a tight collar against his neck, which was acutely flexed by the weight of his unsupported head, had served as a trigger which precipitated his convulsion. Convulsions from pressure applied to a hyperirritable carotid sinus are rare but have been observed. To anticipate all these complicating factors before the application of a simple forearm cast would, of course, have been impossible. The unpredictable could easily have been prevented, however, if one simple precaution had been observed in the handling of the patient. This complication should help to emphasize again the danger inherent in any treatment given to a patient who is not in a horizontal position.

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

*The following additional articles have been accepted as conforming to the rules of the Council on Pharmacy and Chemistry of the American Medical Association for admission to New and Nonofficial Remedies. A copy of the rules on which the Council bases its action will be sent on application.*

AUSTIN SMITH, M.D., Secretary

CHORIONIC GONADOTROPIN (See New and Non-official Remedies, 1944, p. 445)

The following dosage forms have been accepted

SHARP & DOHME, INC., PHILADELPHIA

'Lyovac' Chorionic Gonadotropin, 500 International Units 5 cc. A powdered preparation which, when diluted with the accompanying 5 cc of sterile distilled water containing 0.35 per cent of phenol provides a solution having a potency of 100 international units per cubic centimeter.

'Lyovac' Chorionic Gonadotropin, 1,000 International Units 10 cc. A powdered preparation which when diluted with the accompanying 10 cc of sterile distilled water containing 0.35 per cent of phenol, provides a solution having a potency of 100 international units per cubic centimeter.

'Lyovac' Chorionic Gonadotropin, 2,500 International Units 5 cc. A powdered preparation which when diluted with the accompanying 5 cc of sterile distilled water containing 0.35 per cent of phenol provides a solution having a potency of 500 international units per cubic centimeter.

THIAMINE HYDROCHLORIDE (See New and Non-official Remedies 1944 p. 608)

The following dosage forms have been accepted

MERCK & CO., INC., RAHWAY, N. J.

Thiamine Hydrochloride (Powder)

HORTON & CONVERSE, LOS ANGELES

Tablets Thiamine Hydrochloride 5 mg and 10 mg

GEORGE A. BREON AND CO., INC., KANSAS CITY, MO.

Tablets Thiamine Hydrochloride 10 mg

OUABAIN (See New and Nonofficial Remedies, 1944, p. 314)

The following dosage forms have been accepted

CARROLL DUNHAM SMITH PHARMACAL CO., ORANGE, N. J.

Ampuls Ouabain Injection 0.5 cc and 2 cc

Ampuls Ouabain and Digitalis Tablets 2 cc. Packages containing two 2 cc. 0.5 mg ampuls of ouabain and one vial of 20 tablets digitalis 0.1 Gm.

THEOPHYLLINE ETHYLENEDIAMINE (See New and Nonofficial Remedies 1944, p. 373)

The following dosage forms have been accepted

WILLIAM R. WARNER & CO., INC., NEW YORK

Ampuls Solution Aminophylline 0.24 Gm in 10 cc

Tablets Aminophylline 0.1 Gm

TETANUS ANTITOXIN (See New and Nonofficial Remedies, 1944, p. 544)

The following additional dosage form has been accepted

PITMAN-MOORE CO., INDIANAPOLIS

Tetanus Antitoxin Pepsin Digestion Refined. Vials containing 1,500 units

ASCORBIC ACID (See New and Nonofficial Remedies, 1944, p. 620)

The following dosage form has been accepted

CARROLL DUNHAM SMITH PHARMACAL CO., ORANGE, N. J.

Tablets Ascorbic Acid 100 mg

RIBOFLAVIN (See New and Nonofficial Remedies, 1944, p. 613)

The following dosage form has been accepted

ENDO PRODUCTS, INC., RICHMOND HILL, N. Y.

Tablets Riboflavin 5 mg

PYRIDOXINE HYDROCHLORIDE (See New and Nonofficial Remedies, 1944, p. 618)

The following dosage form has been accepted

MERCK & CO., INC., RAHWAY, N. J.

Vitamin B<sub>6</sub> Hydrochloride (Powder)

# THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

535 NORTH DEARBORN STREET CHICAGO 10, ILL

Cable Address

Medic Chicago

Subscription price

Eight dollars per annum in advance

*Please send in promptly notice of change of address giving both old and new always state whether the change is temporary or permanent. Such notice should mention all journals received from this office. Important information regarding contributions will be found on second advertising page following reading matter.*

SATURDAY DECEMBER 16, 1944

## STUDIES ON PINTO'S DISEASE

The discovery in Cuba in 1938 of the spirochetel etiology of Pinto's disease gave a new impetus to the study of the disease itself and also to that of yaws and syphilis. Within the last five years numerous reports have appeared concerning the occurrence of pinta in several countries in the American continent in which the condition had not been previously observed. With the publications of Fonso Gandolfo and his co-workers<sup>1</sup> in Argentina and the article of Lieberthal<sup>2</sup> in this country it would seem that the disease is prevalent in practically the whole American hemisphere. True only 3 patients have been studied by Lieberthal in Chicago but, since 2 of them came from southern states near the heavily infected Mexico it is highly probable that more cases will be diagnosed in the future. Although comprehensive reviews have already been published in English,<sup>3</sup> one must read the numerous original publications in Spanish to realize fully the painstaking efforts required for the solution of each of the problems posed by the disease in a long sequence of events that started hundreds of years ago.

The conquistadores, including Cortez himself, apparently observed Pinto's disease and wrote about it. Polanco in 1760 included pinta in his *Diccionario Berecochea* and Corona in 1811 speaks for the first time of the beneficial effects of mercury, and fifty years later J. J. Leon<sup>4</sup> gave the first clinical description of the disease, a study considered today as a classic. The effectiveness of arsphenamine was established in 1913 by Gratz in Bogota. Almost simultaneously but independently Menk in Colombia and Gonzalez Herrejon in Mexico found in 1925 that the Wassermann reaction was positive in a high percentage of cases and the

following year Gonzalez Herrejon<sup>4</sup> promulgated his thesis that pinta was a spirochetel disease different from yaws and syphilis. This conception was brilliantly confirmed in 1938 by a Cuban group, Alfonso Armenteros, Grau Triana, B. Saenz, Pardo-Castello and Leon y Blanco, and by the subsequent studies of Leon y Blanco in Mexico. The mycosic theory currently accepted and sponsored by authorities such as Sabouraud was eliminated forever.

One also finds in the Spanish publications some refreshing anecdotes supplying the inside and humane part of the story. There was naive Father Alzate, who in 1759 thought that the disease was introduced in Michoacan as the result of a volcanic eruption, or the fantastic tales about men contracting pinta through sexual intercourse with some species of giant lizards, also the more realistic Bishop Fuero, who concretely blamed a woman from Chiapas for the spread of pinta—not a venereal disease though—throughout his diocese. We wonder about the power of deduction of J. J. Leon,<sup>5</sup> who in 1862 ascribed the disease to the ingestion of corn infected by a definite species of fungus, adding, however, that there was in the lesions a virus capable of transmitting the disease to other human beings through a vector insect. We enjoy reading about the innate wisdom of the Mexican Indians who got jobs in the mercury plants whenever affected by pinta and how this empirical observation suggested to Soberon y Parra<sup>6</sup> the use of arsphenamine and bismuth compounds for treating the disease.

Credit for the study of the early manifestations of pinta goes entirely to Leon y Blanco, who inoculated himself with infectious material and followed both clinically and bacteriologically the evolution of his lesion. Thus two important Latin American contributions to medicine, namely the final proof of the spirochetel etiology of pinta and that of the unity of Oroya fever and verruga peruana by Carrion in 1885 were the result of experiments on the experimenter himself. As it is well known, Carrion died the victim of his own scientific curiosity.

However, historical research by Aguirre Pequeño<sup>7</sup> has disclosed an observation by Iturbide in 1870 concerning a soldier who wounded himself with his bayonet after stabbing a person affected with pinta and contracted the disease himself. More important, though, are the studies that Tellez<sup>8</sup> described in his monograph. He stated that on numerous occasions he transmitted the disease to healthy persons by scarification with a lancet soiled with blood of pinta's patients, and he thought that insects of the genus *Empis* were vectors of the disease through the same way of transmission.

<sup>1</sup> Fonso Gandolfo C. Steinberg I. R. Rugiero H. R. del Ponte E. Crivellari C. and Coria J. B. *Primer Congreso Nacional sobre Enfermedades Endémico-Epidémicas* Buenos Aires 1942.

<sup>2</sup> Lieberthal E. P. Pinta (mal del Pinto Carate) in *Continental United States J. A. M. A.* 123: 619 (Nov. 6) 1943. Stokes J. H. Beerman Herman, and Ingram N. R. *Am. J. M. Sc.* 205: 611 (April) 1943. Fox Howard Chapter XXII in *Clinical Tropical Medicine* Z. Taylor Berkovitz editor New York. Leon<sup>3</sup>.

<sup>3</sup> Leon J. J. *Bol. Soc. Mex. de Geog. y Estadística* 8: 503 1860.

<sup>4</sup> Gonzalez Herrejon S. and Pallares M. *Hosp. gen.* 2: 109 1927.

<sup>5</sup> Soberon y Parra G. *Avance med.* 4: 145 1943.

<sup>6</sup> Aguirre Pequeño F. *Medicina* 22: 13 1942.

<sup>7</sup> Tellez G. *El mal de Pinto* pamphlet Mexico 1889.



Tellez also stated that pinta was an exanthematic form of syphilis

Contrasting with the wealth of information on the human disease naturally or experimentally induced, nothing as yet has been seriously done in attempting to reproduce the disease in animals. This situation should not last long, for one can easily visualize how fruitful it will be to have at one's disposal still another species of spirochetes, *Treponema herrejoni* or *carateum*, to carry out comparative studies with the other two species *Treponema pertenue* and *Treponema pallidum*. One can also foresee that the old debate on the European or American origin of syphilis will flare up again on the basis of the extremely probable fact that Pinta's disease was prevalent in America before Columbus.

It would be extremely useful if the excellent book by Leon y Blanco<sup>8</sup> could be translated into English, preferably in an enlarged and better illustrated edition.

#### HUMAN REQUIREMENT FOR THIAMINE

If the science of nutrition is to fulfil its destiny of service to man, the vast collection of fundamental data on experimental animals must be adapted to the needs of man without delay. Even before the Nutrition Conference in 1941, evidence with respect to dietary deficiencies in the nation had been secured. This information was amplified in quantity and implication<sup>1</sup> in 1943. Reliable data must be secured on human requirements for the various dietary essentials. The recommendations made by the Food and Nutrition Board of the National Research Council in 1941 have served as a useful guide in this respect. In the interim active investigation, particularly in the field of the vitamins, has continued in an effort to obtain more adequate criteria for detecting early deficiency states in man and also to improve the analytical methods involved.

Two summaries dealing with the human requirement for the antineuritic vitamin—thiamine, or vitamin B<sub>1</sub>—have recently been published. Holt,<sup>2</sup> in considering the minimum thiamine intake required for the maintenance of health, points out that the composition of the diet affects the requirement of this vitamin. He evaluates the various criteria for adequacy—protection against beriberi, excretion of a definite portion of a test dose of the vitamin, control of the level of pyruvate in the blood, prevention of early accepted signs of deficiency—and concludes that under constant and close dietary control the minimum requirement for the normal human adult is between 0.13 and 0.17 mg per thousand calories. With ordinary food consumption freedom from thiamine deficiency can be

insured by 0.24 to 0.44 mg per thousand calories. It is noted that age, pregnancy, sex and exercise do not materially alter this value for normal persons.

Essentially the same experimental evidence bearing on recent studies of the human requirement for vitamin B<sub>1</sub> has been surveyed by Melnick.<sup>3</sup> Various factors operate to give results which differ in the various studies, the nutritional status of the subjects prior to the test, the length of the experimental period and the criteria used for estimating the needs represent variations in technique which bear on the final conclusions. The minimum requirement for the sedentary adult is placed at 0.35 mg per thousand calories. In view of the inevitable losses in cooking and of the uncertainties in absorption and utilization, Melnick considers the current recommendation of the National Research Council, 0.6 mg per thousand calories, "as offering a liberal but necessary margin of safety."

The foregoing discussion calls attention to the complex problem presented by any attempt to evaluate exact human dietary requirements. Despite differences of interpretation of somewhat divergent results, it is clear that such progress has thus far been made as to elicit growing confidence in the estimates currently available.

#### Current Comment

##### EFFECT OF AMPHETAMINE SULFATE ON PHYSICAL AND PSYCHIC PERFORMANCE

In Alwall's experiments<sup>1</sup> large groups of soldiers were thoroughly fatigued by two or three nights of marching and exercises during the intervening one or two days, with little opportunity to sleep. In the course of the experiment the men marched 125 kilometers over a partly swampy ground with the temperature of the air being about 41 F. The men slept on an average three and one-fifth hours in the course of the entire experiment. On the termination of the fatigue exercises some of the men were given tablets containing 20 mg of amphetamine sulfate, while others were given placebo tablets. Two and one-half hours later both groups were made to run 3 kilometers. Compared with the initial record established by the two groups just before they were subjected to the fatigue experiment, the postfatigue 3 kilometers run required 95 seconds more for the men given placebos and 18 seconds less for the men given amphetamine tablets. Seventy-one of the men in the amphetamine group of some 250 experienced unpleasant effects from the drug and these men gave a better performance. They were probably more susceptible to the drug, so that the administered dose was for them close to the upper therapeutic limit. The same dose of amphetamine administered after the fatigue period improved the rapidity of reading and

<sup>8</sup> Leon y Blanco, F. *El mal de Pinta*. Pinta o Carate. Monografías médicas. Balmit. Compañía General Editora S. A. Mexico D. F. 1942.

<sup>1</sup> National Research Council Bulletin 109. November 1943.

<sup>2</sup> Holt, L. E. Jr. *Federation Proc.* 3: 171 (Sept.) 1944.

<sup>3</sup> Melnick, Daniel. *J. Am. Dietet. A.* 20: 516 (Sept.) 1944.

<sup>1</sup> Alwall, Nils. Studien über die Einwirkung von Benzodrin und Pervitin auf die physische und psychische Leistungsfähigkeit hochgradig ermüdeter Menschen. *Acta med. Scandinav.* 114: 33. 1943.

accuracy as determined by the Bourdon test. In persons who were not fatigued 20 mg of amphetamine diminished the ability for solving arithmetical problems. This was particularly true for more difficult and complicated problems than for the easier problems. The same dose administered to fatigued persons at dawn improved the speed and decreased the error percentage in solving arithmetical problems. However, the same tests made in the afternoon no longer exerted a favorable effect, and Alwall believes this due to the fact that fatigue is greatest at about early dawn and decreases in the course of the day, even after a long lack of sleep. The impairment of performance by amphetamine in the daylight tests is not as pronounced in fatigued persons as in the nonfatigued. The condition of the person is important, therefore, in anticipating the amphetamine effect. The same dose may have a favorable effect on the performance under a certain set of conditions and an indifferent or unfavorable effect at another time or under different conditions. A favorable effect is to be expected in the presence of fatigue. The experiments on the effect of amphetamine on marksmanship in target practice in fatigued persons was indecisive but seemed to indicate that amphetamine rather impaired the accuracy of aim in good marksmen.

#### DIARRHEA AND BACILLARY DYSENTERY

The specific dysenteries and nonspecific diarrheas become a major problem in time of war. Military personnel are not alone involved, however, recently Sandweiss<sup>1</sup> reported observations on 250 civilian patients in Detroit, each of whom had experienced an attack of nausea, vomiting, abdominal cramps and diarrhea. He differentiates the patients into five clinical groups, depending on the severity and duration of their symptoms. Cultures of the stools of 190 of the patients were taken in order to determine whether identifiable pathogenic organisms were responsible for the gastrointestinal symptoms. Twenty-five different strains of paratyphoid or *Salmonella* organisms were isolated in 68 cases. Twenty-seven of the patients were infected with two or three different organisms. Two of the patients died. The outbreak was mild in character, but many of the patients continued to harbor pathogens in their stools for months after the acute episode had subsided. These persons were consequently a hazard as carriers, particularly when employed in food establishments. Sandweiss employed phthalylsulfathiazole (sulfathalidine) for 33 carriers of dysentery organisms. The results were compared with a similar group of 39 patients not so treated. Unfortunately the drug did not appear to influence either the course of the illness or the carrier state, and the results were therefore not conclusive. Indeed, a higher proportion of patients who were treated with the sulfonamide continued as bacillary dysentery carriers than did the untreated patients. A comprehensive preventive program for bacillary dysentery is recommended. This should include the more rigid examination of food handlers with the addition of

routine stool cultures and more frequent follow-up examinations of all carriers. In view of the addition to the population of returning military and civilian personnel, many of whom presumably will be carriers of bacillary dysentery, these recommendations for an intensified preventive program are particularly timely.

#### CHRONIC ILLNESS IN AN URBAN AREA

The Eastern Health District of Baltimore, which comprises two city wards containing about 11,000 white families and 2,800 colored households, was chosen for a five year survey of chronic illness.<sup>1</sup> This was considered reasonably representative of the type of locality in which an urban wage earning population lives. The following chronic diseases were included: manifest mental disorders, psychoneuroses, psychopathic and personality or behavior disorders, heart disease or hypertension, arthritis, diabetes, varicose veins, gall-bladder disease, peptic ulcer, chronic nephritis, cancer, rheumatic fever, tuberculosis, and syphilis. Out of each thousand persons in the population of 5 years of age and older there were 32 cases of hypertension or heart disease, 18 cases of manifest and subclinical mental disorders, 16 cases of arthritis, 7 cases of rheumatic fever, 6 cases of diabetes and 11 cases of other chronic conditions. This resulted in a total prevalence of these chronic illnesses of 90 per thousand of population. Families chosen because of a case of chronic disease showed an excess rate of illness among its members as compared with the other family groups. The rate of physician visits for these patients with chronic disease was 2,375 per thousand of population or slightly more than two visits per person annually. The rate of clinic visits was 1,517 per thousand, giving a total of about four visits per thousand annually. The same population group had an additional 2.5 visits per person for illness not related to the chronic disorder. Patients with chronic disease, therefore, had from three to four times as much medical care (measured by the number of visits from a physician) as did the other members of their families and the general population studied. Persons in the 381 "chronic disease families" formed 26 per cent of the total observed population, had 54 per cent of the total illnesses and received about 50 per cent of the medical care for illness given to the total population. Persons from these few families also constituted almost 40 per cent of the persons hospitalized during the second year of the morbidity study. This interesting report again emphasizes the necessity for sound fundamental studies of the need for and cost of medical care in differently constituted groups. A large part of the medical care problem is the control of the housing, dietary and other environmental factors which affect the development of chronic disease. From the information presented it could be deduced that any plan to spread the cost of medical care over the entire population studied would mean that a comparatively small group and one perhaps especially liable to chronic illness would receive a disproportionate share of the benefits.

1 Sandweiss David J. *Diarrhea and Bacillary Dysentery in Detroit*. *Clinics* 3: 553 (Oct) 1944.

1 Downes Jean. *Findings of the Study of Chronic Disease in the Eastern Health District of Baltimore*, Milbank Memorial Fund Quart 22: 337 (Oct) 1944.

# MEDICINE AND THE WAR

## NAVY

### NAVY RESEARCH UNIT DEVELOPS NEW BLACKOUT TENT

An emergency first aid and blackout tent, designed to permit physicians to work after dark in attack zones, was recently developed by the Navy's Medical Research Laboratory, Camp LeJeune, North Carolina. One tent will be issued to each battalion and regimental medical department and one to each medical company. The tent, which is made of neoprene coated balloon cloth, together with its four lines weighs only 6 pounds 15 ounces and enables physicians to maintain blackout conditions when emergency operations must be performed. A flashlight can be used directly on the operative area, and additional light can be obtained by suspending another flashlight from the inside ties. Eight casualties, lying side by side on ponchos or blankets, can be sheltered by draping the tent over them. It will provide satisfactory conditions for examining casualties, securing hemostasis, dressing and redressing wounds and administering plasma.

The Camp LeJeune Medical Field Research Laboratory has also developed a poleless field stretcher, made of nylon weighing less than 7 ounces, which can be carried in large quantities by combat units on extended forays, and an improved hospital corpsman's pouch. Both items will be placed in production soon.

### NAVY AWARDS AND COMMENDATIONS

#### Lieutenant Samuel N Etheredge Jr

Lieut Samuel N Etheredge Jr, formerly of Norfolk, Va, was recently awarded the Bronze Star Medal. The citation accompanying the award read: "For heroic achievement as medical officer attached to a Marine rifle battalion during an engagement with enemy Japanese forces at Piva Forks, Bougainville,

Solomon Islands, on Nov 24, 1943. Constantly subjecting himself to an intense barrage of hostile artillery and mortar fire, Lieutenant (then Lieutenant junior grade) Etheredge fearlessly and courageously established and operated a battalion aid station during a devastating attack by our forces against a strong enemy position. Carrying out his perilous task with outstanding initiative and cool courage, he skilfully ministered to the injured throughout the fierce bombardment and, by his gallant devotion to duty, inspired his assistants to remain at their posts despite the extreme danger. Lieutenant Etheredge's outstanding professional ability and personal valor in the face of grave peril were in keeping with the highest traditions of the United States Naval Service." Dr Etheredge graduated from the University of Virginia Department of Medicine, Charlottesville, in 1937 and entered the service Oct 12, 1942.

#### Lieutenant (jg) Paul H Koren

Lieut Paul H Koren, formerly of Scarsdale, N Y, was recently awarded the Silver Star Medal. The citation read: "For distinguishing himself by gallantry and intrepidity in action as a medical officer of a beach battalion in action against the enemy during the invasion of France, June 6, 1944. Lieutenant (junior grade) Koren engaged in rendering medical aid and attention to the wounded immediately on landing at the water's edge at H plus thirty-two minutes and continued this work regardless of his personal safety throughout D day, exposed himself to the machine gun, rifle and artillery fire of the enemy and inspiring both wounded and unwounded men with confidence by his exemplary action. The conduct of Lieutenant (junior grade) Koren was in accord and keeping with the highest traditions of the United States Naval Service." Dr Koren graduated from New York Medical College, Flower and Fifth Avenue Hospitals, New York, in 1942 and entered the service in June 1943.

## ARMY

### BRITISH PSYCHIATRIST INSPECTS ARMY FACILITIES HERE

Brigadier John R Rees, consulting psychiatrist to the British army, now in this country as Salmon guest lecturer, visited the Office of the Surgeon General recently where he conferred with the Neuropsychiatry Consultants Division and then inspected neuropsychiatric facilities at Crile General Hospital, Cleveland, and Winter General Hospital, Topeka, Kan. While in Kansas he also participated in the Undersecretary of War's Conference at Fort Leavenworth on "The Military Offender."

Brigadier Rees delivered the annual Thomas W Salmon Lectures at the New York Academy of Medicine, November 20-22 and is now on a lecture tour as guest of the Salmon committee. The Salmon lectures were founded in honor of Col Thomas W Salmon, Medical Corps, who was chief of neuropsychiatry in the first world war.

### ARMY MEDICAL CORPSMAN RECEIVES BRONZE STAR

Staff Sergeant Benjamin T Mapes, formerly of New York, was recently awarded the Bronze Star Medal for meritorious achievement in connection with military operations against the enemy in the northern Solomon Islands, July 28, 1943 to July 13, 1944. Sergeant Mapes had been a member of the staff of Willard State Hospital, New York, for sixteen years at the time of his enlistment in the fall of 1942. He was stationed at Fitzsimons General Hospital, Denver, before leaving the States two years ago.

### ARMY AWARDS AND COMMENDATIONS

#### Captain William O Finkelburg

Capt William O Finkelburg, formerly of Winona, Minn, was recently awarded the Bronze Star Medal for meritorious service against the Japanese forces at New Georgia, British Solomon Islands, July 31, 1943." Dr Finkelburg graduated from the University of Minnesota Medical School, Minneapolis, in 1942 and entered the service June 29, 1942.

#### Lieutenant Colonel Marion R Mobley

Lieut Col Marion R Mobley, formerly chief of the hard of hearing section of Deshon General Hospital, Butler, Pa, was recently commended for especially meritorious service by Major Gen Philip Hayes commanding general of the Third Service Command. The citation read: "for exceptionally meritorious service from May 28, 1943 to July 27, 1944 as chief of the service for the rehabilitation of the hard of hearing established at Deshon General Hospital, Butler, Pa, Nov 1, 1943. Noting the large number of deafened patients requiring treatment and appreciating the limitations of ordinary clinical facilities, Colonel Mobley, by his indefatigable energy, far sighted planning, continuous contact with prominent individuals and groups, military and civilian and by designing clinic buildings and facilities, established an ideal program that has been copied in large part by other centers for the hard of hearing. He imbued all who worked with him with his enthusiasm and broad understanding.

As the program grew beyond all expectations, his health finally gave way. Even as a bed patient in the hospital he maintained close advisory contact with the program." Dr Mobley graduated from the Medical College of the State of South Carolina, Charleston, in 1915, entered the service June 5, 1942 and retired from the Army in September 1944 because of a physical disability.

#### Captain Sion F Sherrill

Capt Sion F Sherrill formerly of Belle Fourche, S D, was recently awarded the Bronze Star Medal for "meritorious services against the Japanese forces at Guadalcanal, British Solomon Islands, Jan 19, 1943." Dr Sherrill graduated from the University of Nebraska College of Medicine Omaha, in 1931 and entered the service April 15, 1941.

#### Captain Brian J Gallagher

The Silver Star was recently presented to Capt Brian J Gallagher, formerly of Bellerose, N Y, for bravery and gallantry. The official citation read "For gallantry in action. On the 1st of April 1943, during the attack by the 3d Battalion, East of El Guettar, Tunisia, Captain Gallagher, while under constant observation by the enemy from high ground, personally supervised the evacuation of the wounded from the field of battle with utter disregard for his personal safety. Captain Gallagher

was active on the front lines, aiding the wounded and exposed himself time after time to enemy machine gun and artillery fire. By his bravery and untiring efforts he saved the lives of a great number of men and his example of steadfast adherence to duties was an inspiration to all men of his detachment." Dr Gallagher graduated from Long Island College of Medicine, Brooklyn, in 1934 and entered the service in June 1942.

#### Captain Edward Y Postma

Capt Edward Y Postma, formerly of Grand Rapids, Mich, has been awarded the Bronze Star Medal for meritorious achievement against the enemy. He is serving with the 106th Medical Battalion in the southwest Pacific. Dr Postma graduated from the University of Michigan Medical School, Ann Arbor, in 1940 and entered the service in July 1942.

#### Captain Charles S Becker

An award of the Bronze Star Medal was recently made to Capt Charles S Becker, formerly of Jamestown, N Y. The citation reads "for meritorious achievement in connection with military operations against the enemy at Bougainville, Solomon Islands, April 6, 1944." Dr Becker graduated from Western Reserve University School of Medicine Cleveland, in 1942 and entered the service July 3 1943.

## MISCELLANEOUS

### FOUR MEMBERS OF TYPHUS COMMISSION DECORATED

Award of the United States of America Typhus Commission Medal to four members of the commission was recently announced by the War Department as follows:

To Col Harry A Bishop Medical Corps, Medical Section Headquarters Mediterranean Base Section

"For exceptionally meritorious conduct in the performance of outstanding services from Dec 28 1943 to Feb 19, 1944 at Naples Italy. Colonel Bishop was placed on duty with the American Typhus Commission at Naples at the height of a typhus epidemic in that city. As coordinating and executive head of its program he directed the training of military and civilian personnel in typhus control their organization into effectual teams and the securing of needed equipment and supplies. The efficient manner in which this task was accomplished despite the lack of trained personnel and adequate supplies is reflected by the rapidity with which the disease was brought under control. By his forceful leadership and application to duty Colonel Bishop aided materially in alleviating suffering and preventing what might have become a major catastrophe."

To Capt Edward Harvey Cushing, Medical Corps, United States Naval Reserve

"For meritorious service in connection with the work of the United States of America Typhus Commission. On Captain Cushing, the first executive officer of the commission fell the responsibilities of administering and directing the work of the commission in the early months of 1943, when the director was invalided as a result of illness. To the contribution which Captain Cushing had made to the planning of the first overseas expedition of the United States of America Typhus Commission he added personal service of high order in his forceful and tactful administration of the activities of the commission during a difficult period at its first station in the Middle East."

To Dr Alexander G Gilliam senior surgeon United States Public Health Service

"For exceptionally meritorious service in connection with the work of the United States of America Typhus Commission. During the first half of 1943 Dr Gilliam conducted surveys of typhus fever in Egypt and in Tripoli and made the first field investigations of the efficacy of typhus vaccine among native Egyptians. During the latter part of 1943 he made surveys of typhus fever in India and in China. While engaged in the investigation of scrub typhus fever in Burma, where the disease was assuming high importance as a military problem, Dr Gilliam suffered a severe attack of this infection. As the first

epidemiologist of the United States of America Typhus Commission Dr Gilliam contributed expert knowledge and original observations. To his scientific attainments were added qualities of enthusiasm, tact and comprehension which advanced the success of the commission's activities."

To Dr Fred L Soper field staff member of the International Health Division of the Rockefeller Foundation

"For meritorious service in connection with the work of the United States of America Typhus Commission. As one of the original members of the commission, Dr Soper contributed to the organization of its first expedition to Egypt and to the direction of its first field studies in typhus control. In the latter part of 1943 and early in 1944, as head of the Rockefeller Foundation group in Italy, he cooperated with the United States of America Typhus Commission in stopping the outbreak of typhus fever at Naples. Dr Soper placed at the service of the commission his many years of distinguished service in the administration and operative control of epidemic diseases."

### VETERANS REHABILITATION CENTER

The Veterans Rehabilitation Center (2449 West Washington Boulevard Chicago), operated jointly by the Department of Public Welfare, State of Illinois and the Illinois Veterans Service Inc, was formally dedicated November 3. The center has been receiving World War II veterans for treatment of selected psychiatric disorders since Sept 11, 1944. The existing floor plan of the Washington Boulevard Hospital was utilized, operating rooms, wards, more desirable single rooms and adjoining hospital grounds were equipped and refurnished for use as arts and crafts rooms, recreational rooms, drama rooms, music rooms, gymnasium and gymnasium grounds.

All projects are under the supervision of full time specialists, who are assisted by qualified volunteers. The present treatment capacity of the center is 100 patients which may easily be expanded to twice that number by slight increases in specialist personnel. Thirty beds are available for those veterans requiring psychiatric nursing supervision. It is anticipated that the majority of the veterans under treatment will live in their own homes or in suitable living quarters provided for them outside the center.

The psychiatric staff of the center consists of Dr Alfred P Solomon clinical director, Dr Thomas L Fentress associate clinical director, Dr David Slight professor of psychiatry at the University of Chicago, Dr Clarence Neymann, professor of psychiatry at Northwestern University Medical School, and Dr Morris Braude associate professor of psychiatry at the University of Illinois College of Medicine. The clinical director

works in close cooperation with Dr Conrad Sommer, deputy director of mental hygiene, Department of Public Welfare, State of Illinois. Dr Sommer was responsible for the development of the initial plans for the center.

Each of the staff members has the responsibility of patients assigned to him for treatment either in individual or in group psychotherapy, and the supervision of one department of the activity program. The activity program has two major functions, diagnostic and therapeutic.

Shortly after the veteran has been introduced to the activity program, his work habits, his attitudes toward work and play, his vocational interests and antipathies, his skills and aptitudes and the character of his human relationships become apparent. These clinical observations, combined with the psychiatrist's study of the patient, the social service record and the results of psychological testing, provide the basis for the adjustment of the activity program to the needs of the patient.

Activities are prescribed in the same manner as the orthopedic surgeon prescribes specific exercise for an extremity to encourage restoration of an impaired function. In the prescription of an activity designed to alter behavior, it is necessary that the psychiatrist orient the activity therapist as to the nature of the patient's emotions, his character traits and problems, so that the therapist will know the appropriate attitude to assume toward the patient. Furthermore, the psychiatrist must be aware of the possibilities for psychological use of each activity, so that, combined with the control of the human relationship factor, he is in position to direct development of qualities in the personality with the same degree of specificity with which he can direct development of the biceps muscle.

The function of the inpatient department of the Rehabilitation Center is planned for the treatment of psychoneurotic patients who do not require active medical and surgical care or psychiatric isolation and protection procedures. A primary consideration in all admittances is group morale. For this reason the right is reserved to reject for admittance or to discharge from the hospital any patient whose behavior might disrupt the morale of the group. Patients with physical disabilities that do not require medical or surgical treatment are eligible for admission and treatment of their psychoneuroses. Patients with organic diseases of the central or peripheral nervous system, excluding epilepsy and severe migraine, are eligible for admission if they have psychoneuroses and do not require neurologic care. Patients with psychoneurotic depressions will be accepted for treatment with the reservation that any patients who prove to be suicidal risks may be discharged or refused admission as the Rehabilitation Center is not prepared to give them the necessary care and protection. The mildly schizophrenic who have made a social adjustment and who show no tendency toward overt hostile behavior will be accepted for treatment. No provision has been made to accept for admission patients with paranoid trends or delusions. Certain carefully selected patients with psychopathic personalities or alcoholism will be accepted for treatment if these patients are believed to have a sufficiently hopeful prognosis for a group adjustment. Patients are referred directly to the center, or arrangements are made for admission by a referring agency.

At the dedication of the Veterans Rehabilitation Center Dr Alfred P. Solomon gave an address on 'Activity Therapy at the Veterans Rehabilitation Center', Dr Herman L. Kretschmer gave an address on 'Mental Rehabilitation on a State Level'. An address on 'Men Back from Wars' was given by Col William C. Porter, U. S. Army Medical Corps.

## WARTIME GRADUATE MEDICAL MEETINGS

The following subjects and speakers for Wartime Graduate Medical Meetings have just been announced.

McGuire General Hospital, Richmond, Va. Shock, Capt William A. Weiss, Burns, Dr. E. I. Evans, December 22.

Regional Hospital Langley Field, Va. Rheumatoid Arthritis, Dr. T. Dewey Davis. Cardiovascular Diseases, Dr. Douglas G. Chapman, December 29.

Newton D. Baker General Hospital, Martinsburg, W. Va. Find Results of Intervertebral Disk Operations, Dr. Walter E. Grundy. The Development of Plastic Surgery in World Wars I and II, Dr. John Stuge Davis, December 18.

Deshon General Hospital, Butler, Pa. Colostomy and Its Complications, Dr. Verne A. Dodd, December 19.

Air Base Hospital, Patterson Field, Dayton, Ohio. Diagnosis and Treatment of Pneumonia with Emphasis on Primary Atypical Pneumonia, Dr. B. K. Wiseman, December 20.

## HOSPITALS NEEDING INTERNS AND RESIDENTS

The following hospitals have indicated to the Council on Medical Education and Hospitals that they have not completed their house staff quota allotted by the Procurement and Assignment Service.

(Continuation of list in THE JOURNAL, December 9, page 967)

### CALIFORNIA

Permanente Foundation Hospital, Oakland. Capacity 136 admissions. 3,693. Dr. Sidney R. Garfield, Superintendent (interns, July 1945).

### NEW YORK

New York Post Graduate Medical School and Hospital, New York. Capacity 409 admissions. 8,622. Dr. William H. Meyer, Director of Radiology (1 resident—radiology, early in 1945).

Crouse-Ingling Hospital, Syracuse. Capacity 245 admissions. 7,035. Miss Dorothy Pellenz, Assistant Superintendent (interns).

### OHIO

St. Thomas Hospital, Akron. Capacity 235 admissions. 7,405. Sister M. Eleanor R.N., Superintendent (2 interns, Jan. 1, 1945).

## MEDICAL AID FOR DEPENDENTS OF SERVICE MEN

The North Atlantic area of the American Red Cross has adopted a plan providing for admission of 'a limited number' of service men's dependents to voluntary hospitals without involved investigations of their financial status. The plan developed by Brig. Gen. Ralph K. Robertson of the Second Service Command, provides that the city pay \$325 a day for each patient, the private hospital making up the rest. No money is required from the Red Cross. Mr. E. Roland Harriman, manager of the North Atlantic area, stated that 'the voluntary hospitals have been most generous for years in the admission of large numbers of service men's dependents referred to them by Red Cross chapters. A similar cordial cooperation has been given by the city hospitals and the Department of Welfare. The new plan, Mr. Harriman said, will create 'a slight difference of emphasis which will make the service of voluntary hospitals more readily available.' Proof only of dependency and medical indigence will be required for admission, eliminating the investigation usually made for 'charity cases'.

## GERMANS FEAR SHORTAGE OF DOCTORS

The shortage of doctors in Germany has reached a new low. There are only 35,000 doctors, including those on duty with the armed forces, at the disposal of the 80,000,000 Germans living in Germany according to the Swiss newspaper *Schaffhauser Arbeiterzeitung*.

In an article reported recently to the Office of War Information, the Swiss newspaper said that official Nazi quarters admitted the "rapid increase of tuberculosis and the 'frightening' way the number of miscarriages is mounting, as well as the appearance of several other diseases such as 'different chest and skin diseases'."

"National Socialist circles follow this development with great anxiety, especially since the Third Reich lacks not only doctors but also medicines," the Swiss paper said, adding that this decline of the German people's health was the logical result of 'bad and quantitatively insufficient nutrition'.

## EPIDEMIC OF RABIES IN VIENNA

An epidemic of rabies, believed to have started among German army dogs in the garrison on the outskirts of Vienna about a month ago, is raging in the city and deaths are reported to be assuming alarming proportions particularly among the civilian population. Austrian authorities are enlisting the aid of both press and radio to warn the population in an effort to circumscribe the outbreak. The Vienna radio announced recently that 43 dogs had been shot in the city.

# ORGANIZATION SECTION

## Postwar Medical Service

A meeting of the Committee on Postwar Medical Service was held October 28 at the headquarters office of the American Medical Association in Chicago. The meeting was called to order by the Chairman, Dr Roger I Lee. The following persons were present:

Dr Roger I Lee Boston Chairman  
Lieut Col Harold C Lueth Chicago  
Dr Ernest E Irons Chicago  
Brig Gen Fred W Rankin Washington D C  
Dr Exerts A Graham St Louis  
Rev A M Schwittalla St Louis  
Dr Irvin Abell Louisville Ky  
Dr Francis F Borzell Philadelphia Central Committee Wartime Graduate Medical Meetings  
Dr J F Hassig Kansas City Kan Federation of State Medical Boards  
Mr Graham L Davis Battle Creek Mich American Hospital Association  
Dr R C Williams Washington D C U S Public Health Service  
Col Hugo Mella Washington D C Veterans Administration  
Dr Francis G Blake New Haven Conn  
Dr Frederick A Collier Ann Arbor Mich  
Dr James M Mason Birmingham Ala  
Dr Walter W Palmer New York  
Capt William E Eaton (MC), U S Navy  
Dr Morris Fishbein Chicago  
Dr Arthur W Allen Boston  
Dr Edwin P Jordan Chicago  
Lieut Col Gerard R Gessner Washington D C  
Col George M Powell Washington D C  
Dr Herman L Kretschmer Chicago  
Dr James E Paullin Atlanta Ga  
Dr Victor Johnson Chicago  
Dr H H Shoulders Nashville Tenn  
Mr E R Loveland Philadelphia  
Mr J W Holloway Jr Chicago  
Dr Olin West Chicago  
Dr R L Sensenich South Bend Ind  
C Willard Camaler DDS Washington D C  
Miss Mary Switzer Washington D C Procurement and Assignment Service  
Dr Frank H Lahey Boston Directing Board Procurement and Assignment Service  
Dr Harold S Diehl Minneapolis Directing Board Procurement and Assignment Service  
Dr Harvey B Stone Baltimore Directing Board Procurement and Assignment Service  
Miss Louise V Baker Washington D C Procurement and Assignment Service  
Dr Paul C Barton Washington D C Procurement and Assignment Service

In the absence of the Secretary Dr Alan Gregg the Chairman appointed Dr Ernest E Irons Secretary pro tem.<sup>1</sup>

The minutes of the last meeting of the Committee were approved as circulated. The Chairman read the letter of resignation of Dr Willard C Rappleye in which he stated that he resigned as representative of the Association of American Medical Colleges, being no longer an officer of the Association of American Medical Colleges or of the Advisory Board for Medical Specialties. This resignation was accepted. The Secretary pro tem was directed to request the Association of American Medical Colleges and the Advisory Board for Medical Specialties to name representatives to this Committee. (These requests have been forwarded to the secretaries of the aforementioned organizations.)

The Committee then proceeded to the consideration of the subcommittee reports.

A Lieutenant Colonel Lueth reported on the progress of the tabulation of replies to the questionnaire sent out through the Surgeons General to the medical officers in the three services. Copies of these reports were submitted to the members. This subcommittee was continued.

B The Subcommittee to Confer with the Surgeons General Dr Frederick A Collier, Chairman Dr Walter W Palmer, Rev A M Schwittalla, Dr Victor Johnson and Lieutenant Colonel Lueth. Dr Collier reported for the subcommittee that he, Dr Palmer and Father Schwittalla had conferred with the Surgeon General of the U S Army regarding in service training and problems of demobilization. The subcommittee was asked to continue its work and at as early a date as possible to obtain a conference with the Surgeons General of the U S Navy and of the U S Public Health Service. The report of the subcommittee was received with thanks and the committee continued.

C The relation of the Committee on Postwar Medical Service to the Procurement and Assignment Service was discussed at length. The directing board of the Procurement and Assignment Service has stated that it is its recommendation that Procurement and Assignment terminate with the termination of the war and that its records belong to the government. They would be quite willing to turn these records over but have no power, since the records are government property. Dr Paullin stated that there was much information available in state and local groups which would be valuable in postwar medical demobilization and postwar medical educational plans. Dr Stone suggested that the Committee on Postwar Medical Service might well look into the question of utilization of the knowledge and experience of state chairmen and their committees on Procurement and Assignment with a view to using their information for the assistance of returning medical officers.

The following subcommittee was appointed to draw up a report on the relation of the Committee on Postwar Medical Service and the Procurement and Assignment Service. Dr Ernest E Irons, Chairman, Dr Morris Fishbein, Dr Harold S Diehl, Dr Victor Johnson and Lieut Col Harold C Lueth. This subcommittee is to submit a report at the next meeting of the Committee on Postwar Medical Service.

D Capt William E Eaton for the Medical Corps of the Navy discussed the role of refresher courses in the training of medical officers. The possibilities and limitations of suggested resident training in army and navy hospitals were discussed.

E Problems of the Veterans Administration with respect to medical personnel were discussed. Father Schwittalla suggested that the legal questions involved in the possible establishment of a medical corps in the Veterans Administration be investigated. (The Chairman later appointed as a subcommittee to investigate and report, Rev A M Schwittalla, Chairman, Dr H H Shoulders, Dr Le Roy H Sloan.)

F Dr Francis F Borzell for the Central Committee of the Wartime Graduate Medical Meetings during the discussion emphasized the great contribution which the Wartime Graduate Medical Meetings have made to the medical aspects of the war effort. Dr Borzell indicated the desire of the Central Committee to cooperate in any and all ways with the Committee on Postwar Medical Service. It was pointed out that the armed services would prefer to clear problems through one organization rather than through several. It was therefore agreed that the suggestion of Dr Borzell and his committee be approved and that hereafter the Wartime Graduate Medical Meetings committee will clear through the Committee on Postwar Medical Service.

G Lieut Col Harold C Lueth reported on the activities of the Bureau of Information for medical veterans. The activities of this Bureau will include (1) informational service on educational questions (2) state licensure and (3) relocation. Prospective desires and requirements of returning medical officers having now been approximately determined by the returned questionnaires, the problem now is to determine where the facilities can be obtained. A new questionnaire directed to hospitals and medical educational institutions has now been prepared through the Council on Medical Education and Hospitals under

1 The minutes of the meeting were taken by stenotype and are available for reference by members of the Committee. It was felt however that a brief summary of the Committee actions should be presented here in an abbreviated form. It should also be noted that certain items of importance do not appear in the stenotype records.



the direction of Dr Victor Johnson and Lieutenant Colonel Lueth This questionnaire is now being sent to hospitals, medical institutions and others, and it is hoped that a more complete knowledge of available facilities will shortly be obtained Many medical officers have indicated their intention to return to their former residences Others have indicated their intention to change their locations The Bureau of Information of the American Medical Association plans to be of service to the latter group, furnishing information but not acting as a placement bureau The cooperation of state and county units will be an important factor in the effectiveness of this bureau

H Dr J F Hassig, representing Dr Walter L Bierring for the Federation of State Medical Boards, was asked to report on the recent recommendation for a uniform licensing law for temporary licenses Dr Hassig reported that the Federation thus far had no formal action to report

I Dr Roger I Lee reported on certain proposed voluntary lay funds to be used for postwar medical education of returning medical officers At the moment such plans had not sufficiently materialized for formal report

J Dr Victor Johnson reported for Dr Walter W Palmer for the Subcommittee on Postwar Residences The draft of the questionnaire sent to approved hospitals had been prepared to secure information on available residences and on the possibility of extension of such residences by hospitals

K Father Schwitalla reported for the information of the Committee that the Association of American Medical Colleges had laid on the table the proposal for bringing internship into the purview of the college curriculum

L It was reported that certain medical schools have been asked to submit lists for release from the medical departments of the armed services of desired and needed faculty teacher members

The Committee adjourned to meet Saturday, Dec 9, 1944 at 10 a m at 535 North Dearborn Street, Chicago

ERNEST E IRONS, M D, Secretary Pro Tem

## Official Notes

### THE PHILADELPHIA SESSION

#### Section Representatives to the Scientific Exhibit

Each section of the Scientific Assembly has appointed a representative to the Scientific Exhibit to assist and advise in securing exhibits for the Philadelphia session, June 18-22, 1945 The following physicians have received these appointments

Practice of Medicine—Thomas C Garrett 3803 Oak Road German town Philadelphia  
Surgery General and Abdominal—Owen H Wangenstein University of Minnesota Medical School Minneapolis  
Obstetrics and Gynecology—Frederick H Falls 1853 West Polk Street Chicago 12  
Ophthalmology—Georgiana D Theobald 120 Medical Arts Building Oak Park Ill  
Laryngology Otolaryngology and Rhinology—Paul H Holinger 700 North Michigan Avenue Chicago 11  
Pediatrics—W Ambrose McGee 1601 Monument Avenue Richmond Va  
Experimental Medicine and Therapeutics—Robert W Wilkins Evans Memorial Hospital 65 East Newton Street Boston  
Pathology and Physiology—F W Konzelmann Atlantic City Hospital Atlantic City N J  
Nervous and Mental Diseases—F P Moersch Mayo Clinic Rochester, Minn  
Dermatology and Syphilology—Hamilton Montgomery 102 Second Avenue S W Rochester Minn  
Preventive and Industrial Medicine and Public Health—Paul A Davis 1436 Delia Avenue Akron Ohio  
Urology—John H Morrissey 40 East Sixty First Street New York  
Orthopedic Surgery—David M Bosworth 742 Park Avenue New York 21  
Gastroenterology and Proctology—Grant H Laing 104 South Michigan Avenue Chicago  
Radiology—S W Donaldson 326 North Ingalls Street Ann Arbor Mich  
Anesthesiology—Urban H Eversole 605 Commonwealth Avenue Boston

Application blanks for space in the Scientific Exhibit may be obtained from the section representatives or from the Director, Scientific Exhibit American Medical Association, 535 North Dearborn Street Chicago 10

## Washington Letter

(From a Special Correspondent)

Dec 11, 1944

### Army Needs 14,000 More Nurses

A pledge that men in the Army, Navy and Veterans hospitals will receive good nursing care was given by the National Nursing Council for War Services at its first Washington meeting, held in the Social Security Building here with some fifty representatives of governmental and voluntary nursing agencies present Mrs Elmira B Wickenden, executive secretary, said that more than 50,000 out of a profession with 265,000 active members had already volunteered in spite of home front needs but that 14,000 more nurses are needed by the Army They will be found, and "until military quotas are met civilian needs will be secondary," she said Steps taken to recruit more nurses for military service include an appeal by Representative Francis P Bolton (Republican, Ohio), sponsor of the act creating the U S Cadet Nurse Corps, emergency conferences in large cities, including Baltimore, Boston, Brooklyn, Newark, Philadelphia and San Francisco, review of nurses classified by the Procurement and Assignment Service Committee, employment of graduate nurses on a civilian basis by army hospitals, and cooperation of the Army, the Navy, the Office of War Information and the War Advertising Council on Publicity Miss Stella Goostay, principal of Children's Hospital School of Nursing, Boston, presided

### Extension of Recreational Facilities Urged

Provision of adequate recreational facilities for the war period and their extension after the war to meet increased peacetime necessities were urged at a conference of the War Recreation Workers Association held in the East Room of the White House Mrs Roosevelt expressed the opinion that our experience during the "bad economic situations" of the thirties should be a warning against permitting lack of coordinated recreational programs to affect the younger generation Miss Ruth Green presided, and problems were discussed by Mrs Roosevelt, Capt Mildred McAfee, U S N R, Mark McCloskey, director of Community War Services, Miss Helen Rowe, chairman, American Association for the Study of Group Work, Roy Sorenson, association general secretary, National Council, Y M C A, and John I Neasmith, Federal Security Agency

### President Roosevelt Endorses 1945 Poliomyelitis Drive

President Roosevelt has approved the request of Basil O'Connor, president of the National Foundation for Infantile Paralysis, to launch the foundation's 1945 fund raising drive on his next birthday, January 30 Mr O'Connor announced that the 1945 march of dimes to the White House will be held from January 14 to January 31 In dedicating his birthday for the twelfth year to the fight against poliomyelitis the President said "The fight against infantile paralysis is a fight to the finish and the terms are unconditional surrender" He added "We face formidable enemies at home and abroad Victory is achieved only at great cost, but victory is imperative on all fronts"

### Capital Dentists Honor Horace Wells

On the 100th anniversary of his discovery of the principles of anesthesia, Horace Wells was honored by the District of Columbia Dental Society with the unveiling of a bust of Wells in the Medical Society Auditorium During the ceremony several speeches were delivered on modern anesthesia, with leading medical men of the Capital, including military and governmental officials, taking part

### Eleven General Hospitals Needed at the Front

Col Florence Blanchfield, superintendent of the Army Nurse Corps, has announced that eleven general hospitals must be established on the European front immediately and that nurses will be required to staff them She said that men who are wounded or ill are returning from the battle fronts at the rate of 12,000 a week and require the care of 14,000 mo

### Safety Conditions in Federal Service Probed

A bill providing funds for the U S Employment Compensation Commission to investigate safety conditions in the civil service, which are described as far below those in private industry, has been reported out by the Senate Education and Labor Committee. The casualty report of the commission for the first half of 1944 shows a rise in frequency of occupational disabilities from 13 to 132 per cent per million man-hours worked. Average cost per federal employee is now \$4.48 a year in benefit payments for accidents on the job.

### Rats Menace Nation's Capital

Infestation of Washington by rats, which has made many District of Columbia dwellings unfit for habitation, is causing growing concern here. Major William H. Cary Jr., District director of sanitation, has called on District residents to help combat the city's estimated million rat population. The health department has only one experienced inspector and thirty assistants in spite of about twenty thousand complaints being received annually.

## Medical Legislation

### DISTRICT OF COLUMBIA

*Changes in Status*—H R 2644 has passed the House and Senate, granting additional powers to the Commissioners of the District of Columbia, including the authorization to waive the payment by any person in the military service of any annual or other periodic fee required by the law to be paid to the District of Columbia as a condition to retaining or renewing any license or permit to engage in any business or calling or to practice any profession. H R 3150 has passed the House and Senate, proposing to amend the healing arts practice act so as to eliminate the requirement that an applicant applying for a license without examination must have practiced the healing art under a license obtained in another jurisdiction for not less than two consecutive years immediately preceding the date of his application for his license in the District. As a substitute for this requirement the bill provides that the applicant must have practiced the healing art after the issuance of the license obtained in another jurisdiction for not less than one continuous year out of three years immediately preceding the date of his application for license in the District. This bill provides that the required one continuous year's practice may be either private, institutional or governmental, or a combination thereof. H R 3619 has passed the House and Senate, amending the act regulating the disposal of dead human bodies in the District. This bill provides for the appointment of deputies who will be authorized to issue permits for the removal of dead bodies from place to place within the District and for the recognition of foreign burial permits by superintendents and other persons in charge of cemeteries in the District. H R 4867 has passed the House and Senate, extending the health regulations of the District of Columbia relating to restaurants to similar establishments operated by the government.

### MEDICAL BILLS IN CONGRESS

*Changes in Status*—S 2201 has been reported to the Senate, providing for promoting and maintaining the physical and mental fitness of employees of the federal government. This is a companion bill to H R 5257 which is pending in the House of Representatives with a favorable committee report. H R 4216 has been reported to the House providing more efficient dental care for the personnel of the United States Navy. A special rule has been granted on this bill by the House Committee on Rules which assures early consideration. The bill is designed to accomplish its objective largely through a change in administrative practices and procedures which will place professional, technical and administrative dental matters in the hands of dental officers and will make the senior dental officer on ships and

shore stations directly responsible to the commanding officer in this connection. H R 5587, the First Supplemental Appropriation Bill, 1945, has passed the House. Among other things, this bill makes available to the Veterans Administration the sum of \$10,571,000 for hospital and domiciliary facilities. It also includes appropriations for the United States Public Health Service, including \$963,400 for the pay of personnel and maintenance of hospitals and \$1,875,000 for emergency health and sanitation activities. The latter appropriation will be used in connection with three projects, namely (1) plague control in the Hawaiian Islands of Maui and Hawaii, for protection of military personnel, (2) the conduct of antimalarial projects in centers of malaria transmission in a number of states for the purpose of meeting the impact of returning carriers among servicemen and (3) sanitary measures in Liberia primarily for the benefit of citizens of the United States, military and civil, stationed in or passing through that country. The House Committee on Appropriations refused to provide an appropriation of \$205,000 for the Public Health Service for postwar planning and an appropriation of \$773,000 for the control of tuberculosis. The committee thought that both of these projects should be given consideration in connection with a regular appropriation bill.

*Bills Introduced*—S J Res 163, introduced by Senator Davis, Pennsylvania, proposes that Congress shall give recognition to the fact that the success of the Selective Service System has been in a great measure due to the service of members of local draft boards and other persons who have served voluntarily and without compensation. S 2148 introduced by Senator Kilgore, West Virginia, proposes to amend the Servicemen's Readjustment Act of 1944 to provide that the education and training to be had under that act shall be available to veterans without regard to their age and irrespective of whether or not their education or training was impeded, delayed, interrupted or interfered with by reason of entrance into the service. S 2191, introduced by Senator Langer, North Dakota, and H R 5454, introduced by Representative Springer, Indiana, propose to amend the laws relating to veterans so as to eliminate the requirement that certain applicants for hospital treatment or domiciliary care shall take the pauper's oath. H R 5426, introduced by Representative Bolton, Ohio, H R 5431, introduced by Representative Norton, New Jersey, and H R 5432, introduced by Representative Smith, Maine, propose to incorporate the Medical Women Army-Navy Club. The objectives and purpose of the corporation will be, among other things, to endow a memorial to honor nurses of the Army and Navy who served as officers in World War II and to engage in activities for the promotion of the general welfare of the women commissioned officers of the Medical Departments of the Army and Navy. H R 5487, introduced by Representative Fish, New York, proposes to amend the National Cancer Institute Act so as to authorize an appropriation of \$10,000,000 each fiscal year, beginning with the termination of hostilities with Germany, for the purpose of carrying out the provisions of that act.

## Society Proceedings

### COMING MEETINGS

- Annual Congress on Industrial Health Chicago Feb 13-15 Dr Carl M. Peterson 530 N Dearborn St Chicago Secretary
- Annual Congress on Medical Education and Licensure Chicago Feb 12-13 Dr Victor Johnson 535 N Dearborn St Chicago Secretary
- American Academy of Orthopaedic Surgeons Chicago January 21-24 Dr Myron O. Henry 825 Nicollet Ave Minneapolis Secretary
- Annual Forum on Allergy Pittsburgh January 20-21 Dr Jonathan Forman 956 Bryden Road Columbus Ohio Director
- Puerto Rico Medical Association of Santurce Dec 15-17 Dr E. Martinez Rivera P O Box 3866 Santurce Secretary
- Society of Surgeons of New Jersey Jersey City January 31 Dr Walter B. Mount 21 Plymouth St Montclair N J Secretary

## Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH)

### CALIFORNIA

**Special Lecture**—Dr Arthur C De Graff, Samuel A Brown professor of therapeutics, New York University College of Medicine, will address a special meeting of the San Francisco County Medical Society and the San Francisco Heart Committee, December 18, on 'Present Status of Digitalis and the Cardiac Glucosides in the Treatment of Congestive Heart Failure.'

**Free X-Ray Service**—An x-ray chest survey center was recently opened in San Francisco in the building of the city department of health and operated by the San Francisco Tuberculosis Association in cooperation with the local health department. The equipment was purchased with funds raised from the sale of Christmas seals. The center will provide free x-rays to the public five days each week and, when in full operation, will be capable of examining about 250 persons a day.

**Plague and Tularemia**—*California's Health* reports that in September bubonic plague had been demonstrated in a pool of 164 fleas taken from 35 ground squirrels collected on a ranch in Kern County. During the same month, a pool from 4 ground squirrels collected on a ranch in Lassen County proved positive for plague. During the same month, six pools of fleas taken from squirrels on two ranches of San Luis Obispo County proved positive for plague. Tularemia was demonstrated in a pool of 16 ticks taken from ground squirrels on a military reservation in Monterey County. Tularemia was also demonstrated in eight pools of mice taken within 5 miles of San Luis Obispo City.

### CONNECTICUT

**State Society Opens Membership to Students**—On December 7 the house of delegates of the Connecticut State Medical Society adopted an amendment to its by-laws providing that any person whose legal or family residence is in the state of Connecticut who is a regularly enrolled student and a candidate for the degree of doctor of medicine in an acceptable medical school, as provided in section 478F of the Cumulative Statutes of Connecticut, or any person who is a student in an acceptable medical school located in the state of Connecticut may become a student member of the society. Also physicians not licensed to practice medicine in Connecticut who are serving as interns or residents in hospitals in Connecticut, for the purpose of extending their education and not primarily for remuneration, may become student members of the society. Such membership shall be obtained by applying to the council of the society on a form provided for that purpose and election by vote of a majority of the council. Student members will enjoy all the rights and privileges of membership in the society except that they shall not be eligible to vote or hold office. When such a student member is licensed to practice medicine in the state of Connecticut and settles in this state in practice or remunerative employment, he shall be eligible at once for election to active membership in the county association in the county in which he has settled without the waiting period of residence within the county, subject to such regulations as may be imposed by such county associations.

### DISTRICT OF COLUMBIA

**Action on "Borderline Certificates" Criticized**—The executive board of the Medical Society of the District of Columbia recently stated that the action of the Board of Medical Examiners of Maryland in discontinuing issuance of 'borderline certificates' to physicians licensed in Washington 'cannot be justified' and called on residents of nearby Maryland counties to make themselves heard in the matter. The certificates cost \$1 and legalize the practice of medicine in Maryland by physicians licensed in the District of Columbia. Newspapers reported that some time prior to November 15 Dr George C Ruhland District health officer, learned that no new borderline certificates would be issued. In a statement to the press the executive board of the District society said it is 'unreasonable' to ask busy District physicians to spend a day making the trip to Baltimore to get a full license

to practice in Maryland. The certificates are issued through the mail. Many county residents come in to the office of Washington physicians for treatment and when they are ill at home "naturally expect to call physicians who have cared for them in their offices." If the present ruling of the board is enforced, it was stated, this will not be possible in a great many instances until these physicians have obtained the required (full) licenses. These cost \$50 each. "The present arrangement under which reciprocal borderline certificates are issued has been in effect many years. To scrap it in the midst of a war and in the face of a shortage of physicians cannot be justified. Certainly the people should make themselves heard, for it is they who are most vitally affected," the board said.

### IDAHO

**Society News**—Dr Archibald L Hoyne, Chicago, discussed the 'Management of Contagious Diseases in General Practice' at the October 18 meeting of the North Idaho District Medical Society in Lewiston. Dr Hoyne, among others also addressed the Southwest Idaho District Medical Society in Boise recently.

### ILLINOIS

**Free Antipneumonia Serum to Be Discontinued**—Effective January 1 the Illinois State Department of Public Health will discontinue the free distribution of antipneumococcic serum. This action is being taken with the approval of the pneumonia advisory council of the department and the council of the Illinois State Medical Society. At the time free distribution of antipneumococcic serum was begun by the Illinois State Department of Public Health in 1937, no other specific form of therapy was available, and the wide use of serum resulted in a pronounced decline in the case fatality rate of pneumonia. Since then however, the discovery and introduction of new sulfonamide compounds such as sulfathiazole and sulfadiazine have provided a simpler and more economical therapeutic agent for this disease. Carefully controlled studies have shown that the treatment of pneumonia with sulfonamide drugs is equal, if not superior, to treatment with serum. The availability of penicillin for civilian use has provided an additional highly potent method of treatment where indicated. Sulfathiazole and sulfadiazine for the treatment of pneumonia may be had on request from the division of communicable diseases, all full time local health departments and all approved pneumonia typing laboratories.

### Chicago

**Personal**—Dr Jacob V Edlin has been given a leave of absence on account of ill health from his position as superintendent of the Chicago State Hospital. Dr Frank J Griffin is acting superintendent.

**The McArthur Lecture**—Dr Arnold R Rich, associate professor of pathology, Johns Hopkins University School of Medicine, Baltimore, will deliver the twenty-first Lewis Linn McArthur Lecture of the Frank Billings Foundation at the Palmer House, February 23. His subject will be "Role of Hypersensitivity in the Pathogenesis of Rheumatic Fever and Periarthritis Nodosa."

**Meeting on Industrial Medicine and Surgery**—The Central States Society of Industrial Medicine and Surgery held its midwinter scientific meeting at the Palmer House, December 8, under the presidency of Dr Fred M Miller. In addition to clinics at St Luke's and Cook County hospitals, speakers on the program included Dr Walter S Priest on "Penicillin Therapy in Relation to the Problems of Industrial Medicine and Surgery." The program also included a panel discussion on "Fixations of Fractures" and one on "Head Injuries."

### IOWA

**Personal**—Dr Gisle M Lee Thompson, was guest of honor at a banquet given by the Thompson Commercial Club, October 16, in recognition of the community's appreciation for his fifty years' service. He was presented with a silver gift in the form of one dollar for each year of service to the community—Avery E Lambert, Ph D, professor of histology at State University of Iowa College of Medicine, Iowa City, who has been connected with the school since 1925 has reached the age of retirement but will continue some of his work on a part time basis.

**First Tuberculosis Case Register**—The first central tuberculosis case register in Iowa was recently installed at Sunny Crest Sanatorium, Dubuque. The project which was made possible through the efforts of the Dubuque County Tuberculosis Association, the staff of the sanatorium the

Visiting Nurse Association and county and school nurses will provide current information on the location of known patients in the county, the status of the disease and the treatment being received. It will guide health officials in administering the tuberculosis control program which has been functioning for a number of years.

**Blank Memorial Hospital Dedicated**—On December 3 the new \$300,000 Raymond Blank Memorial Hospital for Children Des Moines, was dedicated. The hospital said to be the first in Iowa constructed exclusively for the treatment of children is the gift of Mr and Mrs A H Blank, Des Moines and is a memorial to their son, Raymond, who died March 7 1943 at the age of 32. The hospital adjoins the Iowa Methodist Hospital. Among the speakers at the dedication were Dr Walter L Bierring, Des Moines, state health commissioner and Dr Morris Fishbein, Editor of THE JOURNAL. Mr Blank made the presentation of the hospital and the acceptances were given by Rolfe O Wagner, president of the board of directors Iowa Methodist Hospital, for the hospital and Gov Bourke B Hickenlooper for the people of Iowa.

### KENTUCKY

**New Director of Industrial Hygiene**—Dr Wayne L Ritter, U S Public Health Service, has been named director of the bureau of industrial hygiene of the Kentucky State Department of Health to succeed Dr Walter E Doyle, who was recently called to Washington D C (THE JOURNAL, October 7 p 379).

**Personal**—Dr William L Cash, Princeton, examining physician for the Caldwell County Selective Service Board was recently presented with an embossed certificate for patriotic service following three years of duty with the draft board. The certificate is signed by President Roosevelt, Major Gen Lewis B Hershey director of Selective Service, Gov Simeon S Willis and Col Frank D Rash, state director of selective service.—Dr Isham Kimbell has resigned as head of the Central State Hospital, Lakeland to become a member of the staff of the Veterans Administration Facility Fort Lyon Colorado effective October 31.

### MAINE

**Society News**—Dr Ralf S Martin, Portland, addressed the York County Medical Society in Kittery, October 11 on 'Recent Advances in Rheumatic Fever'. Other speakers included Dr Adam P Leighton Portland president-elect of the Maine Medical Association, who discussed the opening of a medical school in the state.—Dr Edwin H Place Boston discussed "Contagious Diseases and Complications" before the Penobscot County Medical Association in Bangor October 17.

### MASSACHUSETTS

**Session on Obstetrics**—The sixteenth annual meeting of the New England Obstetrical and Gynecological Society was held at the Harvard Club Boston, December 6, under the presidency of Dr Roy J Heffernan, Brookline, whose address was titled "Role of the Transverse Cervical Cesarean, and the Management of Placenta Previa". Among the speakers were:

Dr Louis E Phaneuf Boston The Repair of the Lacerated Perineum  
Dr Maurice O Belson Boston Management of the Third Stage of Labor  
Dr Meyer D Schnall Boston Stereal Transfusions in Obstetrics and Gynecology  
Dr Joe V Meigs Boston Ureter in Pelvic Surgery  
Dr Harold H Rosenfield Boston Report on Obstetric Analgesia  
Dr George W Waterman Providence R I Committee's Report Concerning the Emergency Maternal and Infant Care  
Dr C Wesley Sewall Boston Experience with the Rh Factor from the Obstetric Viewpoint  
Dr John M Fallon Worcester Photographic Clinic

**Bureau of Clinical Information Formed**—The Massachusetts Medical Society has established a bureau of clinical information as a means of augmenting its postgraduate educational effort. The bureau will supply information on the daily activities of approved hospitals in Boston and its immediate vicinity covering each hospital's schedule of operations for the day, medical and surgical ward rounds clinics, the location of such clinics and the names of those presiding over these various activities. From time to time the bureau will make available a bulletin which will list the fixed medical meetings and conferences held in the metropolitan area. This bulletin will be sent to hospitals medical schools and physicians on request and will be available at the bureau. The bureau will be open from 7 to 10 a m and from 3 to 8 p m except Saturday afternoons. Information will be given by telephone. No expense is involved on the part of those using this service.

### MINNESOTA

**Illegal Practitioner Sentenced**—On October 27 Frank J Brady, alias Frank Bateman, pleaded guilty in the district court of Hennepin County to a charge of practicing healing without a basic science certificate and was sentenced to a term of one year in the Minneapolis workhouse. Evidence was introduced to show that Brady had been performing illegal abortions although he claimed to be a bartender by occupation.

**Medical Conference**—The North Central Medical Conference met at the Hotel St Paul, St Paul, December 10, under the presidency of Dr Leonard W Larson, Bismarck, N D, who discussed responsibility of medicine in planning for postwar medical services. Dr L Fernald Foster Bay City Mich, secretary, Michigan State Medical Society talked on prepaid medical service. Other speakers on the program included:

Dr Raymond G Arveson Frederic Wis A Wisconsin Committee Takes a Trip  
Dr Alfred W Adson Rochester Council on Medical Service and Public Relations of the American Medical Association  
Dr Joseph W Lawrence Washington D C My First Six Months in Washington  
Mr Charles H Crownhart Madison Wis Shall State Associations Develop Committees on Medical Service and Public Relations?

### NEW JERSEY

**State Society Acquires New Home**—The Medical Society of New Jersey has purchased a fifteen room house at a cost of \$30,000 at 315 West State Street, Trenton, to serve as its headquarters. Facilities are provided for the executive and



New home of state society

editorial offices as well as six meeting rooms for groups of 25 and one large assembly hall for a group of 150. The house is built of concrete with a green tile roof. The grounds are completely landscaped, offering ample accommodations for parking cars as well as a seven car garage. The entire property is 90 by 420 feet. The interior is now being redecorated, and the society hopes to occupy it by Christmas.

### NEW YORK

**Fellowship in Public Health**—The Mary Pemberton Nurse Fellowship in public health is open for award by Vassar College Poughkeepsie, April 1. The fellowship amounting to \$2,500, is offered to a woman college or university graduate for original and outstanding work in public health at any approved institution. The money is intended to enable her to spend a year in study, in the carrying forward of an original project or in writing on the subject. Candidates should submit their application not later than March 1. The award will be made by the Vassar College Committee on Graduate Study on the nomination of an advisory committee of three selected by the college, one representing public health interests, a physician and an expert in public health. Application blanks should be secured from and returned to the president's office Vassar College Poughkeepsie.

### New York City

**Treatment of Mental Disorders in Children**—A feature of the proposed four million dollar postwar expansion program at Creedmoor State Hospital is an expenditure of \$300,000 to create a children's division for the exclusive treatment of mental disorders in young persons.

**Remington Medal Presented**—The Remington Honor Medal was presented to Dr Harvey Evert Kendig dean of the Temple University School of Pharmacy, Philadelphia at a dinner of the New York Branch of the American Pharmaceutical Association at the annual meeting December 12 (*THE JOURNAL*, June 24, p 589)

**Personal**—Mr Bernard S Coleman, S.B., who for ten years has been secretary of the tuberculosis committee of the New York Tuberculosis and Health Association, has been appointed director of the council of National Jewish Tuberculosis Institutions, with headquarters in Denver, effective January 2—Drs Thomas A McGoldrick, formerly president of the Medical Society of the State of New York, and Thomas M Brennan, both of Brooklyn, have recently been made Knights of St Gregory the Great by Pope Pius XII for services to their faith and their charitable works in the diocese—Dr Emanuel W Lipschutz, Brooklyn, has recently been appointed adjunct professor of gastroenterology at the New York Polyclinic Medical School and Hospital

**Trauma and Cardiac Disabilities**—The role of trauma in the causation of cardiac disabilities is the theme of a new program sponsored by the New York Cardiological Society which will be carried out as a continuing series of investigations and reports on clinical statistics, experimental investigation, pathology and medicolegal aspects. The object of the new project is to study all angles of the relationship between trauma and heart disease and to formulate, on the basis of the widest investigation possible, a reasonable code for the guidance of expert opinion. The project grew out of a suggestion by Dr Raphael Lewy, chief medical consultant of the workmen's compensation bureau New York State Department of Labor, now retiring after more than thirty years of service, who said that expert opinions have shown such wide variance that it is of paramount importance for some dispassionate and competent body to examine all evidence in the literature and conduct such investigations as will produce a set of reasonable criteria that will have authority and general acceptance. Various grants and funds from the society's treasury will be used to finance the work. On January 24 an introductory meeting will be held at the New York Academy of Medicine to which interested organizations, practicing physicians and officials are invited. Information may be obtained from the secretary of the New York Cardiological Society, Dr Philip Reichert 480 Park Avenue, New York 22

## OHIO

**Special Society Election**—Dr Clarence E Hufford Cleveland, is the new president of the Ohio State Radiology Society. Dr Harold G Reineke, Cincinnati, is vice president and Dr Henry Snow, Dayton, secretary-treasurer

**State Society Organizes Insurance Company**—The Ohio State Medical Association announced on November 16 that it was organizing a "stock medical expense insurance company" to be owned by its members, which would offer policies covering doctor's bills and supplementing established group hospitalization programs. Newspaper reports indicated that the association would not operate the company but was merely the organizing agency. When the company is incorporated and ready for operation it will be administered under the guidance of members of the medical profession who have become stockholders and incorporators

**Charles Doan Appointed Dean of State University**—Dr Charles A Doan, since 1936 chairman of the department of medicine at the Ohio State University College of Medicine Columbus, has been appointed dean of the medical school effective at once. Dr Hardy A Kemp, who took a leave of absence in 1942 to enter military service, has been appointed professor of public health and hygiene, to become effective on his return to the campus. Dr Leslie L Bigelow served as acting dean of the medical school until his death, Jan 15 1943. Since then Rollo C Baker, Ph.D., has been acting dean. He will continue as professor of anatomy. Dr Doan graduated at Johns Hopkins University School of Medicine, Baltimore in 1923. He joined the staff at Ohio state in 1930 as professor of medicine and director of the department of medical and surgical research. In 1936 his title was changed to chairman of the department of medicine

## TEXAS

**Proposed Merger of City and County Health Departments**—The Dallas County Medical Society has approved a recommendation to consolidate the city and county health departments which if adopted by the city council and county commissioners court and subsequent legislation, would provide that the merged unit would be housed in enlarged headquarters at Parkland Hospital, jointly operated by the city and county

**Physicians Cooperate in Hospital Unit**—Physicians in Dallas are cooperating in defraying the expenses of one complete unit of the Truett Memorial Building at Baylor University Hospital. The unit will be identified by a plaque bearing the name of the Dallas County Medical Society as the donor and \$50,000 will be raised from members of the society to underwrite the cost of the unit. According to the *Texas State Journal of Medicine* this action was part of a campaign to raise \$1,200,000 for the memorial building and new quarters for the Baylor University School of Nursing and College of Dentistry

## WISCONSIN

**Memorial to Physician**—On December 17 an electric organ will be dedicated at Wisconsin Memorial Park Cemetery in memory of the late Dr Christopher G Johnson, Chicago and Milwaukee. The organ is the gift of Mrs Johnson and the ceremonies will take place in the park's Memorial Church Milwaukee

## GENERAL

**Prize for Work on Glaucoma**—A prize of \$500 for the most valuable original paper adding to existing knowledge about the diagnosis of early glaucoma or the medical treatment of noncongestive glaucoma is being offered by the National Society for the Prevention of Blindness, 1790 Broadway New York 19. This award will take the place of two separate prizes of \$250 each which had been announced in *THE JOURNAL*, Dec 12, 1942, page 1238, and Aug 21, 1943 page 1197. Papers may be presented by any practicing ophthalmologist of the Western Hemisphere and may be written in English, French, German, Italian, Spanish or Portuguese. Those written in any of the last four languages should be accompanied by a summary in English.

**Child Care Pamphlets**—The bureau of child hygiene of the New York City Department of Health issues a series of pamphlets on child care one group designed for the professional staff concerned with the care of children, the other for parents. Many of the pamphlets concern eating habits. For these the demand has been exceedingly great, so that more than 300,000 of these have been issued. The pamphlets which are purchasable at cost directly from the New York City Committee on Mental Hygiene, 105 East Twenty-Second Street New York City, include

Eating Problems of Children  
If Your Child Does Not Eat Well  
Children Like to Eat  
Children's Eating Habits  
What Should We Expect of Our Children?

**Health Security in Postwar America**—The second wartime conference on labor health security was held at the Hotel McAlpin, New York, December 8. The theme of the general session was "Health Security in Postwar America" with the following speakers

Mr Eugene P Connolly secretary New York County, American Labor Party  
Miss Bertha C Reynolds director Personal Service Department National Maritime Union of America C I O  
Representative Adam Clayton Powell Jr  
Miss Helen Hutton field secretary Fort Greene Industrial Health Committee  
Mr Winslow Carlton temporary secretary Health Insurance Plan of Greater New York  
Mr George F Addes Detroit international secretary treasurer United Automobile Workers of America C I O  
Alfred J Asgis, Ph.D. chairman Health Council American Labor Party

A series of panel discussions on postwar health and relocation of health personnel made up the second session

**Contact Lens Society Formed**—The Society for the Advancement of Contact Lens Research was organized at a meeting in New York, November 18. Active members will consist of ophthalmologists, optometrists, dispensing opticians, contact lens technicians and manufacturers of contact lenses while associate membership will be available to persons who are interested in the advancement of contact lenses and in their development. The board of directors is to consist of fifteen members, three to be ophthalmologists, three optometrists, three opticians, three contact lens technicians and three contact lens manufacturers. The society will aim to improve and promote research in and development of contact lenses, to establish a foundation for research in any or all phases of the contact lens field and to instill mutual understanding and cooperation among all persons interested in contact lenses by disseminating authoritative information. Members of the organizing committee were Philip L Salvatori, New York, Ewing Adams, O.D., Detroit, Albert L Anderson, Minneapolis, Phil E Dempsey, Toledo, Ohio, Dr Abraham Allan Rossby, New York, and Gertrud Salvatori New York.



## LATIN AMERICA

**Health Activities in Latin America**—*New Journal*—*Araucos Bisleiros de Nutricao* a monthly journal, recently made its appearance. It is the organ of the National Department of Nutrition in Brazil, which works in collaboration with the Nutrition Foundation of New York. Dr Josue de Castro, Rua Araujo Porto Alegre Rio de Janeiro, Brazil is the editor. The first three issues contain a section of original articles, editorials, literature on nutrition and news.

**Society News**—The Medical Association of the Isthmian Canal Zone was addressed on October 17 at the Margarita Hospital among others by Drs Merrill H. Judd, Cristobal, C. Z. and James P. Wallace Cleveland, on "Treatment of Burns." Oscar Fannenbaum, New York, "Diagnosis of Cardiovascular Syphilis" and Oakley K. Park, St. Louis, "Penicillin or Chemotherapy."—Dr Gregoria Arroz Alfaro, Buenos Aires was recently appointed president of the Instituto Internacional Americano de Proteccion a la Infancia, and Dr Victor Iscardo y Anya, Montevideo, Uruguay, secretary and director of the department of health.

**Bust of William Harvey Unveiled**—On October 30 at a special meeting of the faculty of medicine of the National Autonomous University of Mexico, a bronze bust of William Harvey the discoverer of the circulation of the blood was unveiled. It is the work of Dr J. G. Martin del Campo. Dr Alfonso Caso, dean of the university, presided and speakers included Mr Charles H. Bateman the ambassador of England in Mexico, and Dr J. J. Izquierdo.

**Personal**—Two Panamanian physicians are among the Latin America students who arrived in London early in October to study under the sponsorship of the British Council. Dr J. Bianchi will undertake a general study of gastroenterology, while Dr J. Gonzalez will be attached to the oral surgery section of East Grinstead Hospital.—Drs Gabriel Gomez Del Rio professor of pediatrics at the University of Havana and director of Children's Hospital and Dr Aurelio Iturte G. De La Solana minister of public health and chief of the medical division of the Insular Institute spent several weeks' study on poliomyelitis at the University of Chicago recently. The two physicians have been named chief consultants in Cuba's new poliomyelitis hospital which was to be opened in Cuba some time in November it is reported.—Dr Rafael Angel Calderon Guardia, formerly president of Costa Rica recently visited Mexico City on his way to New York City, where he will study with Dr George T. Pack. In a report to the press Dr Calderon Guardia is reported to have said that his decision to pursue cancer research was inspired by the death of his father, also a physician from cancer.—Dr Marjorie L. Warner, a 1944 graduate of Ohio State University College of Medicine, Columbus is said to be the first American woman to serve as an intern at Santa Tomas Hospital, Panama City.—Dr Wayne Gilder was recently presented with \$250 worth of war bonds in recognition of his more than twenty years service at Colon Hospital, Cristobal, C. Z. where he is now serving as district physician.

**First Tuberculosis Sanatorium in Haiti**—A 100 bed hospital, financed by public subscription was recently completed at Port au Prince, the result of efforts of the National Antituberculosis League of Haiti, founded in July 1942 to help the government combat tuberculosis. The sanatorium is said to be the first of its kind in Haiti. In describing the new project the *Bulletin* of the National Tuberculosis Association states that since death registration in Haiti is inadequate the only reliable indication of the relative importance of various diseases lies in the records of government hospitals where tuberculosis is the principal cause of death and further that the disease has shown a well defined tendency to increase from 1918 to 1941. Haiti has a population of three and one half million on a land surface of 28,000 square kilometers half of which consists of lofty mountains. While no accurate figure can be given on the morbidity of the disease the first figures compiled since April 1941 show the following information for positive skin reactions to tuberculin tests:

|                          |                   |
|--------------------------|-------------------|
| from 0 to 1 year         | 37.7 per cent     |
| from 1 to 2 years        | 25 per cent       |
| from 8 to 12 years       | 69 per cent       |
| from 12 to 18 years      | 85 per cent       |
| among students           | 80 to 85 per cent |
| among adults of all ages | 85 to 90 per cent |

**Leprosy Conference**—The International Leprosy Association and the Pan American Sanitary Bureau are planning a second Pan American Leprosy Conference for Rio de Janeiro sometime in 1945. Dr. Pedro L. Balma, Buenos Aires, is the chairman and H. C. de Souza-Araujo the vice chairman of the western section of the International Leprosy Association. A feature

of the conference will be the presentation of three prizes for articles on leprosy, erected by the National Academy of Medicine of Rio de Janeiro. First prize, of about \$500, will be given for the best work on etiology and pathogenesis of leprosy. Second and third prizes, of about \$250, will be given for articles on practical results of treatment of leprosy and history and epidemiology of leprosy in Brazil.

## FOREIGN

**Proposed Chair of Dermatology**—A gift of £70,000 has been made to the University of Edinburgh by Sir Robert McVitie Grant to establish a chair of dermatology which it is reported in *Science*, will be the first of its kind to be created in Great Britain.

**All Negro Mission for Health Program**—At the request of the Liberian government an all Negro mission of eleven American physicians, engineers, entomologists and nurses has been created by the U. S. Public Health Service in cooperation with the state and war departments at the direction of President Roosevelt to develop a five year health and sanitation program in Liberia. Members of the group include Dr John Baldwin West, head of the mission and senior surgeon in the U. S. Public Health Service, Granville W. Woodson, sanitary engineer, and John P. Davies Jr, maintenance superintendent. The mission will be expected to do whatever it can to bring communicable diseases in Liberia under control, to protect as far as possible the military personnel and transients from the United States and other Allied nations in Liberia against such diseases and to reduce the chances of their transmission to the United States. The various aspects of the mission's work will be financed by public and private agencies, the major portion to be borne by the public health service. The division of cultural cooperation of the Department of State is contributing funds to be used for the improvement of nursing education, a program that will be under the jurisdiction of the mission. Fellowships for the medical training of Liberians in this country will be provided by the Rockefeller Foundation. The mission's work will be similar to the extracantonment activity now carried on by the public health service in cooperation with state and local health departments in the vicinity of military establishments in the United States and to the work of the public health service venereal disease control mission, which was sent to Trinidad with the permission of the British government, and to the work of American missions in controlling malaria along the Burma Road and in aiding the Chinese government in controlling that disease and improving sanitary conditions along the railroad paralleling the Burma Road. The Liberian health mission will apply malaria control procedures in Monrovia, Kakata, Roberts Field and Fish Lake and the country surrounding those localities. In addition to draining and filling, it will carry on larvicide and house spraying. In the water borne disease field the mission will check existing wells and other sources of water supply, condemn polluted sources and drill temporary wells where need for them is established. A survey will be made to determine the need for a temporary filtration plant at Monrovia to protect transients and provide ships with water. The sewage disposal methods now in use will be studied with a view to their improvement, and a program of food inspection will be inaugurated to form the basis of recommendations to the government of Liberia for national legislation covering the sale of foodstuffs. The mission's work will involve in addition to the draining and filling of swampy areas the utilization of other methods of controlling aquatic forms of disease transmitting agents. It will also have control of water supply and sewage disposal. The mission will be expected to assist the Liberian government in the development of a broader public health service including the training of a director, the establishment of divisions of communicable disease control, malaria control, venereal disease control, vital statistics and other divisions essential to the needs of the republic.

## CORRECTION

**American Public Health Association Health Insurance Declaration**—In the editorial with this title on page 434 of *THE JOURNAL*, October 14 it was stated that 'of the 7,493 members of the American Public Health Association 1,571 are Fellows'. *THE JOURNAL* is now informed by the American Public Health Association that these figures were intended to be mutually exclusive that is, 7,493 members plus 1,571 Fellows, a total of 9,064.



## Foreign Letters

### LONDON

(From Our Regular Correspondent)

Nov 11, 1944

#### International Unit of Penicillin

A conference convened in London by the Health Section of the League of Nations has agreed on the standardization of penicillin. Sir Henry Dale, president of the Royal Society, presided at the conference. The delegates were as follows: Australia, Major J L Bazeley (Commonwealth Serum Laboratories), Canada, Dr G D W Cameron (chief, Laboratory of Hygiene, Department of Pensions and National Health, Ottawa), France, Dr J Trefouel (director of the Pasteur Institute), United Kingdom, Dr C R Harington (National Institute of Medical Research) and Dr J W Trevan (Wellcome Physiological Research Laboratories), United States, Dr R D Coghill (Northern Region Research Laboratory, Peoria, Ill), Dr R P Herwick (chief of the Drug Division of the Food and Drug Administration) and Dr M V Veldee (chief, Division of Biologics Control, U S Public Health Service). Sir Alexander Fleming, the discoverer of penicillin, and N G Heatley attended as advisers. The international unit agreed on was "the specific penicillin activity contained in 0.6 microgram of the international standard," but particulars of the standard have not yet been announced.

#### Casualties of the Bombardment of England from the French Coast

The strip of England nearest France contains the pleasant seaside resorts of Dover, Folkestone, Deal, Ramsgate and the neighboring villages. They are in no sense military targets, but for four years they have been bombarded by the Germans from the French coast as part of "total war." This locality has therefore earned the name of "Hellfire Corner." When the mayor of Dover recently announced the receipt of official information that all long range guns on the other side of the English Channel had been captured, the people were quick to celebrate the occasion by gathering in the streets, shouting, dancing and singing. The casualties of the four year bombardment can now be given. The total number of shells recorded, which is not quite complete, is 2,565. These killed 157 persons and injured 671, though the inhabitants lived largely in shelters. In addition, 163 persons were killed and 611 injured by bombs. The worst bombardment of Dover was on Sept 26, 1940, when in five hours 63 shells fell, nearly 50 in one area. A hostel was hit and 49 persons were killed.

#### British Share Their Rations with the Greeks

The Germans deliberately produced a famine in Greece. In addition to their usual barbarities they seized the whole supply of olive oil, of which Greece is the principal producer in Europe, and also the fruits of the Greek islands. The result was that a large proportion of the population perished from starvation. Immediately on entering Greece the British brought food supplies, but transport is a great difficulty. Greece now obtains 130,000 tons of supplies a month, made up of 50,000 tons of wheat, 10,000 tons of other food and 70,000 tons of clothes and medicines.

#### Research on Human and Animal Trypanosomiasis

The secretary of state for the colonies has appointed a tsetse fly and trypanosomiasis committee to consider and advise on the coordination of action, including research directed against human and animal trypanosomiasis and in particular against the tsetse fly as the chief vector. The committee, on which the Dominions Office and the Sudan government are represented will report from time to time to the secretary of state. On all

matters affecting research its recommendations will be referred to the Colonial Research Committee for comment and advice before submission. The committee includes Prof P A Buxton, London School of Tropical Medicine, Dr H Lyndhurst Duke, lately director of the Human Trypanosomiasis Institute in Uganda and chairman of the League of Nations Sleeping Sickness Committee. Prof I M Heilbron, Imperial College of Science, Dr E M Lourie, Liverpool School of Tropical Medicine, Dr S A Neave, director of the Imperial Institute of Entomology, Dr A H G Smart, medical adviser to the secretary of state for the colonies, Mr John Smith, adviser on animal health to the secretary of state for the colonies, and Dr H A Tempany agricultural adviser to the secretary of state for the colonies.

#### Skin Cover for War Wounds and Burns

The War Office has issued to all medical officers a memorandum on skin cover for wounds and burns. This begins by pointing out that there is little scope for primary closure of wounds caused by missiles because (1) infection is deeply introduced, (2) the time lag between injury and primary operation is usually greater than in industrial injuries and (3) it is seldom possible for the wounded man to remain at the surgical center which first deals with his wound. Hence most medical directorates completely ban the procedure. But this creates an urgent secondary problem: finding the best methods, when the danger period is over, to obtain early closure. It is recommended that consulting surgeons should bring to the notice of all surgeons in their command the value of delayed primary suture, secondary suture and simple skin grafting. Delayed or secondary suture should be considered (1) when the bacteriologic state of the wound is under control (sterility cannot be expected), (2) when the loss of tissue, particularly skin, is small and (3) when the deeper tissues, especially muscle, can be brought together without undue tension. A common cause of failure is suture of the skin under excessive tension.

Skin cover by free grafting should be the method of choice when the loss of tissue makes secondary suture impossible. All open granulating wounds should be closed or grafted before that deep unabsorbable fibrous base develops which will neither heal nor accept a graft but which will later require a complicated plastic operation. Spaced postage stamp razor grafts laid on tulle gras sheets are especially useful when sepsis is anticipated. This procedure is recommended for all surgeons. But experienced general surgeons should employ a "direct flap" in cases of avulsion of the skin in such regions as the hand, wrist or forearm laying bare or damaging tendons, nerves or joints. The damaged area should be covered by an immediate abdominal flap. The "grenade hand" is an example. Injuries of the lower leg, ankle and foot, if bone and tendons are exposed, should be transferred to a plastic surgery center. This also holds for the knee and popliteal regions if the defect is large.

#### Preparation for Medical Demobilization

At the request of the minister of health a subcommittee of the Central Medical War Committee known as the Demobilization Committee was appointed to advise on the release of medical officers after the war. The government had announced that the main considerations in determining priority of release would be age and length of service. The task of the committee was to determine how best under this general plan to combine justice to the serving doctors and satisfaction of the more urgent needs of civilian practice. The result of its recommendations is the following plan adopted by the government. General demobilization must await the total defeat of the Axis. All that is now contemplated is reallocation of manpower between the armed forces and civilian work when Germany has been defeated while Japan remains at war. As there can be no break in the war effort, military requirements will override all other considerations. Compulsory recruitment for the armed forces will

be continued. But it will be possible to bring relief to the men who have served for long periods and through continued recruitment to enable them to return home. There will be two methods of selection. A larger group will be selected for release according to age and length of service, a smaller group will consist of men required for urgent reconstruction work at home. These will include a limited number of men with special qualifications, for whose transfer application must be made through government departments. No man will be released if his retention is considered necessary on military grounds. In the former class there will be a special priority group for men over 50, who will be released before others if they wish. Otherwise the criterion will be a combination of age and length of war service on the basis that two months of service equals one additional year of age.

### BRAZIL

(From Our Regular Correspondent)

RIO DE JANEIRO NOV 20 1944

#### A Meeting of Obstetricians and Gynecologists

Jointly organized by the Brazilian Society of Obstetrics and Gynecology and by the São Paulo State Medical Association a large meeting of practitioners of these medical specialties from the cities of Rio de Janeiro and São Paulo, the two most important medical centers of the country, has just been held in this city. Among the leading figures present at the meeting were Drs Arnaldo de Moraes, J. Rodrigues Lima, Ary Novis, Goulart de Andrade, Paulo Barata, Motta Maia and Mario Pardal from Rio de Janeiro, and Drs Ayres Netto, Altino Antunes, Escobar Pires, Cyro Camargo, Arruda Sampaio, Jose Gallucci, Wolff Netto and A. Guidi from São Paulo. The more important subjects discussed at the meeting were the treatment of uterine prolapse, arrhenoblastoma, hypernephroid tumor of the ovary, anemias of pregnancy, grading the malignancy in cancer of the uterine cervix, early diagnosis of cancer of the uterine cervix, neonatal mortality, x-ray visualization of the placenta, uterine cancer and pregnancy, surgical treatment of uterine myoma, indication of the different kinds of anesthesia in gynecology and gigantic tumors of the ovary.

At the close of the meeting Dr A. Oliveira Lima, commissioner of health for the Federal District (Rio de Janeiro) addressed the obstetricians and gynecologists to point out the present situation in the administration of maternity care in the largest city of Brazil. He began by emphasizing that in this city an average of almost 50 per cent of the maternal deaths are due to puerperal infection, more than 20 per cent to toxemia and more than 10 per cent to hemorrhage. These figures define the large task that the health organization of the city has to face, particularly because the number of hospital beds for maternity is clearly insufficient. Out of a total of 41,768 births registered during the year 1943, only 14,606 deliveries were attended by physicians in hospitals. There are 207 beds for maternity cases in the eight municipal hospitals (an average of 25.9 beds per hospital) while 6,480 pregnant women were attended during the year 1943, an average of 31.3 deliveries per bed during the year, which corresponds to an average of 11.7 days per bed per case. The only hospital entirely devoted to maternity cases in Rio de Janeiro is the Pro-Matre Hospital, which is a private institution. But the city administration has completed plans to erect a lying-in hospital with 400 beds, the building of which is about to begin.

#### Sixth Pan American Congress of Tuberculosis

The sixth Pan American Congress of Tuberculosis will be held at Havana, Cuba, in January 1945 to discuss three main subjects: BCG vaccine in the control of tuberculosis, clinical forms of incipient tuberculosis and the systematic plan of treatment of cavernous tuberculosis. The Brazilian committee for the organization of the congress has chosen Drs Arlindo de Assis, Manoel de Abreu and A. MacDowell to present spe-

cial reports on these subjects. Drs Jose Rosemberg, Jayme S. Neves, Reginaldo Fernandes, Alberto Renzo A. Ibiapina, Aresky Amorim and Hugo Pinheiro Guimarães will also present papers on the same topics.

#### Malaria in the State of São Paulo

The Service of Malaria Control of the São Paulo State Health Department recently published an important volume with tables, diagrams and halftones to show its work in the last few years. The organization of the service includes several divisions: the Division of Treatment and Education, which has about fifteen fixed stations located in the malarial districts and a few movable stations; the Division of Statistics and Epidemiology; the Division of Control, which is in charge of all the work of spraying houses, oiling and dusting ponds and marshes, draining seepage water and collecting blood samples; and the Division of Laboratory, with such tasks as examining blood samples and classifying mosquitoes. An important part of the service is the Malaria Experiment Station at Guarujá, where many valuable studies have been made. The tables and graphs show that the death rate from malaria in all the state of São Paulo varied from 10.53 per hundred thousand of population in 1930 to 39.00 per hundred thousand in 1938, the minimum rate having been 8.25 in 1938. The number of cases reported varied from 3,291 in 1933 to 181,398 in 1941, when there was a serious outbreak. The lowlands of the Atlantic border which represent only 5 per cent of the area of the state, had 40.64 per cent of the cases during the 1941 malarial season.

#### Brief Items

Dr Jorge de Moraes Grey, a practicing surgeon at Rio de Janeiro, has been elected to membership of the National Academy of Medicine.

Dr Florencio de Abreu, director of the Central Army Hospital of Rio de Janeiro, has been elected president of the Brazilian Academy of Military Medicine.

A special course in cancerology is being given at the St. Francisco de Assis Hospital at Rio de Janeiro. Drs Doellinger da Graça, Vital Fontenelle, Moraes Grey, Augusto Paulino and Rabello Filho e Armando Aguinaga are teaching this course.

A recent cablegram from Buenos Aires has announced that Dr Aloysio de Castro, professor emeritus of medicine at the University of Rio de Janeiro and president of the National Academy of Medicine, has been honored as a guest at the Athenaeum of History of Medicine of Argentina.

Dr Eugene Kisch of the Hospital for Joint Diseases of Far Rockaway, New York, is spending several days at Rio de Janeiro as a guest of the Ataulfo de Paiva Foundation, an organization interested in the campaign against tuberculosis in this city. He has lectured at the National Academy of Medicine and at the Brazilian Tuberculosis Association on the treatment of osteoarticular tuberculosis.

Dr Ovidio Meira, director of the St. Zacarias Children's Hospital of Rio de Janeiro, died at the age of 64. He was one of the leading orthopedists of the country.

## Marriages

CHARLES L. WILLIAMS JR., P. A. S. U. S. Public Health Service, Ann Arbor, Mich., to Miss Alice Griesemer of Reading, Pa., October 14.

ROBERT W. MACRAE of Rockville Centre, N. Y., to Miss Lillie McWhinney Smith of Lawrence in South Mills, N. C., October 14.

VERNON HUTTON JR., Nashville, Tenn., to Miss Margaret Helen Turner in Hattiesburg, Miss., October 15.

E. DAVID BLECHMAN, Newport News, Va., to Miss Carolyn Hess of New York, November 30.

SIDNEY GOVER to Miss Ray Katz, both of New York, November 11.

## Deaths

**Benjamin F. Bailey** \* Lincoln, Neb., Hahnemann Medical College of Philadelphia, 1881, member, House of Delegates, American Medical Association, 1930-1937, past president of the Nebraska State Medical Association, Lancaster County Medical Society, state board of health, American Institute of Homeopathy, Nebraska State Homeopathic Medical Society, the American Interprofessional Institute, Northwest Regional Conference Council of Social Agencies and the Lincoln board of education, interstate supervisor of education of the draft, U S P H S, in the last months of World War I for Nebraska, Iowa, Wisconsin, Minnesota, North Dakota and South Dakota, director of the First National Bank and Union Loan and Savings Association, past president of the Lincoln and Nebraska Society, Sons of the American Revolution and the Lincoln Chamber of Commerce, for twenty years president of the Lincoln and Lancaster County American Red Cross, formerly trustee of the Y M C A, president and chief of staff, Green Gables, Dr. Benjamin F. Bailey Sanatorium, which he established in 1901, joint author of "Present Status of Pediatrics", served as chairman of the committee on journal and publication, Nebraska State Medical Association, died October 31, aged 84, of cerebral hemorrhage.

**Benjamin Franklin Buzby** \* Narberth, Pa., University of Pennsylvania School of Medicine, Philadelphia, 1914, formerly instructor in surgery at his alma mater, specialist certified by the American Board of Orthopaedic Surgery, Inc., past president of the Camden County Medical Society, member of the American Academy of Orthopaedic Surgeons and Philadelphia Academy of Surgery, past president of the Philadelphia Orthopedic Club, fellow of the American College of Surgeons, served overseas as a captain in the medical corps of the U S Army during World War I, on the courtesy staffs of the Bryn Mawr Hospital, Bryn Mawr, Pa., and the Chestnut Hill Hospital, Germantown, Pa., consulting orthopedist, Underwood Hospital, Woodbury, N. J., and Camden County institutions Lakeland, N. J., chief of orthopedic service at the Burlington County Hospital, Mount Holly, N. J., Germantown Dispensary and Hospital, Philadelphia, and the Cooper Hospital, Camden, N. J., where he died October 22, aged 53, of acute lymphatic leukemia.

**Ralph Clinton Cupler**, Chicago, College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1901, also a pharmacist, fellow of the American College of Surgeons, for many years a member of the Chicago Surgical Society, life member of the Surgical Society of Rochester, Minn., captain in the medical corps of the U S Army during World War I, formerly demonstrator of operative surgery and anatomy at the Chicago Polyclinic, formerly professor of clinical surgery at the Bennett Medical College and the Chicago College of Medicine and Surgery, surgeon at St. Anthony's Hospital from 1905 to 1933 and in 1903 gynecologist, in 1903 member of the associate staff at Cook County Hospital, surgeon for the Illinois Central Railroad, died in Wilmette, Ill., October 24, aged 65, of coronary occlusion.

**Harold Eliphalet Hoyt**, Long Island City, N. Y., Albany Medical College, Albany, 1904, member of the American Medical Association and the American Psychiatric Association, served on the faculty of the New York Homeopathic Medical School, veteran of the Spanish-American War, captain in the medical corps of the U S Army during World War I, formerly physician in charge of Fitch's Home for Soldiers, Noroton Heights, Conn., served as resident psychiatrist at Blythwood, Greenwich, Conn., on the staff of West Hill Sanitarium, New York, and as assistant attending and associate attending neurologist at the Metropolitan Hospital, New York, a member of the staff of the River Crest Sanitarium, Astoria, since 1933 and physician in charge since 1935, died in St. John's Long Island City Hospital, October 12, aged 66, of carcinoma.

**Sterling B. Taylor**, Columbus, Ohio, Starling Medical College, Columbus, 1890, member of the American Medical Association, fellow of the American College of Surgeons, in 1939 retired as local surgeon for the New York Central Railroad, in 1934 president of the American Association of Railway Surgeons, lecturer on anatomy at the Ohio Medical University from 1892 to 1899, Starling Medical College from 1903 to 1906 and Starling-Ohio Medical College 1907-1908, served as major in the medical corps of the Ohio National Guard, on the staff of the Grant Hospital, died in St. Petersburg, Fla., September 21, aged 75, of coronary heart disease.

**Antonio Lagorio**, Chicago, Rush Medical College, Chicago, 1879, founder and director of the Pasteur Institute, member

and president of the board of directors of the Chicago Public Library from 1906 to 1917, served as trustee of the House of Correction, received the Italian Cross of Chevalier and the silver medal of the Italian Red Cross and in 1922 the Order of the Grand Knight of the Crown of Italy, received the honorary LL.D. from St. Ignatius College, 1907, said to be the first to bring the Pasteur treatment to the United States fifty-five years ago, died in the Columbus Hospital, November 26, aged 87, of diabetes mellitus.

**George Sloan Dixon**, New York, Bellevue Hospital Medical College, New York, 1885, member of the American Medical Association, the American Academy of Ophthalmology and Otolaryngology and the American College of Radiology, specialist certified by the American Board of Radiology, formerly instructor of otology at the Columbia University College of Physicians and Surgeons and professor of roentgenology at the School of Ophthalmology and Otology, New York, president of the New York Roentgen Society in 1924, on the staff of the New York Eye and Ear Infirmary from 1893 to 1935, died October 9, aged 91, of carcinoma of the throat.

**Charles Atsatt Sparrow** \* Worcester, Mass., Harvard Medical School, Boston, 1910, member of the American Academy of Pediatrics and the New England Pediatric Society, past president of the Worcester District Medical Society and counselor of the Massachusetts Medical Society, chief, pediatric service, Memorial Hospital, Worcester, and consultant to the Milford Hospital, Milford, chief medical officer of Civilian Defense, Worcester District, an associate editor of the *Worcester Medical News*, died September 20, aged 60, of pulmonary embolism and coronary occlusion.

**Eugene Hertel Vachon**, Hartford, Conn., University of Montreal Faculty of Medicine, Montreal, Que., Canada, 1941, served internships at Hotel-Dieu de St. Joseph, Montreal, St. Jean de Dieu Hospital, Gmelin, Que., and the Hospital St. Justine, Montreal, Que., served a residency in medicine at the Middlesex Hospital, Middletown, and at the State Veterans Hospital in Rocky Hill, formerly in charge of anesthesia at the Davis Memorial Hospital, Elkins W. Va., on the staff of St. Francis Hospital, where he died September 25, aged 35, of coronary occlusion.

**Charles Baker Adams**, New York, Columbia University College of Physicians and Surgeons, New York, 1900, served on the staffs of the New York, Bellevue and Post-Graduate hospitals, died in the Columbus Hospital, October 18, aged 70.

**Jesse Curtis Akins**, Forreston, Ill., Barnes Medical College, St. Louis, 1899, member of the American Medical Association, on the staffs of the Deaconess and St. Francis hospitals, Freeport, for many years coroner of Ogle County, president of the White Oak Cemetery Association, died October 4, aged 75, of cardiac decompensation and uremia.

**Sidney Watson Badcon**, Ogden, Utah, Northwestern University Medical School, Chicago, 1912, member of the American Medical Association, served an internship at the Thomas D. Dee Memorial Hospital, where he had been on the staff and for two years president of the board, county physician, died in Samaritan Hospital, Denver, October 7, aged 73, of carcinoma of the prostate.

**Vincent A. Ball** \* Tonawanda, N. Y., University of Buffalo School of Medicine, 1921, died in the De Graff Memorial Hospital, North Tonawanda, October 11, aged 48, of coronary occlusion.

**Abram James Barker** \* Torrington, Conn., Bellevue Hospital Medical College, New York, 1897, past president of the Litchfield County Medical Society, member of the draft medical advisory board during World War I, surgeon for the American Brass Mill for many years, on the consulting staff of the Charlotte Hungerford Hospital, where he died October 2, aged 76, of coronary thrombosis and chronic valvular disease.

**Lyman Guy Barton** \* Plattsburg, N. Y., Bellevue Hospital Medical College, New York, 1891, an Affiliate Fellow of the American Medical Association, fellow of the American College of Surgeons, devised Barton forceps, skull tongs and other instruments, on the staff of Champlain Valley and Physicians hospitals, died November 21, aged 78, of coronary occlusion.

**Edward I. Brown**, St. Paul, Minneapolis College of Physicians and Surgeons, medical department of Hamline University, 1900, member of the American Medical Association, on the staff of the Bethesda Hospital, where he died October 8, aged 75, of cerebral hemorrhage.

**Thomas David Brown**, Ogdensburg, N. Y., Bellevue Hospital Medical College, New York, 1898, died October 6, aged 71, of coronary occlusion.

**Femulus S. Buckland** ♂ Baraga, Mich., Fort Wayne College of Medicine, Fort Wayne, Ind., 1892, formerly associated with the Indian Service and superintendent of the Mackinac School, formerly health officer of Baraga Village, on the staff of St. Joseph's Hospital, Hancock, the Buckland Athletic Field at Baraga High School bears his name in recognition of his many contributions to the community for many years chairman of the Baraga County Republican Committee, died October 13, aged 78.

**Elliot T. Bush** ♂ Elmira, N. Y., University of Buffalo School of Medicine, 1903, past president of the Chemung County Medical Society, member of the American Urological Association, fellow of the American College of Surgeons, for many years honorary member of the Rotary Club, on the staffs of St. Joseph's Hospital and the Arnot-Ogden Hospital, where he died October 12, aged 64.

**James Clyde Butler**, Hutchinson, Kan., Tennessee Medical College, Knoxville, 1894, member of the American Medical Association, formerly surgeon to the National Soldiers' Home in Tennessee, at one time associated with the Dykes Hospital in Stafford, served during World War I, died November 14, aged 73.

**Victor Warren Byrnes**, Durant, Iowa, State University of Iowa College of Medicine, Iowa City, 1897, past president of the Cedar County Medical Society, died October 16, aged 70, of coronary thrombosis.

**Andrew Roscoe Carrigan** ♂ Manchester, Ohio, Kentucky School of Medicine, Louisville, 1903, served as a member of the Adams County Board of Health, died October 16, aged 64, of heart disease.

**Harry X. Cline**, Marion, Ill., Washington University School of Medicine, St. Louis, 1905, veteran of the Spanish American War and World War I, died October 15, aged 66, of coronary thrombosis.

**Edward W. Cummins**, Harrisburg, Ill., St. Louis University School of Medicine, 1906, member of the American Medical Association, served twice as president of the Saline County Medical Society, president of the board of the Saline County Tuberculosis Society, for many years member of the city school board, director of the First National Bank and physician for the Wasson Coal Company, formerly commissioner and city and county health officer, served during World War I, died October 5, aged 66, of lymphosarcoma.

**Thomas Ridley Currie** ♂ Philadelphia, University of Pennsylvania Department of Medicine, Philadelphia, 1894, on the staffs of St. Christopher's and Northeastern hospitals, died October 10, aged 79, of ruptured aneurysm of the abdominal aorta and generalized arteriosclerosis.

**Oscar Eisinger** ♂ Cleveland, Medizinische Fakultät der Universität Wien, Austria, 1915, a captain in the Austrian army during World War I, medical examiner for the induction board of Cleveland, World War II, on the staff of the Polyclinic Hospital, died October 4, aged 53, of coronary thrombosis.

**Omar F. Elder**, Atlanta, Ga., Atlanta College of Physicians and Surgeons, 1909, associate member of the Medical Association of Georgia, died October 25, aged 58, of coronary sclerosis.

**Marcus Samuel Fletcher** ♂ Georgetown, Ill., College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1898, on the staffs of the Lakeview and St. Elizabeth hospitals in Danville, served during World War I, for many years a member of the school board, died October 9, aged 75, of carcinoma.

**Clark Barrows Hatch** ♂ Newark, Ohio, Starling-Ohio Medical College, Columbus, 1904, member of the American Academy of Ophthalmology and Otolaryngology, an examiner for the draft board during World War I, formerly city health officer, past president of the Rotary Club and the Y. M. C. A. board of directors, on the staff of the Newark City Hospital, where he died October 20, aged 65, of acute pulmonary edema.

**Samuel Barth Hirschberg**, Los Angeles, Detroit College of Medicine, 1908, served as a captain in the medical corps of the U. S. Army during World War I, formerly director of the Letterman General Hospital, San Francisco, superintendent of the Mount Zion Hospital, San Francisco, and the Chicago-Winfield Tuberculosis Sanitarium, Winfield, Ill., and medical director of the Beth Moses Hospital, Brooklyn, died October 5, aged 61, of carcinoma of the stomach.

**Leonard D. Hoskins**, Pineville, Ky., Hospital College of Medicine, Louisville, 1903, member of the American Medical Association, died in Knoxville, Tenn., October 11, aged 71.

**George P. Huddle**, Stoutsville, Ohio, Starling Medical College, Columbus, 1888, died in the Lancaster Municipal Hospital, Lancaster, October 20, aged 82.

**Carl Aaron Hyer** ♂ Columbus, Ohio, Ohio State University College of Medicine, Columbus, 1920, from 1924 to 1928 member of the teaching staff of the Ohio State University College of Medicine as an assistant in the department of medicine, for many years on the staff of the Mount Carmel Hospital, member of the local Rotary Club, died suddenly October 13, aged 52, of cerebral hemorrhage.

**Raymond Delos Jamieson** ♂ Racine, Wis., Marquette University School of Medicine, Milwaukee, 1913, past president of the Racine County Medical Society, member of the executive staff at St. Mary's Hospital, where he served as roentgenologist for seven years and had been on the staff at St. Luke's Hospital, died October 7, aged 53, of heart disease.

**Jacob Kaufmann** ♂ New York, Kaiser-Wilhelms-Universität Medizinische Fakultät, Strassburg, Germany, 1885, formerly professor of clinical medicine at the Columbia University College of Physicians and Surgeons, member and past president of the American Gastro Enterological Association, member of the American Association for the Advancement of Science, attending physician at the Lenox Hill Hospital from 1895 to 1925, when he became consultant, a position formerly held at the Beekman Hospital, died October 13, aged 84, of senility.

**Frederick Krauss** ♂ Elkins Park, Pa., University of Pennsylvania Department of Medicine, Philadelphia, 1893, member of the American Academy of Ophthalmology and Otolaryngology, fellow of the American College of Surgeons, on the staffs of St. Christopher's and Episcopal hospitals, Philadelphia, and the Abington Memorial Hospital, Abington, where he died October 9, aged 73.

**Richard Vance Lynch** ♂ Clarksburg, W. Va., Eclectic Medical College, Cincinnati, 1910, past president of the Harrison County Medical Society, at one time physician for the Hutchinson Coal Company at Erie, physician for the Grasselli Chemical Company, Spelter, died November 13, aged 60, of heart disease.

**John McCampbell**, Morganton, N. C., Baltimore Medical College, 1894, member of the American Medical Association and the American Psychiatric Association, chairman of the district medical board during World War I, retired in 1938 as superintendent of the State Hospital, a position he had held for many years, served as a member of the state eugenics board, died in the Davis Hospital, Statesville, November 5, aged 76, of carcinoma of the head of the pancreas.

**Wallace Delos Russell**, New Hartford, N. Y., University of the City of New York Medical Department, New York, 1886, member of the American Medical Association, died September 27, aged 86, of generalized arteriosclerosis and heart disease.

**Scott Ryerson** ♂ Daggett, Calif., University of Buffalo School of Medicine, 1931, specialist certified by the American Board of Surgery, diplomate of the National Board of Medical Examiners, fellow of the American College of Surgeons, served as assistant in surgery at his alma mater, formerly on the staffs of the Buffalo General and the Edward J. Meyer Memorial hospitals, died in Buffalo, September 17, aged 35, of coronary thrombosis.

**John Raymond Sheehan**, Milwaukee, Chicago College of Medicine and Surgery, 1915, served during World War I, died in the Milwaukee County Hospital, Wauwatosa, September 28, aged 54, of acute peritonitis and perforated duodenal ulcer.

**Arthur Edwin Shell** ♂ Chilton, Ill., University of Illinois College of Medicine, Chicago, 1915, served during World War I in 1931 appointed district surgeon for the Illinois Terminal Railroad System and the Illinois Power and Light Corporation, died in St. James Hospital, September 3, aged 55, of coronary thrombosis.

**Charles Reynolds Sheridan**, Detroit, University of Maryland School of Medicine, Baltimore, 1907, member of the American Medical Association, served as health officer of Hamtramck, on the staff of St. Francis Hospital, died October 3, aged 58, of heart disease.

**John B. Slicer**, Rising Sun, Md., College of Physicians and Surgeons, Baltimore, 1884, formerly county coroner, died in the Union Hospital, Elkton, September 8, aged 86, of carcinoma of the liver.

**Albert Godfrey Smith**, Oskaloosa, Kan., University Medical College of Kansas City, Mo., 1886, member of the American Medical Association, honorary member of the Shawnee County Medical Society, formerly mayor, served on the staff of Christ's Hospital, Topeka, died September 25, aged 84, of coronary thrombosis.

**John Henry Smith** ☉ Duke Center Pa University of Pittsburgh School of Medicine, 1909 died in St Francis Hospital, Olean, N Y, September 3 aged 63 of acute peritonitis following perforation of colonic diverticula

**Matthew B Smith**, Fenton, Mich Saginaw Valley Medical College, Saginaw, 1898, formerly on the staffs of the Hurley and St Joseph's hospitals, Flint, died September 27, aged 72, of heart disease

**Wayne Lawson Snyder**, Brookville, Pa, Jefferson Medical College of Philadelphia, 1905, member of the American Medical Association, fellow of the American College of Surgeons, served overseas during World War I, formerly on the staff of the Brookville Hospital, died September 23, aged 63, of coronary heart disease

**Chester A Spittler** ☉ Middletown, Ohio, Indiana Medical College, School of Medicine of Purdue University Indianapolis, 1907, served as city physician and health officer for many years on the staff of the Middletown Hospital died September 14, aged 66, of chondrosarcoma

**Guy N Stonemetz**, Fairfield, Ill St Louis Medical College, 1885, for many years a druggist died September 22, aged 81, of nephritis and senility

**Homer O Strosnider** Keokuk, Iowa, Keokuk Medical College, College of Physicians and Surgeons, Keokuk, 1905, member of the American Medical Association, died September 29, aged 61, of pernicious anemia

**John Armstrong Sugg**, McEwen, Tenn, University of Nashville Medical Department, 1900 died September 1, aged 71

**Robert Elmer Summitt** ☉ Gainesville Fla, Tulane University of Louisiana School of Medicine, New Orleans, 1926 served during World War I, member of the Alachua County Hospital staff and past president, died September 12, aged 51 of heart disease

**John Nelson Swartz** ☉ Detroit University of Michigan Department of Medicine and Surgery, Ann Arbor, 1892 died September 27, aged 72, of congestive heart failure

**Green Benjamin Taylor**, Cameron Texas, Memphis (Tenn) Hospital Medical College 1900 past president and secretary of the Milam County Medical Society and president of the Central Texas District Medical Society formerly vice president of the State Medical Association of Texas, for many years local oculist for the Santa Fe and Southern Pacific railroads, died September 2, aged 69, of coronary occlusion

**Alfred Teebor**, Newark, N J, Medizinische Fakultät der Universität Wien Austria, 1914, died September 23, aged 54, of coronary thrombosis

**Henson Foster Tomb**, Johnstown Pa, Jefferson Medical College of Philadelphia 1887, member of the American Medical Association, school physician, member of the consulting staff of the Conemaugh Valley Memorial Hospital where he died September 15 aged 83, of carcinoma of the liver

**Rufus Henry Tomlinson**, McKinnon, Tenn Vanderbilt University School of Medicine Nashville 1893, died in the Clarksville Hospital, Clarksville, September 27 aged 76, of heart disease

**J Frank Van Voorhis**, Rockford Ill Bennett Medical College Chicago 1889, died in the Swedish American Hospital September 17, aged 79, of cerebral hemorrhage

**George Van Voris Warner**, Red Bank, N J, Albany Medical College Albany 1902, past president of the Monmouth County Medical Society, served as president of the Monmouth County Mosquito Extermination Commission, on the staffs of

the Dr E C Hazard Hospital, Long Branch, and the Royal Pines Hospital Pinewald, died October 9, aged 67

**Lloyd Cyrus Warren** ☉ Franklin, N Y, Baltimore Medical College, 1911, a first lieutenant in the medical corps of the U S Army during World War I, since 1940 medical examiner for the Selective Service Board at Walton served as school physician, health officer of the town of Franklin, and coroner of Delaware County, on the staffs of the Aurelia Osborn Fox Memorial Hospital Oneonta, and The Hospital Sidney, died September 14, aged 61, of coronary occlusion

**Benjamin Weiner**, Pittsburgh, University of Pittsburgh School of Medicine, 1909, served during World War I died August 9, aged 56, of carcinoma of the lung

**Milton Madison Wells** ☉ Fairland, Ind, Medical College of Indiana, Indianapolis, 1901, served during World War I, for many years Brandywine township trustee died in the W S Major Hospital, Shelbyville, October 12, aged 73

**Frank Kemper Westfall**, Prairie City Ill, the Hahnemann Medical College and Hospital, Chicago, 1903, at one time on the staff of the Phelps Hospital, Macomb, died September 16 aged 64

**Edgar Allen Widber**, Monroe Township N J University of Vermont College of Medicine Burlington, 1894, died September 28, aged 83 of arteriosclerotic heart disease

**James Salmon Wilkinson**, Philadelphia Medico-Chirurgical College of Philadelphia, 1906 on the courtesy staffs of the Germantown and Chestnut Hill hospitals died October 3 aged 61, of nephritis

**Lucius Gould Wright**, Chicago, John A Creighton Medical College Omaha, 1910, served during World War I, died September 23, aged 69, of atrophic cirrhosis of the liver

**Herbert Leroy York**, Melrose, Mass Harvard Medical School, Boston 1899, retired druggist died in the Corey Hill Hospital, Brookline, September 25, aged 70 of coronary occlusion

**Everett Thomas Zaring** ☉ Terre Haute, Ind Indiana Medical College, School of Medicine of Purdue University, Indianapolis 1906, member of the American Society of Anesthetists, deputy coroner of Vigo County, served as secretary for the city board of health, formerly contagious disease physician for the city, on the staff of the Union Hospital, died September 20, aged 61, of cerebral hemorrhage

## KILLED IN ACTION

**John Arthur Clapp**, Chicago, University of Illinois College of Medicine, Chicago, 1942, served an internship at the St Louis City Hospital, St Louis, and the Evangelical Hospital in Chicago commissioned a lieutenant (jg) in the medical corps of the U S Naval Reserve on Oct 14, 1942 began active duty in July 1943, died in the Pacific area July 21, aged 29, of fragment chest wound

**Gene W Hair**, Buffalo University of Buffalo School of Medicine 1941 member of the American Medical Association diplomate of the National Board of Medical Examiners interned at the Buffalo Hospital of the Sisters of Charity, commissioned a lieutenant (jg) in the medical corps of the U S Naval Reserve on March 12 1943, medical officer on a Landing Ship Tank and had been in North Africa Sicily, Salerno and England, killed in action off the coast of France June 9 aged 35



LIEUT (JG) JOHN ARTHUR CLAPP  
(MC), U S N R, 1914-1944



LIEUT (JG) GENE W HAIR  
(MC), U S N R, 1908-1944



## Bureau of Investigation

### STIPULATIONS

#### Agreements Between Federal Trade Commission and Promoters of Various Products

Following are abstracts of stipulations in which promoters of patent medicines," medical devices or cosmetics have agreed, following action by the Federal Trade Commission, to discontinue certain misrepresentations in their advertising. These stipulations differ from the "Cease and Desist Orders" of the Commission in that such orders definitely direct the discontinuance of misrepresentations. The abstracts that follow are presented primarily to illustrate the effects of the provisions of the Wheeler Lea Amendment to the Federal Trade Commission Act on the promotion of such products.

**Bassoran with Cascara**—The William S. Merrell Company Cincinnati entered into a stipulation with the Federal Trade Commission in March 1944 agreeing to discontinue any advertisement which did not reveal that the product should not be used when symptoms of appendicitis such as abdominal pain or nausea are present, provided however that the advertisements need only contain the statement "Caution: Use Only as Directed" if the label directions carry a warning to the same effect.

**Green's Reliable Restorer**—This is put out by an A. J. Green trading as Green's Hair Hospital, Clarksburg, W. Va. In March 1944 he stipulated with the Federal Trade Commission that he would cease representing that his product is not a dye or stain and is harmless, that it corrects gray hair or through use of the term "restorer" or by any other means that it restores the original color to the hair that it grows or promotes the growth of hair that it stops the hair from falling out or constitutes a cure or remedy for or has any value in treating dandruff or contagious eruptions in excess of the removal of dandruff scales.

**Gro-Fas Hair Balm Formula** "Formula For Treating Gray Hair" and **Gro-Fas Hair Treatment**—These are sold by an H. S. Cobb trading as the Cobb Laboratories, Philadelphia. In a stipulation that he entered into with the Federal Trade Commission in March 1944 he agreed in connection with the sale of Gro-Fas Hair Treatment and the formulas to cease representing that the product itself or one compounded in accordance with his formulas will nourish or feed the scalp or clear it of sore rash or tetter itch. Further he agreed to cease representing by use of the term "Gro-Fas" that the product of this name or one compounded from his formulas will cause the hair to grow longer or in any way affect the growth of the hair. Also he stipulated that he would cease using the word "Laboratory" in his trade name or business when he does not own, operate and control a laboratory where research work in connection with his business is conducted by trained technicians.

**Naturaltone**—This is a product of a Katherine E. Martin trading as Naturaltone Company, Chicago. According to a stipulation that she entered into with the Federal Trade Commission in March 1944 she will no longer represent by use of the word "restorer" or any other means that the preparation restores the original color to the hair that it is not a dye but a gray hair corrective and banishes gray hair that it makes the hair soft and benefits the scalp or is a cure or remedy for dandruff or has value in treating it in excess of removing dandruff scales.

**Sabetal**—This is put out by Isaac Masarsky trading as Hillcrest Laboratories, Spring Valley, N. Y. According to a stipulation that he entered into with the Federal Trade Commission in March 1944 he will no longer represent that the product has any beneficial effect on psoriasis, eczema or any other external skin irritation other than temporarily relieving the itching incident thereto or aids in the removal of loose epidermic scales caused by such ailments. It was further agreed to discontinue any advertisement which did not reveal that Sabetal contains coal tar and oxyquinoline sulfate and that its use may cause irritation and in such cases should be discontinued. Masarsky was permitted however to use the simple advertising statement "Caution: Use Only as Directed" provided that the labeling carried the same warning.

**Viet**—This is a product of the Cerophyl Laboratories, Inc. of Kansas City, Mo. In March 1944 this concern and the Potts-Turnbull Advertising Company of the same city stipulated with the Federal Trade Commission that they would no longer represent that Viet will relieve or correct such conditions as loss of beauty in skin or eyes, nervousness, undue fatigue, stomach or intestinal trouble or be beneficial in treating nervous irritability or run-down condition. The Cerophyl concern and the Campbell-Ewald Company of Detroit, another advertising firm stipulated with the Federal Trade Commission to discontinue any advertisement which represented that Viet would help tone or benefit the nervous system, regulate or normalize elimination, reduce susceptibility to colds, build up resistance to illness or disease or correct some other conditions. They further agreed to cease representing that the use of Viet will be helpful for all conditions resulting from vitamin deficiency, that the grass juice factor in the preparation is essential in nutrition or that chlorophyll is beneficial or essential in the human diet.

**Vilches Cosmetics**—These are put out by one Walter Gutheim of New York who trades under the name Mrs. E. Vilches. In a stipulation that he entered into with the Federal Trade Commission in March 1944 Gutheim agreed to discontinue the following advertising misrepresentations: That Vilches Hair Restoro will restore the original color

the hair, nourish the hair root, promote hair growth or prevent dandruff and falling hair is not a dye and is harmless; that Vilches Special Hair Tonic will check falling hair; that Vilches Cleaning Cream will cleanse the skin more thoroughly than soap and water; that Vilches Burdock Root Ointment is a cure or remedy for or has value in the treatment of dandruff, itching scalp, falling hair, eczema and other scalp diseases or will promote the growth of hair; or that Vilches Creams, Lotions, Astringents and Powders will nourish the skin, give it a youthful appearance or rid it of wrinkles. Gutheim further stipulated that he would cease representing by use of the words "Skin Food" in the brand name of Vilches Excellent Skin Food or in any other manner that this product will nourish the skin or by use of the words "Pore Cleansing" in the brand name of Vilches Pore Cleansing Cream or by any other means that this cream will cleanse the pores by use of the phrase "Ickle Remover" in the brand name of Vilches Ickle Remover or otherwise that the preparation will remove freckles by use of the words "Pimple and Blackhead Cream" in the brand name of Vilches Pimple and Blackhead Cream or in any other manner that this product will clear the skin of pimples and blackheads.

**Vitamelt Enriched Bread**—This product put out by Vitamelt Bread Inc. is reported by the Federal Trade Commission to be enriched with a vitamin powder concentrate manufactured by Dr. W. S. Vitamelt Laboratories, Inc. also of Chicago. In March 1944 the two corporations which are said to have the same stockholders and officers stipulated with the Federal Trade Commission to discontinue the following misrepresentations: That this bread by reason of its impregnation with Vitamelt concentrate provides a competent treatment or efficient remedy for bodily conditions revealed by such symptoms as nervousness, sluggishness, loss of youthful appearance, digestive disturbances, memory loss, vitality, tooth decay, mouth and gum inflammations, insomnia or loss of weight and strength among other disorders; that the vitamin and mineral enrichment of Vitamelt Bread exceeds that of standard enriched bread; that the ordinary diet is apt to lack the necessary amounts of essential vitamins or that it is usually impossible to obtain the requisite quantities of vitamins in the ordinary diet; that for the maintenance of bountiful health "only a reasonable amount of additional vitamins is required for consumers of Vitamelt bread or that the product may be relied on to provide the minimum daily requirements of the essential vitamins and minerals when taken in customary quantities. Further the two concerns agreed to cease designating the alleged functions of certain vitamins and minerals such as calling vitamin B<sub>1</sub> the "calm nerve" vitamin, iron the "red blood mineral," and calcium the "good teeth mineral."

**Woda Polska (Polish Water)**—This is put out by Anthony Worzalla, Rose Worzalla, Imbeci Stevens, Point, Wis. According to a stipulation that they entered into with the Federal Trade Commission in March 1944 they will cease representing by the use of the word "restores" or any other means that their dye restores the original color to hair, eliminates or corrects gray hair or is harmless.

## Bureau of Legal Medicine and Legislation

### MEDICOLEGAL ABSTRACTS

**Workmen's Compensation Acts: Hodgkin's Disease Allegedly Aggravated by Trauma**—Hall apparently suffered from Hodgkin's disease prior to the industrial accident here in question. In the course of his employment he operated what is referred to in the opinion here reported as an "oil servicing unit" sitting on a seat from which he could reach various levers. The unit was tied down by a chain to a cement corner 3 or 4 feet high to keep it from slipping. One day in March 1942 this chain broke, permitting the unit to move forward a few feet against the corner of a derrick and the seat on which Hall was sitting to be thrown up about 8 inches. This caused Hall to be thrown off the seat and on to the ground about 4 or 5 feet below. He was severely bruised on his left hip on the calf of his left leg and on his left arm between the shoulder and the elbow. The next morning he complained of soreness and stiffness in his neck but there was no bruise visible in that area. While his injuries "troubled him with his work" he continued to work until July 26. Less than a week after the industrial accident a lump formed in the gland under his left jaw, increasing in size until it was about 3 inches long and 1½ inches high. It caused him no pain or particular inconvenience for a few months but some time in June became troublesome. In August 1942 he was taken to a hospital where the gland was removed by Dr. Chesky who made a diagnosis of Hodgkin's disease. The workman died the following February from that disease. His widow instituted compensation proceedings under the workmen's compensation act of Kansas claiming a causal connection between the industrial accident and Hall's death. From an order of the compensation commissioner denying com-



compensation the widow appealed to the district court McPherson County which found that Hall had been suffering from Hodgkin's disease prior to the industrial accident and that the progress of that disease was aggravated and accelerated by the industrial accident, which in turn resulted in Hall's death. The court accordingly awarded compensation and the employer and his insurer appealed to the Supreme Court of Kansas.

The appellants contended that there was no competent evidence before the trial court to support a finding that the progress of Hodgkin's disease in Hall was hastened, aggravated and accelerated by the industrial accident thereby hastening Hall's death. Thus, said the Supreme Court presents a question of law. In deciding the question this court does not weigh the evidence but only examines the record to see if there is substantial, competent evidence to support the findings of the trial court and in so doing ignores controverting evidence which may not have been given credence. We have no occasion here to write a thesis on Hodgkin's disease. However, from the evidence in this case and from pertinent authorities it appears that Hodgkin's disease is characterized by an enlargement of the lymphatic glands, accompanied by progressive anemia and terminating in a fatal result. It most frequently shows itself in the glands of the neck but may involve other glands, as those under the arm, the abdomen or the groin. Sometimes the spleen is affected, and less frequently the liver and bone marrow. As the gland enlarges a real change takes place in the cell structure. Sometimes this suggests an unusual variety of tuberculosis of the lymphatic glands, at other times it is thought to be identical with one variety of a malignant tumor. The disease begins slowly and without pain, and one may be afflicted with the disease for several months or even for several years without knowing it. The cause of the disease is unknown. The progress in some cases has been slowed by treatment with radium or roentgen therapy. The employer and his insurance carrier relied on a quotation from Gray's "Attorney's Textbook of Medicine," page 526 (ed 2, p 789) to the effect that medical authorities agree that Hodgkin's disease cannot be either caused or aggravated by injury. That thought continued the court, is expressed by the author of that textbook in two other places in his article on Hodgkin's disease, but no medical authority is cited to that effect nor is such medical authority cited by the employer and his insurance carrier and our own research discloses none. Without regard to the correctness of the authority so relied on by the appellants, the trial court was compelled to decide this case on the evidence before it, and our sole question is whether or not there was substantial, competent evidence to sustain the finding and judgment of the trial court. On that point the best that can be said for the appellants is that the evidence was conflicting. Five physicians testified. One of them stated that he did not know the cause of Hodgkin's disease for which reason he would express no view as to whether it might be caused or aggravated by trauma. Two physicians testified that in their judgment trauma would injure tissues affected by Hodgkin's disease just as readily as it would injure healthy tissue or tissue affected by any other disease and in their opinion that, since Hall suffered pain and discomfort in his neck the morning following the industrial accident and a lump formed in a gland in the neck within a few days after the accident, it was reasonable to suppose that the injury had some thing to do with it and that probably the injury aggravated the disease and shortened the life of the workman. Two of the physicians gave it as their opinion that Hodgkin's disease could not be aggravated by trauma, basing their testimony largely on the fact that the medical authorities do not mention trauma as either a cause or an aggravation of the disease. One of the latter physicians testified that he had never had a case in which he was sure that the disease had been aggravated by trauma. The weight to be given to this evidence concluded the court was for the trial court and not for this court on review. It is well settled of course, that an injury which aggravates an existing disease or accelerates the death of a workman is compensable. The employer and his carrier however argued that the medical testimony relied on by the trial court to show a causal connection between the industrial accident and the ensuing death went no further than to indicate that it was possible that the disease was aggravated by the accident and that therefore the judgment of the court was founded on speculation or

surmise. We think answered the court, however that the evidence is not open to that interpretation but went further to the effect that the injury probably had the effect of aggravating and accelerating the disease.

Accordingly the award of compensation for Hall's death was affirmed.—*Hall v Kornfeld-Harper Well Servicing Co* 151 P (2d) 688 (Kan 1944)

## Medical Examinations and Licensure

### COMING EXAMINATIONS AND MEETINGS

#### NATIONAL BOARD OF MEDICAL EXAMINERS EXAMINING BOARDS IN SPECIALTIES

Examinations of the Examining Boards in Specialties were published in this JOURNAL December 9 page 979

#### BOARDS OF MEDICAL EXAMINERS

- ALABAMA Montgomery June 26 28 Sec Dr B F Austin 519 Dexter Ave Montgomery 4  
ALASKA Juneau March Sec Dr W M Whitehead, Box 561 Juneau  
ARIZONA \* Phoenix Jan 23 Sec Dr J H Patterson 826 Security Bldg Phoenix  
CALIFORNIA Oral Los Angeles Jan 21 Written Los Angeles March 58 Sec Dr Frederick N Scatena 1020 N St Sacramento 14  
COLORADO \* Denver Jan 25 Sec Dr J B Davis 831 Republic Bldg Denver  
HAWAII Honolulu Jan 8 11 Sec Dr J A Morgan 55 Young Bldg Honolulu  
IDAHO Boise Jan 8 11 Dir Bureau of Occupational Licenses Mrs Lila D Painter 355 State Capitol Bldg Boise  
ILLINOIS Chicago Jan 24 Supt of Registration Department of Registration and Education Mr Philip Harman Springfield  
INDIANA Indianapolis Jan 35 Exec Sec Board of Medical Registration and Examination Miss Ruth V Kirk, 301 State House Indianapolis 4  
MINNESOTA \* Minneapolis Jan 16 18 Sec Dr J F DuBois 230 Lowry Medical Arts Bldg St Paul 2  
NEW HAMPSHIRE Concord March 8 9 Sec Board of Registration in Medicine Dr D G Smith 77 Main St Nashua  
NEW MEXICO \* Santa Fe April 9 10 Sec Dr LeGrand Ward 141 Palace Ave Santa Fe  
NEW YORK Albany Buffalo New York and Syracuse Jan 29 Feb 1 Chief Mr H L Field Education Bldg Albany  
NORTH DAKOTA Grand Forks Jan 25 Sec Dr G M Williamson 417 S 3rd St Grand Forks  
OHIO Endorsement Columbus Jan 9 Examination Columbus June Sec Dr H M Platter 21 W Broad St, Columbus  
OREGON \* Portland Jan 24 27 Exec Sec Miss L M Conlee 608 Failing Bldg Portland 4  
RHODE ISLAND \* Providence Jan 4 5 Chief Division of Examiners Mr Thomas B Casey 366 State Office Bldg Providence  
SOUTH CAROLINA Columbia June 25 27 Sec Dr N B Heyward 1329 Blumhain St Columbia  
SOUTH DAKOTA \* Pierre Jan 16 17 Sec Medical Licensure State Board of Health Dr G Cottam Pierre  
TEXAS Dallas Dec 19 21 Sec Dr T J Crowe 918 20 Texas Bank Bldg Dallas 2  
VERMONT Burlington June Sec Dr F J Lawless Richford  
VIRGINIA \* Richmond June 20 23 Sec Dr J W Preston 30½ Franklin Rd Roanoke  
WASHINGTON \* Seattle Jan 15 17 Dir Department of Licenses Mr Thomas A Swayze Olympia  
WEST VIRGINIA Charleston Feb 26 28 Commissioner Public Health Council Dr John E Offner State Capitol Charleston 5  
WISCONSIN \* Madison Jan 9 11 Sec Dr C A Dawson, Tremont Bldg River Falls  
WYOMING Cheyenne Feb 5 6 Sec Dr M C Keith Capitol Bldg Cheyenne

\* Basic Science Certificate required

#### BOARDS OF EXAMINERS IN THE BASIC SCIENCES

- CONNECTICUT Feb 10 Address State Board of Healing Arts 250 Church St New Haven 10  
DISTRICT OF COLUMBIA Washington Apr 23 24 Sec Commission on Licensure Dr G C Rubland 6150 E Municipal Bldg Washington 1  
FLORIDA DeLand June 1 Sec Dr J F Conn John B Stetson University DeLand  
IOWA Des Moines Jan 9 Dir Division of Licensure and Registration Mr H W Grefe Capitol Bldg Des Moines  
MICHIGAN Ann Arbor and Detroit Jan 12 13 Sec Miss Eloise LeBeau 101 N Walnut St Lansing  
MINNESOTA Minneapolis Jan 23 Sec Dr J C McKinley 126 Millard Hall University of Minnesota Minneapolis 14  
NEBRASKA Omaha Jan 9 10 Dir Bureau of Examining Boards 1009 State Capitol Bldg Lincoln  
NEW MEXICO Santa Fe Feb 12 Sec Miss Marion M Rhea State Capitol Santa Fe  
OREGON Portland March 3 Sec Board of Higher Education Mr C D Byrne University of Oregon Eugene  
TENNESSEE Memphis and Nashville Dec 18 19 Sec Dr O W Hyman 874 Union Ave Memphis

## Current Medical Literature

### AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 19 4 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (\*) are abstracted below.

### American Journal of Physiology, Baltimore

142 299-482 (Oct.) 1944 Partial Index

- Studies on Mechanisms Involved in Shock and Its Therapy E. Mylon, C. W. Casbman Jr. and M. C. Winternitz—p. 299  
Further Observations on Factors Influencing Hypoxic Resistance of Mice W. A. Hiestand and Helen Rogers Miller—p. 310  
Comparison of Renotropic with Androgenic Activity of Various Steroids C. D. Kochlikian—p. 315  
Visual Thresholds as Index of Physiologic Imbalance During Anoxia R. A. McFarland, M. H. Halperin and J. I. Niven—p. 328  
Fatigue of Depressor Reflex Harriet Mylander Maling—p. 350  
Effects of Infusing Glycine and of Varying Dietary Protein Intake on Renal Hemodynamics in Dog R. I. Pitts—p. 355  
Cardiovascular Changes Resulting From Severe Scalds I. H. Page—p. 366  
Response of Mammalian Smooth Muscle to Oxygen at High Pressure and Its Possible Relationship to Oxygen Poisoning of Respiratory Enzyme Systems J. W. Bean and D. F. Bohr—p. 379  
Oxygen Consumption of Eye Muscles of Thyroidectomized and Thyroxine Injected Guinea Pigs G. K. Smelser—p. 396  
Experimental Production of Hyperchromic Anemia in Dogs Which is Responsive to Anti Pernicious Anemia Treatment J. E. Davis—p. 402  
Rate of Transcapillary Exchange of Sodium in Normal and Shocked Dogs A. Gellhorn, Margaret Merrell and R. M. Rankin—p. 407  
Reflexes in Anterior Tibial Muscle After Cord Asphyxiation A. van Harreveld—p. 428  
Induced Variations in Cell Fluid Volume in Study of Shifts of Body Fluid C. T. Ashworth and A. J. Gill—p. 435  
Histochemical Changes in Kidney During Diuresis and Dehydration J. M. Weller—p. 441  
Mechanisms Underlying Electrocardiographic Changes Observed in Anoxia A. S. Harris and W. C. Randall—p. 452

### Annals of Surgery, Philadelphia

120 257-416 (Sept.) 1944

- The State of the American Surgical Association F. A. Collier—p. 257  
\*Surgical Management of Wounded in Mediterranean Theater at Time of Fall of Rome E. D. Churchill—p. 268  
Vascular Injuries of Warfare D. C. Elkin—p. 284  
\*Use of Penicillin in Surgical Infections J. S. Lockwood, W. L. White and F. D. Murphy—p. 311  
Acute Starvation Following Operation or Injury with Special Reference to Caloric and Protein Needs R. Elman—p. 350  
Healing of Deep Thermal Burns Preliminary Report G. J. Connor and S. C. Harvey—p. 362  
Study of Interrelationship of Salt Solutions, Serum and Defibrinated Blood in Treatment of Severely Scalded Anesthetized Dogs C. A. Moyer, F. A. Collier, Vivian Job, H. H. Vaughan and Doris Marly—p. 367  
Comparison of Various Types of Local Treatment in Controlled Series of Experimental Burns in Human Volunteers J. A. Dingwall and W. DeW. Andrus—p. 377  
Tannic Acid and Treatment of Burns An Obsequy R. D. McClure, C. R. Lam and R. Romenec—p. 387  
Surgical Treatment of Carcinoma of Body of Pancreas A. Brunschwig—p. 406

**Surgical Management of Wounded in Mediterranean Theater**—A highly significant and far reaching advance in military surgery has taken place in the base hospitals with the development of what may be called "reparative surgery." Reparative surgery according to Churchill is not to be confused with the reconstructive surgery of the zone of the interior. Reparative surgery is designed to prevent or cut short wound infection. If the initial wound operation has been a complete one, wounds of the soft parts may be closed by suture on or after the fourth day. The dressing applied in the evacuation hospital is removed under aseptic precautions in an operating room of a general hospital at the base. Following closure, the part is immobilized preferably by a light plaster encasement or, if this is not practical by bed rest. Decision to close a wound by suture is based solely on an appraisal of the gross appearance at the time of removal of the dressing. Preliminary bac-

teriologic analysis of the flora of the wound does not provide information pertinent to this decision or allow the prediction of the result. Clean wounds that heal by first intent on after delayed closure may show a profuse and varied flora, both anaerobic and aerobic. It is estimated that during the Italian campaign alone at least 25,000 wounds of the soft parts have been closed on the basis of gross appearance only. Healing has resulted in approximately 95 per cent, and no loss of life or limb or serious complications have been reported. Four to ten days is the "golden period" to close wounds, reduce and fix fractures, remove retained missiles and carry out other procedures to prevent or abort infection. It is a satisfaction to note the contrast between the present concept of wound management and the doctrines in vogue scarcely a year ago. The closed plaster management of wounds and fractures was designed to conserve life but exacted a high price in skeletal and soft part deformity. Its use is now limited to certain cases with established infection of bone or with massive defects of soft parts compounding a fracture site. Resuscitation measures that relied on plasma alone to compensate for loss of whole blood prolonged life but tied the hands of the surgeon in the performance of life saving surgery.

**Penicillin in Surgical Infections**—Lockwood and his associates of the Subcommittee on Infected Wounds and Burns of the National Research Council report a series of 400 cases treated with penicillin. The drug when administered systematically modified the course of most infections in which the causative organism is sensitive to penicillin in vitro. The magnitude of the effect in individual cases may be classified as follows: (a) Dramatic curative responses in disseminated sepsis particularly where circulation in localized distributing foci is adequate to effect contact between drug and bacteria. In such cases surgical treatment which would have seemed unavoidable in the past may with penicillin be postponed or avoided altogether. (b) Favorable responses characterized by subsidence of toxemia, correction of anemia, rapid healing of infected or seriously contaminated wounds and elimination of infection within the pleural cavity or joints. (c) Failures particularly where the organism is insensitive or where the lesion under treatment is attributable only in part or not at all to the persistent activity of penicillin sensitive bacteria and under conditions in which penicillin cannot be brought to the infected area because of poor circulation or limited transport of the drug. Local penicillin therapy needs further study but is yielding encouraging results in special cases. Just as with the sulfonamides the use of penicillin requires a thorough redefinition of the indications for, and objectives in the employment of surgery in treatment of localized infections. Careful bacteriologic studies are essential if penicillin is to be used with maximal effectiveness. As the supply of penicillin increases it will be possible through careful observation of cases and the use of controls whenever practical to reach a more accurate definition of the scope and limitations of penicillin than is yet possible.

### Archives of Neurology and Psychiatry, Chicago

52 163-254 (Sept.) 1944

- Relation of Abnormal Collections of Cells in Posterior Medullary Velum of Cerebellum to Origin of Medulloblastoma J. Raaf and J. W. Kernohan—p. 163  
\*Phlebostasis and Phlebothrombosis of Brain in Newborn and in Early Childhood O. Marburg and L. Casamajor—p. 170  
Experimental Production of Focal Epilepsy B. L. Bacella, N. Kopeloff, S. E. Barrera and L. M. Kopeloff—p. 189  
Guide to Interviewing and Clinical Personality Study J. C. Whitehorn—p. 197  
Neuronal Disease Associated with Intracytoplasmic Inclusion Bodies J. W. Papez—p. 217

**Phlebothrombosis of Brain in the Newborn**—Marburg and Casamajor state that phlebothrombosis and phlebostasis are frequently the cause of severe disintegration of the brain in early childhood. The site of the lesions corresponds to the drainage areas of the veins. In the 2 cases reported the site corresponded to the drainage areas of the vena cerebri magna and the sinus longitudinalis superior. But whereas in the first case only the drainage system of the vena terminalis anterior and the vena lateralis ventriculi was damaged in the second case the other branches of the great cerebral vein were also affected except for the vena septi pellucidi and some branches draining the corpus callosum and the posterior part of the

superior frontal gyrus. This region was preserved in both cases. That other branches of the vena cerebri magna were affected in the second case is evidenced by the fact that the hippocampal region had not been spared, in contrast to the condition in the first case, the optic nerve showed atrophic changes and the choroid plexus was sclerotic. The pathologic changes are necrosis, malacia and serous perfusion, followed by total or partial destruction of the tissue, with sparing of the most resistant parts (glia) and destruction of the least resistant structures (myelin sheaths and axons). The repair depends on the degree of destruction. Complete destruction is followed by cyst formation, and incomplete destruction by sclerosis. The condition under discussion is closely related to diffuse sclerosis occurring in childhood, which to some extent is only the terminal stage of a phlebothrombotic or a phlebostatic state. The same relation seems to apply to a disease in lambs called "swayback." Cushing performed operations in 4 cases of cerebral hemorrhages caused by birth. Success was obtained in 2 of these. However, since surgical cure is impossible in cases with necrosis, malacia or serous perfusion, prevention is essential, which implies caution during pregnancy, delivery and early infancy.

### Arizona Medicine, Phoenix

1 229-296 (Sept) 1944

- Primary Carcinoma of Fallopian Tube M Rosenthal and K Peter son—p 247  
Biochemical Approach to Modern Surgical Methods H A Barnes—p 250  
Diagnosis with Differential Diagnosis of Silicosis from Other Conditions Simulating It L B Baldwin—p 254  
Standards for Hospital Radiologic Services M S Dirks—p 259  
Clinical View of Silicosis W M Schultz—p 261  
Appendicitis Complicated by Rupture of Inferior Epigastric Artery G O Bassett—p 263

### Arkansas Medical Society Journal, Fort Smith

41 79-94 (Sept) 1944

- Medicological Aspects of Physical Medicine H H Buckelew—p 79

41 95-120 (Oct) 1944

- Cardiospasm: Review of Literature D C Browne and G McHardy—p 95

### Cancer Research, Baltimore

4 601-672 (Oct) 1944

- Mast Cells in Experimental Skin Carcinogenesis W Cramer and W L Simpson—p 601  
Transplantable Methylcholanthrene Skin Carcinomas of Mice Zola K Cooper H I Firminger and Helen C Keller—p 617  
Effect of Castration Theelin and Testosterone on Incidence of Leukemia in Rockefeller Institute Strain of Mice J B Murphy—p 622  
Decreased Mutual Adhesiveness: Property of Cells from Squamous Cell Carcinomas D R Coman—p 625  
Mode of Origin of Tumors: Solitary Localized Squamous Cell Growths of Skin R A Wills—p 630  
Distribution of Iron and Copper in Malignant Neoplastic Disease K W Buchwald and Leona Hudson—p 645

### Endocrinology, Springfield, Ill

35 229-282 (Oct) 1944

- Effect of Sulfonamides and Thiourea Derivatives on Heart Rate and Organ Morphology C P Leblond and H E Hoff—p 229  
Response of Adrenalectomized Hypophysectomized Rats to Pituitary Growth Hormone Miriam E Simpson W Marx H Becks and H M Evans—p 234  
Studies on Mechanism of Alloxan Diabetes M G Goldner and G Gomori—p 241  
Effects of Pitressin Tannate and Water Restriction on the Water Exchange and Renal Function of Normal Dogs C Spingarn M G Mulinos and Esther Maculla—p 249  
On Broadness of Ring Doves Following Implants of Certain Steroid Hormones O Riddle and E L Lahr—p 255  
Action of Steroid Hormones on Mature Dove Testis E L Lahr and O Riddle—p 261  
Effect of Sex Hormones on Anemia Induced by Hemorrhage in Rat Cræe Finkelstein A S Gordon and H A Charipper—p 267

**Mechanism of Alloxan Diabetes**—Goldner and Gomori describe experiments on dogs which revealed that alloxan exerts its diabetogenic effect by a direct action on the pancreas. The early hyperglycemia after alloxan is not a causal factor in the development of diabetes. Even if a normal blood sugar is maintained for an initial period after alloxan injection, islet cell degeneration and diabetes develop. The initial hyperglycemia depends on the presence of an intact adrenal medulla. Alloxan

does not inhibit or inactivate insulin. The transitory alloxan hypoglycemia is produced by insulin liberated from degenerating pancreatic islet cells. In alloxan diabetes the insulin content of the pancreas is greatly decreased. The diabetogenic action is a specific property of alloxan. None of the chemically related compounds tested have a similar effect on carbohydrate metabolism.

### Georgia Medical Association Journal, Atlanta

33 265-296 (Sept) 1944

- Presentation of Gold Key to President W A Selman C L Ayers—p 265  
Council on Medical Service and Public Relations of American Medical Association G L Kelly—p 266  
Medical Diagnostic Signs and Symptoms J K Fancher—p 271  
Management of Obese Diabetic L H Hamff—p 274  
Hypoglycemia Following Protamine Zinc Insulin Report of Case G L Walker—p 276  
Differential Diagnosis of Anterior Chest Pain E A Bancker—p 278

### Hawai Medical Journal, Honolulu

3 269-328 (July-Aug) 1944

- Early Ambulation as Part of Physiologic Basis of Surgical Practice Report of 214 Cases M A Brennecke—p 269  
Observations with Penicillin N P Larsen—p 272  
Murine Typhus Fever and Pregnancy Case Report G C Milnor—p 275  
Transfusion Therapy in Surgery and Its Relation to Blood Bank R L Hill—p 277

### Journal of Allergy, St Louis

15 311-378 (Sept) 1944

- Immunologic Studies of Pollinosis VI Shortening Treatment of Hay Fever Mary Hewitt Loveless—p 311  
Studies on Blocking Antibody in Serum of Ragweed Treated Patients II Its Relation to Clinical Results H H Gelfand and D E Frank—p 332  
Allergen in Human Dander F A Simon—p 338  
Studies in Food Allergy III Sensitization to Fresh Fruits Immunochemical Aspects L Tuft and G I Blumstein—p 346  
Problem of Allergy at Army Air Forces Hospital I Respiratory Allergy (Hay Fever Vasomotor Rhinitis and Bronchial Asthma) S F Hampton and H Rand—p 355

### Journal of Lab and Clinical Medicine, St Louis

29 1001-1108 (Oct) 1944

- Prognostic Significance of Elevated Blood Creatinine V C Myers—p 1001  
Hematologic Complications of Therapy with Radioactive Phosphorus L A Hempelmann Jr E H Reinhard C V Moore Olga S Bierbaum and S Moore—p 1020  
Salmonella Food Infection in Military Personnel Outbreak Caused by S Oranienburg S Typhi Murium and S Anatum W Greifinger and J K Silberstein—p 1042  
Study of Chemical Composition and Antigenic Properties of Polysaccharide Fraction of Three Hour Cultures of Staphylococcus Aureus O N Fellowes and J I Routh—p 1054  
Serial Biopsy Studies of Effects of Estrogens on Liver Chemical and Morphologic Responses to Diethylstilbestrol and Estradiol H K Roberts F B Helwig R Elman and C M MacBryde—p 1062  
Effects of Ether Anesthesia on Total Erythrocyte and White Cell Counts of Adult Female Rats R C Crafts—p 1070  
Vasospastic Factor in Serum of Case of Raynaud's Disease with Cold Agglutination Experiments on Rabbits T H C Benriss—p 1074  
Cold Susceptible Globulin Fraction of Pathologic Sera E Wertheimer and L Stein—p 1082

**Vasospastic Factor in Serum in Raynaud's Disease**—Benriss found in a patient with Raynaud's disease that her serum contained cold autohemagglutinins. The serum had a high titer of cold antibodies. It was found to cause fatal pulmonary artery spasm in rabbits when given cold intravenously. This effect was mitigated by giving the serum warm. It is suggested that these cold antibodies have a direct effect probably of an allergic type, on arterial musculature both in the experimental animal and in the clinical case. The frequent association of cold antibodies with a Wassermann like body points to an origin of the former from diseased vascular structures, and thus again would help to explain their action on both blood cells and vessels. Cold agglutinins are a normal constituent of the blood plasma. They might possibly have a function in the normal vascular control. This function would lie in stopping the blood flow in an excessively cooled part at the periphery and so preventing further loss of heat in the blood still circulating. Preliminary experiments in protection against the cold antibodies by the intravenous injection of lipoids have

been carried out with some success. The author stresses that the point at issue is that arterial spasm results directly from the action of "cold antibodies." The experiments relate to the serum of a patient which contains cold panhemagglutinins in high titer and some lysins. This patient suffered from Raynaud's syndrome when cooled and when really cold, exhibited a condition that may be called shock, with a feeling of constriction in the chest, shortness of breath, pale pinched facies and blueness of the extremities. Her serum injected cold into rabbits caused lysis with rapid death due to spasm of arteries. It seems likely that this violent effect in the rabbit has its counterpart in a mild and reversible form in the patient and that both could be regarded as allergic phenomena.

### Journal of Neurophysiology, Springfield, Ill

7 255-322 (Sept) 1944

- Relation of Cerebral Cortex to Spasticity and Flaccidity W K Welch and Margaret A Kennard—p 255  
Acute and Chronic Parietal Lobe Ablations in Monkeys T L Peele—p 269  
Inhibition of Activity in Single Auditory Nerve Fibers by Acoustic Stimulation R Galambos and H Davis—p 287  
Supernormal Period in Recovery Cycle of Motoneurons H E Hoff and R S Grant—p 305

### Journal of Nutrition, Philadelphia

28 141-218 (Sept) 1944

- Effect of Composition of Diet on Riboflavin Requirement of Rat G J Manninger D Orsini and C A Elvehjem—p 141  
Food Utilization and Appetite in Riboflavin Deficiency G J Manninger and C A Elvehjem—p 157  
Adequacy of Simplified Diets for Pig V F McRoberts and A G Hogan—p 165  
Studies of Unidentified Vitamins Required by Chick F W Hill L C Norris and G F Heuser—p 175  
Protein Intake and Heat Production E B Forbes R W Swift L F Marcy and Mary T Davenport—p 189  
Intestinal Absorption of Galactose in Rat as Affected by Suboptimal Intakes of Thiamine J R Leonards and A H Free—p 197  
Biotin and Folic Acid Deficiencies in Mouse E Nielsen and A Black—p 203  
Digestibility and Biologic Value of Soybean Protein in Whole Soybeans Soybean Flour and Soybean Milk W M Cahill L J Schroeder and A H Smith—p 209

### Journal of Pediatrics, St Louis

25 191-280 (Sept) 1944

- \*Chyllothorax in Infancy Observations on Absorption of Vitamins A and D and on Intravenous Replacement of Aspirated Chyle G B Forbes—p 191  
Chyllothorax in 2 Week Old Infant with Spontaneous Recovery M A Wessel—p 201  
Early Infantile Autism L Kanner—p 211  
Myasthenia Gravis—Its Occurrence in 7 Year Old Female Child M D Yahr and T K Davis—p 218  
\*Congenital and Infantile Beriberi D W Van Gelder and F U Darby—p 226  
Combined Immunization Against Diphtheria Tetanus and Pertussis P M Hamilton and E G Knouf—p 236  
Erythroblastosis Fetalis Case Report E B Brandes and H R Cushman—p 239  
Bismuth Suppositories (Analbis) in Throat Infections Bacteriology and Pharmacology Effectiveness Absorption Excretion Toxicity S Silber—p 244  
Obstructive Emphysema in Infancy Due to Tuberculous Mediastinal Glands Report of Case L C Prav—p 253  
Studies of Nutritional State of Children in Unoccupied France in Fall of 1942 Preliminary Report H C Stuart—p 257

**Chyllothorax in Infancy**—Forbes reports a case of chylous effusion in a 6 week old infant with spontaneous bilateral chyllothorax. The problem of maintaining a state of adequate nutrition in this type of patient is an important one, as the withdrawal of large amounts of chyle rich in both fat and protein must be repeatedly carried out in the course of the treatment to relieve and prevent severe dyspnea. Some observations have been made on replacement of the aspirated chyle intravenously. In some reported cases this procedure was of considerable benefit, in others it effected no response and in still others sudden death took place which was interpreted as an anaphylactic reaction. Since chyle normally enters the systemic circulation by way of the subclavian vein, it seems unlikely that such reactions could occur entirely as a result of anaphylaxis. In the case here reported considerable amounts of the chylous fluid were injected intravenously without ill effects. However the child succumbed despite repeated thoracenteses and vigorous

supportive therapy over a period of two months. Postmortem examination failed to reveal a cause for the chylous effusion. Absorption tests with vitamins A and D and beta carotene were performed. Vitamins A and D were rapidly absorbed into the chyle from the gastrointestinal tract and in appreciable quantities. Beta carotene was poorly absorbed. Aspirated chyle was administered intravenously many times without untoward reactions. The loss of protein through the repeated aspiration of chyle is fully as important as that of fat, if not more so. Supportive therapy in cases of chyllothorax should include measures to maintain body protein stores.

**Congenital and Infantile Beriberi**—Van Gelder and Darby describe a case of congenital beriberi. The infant was cyanotic and almost aphonic, with extreme tachycardia and a greatly enlarged heart. Spectacular improvement resulted from the use of large parenteral doses of thiamine hydrochloride. Urinary thiamine assays and dextrose, pyruvate and lactate blood levels, fasting and following ingestion of dextrose, indicated a state of thiamine deficiency in the mother. Despite a wholly inadequate antepartum diet the mother did not exhibit clinical signs of beriberi. Although the mother had a subclinical attack of beriberi, the infant was born with severe, almost fatal, manifestations. It is difficult to explain this difference in degree of objective evidence of avitaminosis between mother and infant, but the case illustrates well that one should be on guard when a pregnant woman has been subsisting on a poor diet. The authors suggest that some cases of "congenital idiopathic cardiac hypertrophy" or "status thymicolymphaticus" may actually be instances of unrecognized congenital or infantile beriberi. Infants with large hearts in whom no valvular or congenital lesion can be demonstrated should be given large parenteral doses of thiamine hydrochloride as a therapeutic test. During pregnancy and lactation a mother should be provided with an adequate intake of vitamin B. If the maternal diet is suboptimal, the nursing infant should receive additional vitamin B<sub>1</sub> until such time as other foods containing this vitamin are introduced.

### Journal Pharmacology & Exper Therap, Baltimore

81 307-416 (Aug) 1944

- Pharmacologic Basis for Rational Use of Atrazine in Treatment of Malaria J A Shannon D P Earle Jr B B Brodie J V Taggart R W Berliner and resident staff of research service—p 307  
Iodine in Blood and Thyroid VII Analytic Procedure for Use with Small Samples Pharmacologic Range of Concentrations T S Sappington N Halperin and W T Salter—p 331  
Changes in Activity of Pulmonary Receptors in Anesthesia and Their Influence on Respiratory Behavior D Whitteridge and E Bulbring—p 340  
Some Comparative Pharmacologic Actions of Beta Hydroxy and Methoxy Phenyl Propylamines B E Graham and G F Cartland—p 360  
General Analgesic Effects of Procaine N Bigelow and I Harrison—p 368  
Oxidation in Vitro of Morphine by Rat Liver Slices F Bernheim and Mary L C Bernheim—p 374  
Digitals Cat Assay in Relation to Rate of Injection C I Bliss and M G Allmark—p 378  
\*Streptothricin as Chemotherapeutic Agent H J Robinson and Dorothy G Smith—p 390  
Comparative Anticonvulsive Action of 3,5,5-Trimethylisoxazolidine 2,4-Dione (Tridione) Dilantin and Phenobarbital G M Everett and R K Richards—p 402

**Streptothricin as Chemotherapeutic Agent**—Robinson and Smith report on the efficacy of crude streptothricin in a variety of bacterial infections and also in infections produced by *Trypanosoma equiperdum* and the virus of epidemic influenza. In vitro and in vivo studies showed that crude streptothricin possesses great activity against a variety of gram negative bacterial species. Gram positive forms are also sensitive to the action of streptothricin, but not to the same degree as the gram negative forms. The activity of streptothricin is not influenced by blood serum peptone or vitamins of the B complex. Streptothricin is more active when given parenterally than when administered by mouth. The drug is not active against the virus of epidemic influenza or *Trypanosoma equiperdum*. The ultimate chemotherapeutic index of streptothricin will depend on the toxicity of the pure product. The results suggest that streptothricin may be useful in the local treatment of infected wounds and burns as well as in bacillary dysentery typhoid and food poisoning produced by the *Salmonella* organisms.

Journal of Urology, Baltimore

52 177-282 (Sept) 1944

- The Urologist of the Future C E Burford—p 177  
Renal Calculus with Parathyroid Adenoma G S Foulds—p 180  
Renal Hydrocele Subcapsular Renal Intravascular I H Baretz—p 184  
Aneurysm of Renal Artery—True and False—with Special Reference to Preoperative Diagnosis I A Jarras and M S Marks—p 199  
Nonfibrous Vesicoureteral Obstruction J F McCahey and J S Fetter—p 216  
Uterocervical Transplantation New Procedure A E Goldstein and E F Bertram—p 224  
Ureterocele with Extrusion Through Urethra C J E Kieckham—p 235  
New Use for Old Instrument in Certain Difficult Cases of Vesicovaginal Fistula G J Hunner—p 238  
Subtotal Perineal Prostatectomy Presentation of New Technique V F Marshall—p 250  
Rhabdomyosarcoma of Spermatic Cord C H DeT Shivers—p 266  
Renal Complications of Sulfonamide Administration with Report of Reactions from Sulfathiazole and Sulfadiazine H A Zide—p 275

**Renal Calculus with Parathyroid Adenoma**—A woman over a period of several years had formed stones in both kidneys. Although her blood calcium was significantly raised, the normal blood phosphorus and the oxalate type of stone and lack of bone changes led Foulds to abandon the diagnosis of hyperparathyroidism. Eight years later, when unmistakable findings were present, such as bilateral renal calculi, bone pain, fatigue, weakness, x-ray evidence of osteitis fibrosa cystica, elevated blood calcium levels and decreased blood phosphorus levels, the correct diagnosis was made and proved by operation and pathologic examination of the adenoma which had been removed. The diagnosis could have been made earlier had the author appreciated the full significance of his earlier findings.

Maine Medical Association Journal, Portland

35 173-188 (Sept) 1944

- Presidential Address Maine Hospital Association 1944 F T Hill—p 173  
Some Intangibles Which Effect Hospital Administration J C Doane—p 175

35 189-206 (Oct) 1944

- Meningococcal Infections with Report of 35 Cases R Haas—p 190  
Multiple Carcinoid Tumors of Ileum Report of Case A P Royal Jr—p 193

Minnesota Medicine, St Paul

27 681-776 (Sept) 1944

- Medical Management of Peptic Ulcer J A Lepak—p 703  
Surgical Treatment of Peptic Ulcer M G Gillespie—p 706  
Roentgenologic Diagnosis of Peptic Ulcer W H Ude—p 712  
Clinical Aspects of Ulcer Problem With Special Reference to (1) Definition of Criteria of Suitable Operation (2) Importance of Short Affluent Loop and (3) Results of Operation O H Waugstein—p 714  
Consideration of Certain Unsolved Problems in Cardiology F A Willis—p 722  
Analysis of Obstetric Deaths Due to Hemorrhage Minnesota Medical Mortality Committee—p 726  
Malignant Hepatoma in Infant S N Litman and A H Wells—p 731

New England Journal of Medicine, Boston

231 437-476 (Sept 28) 1944

- \*Abnormal Carbohydrate Metabolism in Human Thermal Burns Preliminary Observations F H L Taylor S M Levenson and Margaret A Adams—p 437  
War Neurosis S H Epstein—p 446  
Spontaneous Pneumothorax from Unknown Cause Report of Case N Sidel and A Wolbarsht—p 450  
Modern Concepts of Renal Structure and Function in Chronic Bright's Disease (concluded) S E Bradley—p 452

**Abnormal Carbohydrate Metabolism in Burns**—Taylor and his associates review observations on 35 consecutive patients with burns admitted to the Boston City Hospital. These patients exhibited a high incidence of hyperglycemia, lacticacidemia and a moderate reduction in the carbon dioxide combining power of the plasma. There is a high degree of correlation between these abnormalities of carbohydrate metabolism and the severity of the burn. The few glucose tolerance tests that were made indicate that in some severely burned patients with hyperglycemia there remains a considerable ability to metabolize added glucose. There was no evidence of liver damage in these patients as a result of the burn injury. In the few cases in

which liver damage was found it was present before the injury, being for the most part an alcoholic cirrhosis. The described abnormalities in the carbohydrate metabolism are not inconsistent with the presence of an increased glycogenolysis together with a possible gluconeogenesis from protein.

New York State Journal of Medicine, New York

44 2063-2174 (Oct 1) 1944

- Problems of Treatment of Tropical Diseases in Returning Military Personnel H E Melenev—p 2105  
Periarthritis of Shoulder Joint Classification Pathology and Treatment J M Tarry—p 2109  
\*Physiopathology Treatment and Prevention of Frost Injuries with Special Reference to Frost Injuries in Warfare P Liebesny—p 2118  
History of Public Health in Chautauqua Cattaraugus and Allegany Counties H R O'Brien—p 2132  
\*Diphtheria in Adequately Immunized Community B F Mattison—p 2138

**Frost Injuries in Warfare**—Liebesny differentiates seven types of frost injuries: (1) erythema and edema, (2) blisters and bullae, (3) superficial gangrene, (4) gangrene of skin and subcutaneous tissue, (5) gangrene of a whole part of an extremity or other parts of the body, especially the ears, (6) injury to muscles, tendons, periosteum, bone and nerves without or with accompanying lesions of the skin, (7) chronic relapsing lesions of the skin, e.g., chilblains and other forms of erythrocytosis. Application of heat in frostbite is inadvisable. This is true in first aid as well as in treatment. The defrosting of frozen parts must be done by means of wet dressings with water of 41 to 58 F. Rubbing or massaging of the frozen parts should be avoided. The therapeutic effect of refrigeration in frostbite may be explained partly by its antiphlogistic effect and partly by the fact that it permits only a gradual increase in the temperature of the frozen parts up to normal body temperature, so that there is sufficient time for the improvement of circulation. To achieve improvement in the circulation, short wave therapy of low intensity has been found effective by the author and by Italian clinicians. The short wave current is applied with air spaced electrodes. The treatments are given daily for ten minutes. The current is applied in such a manner that the increase of the temperature of the skin in the treated area does not exceed 0.5 degree C after ten minutes of application. Recovery is usually accomplished with few treatments. Leriche and Knulin recommended anesthetic infiltration of the lumbar and stellate sympathetic in patients suffering from frostbite with edema and pain. Nearly all patients were immediately relieved. The infiltrations were repeated on the following two days. If there was no necrosis or infarction, patients were well in a few days. Transfusions of plasma in patients suffering from frostbite of large areas and of high degree are advisable. These transfusions should be given during the first twenty-four hours.

**Diphtheria in an "Adequately" Immunized Community**—Mattison reviews an outbreak of diphtheria in Kingston, N. Y., a city with a population of 28,000. The previous history of this city with regard to natural and artificial immunity was unusually complete. An extensive Schick survey had been made in 1922 and again in 1938 together with a carrier survey at the later date. The carrier rate had been 0.03 per cent and there had been a decreasing natural immunity. Twenty-eight cases occurred in the 1943-1944 epidemic. The nature of the disease, in general, was mild, especially when toxoid had been given at some earlier date. An analysis of the immunization histories of 1,160 school children indicated a history of past immunization in 75 per cent reported immunizations among preschool children at the beginning of 1943 indicated that 44 per cent of them were protected. The epidemic occurred predominantly in school age children all of whom had either not been protected, had been given less than the currently recommended toxoid dosage or had been immunized five or more years earlier with no subsequent restimulation. With the available data it is not possible to know whether the outbreak was due to some one or a combination of all of these factors. The decreasing prevalence of diphtheria has brought with it decreasing natural resistance to the disease. Levels of artificial immunization formerly adequate to protect a community may no longer suffice. Suggested steps to maintain the necessary level of community protection



include higher preschool protection rate reimmunization of all children on entrance to school and administration of complete courses (two doses of alum precipitated toxoid or three doses of fluid toxoid) in every individual immunized

### Ohio State Medical Journal, Columbus

40 805-900 (Sept) 1944

- Treatment of Dysmenorrhea Practical Considerations M Douglass —p 821  
 Wartime Food Problems Martha Koehne —p 824  
 Interesting Side Lights on Epilepsies J D O'Brien —p 832  
 Catarrhal Jaundice Epidemic Hepatitis R G Lehman —p 835  
 Occupational Anemias K A Kitzmiller and R A Kehman —p 838  
 Current Thinking in Nutrition J Forman —p 840  
 Cystic Fibrosis of Pancreas R E Wolf and R Johansmann —p 844  
 Milk-sickness in Western Country Together with Account of Death of Lincoln's Mother P D Jordan —p 848

### Pennsylvania Medical Journal, Harrisburg

48 1-96 (Oct) 1944

- Public Health Aspects of Tropical Diseases of Interest to General Practitioner C J Gentzkow —p 15  
 Conversion of Former Army and Navy Camps to Preventoria and Rehabilitation Resorts for Tuberculous Patients J J Toland Jr and I H Kornbluh —p 21  
 \*Remissions of Diabetes Mellitus F D W Lukens and F C Dohan —p 24  
 \*Relation of Ovarian Function to Uterine Fibroids E M Baker —p 29

**Remissions of Diabetes Mellitus**—According to Lukens and Dohan a remission of diabetes means that the disease has so improved that the blood sugar stays at a normal level without insulin treatment on a diet sufficient to maintain normal weight and strength. Such patients frequently have some abnormality as shown by the glucose tolerance test, and diabetes will usually manifest itself during an infection. Remissions must be distinguished from the normal state in which the tolerance test shows a normal curve and the carbohydrate metabolism is not grossly disturbed by infection. The authors surveyed 517 diabetic patients attending their clinic in the past two years. Of this number 19 (3.7 per cent), in whom the diagnosis of diabetes was unquestionable, were on an adequate diet without insulin for periods of from one month to ten years. In 4 of the patients improvement occurred after dietary treatment alone, in 6 it followed active insulin treatment combined with recovery from infection and in 9 it resulted from insulin treatment in the absence of complications. The authors feel that the patients of the last group fulfil their criteria most completely, and these 9 remissions in 517 patients give an incidence of 1.7 per cent. This may be compared with 1.4 per cent cited by Joslin. Seventeen of the 19 patients who had remissions were first seen within four months of the onset of diabetes. This fact deserves emphasis because it stresses the value of early treatment. With the possible exception of infection, the most impressive diminution in the severity of diabetes is seen in the mildly affected obese diabetic patients who respond so well to diet and weight reduction. Many writers have noted the impaired glucose tolerance and diminished response to insulin after high fat diets and the full response to insulin after high carbohydrate diets even when these are low in calories. The previously untreated diabetic patient, after prolonged thorough treatment with diet and insulin, responds with a distinct decline in the insulin needed.

**Relation of Ovarian Function to Uterine Fibroids**—Baker reviews a series of 36 cases of uterine fibroids. He believes that there is sufficient clinical and pathologic evidence to support the theory that a cause and effect relationship exists between the unopposed and persistent action of the estrogenic principle produced by multiple follicle cysts of the ovaries on the uterine endometrium and myometrium producing immediate endometrial hyperplasia, and, when the stimulation is sufficiently prolonged, uterine fibroids. All forms of overgrowth of the uterine endometrium and musculature are due to the same factor, namely the estrogenic hormone.

### Physiological Reviews, Baltimore

24 409-532 (Oct.) 1944

- Factors Affecting Insulin Content of Pancreas R E Harst —p 409  
 Physiological Aspects of Human Genetics Five Human Blood Characteristics H H Strandkov —p 445  
 Vertebrate Smooth Muscle E Fischer —p 467  
 Water Exchange J P Peters —p 491

### Tennessee State Medical Assn Journal, Nashville

37 291-328 (Sept) 1944

- Diarrhea in Adults F E Marsh —p 293  
 Drugs on the Market A E Smith —p 299  
 Performance of Internist in World War II H J Morgan —p 304

### Virginia Medical Monthly, Richmond

71 445 496 (Sept) 1944

- Recent Advance in Naval Medicine J J A McMullin —p 446  
 Treatment of Acute and Subacute Anterior Polymyositis C J Frankel —p 451  
 Modern Trends in Psychiatry W Overholser —p 453  
 Present Trends of Psychiatry in Army W C Menninger —p 461  
 Treatment of Alcoholic Addiction D C Wilson —p 468  
 Diabetic Coma W R Jordan —p 473  
 Recurrent Nontraumatic Rupture of Urinary Bladder Case Report T Pole —p 477

### War Medicine, Chicago

6 139-216 (Sept) 1944

- \*Rheumatic Fever in Canadian Army W R Feiby —p 139  
 Duty Problem and Psychiatric Casualty Rapid Method of Decision R S Schwab —p 144  
 Management of Dyspeptic Soldier in Staging Area H Sebildkrou —p 151  
 Electrococosis Clinical Comparison with Electroshock G N Thompson J E McGinnis A van Harreveld C A G Wiersma and Esther Bogen Fretz —p 158  
 Military Aspects of Narcolepsy M Levin —p 162  
 War Neurosis Psychiatric Experiences and Management on Pacific Island M A Zeligs —p 166  
 Cerebral Metabolism in Experimental Head Injury E S Gurdjian J E Webster and W E Stone —p 173  
 \*Gramicidin S and Its Use in Treatment of Infected Wounds G F Gause and M G Brazhnikova —p 180  
 Comparison of Altitude and Exercise with Respect to Decompression Sickness S F Cook O L Williams W R Lyons and J H Lawrence —p 182

**Rheumatic Fever in Canadian Army**—Acute (febrile) polyarthritis of unknown etiology is the term used in the Canadian army to designate a condition characterized by swollen joints, fever, rapid pulse and elevated sedimentation rate. Patients with this disease respond well to rest and salicylate therapy. Feasby reviews the 407 cases of "polyarthritis" and acute rheumatic fever which occurred among army personnel in Canada during 1943. It was found that about 4 per cent of persons with streptococcal disease of the respiratory tract acquired polyarthritis. The incidence of polyarthritis closely follows the incidence of streptococcal disease of the respiratory tract. Ninety per cent of the cases occurred in the first seven months of the year. Military populations most seriously affected were those of Saskatchewan and Alberta. No particular strain of streptococci accounts for these cases or their complications. The commonest type was A 19, which was predominant in the 1943 streptococcal epidemic at Camp Borden, Ontario. Follow up of the 407 patients revealed that 24 had cardiac complications. A total of 242, or 60 per cent, of the 407 patients with polyarthritis have been discharged and may be pensioned. Sixty-six of these had other conditions which were of greater importance as the cause of discharge. Twenty-three per cent of the patients are still on full duty and 17 per cent are on limited duty. Preventive measures include proper dust control in sleeping quarters and adequate hospital isolation of persons with streptococcal illness.

**Gramicidin S and Its Use in Treatment of Infected Wounds**—Gause and Brazhnikova studied the clinical application of gramicidin S in 573 cases. The original 4 per cent alcoholic solution of gramicidin was diluted with water to make the concentration of gramicidin 400 to 800 micrograms per cubic centimeter of the liquid. These solutions were applied daily either locally or introduced into cavities. The results can be summarized as follows. The first group included cases of septic gunshot wounds of the hip, suppuration following heavy burns of the abdomen, breasts, hips and hands, abscesses of the abdominal wall, heavy anaerobic phlegmons and others. The application of gramicidin S led to (1) rapid disappearance of bacteria in the wound and successful epithelization, (2) successful preparation of the wound for subsequent surgical treatment and (3) in some cases disappearance of the septic state through elimination of the local suppurative process. Gramicidin S was used also in cases of septic gunshot wounds of the larynx and chronic otitis, in empyema and in osteomyelitis.



## FOREIGN

An asterisk (\*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

## Australian and New Zealand J Surgery, Sydney

14 1-72 (July) 1944

- Rational Treatment of Gunshot Wounds of Long Bones with Established Sepsis H Turnbull—p 3  
Plastic Principles in Common Surgical Procedures B K Rank—p 14  
Abdominal Surgery in Forward Areas Observations Made in Casualty Clearing Station 1941-1943 L S Rogers—p 37  
Physical Considerations in Empyema Thoracis E S J King and E R Trethow—p 42

## British Journal of Industrial Medicine, London

1 145-206 (July) 1944

- Industrial Health Research Work of Industrial Health Research Board 1918-1944 R S F Schilling—p 145  
Health Hazards of Coal Mining S W Fisher—p 153  
\*Effect of Aluminum and Alumina on Lung in Grinders of Duralumin Aeroplane Propellers D Hunter, R Milton, K M A Perry and D R Thompson—p 159  
Relative Sterility of Hands of Certain Metal Workers I Lominski and G R Thomson—p 165  
Physical Nature of Radiations Used in Industry G D Rochester—p 168  
Medical Aspects of Radiations Used in Industry Ethel Browning—p 170  
Working Capacity After Thyroidectomy W L Scott and J W Parks—p 176  
\*Subcutaneous Emphysema Due to Compressed Air G P B Whitwell—p 179  
Brightness Well Being and Work H C Weston—p 180

**Effect of Aluminum on Lung in Grinders of Duralumin**—Hunter and his associates investigated the health of airplane propeller grinders. A comprehensive study of the environmental conditions was carried out in a particular factory, and physical analyses of the atmosphere content of aluminum have been made close to the grinders' mouths and in the general atmosphere of the shop. All the grinders and polishers of propellers in one factory were interviewed and their occupational histories were taken. Twenty-seven claimed to have some cough and 10 to be somewhat short of breath but these symptoms did not appear to cause them inconvenience. The sick records of the group were examined and compared with a similar group of workers in a machine shop belonging to the same company. This analysis showed no difference of statistical significance between the two groups. Blood counts and x-ray examinations were made on duralumin propeller grinders. Fifteen by 12 inch roentgenograms were taken in 92 of 97 workers who were exposed to aluminum dust. There was no evidence in any of them of reticulation. In 7 instances there were shadows in the peripheral part of the lung which were different from the ones usually found in this situation. It is conceivable that they may be due to concretions of aluminum dust. They were not related to symptoms. The authors conclude that there is no evidence that the dust to which the grinders are exposed produces any disease of the trachea, bronchi or lungs.

**Subcutaneous Emphysema Due to Compressed Air**—Whitwell states that, apart from its use with pneumatic tools, compressed air is commonly used in the engineering industry (a) as a coolant and (b) to blow away metal particles from the cutting area of machine tools. If the operator has already sustained skin trauma there is a risk of air entering the wound and causing subcutaneous emphysema. A piece of metal pierced the pulp of the middle left finger of a man while he was milling a steel component. He removed it and continued to work, holding the components in his left hand while he used the compressed air on them. In a few minutes the injured finger had become white. The terminal part of the finger was white, insensitive and slightly tense. An hour and forty minutes later he had the typical 'crackling' swelling of emphysema over the dorsum of the hand and on the radial side of the extensor surface of the forearm as far as the elbow. There was no further extension of the swelling but the finger was then red and aching. He was sent home, and the condition disappeared within twenty-four hours. No sepsis developed and there were no untoward results.

## Indian Medical Gazette, Calcutta

79 297-344 (July) 1944

- Tetanus Neonatorum in Tropics Suggestion for Its Reduction L Rogers—p 297  
\*Polyneuritis with Special Reference to Acute Varieties M A Pirzada—p 298  
Determination of Blood Groups from Meals of Blood Sucking Insects S D S Greval J N Bhattacharya and B C Das—p 303  
Chemical Method of Obtaining Dry Blood Proteins for Transfusion Purposes K V Krishnan and E K Narayanan—p 304  
Pyrogenic Reactions Following Intravenous Saline Infusions B M Paul and B C Chatterjee—p 305  
Talipes Equinovarus H C Aldrich—p 307  
Vitamin B Deficiency States Among Women in Mysore A Survey of Cases Admitted into Female Medical Wards Krishnarajendra Hospital Mysore During 1943 M Puttaya—p 310  
Primary Pneumococcal Serofibrinous Pleurisy P N Laha—p 314  
Neurotic Guit Complex Uncovered W Brinitzer—p 315

**Polyneuritis, Particularly Acute Varieties**—Pirzada observed 6 cases of acute polyneuritis in a period of about two years. During the same period he observed only 5 cases of chronic polyneuritis. The essential feature of acute infective polyneuritis is extensive paralysis of sudden onset from which the patient recovers rapidly if he does not succumb. Three cases of this type are described. The disease appears to be relatively benign, possibly because of infection with a virus of low virulence. A less acute and milder form of polyneuritis with a protracted course and of unknown etiology is described by Walshe. Three cases described in the text belong to this variety. In the cases observed by Pirzada, however, syphilis appears to be one of the etiologic factors. Vitamin B<sub>1</sub> deficiency is not believed to play a part in the direct causation of acute polyneuritis, but it has been suggested that subclinical deficiency may be a predisposing factor and a specific virus and Treponema pallidum precipitating factors. The efficacy of vitamin B<sub>1</sub> therapy in polyneuritis, particularly in the acute forms, is open to doubt, but Pirzada's experience suggests that it is worthy of further trial under controlled conditions. In chronic polyneuritis an etiologic factor can usually be found. In the 5 chronic cases mentioned by the author leprosy, nutritional factors, diabetes and typhoid were etiologic factors.

## Medicina, Madrid

12 545-628 (Aug) 1944 Partial Index

- \*Acute Nontuberculous Pleural Empyema M Gonzalez Ribas—p 553  
Endometriosis of Genital Organs J M Bedoya Gonzales—p 594

**Acute Nontuberculous Pleural Empyema**—Gonzalez Ribas practiced closed drainage with intrapleural aspiration according to Monaldi's technique in 9 cases of acute nontuberculous pleural empyema. The condition was secondary to septic infarct following gynecologic operations in 6 cases, to pneumonia in endocarditis lenta in 1 case and to lung abscess in 2 cases. The drainage was carried on for periods of two to six weeks. Three patients recovered. One patient improved. He had to have a pleurotomy complementary to drainage, after which he recovered. Two patients died from new pleural foci shortly after control of the early pleural foci. Two patients died late after control of pleurisy. One died of acute atrophy of the liver and the other from heart insufficiency. A necropsy in the 4 cases showed complete reexpansion of the lung and consequent closure of the pleural cavity. Trauma caused by the establishment of the drainage is minimal. The pleural fluid is removed at a slow rate, and the consequent decompression of the mediastinum is effected slowly and progressively. In very acute cases the procedure can be carried out with the patient in his bed. Rapid sterilization of the pleuritic fluid is obtained in all cases. Reexpansion of the lung and permanent closure of the pleural cavity are obtained in almost all cases. In the rare cases in which the closure of the pleural cavity is not complete the condition of the patient is improved to such an extent that he can have the proper surgical intervention. In rare cases however, new foci of empyema appear either in the lung areas which were previously normal or in the opposite lung. The course of new foci is fatal. Closed drainage with intrapleural aspiration prevents early postoperative mortality and the development of chronic empyema and of open pneumothorax. The patient can have the proper medical and supportive care in the course of the therapy.

## Book Notices

**Heart Disease** By Paul Dudley White M D Physician to the Massachusetts General Hospital Boston Third edition Cloth Price \$9 Pp 1 025 with 138 Illustrations. New York Macmillan Company 1944

The first edition of this book was published in 1931, the second in 1937. Just as the second edition was a vast improvement over the first, so the present volume is further along the road to perfection. The arrangement of the book has not been greatly altered, but it is apparent throughout that the author has taken great pains to revise it in accord with current advances in the cardiovascular field and also to meet the major criticisms made of the earlier editions. As a veteran hewing close to the line, he separates fact and fancy. Hypothetical and unsettled issues are mentioned but not labored, they are, as the author states in his preface, "dismissed with remarks which summarize what we know and what we don't know about them." In accomplishing this admittedly difficult task, he has enhanced the value of his book as a textbook for students as well as a reference book for practitioners.

Appearing for the first time in this edition is a chapter entitled 'The Range of the Normal Heart,' which is probably the most important and valuable addition that the author has made to his book. Retained in this revision, but deleted from the second edition to save space, are original quotations from men whose names are famous in the field of cardiology. An interesting feature is the addendum dated March 1944 which contains material inadvertently neglected after proof reading, and also a brief discussion of the most important contributions that appeared up to the time the book went to press.

The publishers, although handicapped by the paper shortage, have nevertheless produced a volume which compares favorably in appearance with its predecessors. Although it contains nearly a hundred more pages than the first edition, it is smaller, lighter and easier to handle. As an authoritative treatise on the subject it may be warmly recommended to all students interested in the subject of heart disease.

**Hospital Color and Decoration** By Raymond P Sloan Cloth Price \$3 75 Pp 253 with Illustrations Chicago Physicians' Record Company 1944

There has been a growing realization in recent years that beauty is an essential element in hospital construction. Fortunately this can be achieved without extravagance and without the sacrifice of any of the basic principles involved in the practical utilization of institutional facilities. In the present volume the author shows how cheerful and attractive surroundings can be attained. His principal medium is color, yet he does not overlook the importance of other decorative effects in the planning and arrangement of individual rooms, wards, hospital entrance, lounge, solariums and other units. Careful attention is given to the selection of furnishings, lighting effects, flowers and plants and also to the scientific landscaping of hospital grounds. Excellent illustrations are included and many valuable suggestions, charts and guides with reference to color schemes, plants for the sunroom and outside planting appropriate to the various sections of the United States. A useful bibliography facilitates the selection of other reference material. The book is highly instructive and is written in a pleasing and interesting style. It is a welcome addition to the literature of the hospital field and should be read by all who are interested in hospital construction and service.

**Investigaciones sobre fisiopatología tiroidea** Por C Picado T Publicaciones de la Secretaría de salubridad pública Paper Pp 92 with Illustrations San José Costa Rica 1943

This little work stems apparently out of the fact that in Costa Rica in the author's opinion, thyroid dystrophies are due not only to exogenous factors, such as iodine deficiency, but also to endogenous factors. The author believes that special normal physiologic indexes must be established for countries such as Costa Rica, where climate and other factors influence physiologic functions differently as compared with temperate countries. In studying the etiology of Costa Rican thyroid

dystrophies, the author develops a hypothesis advanced in an earlier publication. This hypothesis has to do with the formation of antihormones, and his conclusions fall essentially in line with accepted thought in this connection, so far as the broad principles of antihormone formation are concerned. The author has carried out considerable experimentation on the influence of hormones and antihormones, using serums of various species of animals. As regards human beings, this reaches a focus in the explanation offered for the probable mechanism of the therapeutic action of serum from thyroidectomized animals when injected into hyperthyroid patients. This explanation is that "the thyroidectomized animal's serum contains an excess of thyrostimulin (acting as haptene) which, with the serum as vector, immunizes the receptor patient against his own excess of thyrostimulin." The author makes the mistake of endeavoring to include too many lines of work in this brochure, with the result that his chief conclusions are not clearly set forth. To those interested in the relations between thyroid dystrophies and possible etiologic factors this little work may prove interesting. Many of the illustrations in the book and some of the text consist essentially of a reproduction of earlier work.

**Proceedings of the Conference on Problems of Human Fertility** Sponsored by the National Committee on Maternal Health January 15 16 1943 New York City Edited by Earl T Engle Cloth Pp 182 with Illustrations Menasha Wis George Banta Publishing Company 1943

Criteria of ovulation, sperm migration and placental transmission are discussed in twelve papers. Severinghaus feels that there is a dependable relation between pregnandiol in the urine and corpus luteum formation. Rock and Hertig report on 14 very early ova with average ovulation as day 14 preceding expected menstrual period, and slight deviation. Wislocki compares midation in monkeys at day 9 with the human day 7½. Hartman is unsure of a monkey safe period, his range of ovulation time in 293 animals being from the 9th to the 23d day. Corner declares that corpora lutea in woman and the monkey can be dated fairly accurately, questioning Hartman's biannual indications. Greulich reports favorably on rectal temperature tests when taken by institution attendants as indicating the time of ovulation with check by 29 laparotomies and microscopic sections. Rubenstein checked on vaginal smears as an indicator of ovulation by 18 laparotomies. Boling gave electrometric technic.

Lamar found that the spermatozoa in vitro would enter cervix mucus collected at any time during the month including that of menstruation. This is in contrast to the Huhner and Weisman in vivo tests, which show entry only at midcycle. Rubenstein estimated intravaginal sperm survival as 30 to 180 minutes. Rakoff induced atrophy of vaginal mucosa with testosterone, and Hertig found estrogenic activity of the ovary long after ovulation ceased.

Other chapters discuss biology of the vagina, cytology of the trophoblast and various aspects of placental transmission. The discussions following the papers bore somewhat on the clinical aspects of the topics.

**Varicose Veins Hemorrhoids and Other Conditions Their Treatment by Injection** By R Rowden Foote M R C S L R C P D R C O G Physician in Charge Injection Clinic Royal Waterloo Hospital London Cloth Price 12s 6d Pp 119 with 54 Illustrations London H K Lewis & Co Ltd 1944

This is a short treatise on the indications and technic of sclerosing injections for varicose veins, hemorrhoids, hydrocele, bursa, ganglion, nevus and anal fissure. There is an appendix of useful prescriptions and some points on the organization of an "injection clinic." The text is clear and concise, the illustrations and printing are excellent in spite of having been produced in war torn England. In 115 pages the author has described and summarized all the practical points of injection therapy. An excellent chapter on the operative treatment of varicose veins has been written by Mr Rodney Mangot. Unusual for the American reader is the combined use of lithium salicylate with quinine (Mangot's solution), which gives a gelatinous mass and is said to avoid cinchonism. This volume is highly recommended for the general practitioner. It contains all he needs to know about this form of treatment.

## Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS BUT THESE WILL BE OMITTED ON REQUEST.

### CONSERVATIVE AND OPERATIVE MANAGEMENT OF SINUSITIS

**To the Editor**—I am a retired otolaryngologist who practiced in a great metropolitan city for nearly twenty five years after that went into the first world war and at its close served seven additional years in a Veterans Hospital. I have been retired ten years and though I have a recent standard work on otolaryngology, I do not find just what I am interested in knowing about the present attitude of the best established and most representative otolaryngologists toward operative procedures on the frontal and ethmoid sinuses. Specifically I should like to know what percentage of operations for chronic discharge from the frontal and ethmoid sinuses result in cure. Another thing in my practice I learned that a large number of sinus infections are acquired in swimming pools. The other day a young girl told me that her otolaryngologist had cautioned her against diving because she had sinus trouble. The question arose in my mind whether as she has pustular sinus disease already there could be a reinfection since there are only a few pus forming germs to be considered notably the streptococci and staphylococci. I think that if the doctor had advised a piece of cotton in the nose for comfort he need not have denied her the pleasure of diving.

Fayette C. Ewing, M.D., Pineville, La.

**ANSWER**—There are certain cases of an acute nature in which surgery is more dangerous than conservative treatment. On the other hand, there are many fulminating cases of frontal sinusitis which require immediate and complete drainage with wide exposure following operation. The rules which govern general surgery apply here, with necessary allowance for the difference in the anatomic structures involved. Therefore, to lay down a hard and fast rule without qualification and try to treat all cases by this rule is a dangerous policy. Each case must be evaluated on its own merits, with or without operation according to the indications present.

A chronic frontal sinusitis or ethmoiditis may be so severe that it may be necessary to operate if an acute exacerbation develops.

The most urgent indication for surgery in frontal and ethmoidal infections would seem to be when one is confronted with the acute fulminating type with threatened orbital or intracranial complications.

When a chronic ethmoidal or frontal infection has not responded well to intranasal procedures, and in polypoid conditions with or without suppurative, a definite indication for surgical intervention is present. In frontal sinusitis when the x-ray studies reveal chronic thickening or polyps associated with headaches, surgery of the frontal sinus should be considered.

Where such gross pathologic change cannot be demonstrated and only a discharge persists with sufficient room for aeration and drainage, then certainly conservative treatment should be given a trial, with use of shrinking solutions and packing the diseased area with colloidal silver or tyrothricin. If results have been unsatisfactory after a reasonable time, intranasal surgery such as removal of the anterior third of the middle turbinate together with uncapping of some of the suspected ethmoidal cells or enlarging of the frontal ostium (not rasping) should prove beneficial.

If such surgical attacks do not produce the desired results, a Sewell or Killian operation limited to the frontal and ethmoid sinuses should give results. In a small frontal sinus the Sewell operation, in which the floor of the frontal sinus is removed together with the diseased mucous membrane, should be considered. However, in a large frontal sinus associated with considerable involvement of the ethmoidal cells a Killian operation in which the anterior wall and floor of the frontal sinus is removed, leaving only a bridge to prevent a deformity, would seem to be the operation of choice, because the diseased areas are more easily visualized and removed. Such procedures should give results if all the diseased tissue has been removed.

There are many opinions but no statistics on the percentage of cures in sinus infections, whether by medical treatment or by any of the surgical procedures.

Many reports have appeared regarding patients with chronic sinus infections who go in for diving. Sinus infection has been aggravated by diving, and often the severe type has developed not infrequently complicated by osteomyelitis. Whether or not new organisms are introduced does not seem to matter, the important observation is that such fulminating cases are frequently reported. It would therefore seem inadvisable for a

patient with sinusitis to be exposed to the possibility of developing an infection of the frontal sinus from the adjacent anterior ethmoid cells and the possible associated severe complications.

Packing a nose when diving may possibly be helpful, as it may slow the sudden ingress of water into the nasal cavities but it also may interfere with the proper respiration of the swimmer.

Accounting for the apparent differences in methods of treatment, several things should be considered important such as the climate or section of the country and environment in which the patient must live and the actual occupational and hygienic conditions under which he works. Also to be considered are the social status or mental capacity of the patient that is whether he can or will follow out conservative or postoperative treatment and care. It is undoubtedly true that more conservative measures are successful under the climatic conditions found in warmer places such as Louisiana, Florida and the Carolinas than is possible in New York with its more rigorous and changeable climate. For this reason reports from Louisiana of excellent results from conservative treatment of acute or sub-acute sinus conditions may be expected. Another specialist who lived in the North might take exception because he argues from entirely different premises.

### PLEURAL FRICTION RUB WITHOUT PAIN

**To the Editor**—I have recently observed 2 patients with pulmonary tuberculosis who had pleural friction rubs without pleural pain. Neither patient showed evidence of pleurisy by x-ray. In each case the pleural friction rub was followed in several days by pleural pain at which time the rub disappeared. This seems to me to be paradoxical and I am unable to find any reports in textbooks or in the American Review of Tuberculosis the only journal on file here which mentions or confirms my findings. I am considering writing an article on these 2 cases because I feel that the subject and my findings would be of interest. Do you have any articles or additional information on the subject? M.D., West Virginia.

**ANSWER**—There are no sensory pain fibers in the visceral pleura over the periphery of the lung, but the parietal pleura is richly supplied with them; therefore pain is experienced only when certain involvement occurs in the parietal pleura. Occasionally one sees a patient who presents pleural friction rubs which can be elicited both by palpation and by auscultation in the total absence of pain. Some patients are conscious of a rubbing sensation but experience no discomfort.

The involvement of the parietal pleura may be an extremely mild and slow process, and the thickening takes place so gradually that the pleura adapts itself to the changed situation just as occurs in some slowly developing conditions in the skin. So much fibrous tissue is deposited around the nerve endings that they are not stimulated when friction is first elicited. When either the visceral or the parietal layer of pleura or both becomes inflamed, the visceral layer glides over the parietal layer but not so smoothly as usual. There may be an absence of sufficient serous fluid to lubricate adequately the area under the changed condition. Apparently it is only when the visceral pleura begins to cling to the parietal layer that pain is experienced. This causes some tugging or pulling on the parietal pleura, which is richly supplied with sensory pain nerve fibers. In cases in which pleural effusion forms and accumulates early it serves as a wedge, and unless the two layers of pleura are firmly adherent at certain points they are separated and the pain disappears. In the event that fluid does not accumulate the pain is likely to persist until adhesions immobilize a large area of visceral pleura or the parietal pleura becomes adapted to the changed condition.

It has been suggested that in some cases of pleural friction in which pain is never experienced, the parietal layer does not become inflamed and adhesions do not form. The inflammation is confined to the visceral pleura and is self limited. A remote possibility in cases in which pain never occurs is the existence of an area of anesthesia involving the parietal pleura (compression, girdle and segmental anesthesia).

This is an interesting subject, and a summing up of available information together with the presentation of the 2 cases would be worth while.

### IMMATURE CATARACT

**To the Editor**—I have a cataract which is not ripe enough to be operated on. I am using daily 1 per cent homatropine instilled in the eye in order to get a larger visual field. One ophthalmologist approves but another one says that it may cause some local trouble by keeping the pupil dilated. Do you think that the second one is right? M.D., New York.

**ANSWER**—It is no longer necessary to wait for a cataract to become "ripe," as modern ophthalmic surgery permits the removal of a lens at any stage with safety. If the lens opacity has progressed to such a point that pupillary dilation is necessary for useful vision, intracapsular removal of the lens is indicated.

Continued dilation of the pupil is potentially hazardous. Continued dilation of the pupil may not do harm, but there is always the possibility that the dilated pupil will precipitate an attack of acute glaucoma and then irreparable damage is done. There is no need to run this risk.

### URTICARIA AND ANGIONEUROTIC EDEMA

**To the Editor**—A woman physician aged 35 who had never before been seriously ill was taken sick three weeks ago first with nausea headache and severe vomiting. Twenty four hours later she broke out with hives of tremendous size at first only on the body later covering the arms and legs. At the same time angioneurotic edema of the eyelids lips hands and feet developed. These attacks come four or five times daily and are much worse during the night. Her condition is getting worse in spite of different treatments. No relief is obtained from local applications except that rubbing alcohol relieves the itching somewhat. She takes one tablet of 3½ grain (24 mg) of ephedrine hydrochloride four or five times daily and in addition is given injections two or three times daily of epinephrine 1:1000 0.5 cc each time or epinephrine in oil. That medication gives relief for about four hours. On advice of a skin specialist she was put on a diet which is free of meat eggs wheat coffee and fresh fruit. In the first week nicotinic acid and Calcium tablets were tried with no results. In the second week Torantil tablets (3 x 2) were continued with the Calcium tablet. Finally Hopamin (Parke Davis) is being tried. No relief has been obtained so far. Her general health is good there are no other symptoms or findings. What other treatment could be tried? Can the prolonged use of ephedrine in such a great amount be harmful? The skin specialist advised against any skin tests assuming that we might get a number of wrong reactions because of the great irritability of her skin.

M D New York

**ANSWER**—Urticaria and angioneurotic edema occur frequently, separately or together. They are usually due to ingestion of certain foods or drugs occasionally they seem to be associated with bacterial infection, especially in the gallbladder. Skin tests in these two conditions are usually of little if any value because positive tests are often found which have no clinical relation to the cause of symptoms, and, in other cases, tests are negative to foods known to cause the swellings. It is known, for example, that strawberries, a frequent cause of urticaria, give an extract which usually shows negative skin tests even in susceptible persons. Benson has shown that such patients can safely eat strawberries if the berries are carefully washed in a colander with hot water. Evidently the allergen can be washed away and is not in the berry itself.

Experience has shown that most patients with urticaria and angioneurotic edema recover more or less rapidly if they avoid (1) drugs and medicines of all kinds (2) pork, including ham bacon lard and Jello, (3) fresh fruits, including juices (4) fresh vegetables, including juices, (5) peas, beans and tomatoes, cooked or raw, (6) chocolate and cocoa, (7) fish of all kinds (8) nuts and (9) cola drinks. This diet should be maintained for about two weeks, if symptoms subside one of these foods is to be added at intervals of four to five days, pork and peaches last of all. If the swellings continue other elimination diets should be tried, e.g. a strict milk free diet. Epinephrine and ephedrine may be used to control large swellings, but calcium and histamine (Torantil) usually fail. A series of injections of histamine, beginning with 0.10 cc of the 1:10,000 dilution occasionally gives relief. The gallbladder and other possible foci of infection should be studied in obstinate cases.

### FAITH HEALING

**To the Editor**—Frequently I have had occasion to answer well meaning patients with regard to the faith healing of various Catholic shrines such as at St Ann De Beoupre and at Lourdes. I find myself at a loss for concrete evidence of the psychologic aspects of such miracles. Has any scientifically controlled investigation of these phenomena ever been conducted? What are the conclusions of these investigators both pro and con? Has such an investigation ever been suppressed? I should be grateful for any information you can offer me regarding these queries.

T R Hozelrigg M D Cleveland

**ANSWER**—It is certain that the suggestion of cure must benefit many persons in these shrines and the advertisement of the cures must certainly make the suggestion for cure potent. On the other hand untold misery is caused to many hopeless sufferers from structural disease and degeneration by their long and useless journeys to shrines from distant places and often far off countries. One must remember that one hears of the cures, the disappointed patient does not advertise his disappointment.

### PSEUDOHYPERTROPHIC MUSCULAR PARALYSIS

**To the Editor**—Please advise as to treatment for pseudohypertrophic muscular paralysis in a boy of 6.

Samuel Morrill M D Sackets Harbor N Y

**ANSWER**—There is no known treatment that exerts a favorable influence on pseudohypertrophic muscular paralysis.

### FIRST INFECTION TYPE OF TUBERCULOSIS IN CHILDREN

**To the Editor**—I have just read the book review for "The Evolution of Tuberculosis as Observed During Twenty Years at Lymanhurst Minneapolis Board of Public Welfare 1921 to 1941" published in The Journal August 26 1944 page 1216. The statement is made in the review that, after thirteen years of observation and study, it was decided that treatment of children with the first infection type of tuberculosis is of little avail either immediately or remotely. Was the inference intended that children with the first infection type with low grade fever and failure to gain weight could be permitted to go to school and otherwise lead an essentially normal life for children of that age?

H M Janney M D Ashland Ky

**ANSWER**—The authors of "The Evolution of Tuberculosis as Observed During Twenty Years at Lymanhurst" state that in their experience low grade fever and failure to gain weight were not found to be manifestations of the first infection type of tuberculosis. They originally had a hospital division where such children were kept strictly in bed and under close medical observation. The symptoms mentioned, as well as others, were invariably found to be due to nontuberculous conditions, such as foci of infection in the nose, mouth and throat. However, they point out that when a child first becomes allergic to tuberculin that is, within three to seven weeks after the infection occurs, there may be a period of one or two weeks when the body temperature is elevated. However, this promptly subsides and thereafter fever is not found to be due to primary tuberculosis. The red cell sedimentation rate is also elevated during the febrile period and usually continues so for a few weeks after the temperature is normal.

If fever, loss of weight and other symptoms subsequently occurred and were found to be due to tuberculosis they were always caused by the reinfection phase of the disease. However, this developed with extreme rarity in the lungs during the period of childhood. Reinfection types of extrapulmonary tuberculosis, particularly involvement of the bones and joints was more often experienced during this period. Therefore the authors believe that a child who has just become allergic to tuberculin and has a brief febrile period should be on strict bed rest as long as fever is present and the red cell sedimentation rate is accelerated. At the end of this time, unless the disease enters the reinfection phase there is no objection to the child resuming school work and leading an essentially normal life for children of that age. However, as the period of adolescence approaches, all children with primary tuberculosis should be examined at least annually for the appearance of the reinfection type of disease in the lungs. Moreover, all such children should be guarded carefully against exposure to contagious cases of tuberculosis, as this is one of the diseases from which the human body does not develop dependable immunity.

### LONG CONTINUED EXPOSURE TO ROENTGEN RAYS

**To the Editor**—We examine by fluoroscope between 40 and 50 patients twice weekly. Only the operator wears lead lined gloves and apron. The current is 70 kilovolts and 5 milliamperes. Each patient is before the fluoroscope only a few seconds preceding his refill of pneumothorax or pneumoperitoneum. The attending doctors are grouped before the fluoroscopic screen without apron or gloves. What effect will the rays have on the physicians so grouped if this is continued over a period of months and years?

M D, California

**ANSWER**—Such a question can be answered accurately only when an accurate determination of the exposure is made. The tolerance dose for continued exposure has been estimated at 1 roentgen per week and more recently at 0.1 roentgen per day. Reference is made to the book Medical Physics by Otto Glasser page 1382 and National Bureau of Standards Handbook 20.

### DIAGNOSIS OF HERNIATION OF NUCLEUS PULPOSUS IN LUMBAR SPINE

**To the Editor**—Two soldiers who were discharged from the Army because of sciatica and backache did not bend over in the usual fashion when picking up their shoes and losing them. They stood on the good leg with the trunk erect and bent the affected lower extremity in the hip and the knee to reach the foot with the hands. This relieved the tension of the sciatic nerve. Both these men were suspended by their hands holding on to the top part of a door so that their feet did not touch the floor. In this position I tapped their lumbar regions with my fist. This tapotement did not elicit any pain. When they stood on their feet tapotement of the lumbar region did elicit pain. That this can be considered one of the tests for the establishment of the diagnosis I believe is reasonable because the suspension of the body by the hands of the patient causes the weight of the section of the body below the sacrolumbar articulation to exert a pull which is sufficient to cause the herniated portion of the nucleus pulposus to retract so much that for the moment there is no pressure exerted on the spinal nerve roots which ordinarily causes the symptoms of sciatica. These diagnostic signs may not be new. However I have not seen them in the literature and therefore submit them.

Algot Astrom M D Lexington Ky

# The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL 126, No 17

CHICAGO, ILLINOIS  
COPYRIGHT 1944 BY AMERICAN MEDICAL ASSOCIATION

DECEMBER 23 1944

## RECONDITIONING IN CHEST SURGERY

COLONEL JOHN B GROW

MAJOR OMER M RAINES

AND

MAJOR ORA L HUDDLESTON

MEDICAL CORPS, ARMY OF THE UNITED STATES

One of the major developments in the field of surgery during the present war has been the general recognition of the value of a reconditioning program. The term "reconditioning program" is a broad one and covers the care of the patient from the time of his operation until he is physically fit to return to his organization. The goal of this program may be simply stated as the restoration of the patient to a normal physical and mental state of health. In order to achieve this objective it has been found necessary to have a well ordered program, which includes four important elements: (1) physical reconditioning, (2) educational reconditioning, (3) occupational therapy and (4) recreation. To be successful this program must be initiated as early in the convalescent period as possible and requires the close cooperation between the surgeon, the physical therapist, the occupational therapist and the physician in charge of reconditioning. It is our purpose in this communication not to discuss reconditioning in general but to describe experiences with a reconditioning program as applied to the specific problem of chest surgery patients during a period of approximately twenty-one months. The subjects of diversional and recreational programs and mental rehabilitation in the convalescent care of patients have been adequately discussed elsewhere. For this reason the present communication will be confined solely to the physical reconditioning of chest surgery patients.

The problems to be overcome in the physical reconditioning of the patient convalescing from a surgical disease of the chest are: (1) a lowered vital capacity, (2) a decrease in stamina and strength incident to a protracted debilitating illness, (3) postural defects and (4) the loss of power of large muscle groups incident to extensive muscle cutting incisions. The other phases of reconditioning, educational reconditioning, occupational therapy and recreational and diversional activities are fully as important in this type of patient as in other groups, owing to the usual history of long standing disease with its attendant depression of morale.

The surgical diseases of the chest will be considered from the standpoint of reconditioning in the following groups: (1) tuberculosis, including pulmonary tuberculosis and tuberculosis of the pleura, (2) the suppurative diseases of the lungs and pleura, not including the bronchi, acute and chronic empyema, and lung abscess not associated with bronchiectasis, (3) conditions which

require pulmonary resection in their treatment, i. e. bronchiectasis, tumors, benign and malignant, of the lung, (4) a miscellaneous group of benign cysts and tumors of the mediastinum and pleura which require thoracotomy in their surgical treatment.

## TUBERCULOSIS

The rehabilitation of the tuberculous patient is a long term program, which, owing to the nature of the disease, must be carried out under the supervision of a phthisio-therapist. Many excellent programs, initiated by local and national groups, are in operation to rehabilitate the tuberculous, and many of these patients have been restored to active and useful lives. However, the disability incident to clinical tuberculosis is not compatible with military service, and for this reason most physical reconditioning and rehabilitation activities will take place following discharge from the army. The very important educational, occupational therapy and recreational aspects of reconditioning that do apply to the period of military hospitalization are beyond the scope of this paper.

## SUPPURATIVE DISEASE OF PLEURA AND PULMONARY PARENCHYMA

From the standpoint of reconditioning, we have found it convenient to group the cases of empyema and lung abscess not associated with bronchiectasis together. Acute empyemas are managed at Fitzsimons General Hospital by repeated aspiration until the presence of thick pus indicates that the empyema cavity has become localized and pleural adhesions are present. Then an adequate open drainage is done. Chronic empyemas are treated by revising drainage sinuses to secure adequate drainage and, when chronicity with cessation of obliteration of the empyema cavities occurs, a thoracoplasty with unroofing of the cavity is done. Lung abscesses are given chemotherapy and treated with bronchoscopic aspiration until evidence of failure of resolution is obtained, when open drainage, either in one or in two stages, is established. All patients in this group are transferred to a reconditioning service as soon as they have been afebrile for a sufficient period to take part in the program. This usually requires from ten days to two weeks. The patients are returned to the chest surgery wards daily for dressings but otherwise spend all their time in the reconditioning program. Here the patients' activities are graded carefully in order to avoid overdoing and to stay within the patient's limit of fatigue. He is removed from the hospital atmosphere, placed in an atmosphere of military discipline, wears a duty uniform and engages in graded army training activities.

As the patient's condition permits, breathing exercises, calisthenics and outdoor drills and marches are engaged in. Vigorous physical activity has been found



Continued dilation of the pupil is potentially hazardous. Continued dilation of the pupil may not do harm, but there is always the possibility that the dilated pupil will precipitate an attack of acute glaucoma and then irreparable damage is done. There is no need to run this risk.

#### URTICARIA AND ANGIONEUROTIC EDEMA

*To the Editor*—A woman physician aged 35 who had never before been seriously ill was taken sick three weeks ago first with nausea headache and severe vomiting. Twenty four hours later she broke out with hives of tremendous size at first only on the body later covering the arms and legs. At the same time angioneurotic edema of the eyelids lips hands and feet developed. These attacks come four or five times daily and are much worse during the night. Her condition is getting worse in spite of different treatments. No relief is obtained from local applications except that rubbing alcohol relieves the itching somewhat. She takes one tablet of  $\frac{3}{8}$  grain (24 mg) of ephedrine hydrochloride four or five times daily and in addition is given injections two or three times daily of epinephrine 1:1000 0.5 cc each time or epinephrine in oil. That medication gives relief for about four hours. On advice of a skin specialist she was put on a diet which is free of meat eggs wheat coffee and fresh fruit. In the first week nicotinic acid and Calcium tablets were tried, with no results. In the second week Torantil tablets (3 x 2) were continued with the Calcium tablet. Finally Hapamin (Parke, Davis) is being tried. No relief has been obtained so far. Her general health is good, there are no other symptoms or findings. What other treatment could be tried? Can the prolonged use of ephedrine in such a great amount be harmful? The skin specialist advised against any skin tests assuming that we might get a number of wrong reactions because of the great irritability of her skin.

M D New York

*ANSWER*—Urticaria and angioneurotic edema occur frequently, separately or together. They are usually due to ingestion of certain foods or drugs, occasionally they seem to be associated with bacterial infection especially in the gallbladder. Skin tests in these two conditions are usually of little if any value because positive tests are often found which have no clinical relation to the cause of symptoms, and in other cases tests are negative to foods known to cause the swellings. It is known, for example, that strawberries, a frequent cause of urticaria, give an extract which usually shows negative skin tests even in susceptible persons. Benson has shown that such patients can safely eat strawberries if the berries are carefully washed in a colander with hot water. Evidently the allergen can be washed away and is not in the berry itself.

Experience has shown that most patients with urticaria and angioneurotic edema recover more or less rapidly if they avoid (1) drugs and medicines of all kinds, (2) pork including ham bacon lard and Jello (3) fresh fruits, including juices, (4) fresh vegetables, including juices, (5) peas, beans and tomatoes, cooked or raw (6) chocolate and cocoa (7) fish of all kinds (8) nuts and (9) cola drinks. This diet should be maintained for about two weeks, if symptoms subside, one of these foods is to be added at intervals of four to five days, pork and peaches last of all. If the swellings continue, other elimination diets should be tried, e.g. a strict milk free diet. Epinephrine and ephedrine may be used to control large swellings, but calcium and histaminase (Torantil) usually fail. A series of injections of histamine beginning with 0.10 cc of the 1:10,000 dilution occasionally gives relief. The gallbladder and other possible foci of infection should be studied in obstinate cases.

#### FAITH HEALING

*To the Editor*—Frequently I have had occasion to answer well meaning patients with regard to the faith healing of various Catholic shrines such as at St. Ann De Beaupre and at Lourdes. I find myself at a loss for concrete evidence of the psychologic aspects of such miracles. Has any scientifically controlled investigation of these phenomena ever been conducted? What are the conclusions of these investigators both pro and con? Has such an investigation ever been suppressed? I should be grateful for any information you can offer me regarding these queries.

T R Hazelrigg M D Cleveland

*ANSWER*—It is certain that the suggestion of cure must benefit many persons in these shrines and the advertisement of the cures must certainly make the suggestion for cure potent. On the other hand untold misery is caused to many hopeless sufferers from structural disease and degeneration by their long and useless journeys to shrines from distant places and often far off countries. One must remember that one hears of the cures the disappointed patient does not advertise his disappointment.

#### PSEUDOHYPERTROPHIC MUSCULAR PARALYSIS

*To the Editor*—Please advise as to treatment for pseudohypertrophic muscular paralysis in a boy of 6.

Samuel Marritt M D Sackets Harbor N Y

*ANSWER*—There is no known treatment that exerts a favorable influence on pseudohypertrophic muscular paralysis.

#### FIRST INFECTION TYPE OF TUBERCULOSIS IN CHILDREN

*To the Editor*—I have just read the book review for "The Evolution of Tuberculosis as Observed During Twenty Years at Lymanhurst Minneapolis Board of Public Welfare 1921 to 1941" published in The Journal, August 26 1944 page 1216. The statement is made in the review that, after thirteen years of observation and study it was decided that treatment of children with the first infection type of tuberculosis is of little avail either immediately or remotely. Was the inference intended that children with the first infection type with low grade fever and failure to gain weight could be permitted to go to school and otherwise lead an essentially normal life for children of that age?

H M Janney M D Ashland Ky

*ANSWER*—The authors of "The Evolution of Tuberculosis as Observed During Twenty Years at Lymanhurst" state that in their experience low grade fever and failure to gain weight were not found to be manifestations of the first infection type of tuberculosis. They originally had a hospital division where such children were kept strictly in bed and under close medical observation. The symptoms mentioned, as well as others, were invariably found to be due to nontuberculous conditions, such as foci of infection in the nose, mouth and throat. However, they point out that when a child first becomes allergic to tuberculin that is, within three to seven weeks after the infection occurs there may be a period of one or two weeks when the body temperature is elevated. However, this promptly subsides and thereafter fever is not found to be due to primary tuberculosis. The red cell sedimentation rate is also elevated during the febrile period and usually continues so for a few weeks after the temperature is normal.

If fever, loss of weight and other symptoms subsequently occurred and were found to be due to tuberculosis they were always caused by the reinfection phase of the disease. However, this developed with extreme rarity in the lungs during the period of childhood. Reinfection types of extrapulmonary tuberculosis, particularly involvement of the bones and joints was more often experienced during this period. Therefore the authors believe that a child who has just become allergic to tuberculin and has a brief febrile period should be on strict bed rest as long as fever is present and the red cell sedimentation rate is accelerated. At the end of this time, unless the disease enters the reinfection phase there is no objection to the child resuming school work and leading an essentially normal life for children of that age. However, as the period of adolescence approaches, all children with primary tuberculosis should be examined at least annually for the appearance of the reinfection type of disease in the lungs. Moreover, all such children should be guarded carefully against exposure to contagious cases of tuberculosis, as this is one of the diseases from which the human body does not develop dependable immunity.

#### LONG CONTINUED EXPOSURE TO ROENTGEN RAYS

*To the Editor*—We examine by fluoroscope between 40 and 50 patients twice weekly. Only the operator wears lead lined gloves and apron. The current is 70 kilovolts and 5 milliamperes. Each patient is before the fluoroscope only a few seconds preceding his refill of pneumothorax or pneumoperitoneum. The attending doctors are grouped before the fluoroscopic screen without apron or gloves. What effect will the rays have on the physicians so grouped if this is continued over a period of months and years?

M D California

*ANSWER*—Such a question can be answered accurately only when an accurate determination of the exposure is made. The tolerance dose for continued exposure has been estimated at 1 roentgen per week and more recently at 0.1 roentgen per day. Reference is made to the book Medical Physics by Otto Glasser page 1382, and National Bureau of Standards Handbook 20.

#### DIAGNOSIS OF HERNIATION OF NUCLEUS PULPOSUS IN LUMBAR SPINE

*To the Editor*—Two soldiers who were discharged from the Army because of sciatica and backache did not bend over in the usual fashion when picking up their shoes and lacing them. They stood on the good leg with the trunk erect and bent the affected lower extremity in the hip and the knee to reach the foot with the hands. This relieved the tension of the sciatic nerve. Both these men were suspended by their hands holding on to the top part of a door so that their feet did not touch the floor. In this position I tapped their lumbar regions with my fist. This tapotement did not elicit any pain. When they stood on their feet tapotement of the lumbar region did elicit pain. That this can be considered one of the tests for the establishment of the diagnosis I believe is reasonable because the suspension of the body by the hands of the patient causes the weight of the section of the body below the sacrolumbar articulation to exert a pull which is sufficient to cause the herniated portion of the nucleus pulposus to retract so much that for the moment there is no pressure exerted on the spinal nerve roots which ordinarily causes the symptoms of sciatica. These diagnostic signs may not be new. However I have not seen them in the literature and therefore submit them.

Algot Astrom M D Lexington Ky



# The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL 126, No 17

CHICAGO, ILLINOIS  
COPYRIGHT 1944 BY AMERICAN MEDICAL ASSOCIATION

DECEMBER 23 1944

## RECONDITIONING IN CHEST SURGERY

COLONEL JOHN B GROW

MAJOR OMER M RAINES

AND

MAJOR ORA L HUDDLESTON

MEDICAL CORPS, ARMY OF THE UNITED STATES

One of the major developments in the field of surgery during the present war has been the general recognition of the value of a reconditioning program. The term "reconditioning program" is a broad one and covers the care of the patient from the time of his operation until he is physically fit to return to his organization. The goal of this program may be simply stated as the restoration of the patient to a normal physical and mental state of health. In order to achieve this objective it has been found necessary to have a well ordered program, which includes four important elements: (1) physical reconditioning, (2) educational reconditioning, (3) occupational therapy and (4) recreation. To be successful this program must be initiated as early in the convalescent period as possible and requires the close cooperation between the surgeon, the physical therapist, the occupational therapist and the physician in charge of reconditioning. It is our purpose in this communication not to discuss reconditioning in general but to describe experiences with a reconditioning program as applied to the specific problem of chest surgery patients during a period of approximately twenty-one months. The subjects of diversional and recreational programs and mental rehabilitation in the convalescent care of patients have been adequately discussed elsewhere. For this reason the present communication will be confined solely to the physical reconditioning of chest surgery patients.

The problems to be overcome in the physical reconditioning of the patient convalescing from a surgical disease of the chest are (1) a lowered vital capacity, (2) a decrease in stamina and strength incident to a protracted debilitating illness, (3) postural defects and (4) the loss of power of large muscle groups incident to extensive muscle cutting incisions. The other phases of reconditioning, educational reconditioning, occupational therapy and recreational and diversional activities are fully as important in this type of patient as in other groups, owing to the usual history of long standing disease with its attendant depression of morale.

The surgical diseases of the chest will be considered from the standpoint of reconditioning in the following groups: (1) tuberculosis, including pulmonary tuberculosis and tuberculosis of the pleura, (2) the suppurative diseases of the lungs and pleura, not including the bronchi, acute and chronic empyema and lung abscess not associated with bronchiectasis, (3) conditions which

require pulmonary resection in their treatment, (4) bronchiectasis, tumors, benign and malignant, of the lung, (5) a miscellaneous group of benign cysts and tumors of the mediastinum and pleura which require thoracotomy in their surgical treatment.

### TUBERCULOSIS

The rehabilitation of the tuberculous patient is a long term program, which, owing to the nature of the disease, must be carried out under the supervision of a phthisio-therapist. Many excellent programs, initiated by local and national groups, are in operation to rehabilitate the tuberculous, and many of these patients have been restored to active and useful lives. However, the disability incident to clinical tuberculosis is not compatible with military service, and for this reason most physical reconditioning and rehabilitation activities will take place following discharge from the army. The very important educational, occupational therapy and recreational aspects of reconditioning that do apply to the period of military hospitalization are beyond the scope of this paper.

### SUPPURATIVE DISEASE OF PLEURA AND PULMONARY PARENCHYMA

From the standpoint of reconditioning, we have found it convenient to group the cases of empyema and lung abscess not associated with bronchiectasis together. Acute empyemas are managed at Fitzsimons General Hospital by repeated aspiration until the presence of thick pus indicates that the empyema cavity has become localized and pleural adhesions are present. Then an adequate open drainage is done. Chronic empyemas are treated by revising drainage sinuses to secure adequate drainage and, when chronicity with cessation of obliteration of the empyema cavities occurs, a thoracoplasty with unroofing of the cavity is done. Lung abscesses are given chemotherapy and treated with bronchoscopic aspiration until evidence of failure of resolution is obtained, when open drainage, either in one or in two stages, is established. All patients in this group are transferred to a reconditioning service as soon as they have been afebrile for a sufficient period to take part in the program. This usually requires from ten days to two weeks. The patients are returned to the chest surgery wards daily for dressings but otherwise spend all their time in the reconditioning program. Here the patients' activities are graded carefully in order to avoid overdoing and to stay within the patient's limit of fatigue. He is removed from the hospital atmosphere, placed in an atmosphere of military discipline, wears a duty uniform and engages in graded army training activities.

As the patient's condition permits, breathing exercises, calisthenics and outdoor drills and marches are engaged in. Vigorous physical activity has been found

to be of definite benefit in hastening the obliteration of empyema and lung abscess cavities. The usual experience is that by the time the empyema or lung abscess cavity has disappeared the patient has been restored to his normal weight, stamina and strength. He may then be returned to full military service with his organization. Chronic empyemas which require thoracoplasty of an extensive nature in their treatment frequently incapacitate the soldier for further military service through the deformity incident to the surgical procedure and the consequent reduction in vital capacity.

#### PULMONARY RESECTION

The reconditioning of patients following pulmonary resection may be divided roughly into three stages: (1) the immediate convalescent care, (2) the physical therapy period comprising the period from the seventh postoperative day to the twenty-first postoperative day, and (3) the period from the twenty-first postoperative day to the time of his discharge from the hospital, when he is a patient in the reconditioning service. If there is no associated suppurative sinus disease, patients who have had resection of no more than the amount of pulmonary tissue contained in the middle and lower lobes of the right lung may be returned to military duty. Patients who have had more pulmonary tissue resected than this amount are usually incapacitated for military service.

In cases involving the partial resection of one lung, two drainage tubes are left in the intercostal spaces just above the diaphragm, one anteriorly and one posteriorly. These tubes are connected to underwater sealed empyema bottles. The intercostal drainage tubes are usually removed on the third or fourth postoperative day. Other measures during this period are those designed to prevent the development of atelectasis.

The seventh to the twenty-first postoperative days fall into the physical therapy period. During this time breathing exercises and shoulder exercises are started while the patient is still confined to the ward. The shoulder exercises consist of moving the arm through a complete range of motion supplemented by repeated passive exercises. Later these are changed to active assistive exercises and active exercises of the shoulder girdle. The shoulder exercises are unilateral and confined to the operative side. Breathing exercises are bilateral and symmetrical and involve the contractions of the accessory respiratory muscles as well as the regular inspiratory and expiratory muscles during strong, forced breathing. The purpose of the breathing exercises is to increase the vital capacity. The purpose of the shoulder exercises is to prevent contraction and limitation of range of motion of the shoulder joint. Usually exercises are given twice daily. When the patient becomes ambulatory during the second and third postoperative weeks, the treatments are given in the Physical Therapy Clinic. When muscle soreness, rigidity or limitation of motion are present, additional treatment consists of radiant heat or hot packs to the involved muscle group prior to the administration of the exercises. Air cooled general ultraviolet light irradiation is given to stimulate immunity reactions and increase the patient's general strength.

After the third postoperative week the patient's convalescence is sufficiently advanced that he may be transferred to the Reconditioning Service. Here his program is much as it has been outlined for the patients with suppurative disease of the lung parenchyma and

pleura. The exercises concentrate in increasing the vital capacity and restoring the strength of the shoulder girdle. The men are trained in the use of and encouraged to engage in activities with Indian clubs, rowing machines, pulley weights, dumb-bell exercises, straddle pull ups, push ups, chin ups and resistive exercises. For patients who have no draining sinuses swimming has been found to be important, from the standpoint both of recreation and of physical conditioning. The Australian crawl swimming stroke is particularly useful in loosening up the muscles of the shoulder girdle. Of 31 patients treated in this manner during the past year who required the resection of no more than the amount of pulmonary tissue contained in the middle and lower lobes of the right lung 25 were returned to duty, the average length of hospitalization after operation being approximately ten weeks. Of the remaining 6 who were discharged 3 were discharged because of suppurative sinus disease and suppurative bronchitis of the remaining lung, and 3 were discharged for reasons not related to the condition for which resection was performed.

#### EXPLORATORY THORACOTOMY

Patients who require exploratory thoracotomy, such as the removal of benign cysts, tumors of the pleura and mediastinum and the repair of diaphragmatic hernias, usually have but little respiratory difficulty as a residual of the operation. The primary problem in these patients is the restoration of stamina and strength with recovery of function of the shoulder girdle. They follow the same routine as given under "Pulmonary Resection." The results in this group are uniformly good.

#### COMMENT

Unfortunately it is not possible to compare the results obtained before and after the initiation of the reconditioning program at this hospital, owing to the fact that the cases are not comparable and surgical techniques have been changed during this period. However, the rapid response of this group of patients to the program, the excellent physical conditioning obtained and the high percentage of cases returned to military duty have been striking. This is illustrated by the fact that during this period of 31 cases treated by the resection of no more than the amount of pulmonary tissue contained in the middle and lower lobes of the right lung 25 were returned to duty with an average of ten weeks of hospitalization following surgery. Of the remaining 6 who were discharged 3 were discharged for suppurative sinus disease with suppurative bronchitis in the remaining lung tissue. Three were discharged for diagnoses unrelated to the disease for which pulmonary resection was performed. Twenty-two soldiers with chronic non-tuberculous empyema completed treatment during this period. Of this number 18 were returned to duty and 4 were discharged from the service. The reconditioning program was of the greatest value in this group, requiring prolonged hospitalization by maintaining general physical fitness and a high morale.

#### CONCLUSIONS

1 A planned reconditioning program contributes greatly to the success in the management of chest surgery patients.

2 A satisfactory reconditioning program requires close cooperation between the surgeon, the physical therapist, the occupational therapist and the medical officer in charge of reconditioning.

PERSISTENCE OF VIRUS EXCRETION  
IN THE STOOLS OF POLIO-  
MYELITIS PATIENTS

DOROTHY M HORSTMANN, M.D.

ROBERT WARD, M.D.

AND

JOSEPH L MELNICK, PH.D.

NEW HAVEN, CONN

It is now an established fact that many patients with acute poliomyelitis excrete virus in their stools, but little is known of the duration of excretion of virus in fecal material beyond the first four weeks of the disease. The literature up to 1940 has been summarized in two papers by Vignec, Paul and Trask.<sup>1</sup> An example of long persistence of the virus was reported in 1939 by Lepine and his associates,<sup>2</sup> who demonstrated it in the stools of a child forty-one, seventy-four and possibly one hundred and twenty-three days after the abortive disease. Since 1940 two late isolations have been reported: one by Howitt, Buss and Shaffrath<sup>3</sup> fifty days and another by Wenner and Casey<sup>4</sup> forty-five days after the onset of poliomyelitis. Piszczek and his associates<sup>5</sup> recovered virus from the stools of a healthy contact who had been exposed one and two months before the specimen was collected.

The present study was undertaken to determine the average duration of excretion of virus in stools of patients following acute infection and to ascertain whether a chronic carrier state similar to that occurring in typhoid exists in poliomyelitis.

## MATERIALS AND METHODS

Sixty patients who were admitted to the New Haven Hospital during the summer epidemic of 1943 and 1 who entered in February 1944 were selected for study. In all of these a clinical diagnosis of poliomyelitis had been established. There were 46 cases of the paralytic and 15 of the nonparalytic type. An attempt was made to collect specimens during the first or second week of the disease and at four to six week intervals thereafter. All the materials were frozen immediately or within a few hours after collection and stored on solid carbon dioxide until ready to be tested.

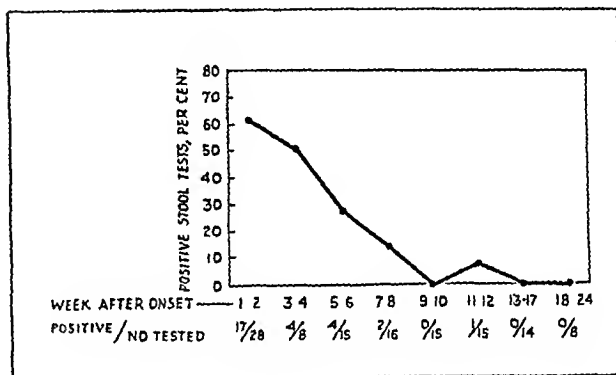
The technic of preparation of materials for inoculation was that developed by Melnick,<sup>6</sup> with a few minor changes. The stools were for the most part 35 to 50 Gm in amount, although some were as small as 10 Gm. In all specimens the inoculum was prepared by ultracentrifugation at 39,000 revolutions per minute. Immature rhesus monkeys (*Macaca mulatta*) were used as test animals throughout. Eighty-four monkeys were used, and of these 57 were used more than once. Inocu-

lations were by the intracerebral route in fifty-four tests and directly into the lumbar cord in eighty and by a combination of the two routes in twelve. All but 2 monkeys were ultimately killed and a test was considered positive when microscopic lesions characteristic of poliomyelitis, viz neuronal necrosis, neuronophagia and perivascular cellular infiltration were seen in the spinal cord. The 2 monkeys not killed exhibited typical paralytic poliomyelitis and were preserved for use later. These also were considered to represent positive tests.

## RESULTS

Of the 146 tests performed on 123 specimens 28 were positive, 91 negative and 4 incomplete because of premature death of the test animal. The chart gives the time distribution of the positive tests among the 119 specimens on which complete tests were carried out.

By this method 50 to 60 per cent of the patients were found to excrete virus in the first four weeks of the disease. The rate then falls off steadily, although at five to six weeks 27 per cent of the specimens tested were positive and at seven to eight weeks 12.5 per cent. Between the ninth and twenty-fourth weeks only 1 of 52 specimens tested was shown to contain virus, this was the latest positive obtained and came from a boy 8 years old in the twelfth week of paralytic disease.



Excretion of virus in 119 stools of 61 poliomyelitis patients

It has been emphasized previously that the stools of young children under 8<sup>8</sup> and particularly children with nonparalytic disease are more apt to contain virus than those of older children, as a result the younger child has been suspected of being the more frequent and important carrier. In the present study no difference was detected in the number of positive specimens from the younger and older age groups in either the acute or the convalescent period, nor was there any difference between the paralytic and nonparalytic patients as to virus excretion. This may be due to the method employed.

## COMMENT

The prevalent concept of the virus excretion after poliomyelitis is that stools commonly contain the agent for three to four weeks following the onset but rarely thereafter. The results of this study indicate that the period of virus excretion is longer and extends into the seventh and eighth weeks in an appreciable percentage of cases.

It provides no evidence for the existence of persistent carriers of poliomyelitis virus but it is possible that failure to demonstrate such carriers was due to the relatively small number of subjects studied.

7 Results of comparison of the two techniques to be published.  
8 Sabin A. B. and Ward R. Natural History of Human Poliomyelitis. II. Elimination of Virus. *J. Exper. Med.* 74: 519-529 (Dec 1941). Trask, Paul and Vignec.<sup>1</sup>

From the Section of Preventive Medicine Yale University School of Medicine.  
Aided by a Grant from the National Foundation for Infantile Paralysis, Inc.

1 Vignec A. J., Paul J. R. and Trask, J. D. The Recovery of the Virus of Poliomyelitis from Extraneural Sources in Man with a Survey of the Literature. *Yale J. Biol. & Med.* 11: 15-31 (Oct.) 1938.  
Trask, J. D., Paul, J. R. and Vignec, A. J. Poliomyelitis Virus in Human Stools. *J. Exper. Med.* 71: 751-763 (June) 1940.

2 Lepine P., Sedallian P. and Stutter V. Sur la presence du virus poliomyelitique dans les matieres fecales et la longue duree d'elimination chez un porteur sain. *Bull. Acad. de med. Paris* 122: 141-147 (July) 1939.

3 Howitt Beatrice F., Buss W. C. and Shaffrath M. D. Acute Anterior Poliomyelitis in Kern County, Calif. *Am. J. Dis. Child.* 64: 631-648 (Oct.) 1942.

4 Wenner H. A. and Casey A. E. A Community Study of Carriers in Epidemic Poliomyelitis. *J. Clin. Investigation* 22: 117-125 (Jan) 1943.

5 Piszczek E. A., Shaughnessy H. J., Zichis J. and Levinson S. O. Acute Anterior Poliomyelitis. *J. A. M. A.* 117: 1962-1965 (Dec) 6: 1941.

6 Melnick, J. L. The Ultracentrifuge as an Aid in the Detection of Poliomyelitis Virus. *J. Exper. Med.* 77: 195-204 (March) 1943.

It should be emphasized at this point that these results are relative and are dependent on the method employed. If a cruder method, such as that which has been employed in certain community surveys, had been used, no doubt the excretion rate would have been found to be less than is here reported.

An attempt is not made to interpret the epidemiologic significance of the findings but rather to record the observations.

#### SUMMARY

1 The duration of excretion of poliomyelitis virus in the stools of 61 patients was studied. It was found that 61 per cent excrete virus during the first two weeks after onset of the disease, 50 per cent during the third and fourth weeks, 27 per cent at the fifth and sixth weeks, 12.5 per cent at the seventh and eighth weeks. Between the ninth and twenty-fourth weeks virus was detected in only 1 of 52 specimens tested; one excreted in the twelfth week.

2 Not one of the 61 patients followed was demonstrated to become a persistent carrier of poliomyelitis virus.

## PNEUMOCOCCIC ARTHRITIS

### REPORT OF CASE OF SO-CALLED PRIMARY PNEUMOCOCCIC ARTHRITIS

WILLIAM P. BOGER, M.D.

BLUEFIELD, W. VA.

All writers agree that pneumococcic arthritis is a rare disease, and the discussion of the disease is in most instances limited to the making of this observation. This is true in the eight reviews of "rheumatism and arthritis"<sup>1</sup> which cover the American and British literature for the years 1935 through 1940. These eight reviews cite only 1 case of pneumococcic arthritis, that of Instone,<sup>2</sup> and this case seems open to question on the grounds that it does not fit the clinical picture of pneumococcic arthritis and the only proof of etiology is the growth of pneumococci from a throat swab.

The literature of pneumococcic arthritis consists of a series of case reports, and it is of interest to note that several of the best reviews of the subject have been prompted by the observations of single cases.<sup>3</sup> The fact that few observers have seen more than 1 case and recorded cases are so few makes it seem doubtful if any one can speak with authority concerning the disease.

Pneumococcic arthritis should be regarded as a manifestation of a septicemia even in those cases in which

the primary focus from which the organisms gained access to the blood stream cannot be demonstrated. With this concept of the disease I present a case of so-called "primary" or "cryptogenic" pneumococcic arthritis in which no infection apart from the knee could be demonstrated.

#### REPORT OF CASE

N. F., a Negro woman aged 50, was referred to the hospital because of "phlebitis, arthritis and anemia." On Oct. 29, 1942, she was well and sitting in a rocking chair on a neighbor's porch when she was seized with a sudden acute pain in the back of the left knee. The pain was severe and prevented the patient from walking home. Massage and the application of liniments and heat failed to alleviate the pain. The following day the knee was swollen and painful on motion. A doctor was summoned, and "pills and liniment" were prescribed without benefit. During the succeeding days the knee became more swollen and painful and the patient felt "chilly" and "knew" she had fever.

November 7, on the tenth day of her complaint, the patient presented herself for admission to the hospital. The patient's past health had been excellent; she could not recall having been sick for many years, and specific questioning relative to colds, pneumonia, pleurisy, running ears, "gum-boils" and genital infections failed to reveal any such infections.

Examination showed that the patient was well developed and nourished. She lay in bed complaining bitterly of a painful and much swollen left knee, which was held in semi-flexion. She complained of nothing except her knee and appeared to be in good general condition. The temperature was 103 F., pulse rate 100, respiratory rate 25. There were few teeth remaining in the patient's mouth and these were carious, but the gums were in good condition and there was no pyorrhea. The chest was symmetrical and moved equally with respiration, no rales were heard. The blood pressure was 125/85, the heart was normal in size, rate and rhythm, and no murmurs or thrills were demonstrated. The abdomen was nontender and no masses could be felt, the spleen was specifically sought for but not found. Pelvic examination was not done because of pain in the leg. No lymphadenopathy was present.

The left leg was swollen from the hip to the ankle and was easily twice the size of the right leg. The size of the leg was due largely to pitting edema limited to the posterior (dependent) aspect of the leg from the left hip to the ankle. Large, engorged veins coursed over the patellar and lateral aspects of the knee, and the dull purplish discoloration which passes for "redness" in the colored race was apparent over the region of the knee and lower thigh. The knee joint was much swollen by an effusion, the patella was ballotable, and the joint was both tender and "hot" to touch. Movement was painful and limited both by the pain and by the size of the effusion into the joint. Fluctuation just proximal and medial to the patella suggested suppuration in the soft tissues. There was no lymphadenopathy in the left groin despite the obvious signs of inflammation around the knee.

X-ray examination revealed soft tissue swelling but no evidence of pathologic changes in the bone. There was some lifting of the patella. The diagnosis of acute septic arthritis was made, and aspiration of the joint was done under aseptic conditions. An 18 gage needle was used and it was frequently clogged by definite clots of purulent matter during the withdrawal of 310 cc of thick, yellowish green pus. This amount of pus was readily obtained and there was no reason to doubt that it was obtained directly from the knee joint. Examination of the pus revealed countless numbers of both intracellular and extracellular gram positive diplococci, which proved to be type XII pneumococci in pure culture.

Sulfadiazine was given in full dosage 3 Gm initially and 1 Gm every four hours thereafter for twenty-two days. The blood level of sulfadiazine was checked every other day, and a level between 9.5 and 15.8 mg per hundred cubic centimeters was maintained.

The patient's temperature, which was 103 F. at the beginning of her disease, subsided by the fifth day of therapy and there-

Dr. Boger was formerly instructor in medicine, Medical College of Virginia, Richmond, Va., and is now director of the medical department, St. Luke's Hospital, Bluefield, W. Va.

Dr. William B. Porter of the Medical College of Virginia, Richmond, permitted the reporting of this case.

1. Hench P. S., Bauer W., Dawson M. H., Freyberg R. H., Holbrook W. P., Key J. A., Lockie L. M., and McEwen C. Rheumatism and Arthritis. Review of American and English Literature from 1940. *Ann. Int. Med.* 15: 1002-1108, 1941. Hench P. S., Bauer W., Dawson M. H., Hall F., Holbrook W. P., Key J. A., and McEwen C. The Problem of Rheumatism and Arthritis. Review of American and English Literature for 1939. *ibid.* 14: 1383-1448, 1941. The Problem of Rheumatism and Arthritis. Review of American and English Literature for 1938. *ibid.* 13: 1655-1739, 1940. Hench P. S., Bauer W., Dawson M. H., Hall F., Holbrook W. P., and Key J. A. The Problem of Rheumatism and Arthritis. Review of American and English Literature of 1937. *ibid.* 12: 1005-1374, 1939. Hench P. S., Bauer W., Hall F., Holbrook W. P., Key J. S., and Slocumb C. H. The Present Status of Rheumatism and Arthritis. Review of the American and English Literature for 1936. *ibid.* 11: 1089-1247, 1938. Hench P. S., Bauer W., Fletcher A. A., Christ D., Hall F., and White T. P. The Problem of Rheumatism and Arthritis. Review of American and English Literature for 1935. *ibid.* 10: 734-909, 1936. The Present Status of the Problem of Rheumatism. A Review of Recent American and English Literature on Rheumatism and Arthritis. *Ann. Int. Med.* 8: 1315-1374, 1935. footnote 6.

2. Instone S. Pneumococcal Arthritis Complicating Lobar Pneumonia Treated with Sulfapyridine. Recovery. *Brit. M. J.* 2: 223, 1940.

3. Fagge H., Bulkley B., Plisson and Brousse.

after never rose above 99.6 F. Appetite was sustained throughout the hospital stay, and the general good condition of the patient was remarked by all.

Morphine  $\frac{1}{2}$  and  $\frac{1}{4}$  grain (11 and 16 mg.) was required for the relief of pain, and light plaster of paris splints were used to immobilize the painful joint. Despite some pain, the limb was removed from the splints once a day and the knee moved through as full a range of motion as possible.

On November 13 a second aspiration was done and 340 cc of the same type of pus as previously noted was removed. Five Gm of sodium sulfadiazine dissolved in 100 cc of distilled water was injected into the joint. This pus that was withdrawn from the joint after five days of adequate sulfadiazine therapy gave a pure growth of type XII pneumococci. Aspiration of the joint was repeated on the 16th, 19th and 20th, but no organisms were found in the material withdrawn. On November 24 a swelling was found in the left mid thigh that presented all the cardinal signs of inflammation. Aspiration at this site yielded 240 cc of greenish purulent material which was sterile on culture.

X ray films taken during the hospital course failed to reveal any bone destruction in the knee joint. Blood counts done every third day showed a hypochromic anemia of moderate severity, hemoglobin values averaged 58 per cent (Sahl) and the red counts averaged 3,410,000. One 500 cc transfusion was given, which did not change the count materially. The high white cell count obtained was 12,200 and all other counts averaged 7,460. The differential counts at no time showed more than 76 per cent polymorphonuclear leukocytes.

TABLE 1—Listed Cases of Pneumococcic Arthritis

| Author  | Year | Cases in Series | Bacteriologic Proof | Pneumococcus Type |    |     |         |
|---|------|-----------------|---------------------|-------------------|----|-----|---------|
|   |      |                 |                     | I                 | II | III | IV      |
| Weichselbaum <sup>4</sup>   | 1888 | 1               | Yes                 |                   |    |     |         |
| Vogelius Arch de méd expér et d'anat path 8 186 1896 cited by Herrick | 1896 | 11              |                     |                   |    |     |         |
| Leroux Les arthrites à pneumocoques Paris thesis J Roussel 1899       | 1899 | 28              |                     |                   |    |     |         |
| Cave <sup>1</sup>   | 1901 | 31              |                     |                   |    |     |         |
| Herrick <sup>7</sup>  | 1902 | 32              |                     |                   |    |     |         |
| Zessels Ztschr f orthop Chir 24 128 1909 cited by Plisson and Brousse | 1909 | 96              |                     |                   |    |     |         |
| Bulkley <sup>9</sup>  | 1914 | 173             |                     |                   |    |     |         |
| Plisson and Brousse <sup>5</sup>                                      | 1930 | 183             |                     |                   |    |     |         |
| Cases Not Included in Any Previous Review                             |      |                 |                     |                   |    |     |         |
| Cecil and Larsen J A M A 70 343 1922                                  | 1922 | 2               | Yes                 |                   |    |     |         |
| Gubb Brit M J 2 400 1924  | 1924 | 1               |                     |                   |    |     |         |
| Froelich Paris méd 57 64 1930 (all cases noted in children)           | 1920 | 17              |                     |                   |    |     |         |
| Cecil et al <sup>6</sup>  | 1927 | 8               | Yes                 | 5                 |    | 1   | 2       |
| Milch <sup>18</sup>   | 1930 | 1               | Yes                 |                   | 1  |     |         |
| Fagge <sup>16</sup>   | 1933 | 3               | Yes                 |                   |    |     |         |
| Kiefer et al  | 1934 | 1               | Yes                 | 1                 |    |     |         |
| Bloomberg <sup>10</sup>   | 1935 | 1               | Yes                 |                   |    |     |         |
| Eggers <sup>14</sup>  | 1936 | 3               | Yes                 |                   |    |     |         |
| Chickering M Clin North America 21 1, 5 1937                          | 1937 | 2               | Yes                 | 1                 |    | 1   |         |
| Bullowa Management of the Pneumonias N Y Oxford Univ Press 1937 p 477 | 1937 | 1               | Yes                 | 1                 |    |     |         |
| Cohn Rocky Mountain M J 40 137 1943                                   | 1943 | 1               | Yes                 |                   | 1  |     |         |
| Boger   | 1944 | 1               | Yes                 |                   |    |     | 1 (XII) |
| Totals  |      | 227             |                     | 8                 | 1  | 2   | 4       |

Six blood cultures failed to yield a growth despite precautions to inhibit the sulfadiazine in the blood samples. Throat cultures were negative for pneumococci, and so also were cultures of scrapings from the carious teeth.

The patient was discharged on Nov. 29, 1942 with a knee joint that did not pain her, and she was able to walk without discomfort, the knee could be extended to 170 degrees and flexed to 80 degrees giving her an effective range of motion of 90 degrees.

## INCIDENCE

Weichselbaum<sup>4</sup> described the first case of pneumococcic arthritis and since then cases have been infrequently reported. In table 1 the number of cases of pneumococcic arthritis listed is 227, an addition of 42 cases to the compilation of Plisson and Brousse,<sup>5</sup> but

TABLE 2—Data of Herrick and More Recent Studies

| Reference   | Cases of Pneumonia | Cases of Arthritis |
|---|--------------------|--------------------|
| Bulkley <sup>9</sup>  | 12,364             | 17                 |
| Herrick <sup>7</sup> cites  |                    |                    |
| Cave <sup>1</sup>   | 2,992              | 2                  |
| Vogelius  | 3,293              | 2                  |
| Netter  | 4,156              | 6                  |
| (Munich)  | 650                | 1                  |
| (Paris)   | 1,215              | 3                  |
| Sears and Larrabee  | 949                | 23                 |
| Cecil et al <sup>6</sup>  | 1,913              | 8                  |
| Cecil and Larsen (table 1)  | 834                | 2                  |
| Howard Johns Hopkins Hosp Rep 15 29 1910                                  | 608                | 3                  |
| Bullowa (table 1)   | Autopsy series     | 1                  |
| Procle (Pneumonia and Pneumococcus Infection) Chicago, C J Head & Co 1905 |                    |                    |
| cites Huss  | 2,616              | 22                 |
| Raw <sup>11</sup>   | 817                | 7                  |
| Totals  | 31,757             | 97 (0.3%)          |

there are undoubtedly additional cases which have not come to my attention.

Pneumococcic arthritis is said to occur as a complication of pneumonia in 0.1 per cent of the cases.<sup>6</sup> This often quoted incidence was determined by Herrick<sup>7</sup> and has never been revised. In table 2 I have presented Herrick's data and other more recent studies. The incidence of arthritis as a complication of pneumonia would appear to be 0.3 per cent.

## CLASSIFICATION OF PNEUMOCOCCIC ARTHRITIS

Since 70 to 75 per cent of the pneumococcic arthritis cases occur in association with pneumonia,<sup>8</sup> efforts have been made to classify them as preceding, following or occurring with a pneumonia. Certain cases, however, have been clearly shown to be completely independent of pneumonia, thus supporting the original dictum<sup>4</sup> that *Diplococcus pneumoniae* can cause not alone pneumonia but also various other processes, either at the same time as pneumonia or entirely independent of it. The most inclusive classification is<sup>5</sup>

- 1 Arthritis evolving before, during or after a pneumonia
- 2 Arthritis evolving without pneumonia but before, during or after an extrapulmonary infection (meningitis, pericarditis, endocarditis, otitis, peritonitis, cystitis, pharyngitis)
- 3 Arthritis evolving without any other acute manifestation due to the pneumococcus (primary or cryptogenic arthritis)

Plisson and Brousse<sup>5</sup> found 26 cases of "primary" arthritis, 14 cases in children and 12 in adults, but no bibliography was presented. Bulkley<sup>9</sup> found 48 cases of pneumococcic arthritis occurring without pneumonia, but in 18 of these cases an extrapulmonary pneumo-

<sup>4</sup> Weichselbaum A. Ueber seltene Localisationen des pneumonischen Virus. Wien klin Wchnschr 1 573 595, 620 642 and 659, 1888 cited by Herrick<sup>7</sup>.

<sup>5</sup> Plisson and Brousse. Arthrite purulente primitive à pneumocoques du genou chez l'adulte. Lyon chir 17 705 712 1920.

<sup>6</sup> Hench P S, Bauer W, Fletcher A A, Christ D, Hall F and White T P. The Present Status of the Problem of Rheumatism and Arthritis. Review of American and English Literature for 1934. Ann Int Med 9 883 982 1936. Bauer W and Short C L. The Treatment of the Arthritides of Known Origin. New England J Med 223 286, 1936. Fagge<sup>16</sup> Herrick<sup>7</sup>.

<sup>7</sup> Herrick J B. Pneumococcic Arthritis. Am J M Sc 124 12 34 1902.

<sup>8</sup> Fagge<sup>16</sup> Plisson and Brousse<sup>5</sup>.

<sup>9</sup> Bulkley K. Pneumococcic Arthritis. Ann Surg 59 71 100 1914.

coccic infection was found (pyosalpinx, umbilical fistula, tonsillitis, pharyngitis, otitis media, labor, peritonitis and cystitis). The remaining 30 cases which were regarded as "primary" were the 26 previously listed by Plisson and Brousse<sup>5</sup> and 4 cases of his own about which no particulars are given.

The only cases occurring apart from pneumonia concerning which I have been able to gather any particulars are the following. Widal and Meslay<sup>10</sup> reported a male of unknown age with involvement of the left metacarpophalangeal joint who died and was shown to have pneumococcic pericarditis. Widal and Lesne<sup>11</sup> had a man aged 68 who recovered after involvement of the left sternoclavicular joint and the small joints of the left hand. Griffon<sup>12</sup> stated that a woman aged 71 whose right ankle was incised and drained, died and necropsy showed pneumococcic meningitis and vegetative endocarditis. Allen and Lull<sup>13</sup> cultured pneumococci from the knee of a woman aged 40 who died. Billings and Preble<sup>14</sup> had a woman aged 43 with involvement of the elbow, knee, wrist and ankle who died and was shown to have pneumococcic pericarditis and meningitis. Plisson and Brousse<sup>5</sup> saw a colonial soldier of unstated age whose left knee was involved by pneumococcic arthritis and who recovered. Bloomberg<sup>15</sup> cultured pneumococci from the metatarsophalangeal joint of a Negro aged 27 who recovered. Of these 7 cases occurring apart from pneumonia only 3 can really be called "primary" or "cryptogenic," and recovery occurred in these 3 cases together with my own case.

#### SYMPTOMS AND CLINICAL FEATURES

Pneumococcic arthritis is a septic arthritis, and it is the feeling of some that there are no signs and symptoms which distinguish it from other varieties.<sup>16</sup> Pain is always present but may be gradual or sudden in onset, swelling may be slight and involve only the joint, or an intense inflammatory edema may extend to the entire limb; the local signs of acute inflammation are well defined and local tenderness is great. Large effusions are common and it is not at all unusual for infection to spread to the periarticular structures with destruction of ligaments and extension of suppuration into the musculature surrounding the joint. The temperature usually ranges between 102 and 103 F.

It is of interest that Chantemesse, Macaigne and Chipault<sup>1</sup> regarded several clinical features as almost pathognomonic, all of which were noted in my case: white, periarticular edema with prominent venous collateral circulation, elevated temperature with the patient in good general condition, the absence of regional lymph gland reaction, and the rapidity of reappearance of swelling of the joint after aspiration.

According to Bulkley,<sup>9</sup> pneumococcic arthritis is monarticular in about 75 per cent of the cases, and

arthritis has been noted in every joint except the acromioclavicular joint and the joints of the vertebral column. In this connection the case of Milch<sup>18</sup> may be mentioned, for he isolated a type II pneumococcus from an abscess of the vertebral column but in this case there was some question of Pott's disease.

#### BACTERIOLOGY

The only proof of pneumococcic arthritis is the demonstration of pneumococci in fluid aspirated from the involved joint. An arthritis appearing during the course of pneumonia is circumstantial evidence of the arthritis being pneumococcic in origin, but Smirnow<sup>19</sup> demonstrated typhoid bacilli, streptococci and staphylococci in 5 out of 10 cases of pyoarthrosis complicating pneumonia.

There has been some speculation about the type of pneumococcus which produces arthritis and other complications. The most extensive study of this sort has been that of Cecil and his associates<sup>20</sup> who found 8 cases of arthritis among 1,913 typed pneumonia. We were able to find only 16 cases of pneumococcic arthritis in which the type had been determined, and this number of cases does not permit the drawing of any conclusions, type I, 8, type II, 2, type III, 2, type IV, 4 (table 1).

#### PATHOLOGY

There is little or no information available on the microscopic pathology of pneumococcic arthritis. Cave<sup>21</sup> feels that the morbid anatomy is that of any other septic joint. Keefer, Parker and Myers,<sup>22</sup> in speaking of "pyoarthrosis" in general, say that destruction of cartilage occurs "not by direct action of bacteria but by an action of proteolytic enzymes in the leukocytes of pus to a lesser extent by pressure and synovial pannus."

The tendency of pneumococcic arthritis to perforate the joint capsule has been mentioned,<sup>23</sup> but "in many of the acute and most virulent forms there is no solution of continuity in the synovia or cartilage."<sup>7</sup>

#### TREATMENT

Pain in these cases is acute and may require large doses of opiates. Light plaster of paris splints give great comfort, but immobilization has been accepted as treatment only in those cases impossible of joint recovery.<sup>24</sup> Arthrotony has been recommended in the past, but comparable and even superior results are obtained by repeated aspirations. A large bore needle should be used for all observers have noted the large flakes of purulent matter which are present in the yellowish green pus withdrawn from these joints. In order to preserve joint function, passive movement should be insisted on at the earliest possible moment. Physical therapy should be instituted as soon as acute pain has subsided with the hope that wasting of muscles will be prevented and joint disability decreased. Sul-

10. Widal F and Meslay. Bull et mem Soc med d hop de Paris Jan 24 1896 cited by Allen and Lull.<sup>13</sup>

11. Widal and Lesne. Bull et mem Soc med d hop de Paris May 6 1898 cited by Herrick.<sup>7</sup>

12. Griffon V. Pneumococcie articulaire endocardique et meningee. Bull Societe anat de Paris 71 299 305 1896 cited by Preble. Pneumonia and Pneumococci Infections. Chicago C J Head & Co 1905.

13. Allen D P and Lull C. Pneumococcus Arthritis Primary in the Knee Joint. Ann Surg 34 527 533 1901.

14. Billings and Preble cited by Herrick.<sup>7</sup>

15. Bloomberg M H. Report of a Case of Primary Pneumococcus Arthritis. New England J Med 212 1122 1123 1935.

16. Jaffe C H. Pneumococcal Arthritis. Guy's Hosp Rep 83 444 451 1933. Pemberton.<sup>2</sup>

17. Chantemesse Macaigne and Chipault cited by Plisson and Brousse.<sup>5</sup>

18. Milch H. Pneumococcus Spondylitis. J Bone & Joint Surg 27 292 297 1929.

19. Smirnow. Ueber die Gegenwart pathogener Mikroorganismen in den Gelenken bei einigen Infektionskrankheiten. St Petersburg Ztschr f allg vet Med 1895 p 110 cited by Herrick.<sup>7</sup>

20. Cecil R L, Baldwin H S and Larsen N P. Lobar Pneumonia—A Clinical and Bacteriologic Study of 2 000 Cases. Arch Int Med 40 253 280 (Sept) 1927.

21. Cave E J. Pneumococcic Arthritis. Lancet 1 82 86 1901.

22. Keefer C S, Parker F and Myers W K. Histologic Changes in the Knee Joint in Various Infections. Arch Path 18 199 215 (Aug) 1934.

23. Herrick.<sup>7</sup> Plisson and Brousse.<sup>5</sup> Raw.<sup>25</sup> Cave.<sup>21</sup>

24. Eggers G W N. Suppurative Arthritis of the Knee Joint. Texas State J Med 31 623 626 1936.



fonamide therapy has strikingly reduced the mortality rate of pneumonia and has reduced complications commensurately, so it may be expected that these drugs will be of service in preventing pneumococcic arthritis as well as in treating it. I have seen no report of the use of penicillin in this disease. But whatever therapy is used, one's enthusiasm should be tempered by the observation of Herrick<sup>7</sup> that "it is well to remember that, with serous and in a few cases even with purulent exudate, recovery has ensued either spontaneously or by the simpler measures of rest, compression or aspiration."

#### PROGNOSIS

Pneumococcic arthritis is said to carry a high mortality rate. Raw<sup>25</sup> had 7 patients and 3 died (42 per cent), Sever<sup>26</sup> had 6 patients and 3 died (50 per cent), Herrick<sup>7</sup> gives the mortality rate as 65 per cent and Bulkley<sup>9</sup> found that with multiple foci of pneumococcic infection the mortality was 72 per cent whereas when only a single joint was involved the mortality was 24 per cent.

It is my feeling that these mortality rates are not those of pneumococcic arthritis but those of pneumococcic bacteremia. The cases of isolated pneumococcic arthritis are too few to permit any one to quote a mortality rate for this condition, and I feel that it is worthy of comment that recovery occurred in all 3 cases of this sort which I found and my own case likewise.

The prognosis with respect to joint function is influenced by the patient's general condition, but one need not be pessimistic about this type of arthritis. Cave<sup>21</sup> feels that there is generally permanent impairment. Bulkley<sup>9</sup> found details of joint function given for only 34 patients among 172 and of these 25 had "good functioning joints" and the impression was given that the remaining 9 had useful joints. Of Raw's<sup>25</sup> 7 patients 3 had useful joints although they remained "slightly stiff." The patient of Plisson and Brousse<sup>5</sup> recovered 90 degrees of flexion and my own patient was able to walk without pain and had 90 degrees of motion.

It seems fair to say that ankylosis can be prevented in a high percentage of pneumococcic arthritis cases and a useful joint result, but there will be some permanent damage in almost every joint infected by pneumococci.

#### COMMENT

In the understanding of bacterial diseases a transient bacteremia has been increasingly invoked as an explanation of multiple manifestations of a single infection. Bacteremia has been frequently demonstrated as one phase of pneumococcic pneumonia, and the rare complications of pneumonia, arthritis among them, are readily ascribed to this bacteremia. Similarly, when multiple pneumococcic infections exist simultaneously or in close temporal relationship, bacteremia seems an obvious link between them. Under these circumstances pneumococcic bacteremia is the fundamental disease, and only as one of the manifestations thereof completely dominates the clinical picture does there seem any reason to subordinate the importance of the bacteremia.

If pneumococcic arthritis is a clinical entity, and some have doubted that it is,<sup>27</sup> the only cases which should be considered are those in which arthritis is the sole manifestation of pneumococcic infection. Such cases are extremely rare, and it seems doubtful whether there are enough of them to justify comments on the course, prognosis and treatment of pneumococcic arthritis as a disease. It does appear to be unwarranted to ascribe such a grave prognosis and high mortality to pneumococcic arthritis as is done commonly in the literature, when examination of the cases shows that pneumococcic bacteremia far outweighs the importance of the arthritis. It seems worthy of comment that the only patients with primary pneumococcic arthritis which I found in the literature recovered.

The case which I have reported was a case of primary or cryptogenic pneumococcic arthritis and the only case of pneumococcic arthritis which I have observed. I was impressed by the clinical features which Chantemesse, Macaigne and Chipault<sup>17</sup> called attention to, the general well-being of the patient, the edema of the involved limb, the absence of regional lymph glands, the extensive venous collateral circulation and the rapid accumulation of fluid after aspiration of the joint. If these observations are confirmed by others they may be of great clinical value in suggesting the diagnosis of pneumococcic arthritis.

I had no precedent for the injection of sodium sulfadiazine into the knee joint, but this procedure may have had a salutary effect, especially in view of the fact that viable pneumococci were aspirated from the joint after five days of adequate oral sulfadiazine therapy. No claims are made for this form of therapy, for, as Herrick<sup>7</sup> has cautioned, spontaneous recoveries have been noted.

#### CONCLUSIONS

A case of cryptogenic pneumococcic (type XII) arthritis was observed. Forty-two cases of pneumococcic arthritis are added to the compilation of Plisson and Brousse,<sup>5</sup> bringing the number of cases to 227.

The incidence of arthritis as a complication of pneumococcic pneumonia is more nearly 0.3 per cent than 0.1 per cent, the figure commonly quoted.

Those cases of pneumococcic arthritis in which arthritis is the only manifestation of disease are the only ones which merit consideration as a clinical entity and they are very rare. Pneumococcic bacteremia with arthritis as only one of the complications carries a high mortality rate, but evidence is lacking to establish a grave prognosis or high mortality for pneumococcic arthritis by itself.

27 Pemberton R. Arthritis and Rheumatoid Conditions. Their Nature and Treatment. Philadelphia: Lea & Febiger, 1929, p. 306.

**Influence of Climate on Some Diseases.**—The influence of climate on some diseases is beyond dispute. Certain parasites are dependent on weather both directly and indirectly through the fortunes of their insect hosts. The distribution of the insect carriers in some instances is definitely limited by temperature and humidity, and the same factors, operating on the food supply, must affect the size and distribution of animal reservoirs of infection. Climate and its emergencies have a definite influence on crowd formation and crowd movements, and perhaps on the means by which infection travels through a crowd. The evidence is not so clear as to seasonal and climatic variations in physiological resistance to infection, but it is strongly probable that they do occur.—Smith, Geddes. Plague On Us, New York, Commonwealth Fund, 1941.

25. Raw N. Pneumococcus Arthritis with Notes of 7 Cases. Brit M J 2: 1803-1804, 1901.

26. Sever, J W. Pneumococcic Arthritis with Report of 6 Cases. Boston M & S J 173: 387-391, 1915.

# INFLUENCE OF DIFFERENT FORMS OF MECHANICAL ARTIFICIAL RESPIRATION

ON THE PULMONARY AND SYSTEMIC  
BLOOD PRESSURE

PERRY P. VOLPITTO, M.D.

ROBERT A. WOODBURY, Ph.D. M.D.

AND

BENEDICT E. ABREU, Ph.D.

AUGUSTA, GA.

Mechanical methods for initiating respirations that have ceased from any cause have been the subject of frequent study and controversy. The lesser or pulmonary circulation, though intimately associated with respiration, has not been the subject of adequate study with the chest closed. An improved technic has been developed for measuring the effective pulmonary and the effective systemic blood pressure in animals with closed chest and premedicated with 3 to 5 mg. of morphine sulfate per kilogram. The pulmonary and systemic blood pressures have been recorded while respiration was maintained with each of the following resuscitators:

- 1 Anesthetic machine
- 2 Emerson respirator (iron lung)
- 3 Kreiselman infant resuscitator
- 4 Kreiselman "bellows" resuscitator
- 5 Artificial pulmonary ventilation for operating room (Mautz model)
- 6 Lung ventilator
- 7 Emerson resuscitator, J. H. model

## METHODS

All operative procedures were accomplished with the aid of local infiltrations of 1 per cent procaine hydrochloride. The trachea was cannulated in all animals to insure a free airway and to prevent the possible danger of blowing air into the esophagus and stomach.

Changes in the pressure relationship between the abdominal and thoracic cavities were recorded, since they influence venous return to the heart.<sup>1</sup> Balloons fastened to leaden tubes were inserted into the abdominal and thoracic cavities. Subtraction of the intrathoracic pressure from the abdominal pressure was accomplished with a differential manometer<sup>2</sup> and provided measurements of the net abdominal pressure (fig. 1). Changes in this net abdominal pressure can modify venous return to the heart from the abdominal reservoirs. These changes may be the result of an increase or a decrease in intrathoracic pressure without a comparable rise or fall in intra-abdominal pressure.

The gross arterial and the gross venous pressures are those commonly measured and are the amount of pressure present over and above the atmospheric pressure.

From the Department of Anesthesiology and the Department of Pharmacology, University of Georgia School of Medicine.

Read before the joint meeting of the Section on Nervous and Mental Diseases and the Section on Anesthesiology at the Ninety-Fourth Annual Session of the American Medical Association, Chicago, June 16, 1944.

The work described in this paper was done under a contract recommended by the Committee on Medical Research between the Office of Scientific Research and Development and the University of Georgia School of Medicine.

1 Bard P. McLeod's Physiology in Modern Medicine, ed. 9, St. Louis, C. V. Mosby Company, 1941, p. 455.

2 Woodbury R. A., Hamilton W. F. and Torpin R. The Relationship Between Abdominal, Uterine and Arterial Pressures During Labor. *Am. J. Physiol.* 121: 640, 1938.

The net arterial and the net venous pressures are the pressures present over and above those which are surrounding the particular organ whose net pressure is being measured. The net arterial pressure to the lungs is the pulmonary arterial pressure minus the intrapleural pressure, i. e., it is the pressure distending the pulmonary arteries and against which the right heart pumps. The net coronary arterial pressure is the pressure within the coronary arterial system minus the pressure in the thorax. This net coronary pressure is acting to push the blood to the cardiac tissue. These gross and net pressures were measured by means of simple and differential manometers.<sup>3</sup> A method to be described in detail elsewhere<sup>4</sup> was developed for the measurement of these pressures from intact chests not operated on. Sounds adapted to the size of the animal, generally 12-16 Gm., were fastened to manometers (fig. 1). Isotonic solution of sodium chloride was allowed to drip slowly through these sounds to minimize the possibility of coagulation. With use of only gentle pressure one sound was inserted into the exposed left carotid artery and into the aorta and past the semilunar valves into the left ventricle. The other sound was inserted into the exposed external jugular down to the superior vena cava and right auricle and into the right ventricle.

Various degrees of reduced cardiac activity with severe depression or complete arrest of respiration were produced repeatedly by complete occlusion of the airway in 4 dogs and by the use of helium with the carbon dioxide absorption technic in 6 dogs. In some experiments only the immediate circulatory effects of the aforementioned methods of mechanical artificial respiration were studied in quick succession. This was accomplished by recording the pressure relationships during 3 to 10 cycles of each method of resuscitation. This was repeated several times with each animal, using the various types of resuscitators in different order of rotation. By producing several periods of severe hypoxia in each animal it was possible to compare the effect of several methods in each animal.

Cardiac arrest was produced (1) by complete occlusion of the airway in 3 dogs, (2) by the use of helium with the carbon dioxide absorption technic in 2 dogs and (3) by electrically induced ventricular fibrillation in 2 dogs. In these animals the pressure relationships were recorded while all of the methods of resuscitation being studied were used in rotation.

## RESULTS AND COMMENT

When respiratory arrest and slow weak cardiac contractions were produced by the administration of helium, using the carbon dioxide absorption technic, recovery was accomplished with any of the mechanical methods of resuscitation studied. Irrespective of the method employed, the immediate effects on the pulmonary and systemic blood pressures of these hypoxic animals were similar. The immediate effects of the intrapulmonic positive and negative pressure type of resuscitator are illustrated in figure 2B with records obtained with the Emerson resuscitator, while those of the intrapulmonic intermittent positive pressure type of

3 Hamilton W. F., Woodbury P. A. and Harper H. T. Jr. Physiologic Relationships Between Intrathoracic, Intrapulmonic and Arterial Pressure. *J. A. M. A.* 107: 803 (September 12) 1936. Woodbury, Hamilton and Torpin.

4 Woodbury R. A. and Abreu B. E. Unpublished data.

resuscitator are illustrated in figure 2 C with records obtained with the Kreiselman "bellows." The thoracic, left ventricular and right ventricular pressures were increased during the inflation of the lungs. These increases in ventricular pressures, however, were entirely passive, since the effective net ventricular pressure showed no change during the inflation phase. Restated this means that any blood flow which was produced by the resuscitators did not reach the coronary and cerebral arteries. Instead, blood was pushed toward the extremities and cutaneous areas. The absence of any change in net ventricular pressures also means that inflation did not significantly modify the blood pressure distending either ventricle and it did not change the effective net pulmonary arterial or venous pressure. Dogs with acute cardiorespiratory failure have elevated systemic venous pressure (fig 2). This may account for the fact that 10 to 12 mm of mercury positive pressure inflating the lungs did not significantly hinder venous return. This is in agreement with the observation<sup>5</sup> that increases in the intrathoracic pressure in patients with congestive heart failure did not significantly hinder venous return to the heart. It is important to emphasize, however, that intrapulmonic positive pressure above 10 to 12 mm of mercury, if maintained for prolonged periods of time, may hinder venous return to the heart. There was no evidence to substantiate the theory that resuscitators employing posi-

ventricular fibrillation (fig 3), recovery was not accomplished with any of the mechanical artificial methods of resuscitation studied. Again, irrespective of the method of resuscitation chosen, the pressure changes were not significant and were similar to those shown in figure 2. These results, however, differ from the effects of deep

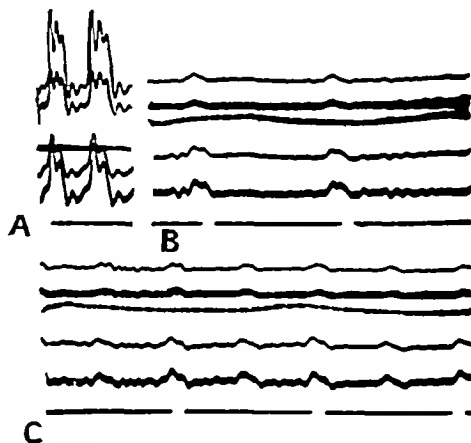


Fig 2—Pressure records from dog from above downward left ventricular net left ventricular, thoracic right ventricular and net right ventricular pressures and line interrupted at two seconds intervals. Upper left tracings were obtained when respiration was normal and before production of anoxia. Upper right tracings were obtained while respiration was maintained with Emerson resuscitator and after severe anoxia had been produced by helium and carbon dioxide absorption technique. Respiratory arrest and slow weak cardiac contractions were present. Lower tracings were obtained one minute after recording the upper right tracings and while respiration was maintained with Kreiselman bellows. During the inflation phase (arrows) with the Emerson resuscitator or with the Kreiselman bellows the thoracic pressure and the right ventricular and left ventricular pressures are increased. But the effective blood pressure and the net left and net right ventricular pressures are not increased.

spontaneous breathing and dying gasps.<sup>4</sup> Deep forceful breathing, even in the presence of complete cardiac arrest, repeatedly increased venous return to the right ventricle and to the pulmonary vessels and also moved some blood from the pulmonary vessels on into the left ventricle. These same changes are more pronounced

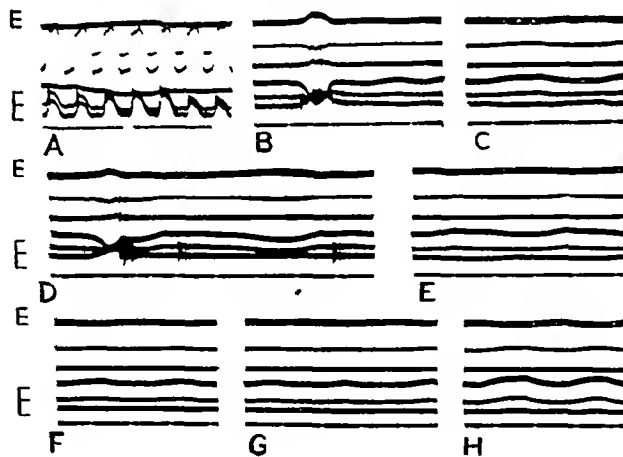


Fig 3—Pressure pulses from dog from above downward net abdominal left ventricular net left ventricular thoracic right ventricular and net right ventricular pressures. Time line is interrupted at two second intervals. Pressure scales for top tracing of the net abdominal and for bottom tracing of the net right ventricular pressure are shown in units of 25 mm of mercury. A normal control tracings. B Emerson resuscitator. C Kreiselman bellows. D Emerson respirator (iron lung) + 2 cm. of water and — 15 cm. of water. E lung ventilator. F artificial pulmonary ventilation for operating room (Maiz model). G anesthetic machine (10 mm mercury). H anesthetic machine (20 mm of mercury).

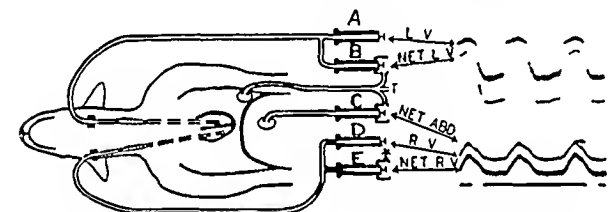


Fig 1—Diagram showing method of recording gross pressures and net pressures in unanesthetized animals with closed chests. Hollow stainless steel sounds were inserted in the left and right ventricles and balloons were placed in the thoracic and abdominal cavities. The net pressure is the actual effective pressure and is the gross pressure in the structure or organ minus the pressure acting on the outside of that structure or organ. Manometer A records the left ventricular pressure (LV). Manometer B records the net left ventricular pressure (net LV) which is the ventricular pressure minus the thoracic pressure acting on the outside of the ventricle. Increases in the thoracic pressure may increase the left ventricular pressure but it also compresses the coronary vessels. Therefore the thoracic pressure must be subtracted from the systemic arterial pressure in order to evaluate the effective net pressure to the coronaries. This was accomplished by means of the differential manometer B where the left ventricular pressure is led to the back of the manometer and the thoracic pressure is led to the front chamber of the manometer. Manometer D records the right ventricular pressure (RV). Manometer E records the net right ventricular pressure (net RV) which is the right ventricular pressure minus the thoracic pressure acting on the outside of the ventricle. Increases in the thoracic pressure may increase the right ventricular pressure but this is a mere passive rise since it also increases the pressure on the outside of the pulmonary vessels. Therefore the thoracic pressure must be subtracted from the pulmonary arterial pressure in order to evaluate the effective net pressures in the pulmonary circulation. This was accomplished by means of the differential manometer E in a manner similar to that described for manometer B. Manometer C records the net abdominal pressure (net ABD). This is the abdominal pressure minus the thoracic pressure and is the effective net pressure which facilitates or hinders blood flow from the abdominal venous reservoir (inferior vena cava and portal system) to the right side of the heart. Increases in the abdominal pressures effectively increase blood flow to the right heart only when a corresponding rise in thoracic pressure does not occur. The tube T from the balloon in the thorax is also connected to the front chamber of manometer E. See the asterisk (\*).

tive-negative intrapulmonic pressures could empty or "milk" enough blood from the capillaries of the lungs to increase the return of blood to the heart effectively.<sup>6</sup>

When cardiac as well as respiratory arrest was produced either with helium or by electrically induced

5 Hamilton W F, Woodbury R A and Harper H T Jr. Arterial Cerebrospinal and Venous Pressures in Man During Cough and Strain. *Am J Physiol* 141:42 1944.

6 Birnbaum G L and Thompson S A. Mechanism of Asphyxial Resuscitation. *Resuscitation with Inter Asphyxiating Gas in Advanced Asphyxia Surg Gynec & Obst* 75:79 1942.

during "dying gasps," where the effective net left ventricular pressure is sometimes elevated to values as high as 60 mm of mercury.

## SUMMARY AND CONCLUSIONS

Seven different forms of mechanical artificial respiration were studied for their influence on the pulmonary and systemic blood pressure. This was made possible by employing a new technic for measuring the effective pulmonary and systemic blood pressure in laboratory animals not operated on and unanesthetized.

Irrespective of the method of mechanical artificial respiration employed, recovery of the animal was accomplished when respiratory arrest and slow weak cardiac contractions were produced with helium. No significant change in pulmonary and systemic blood pressure was produced with any of the methods of resuscitation studied when cardiac and respiratory arrest occurred, either by helium or by electrically induced ventricular fibrillation.

Any blood flow which was produced by the resuscitators did not reach the coronary and cerebral arteries. Instead blood was pushed toward the extremities and cutaneous areas.

Intrapulmonic positive pressure greater than 10 to 12 mm of mercury, if maintained for a prolonged period of time, may hinder venous return to the right side of the heart.

The so-called "milking action" of the intrapulmonic positive-negative type of resuscitator did not effectively increase the return of blood to the heart.

THE RELATION OF ANESTHESIA  
TO HYPOXIA AND ANOXIA

RALPH M. WATERS, M.D.

MADISON, WIS.

At the sessions of the Section on Pathology and Physiology in 1940 the word hypoxia was used in a symposium on anoxia to designate milder degrees of deprivation of oxygen. In the present discussion the word hypoxia<sup>1</sup> will be used to mean any reduction in the tension of oxygen which produces disturbances of function only while the reduction persists. Hypoxia has completely reversible effects. Anoxia will mean a reduction of tension of such a degree that it is followed by changes of function persisting after the lowered tension is relieved. Anoxia is characterized by irreversible effects. Admittedly, an immediate decision cannot always be made as to which word, thus defined, ought to be used on a particular occasion. The use of these two terms does, nevertheless, distinguish between a condition of only temporary moment and one causing prolonged inactivity or death of some or all of the cells of the body.

Thus defined, hypoxia, in a majority of cases, is subject to the anesthetist's control. In fact nature, if given a free hand, will often restore the patient to normal. As evidence, we have only to recollect the instances when friendly scuffles, wrestling matches, choking spells and the like have resulted in more or less extreme cyanosis but following which no permanent harm has resulted. Anoxia on the other hand, is an

intolerable condition and, once it is initiated, the effects are not amenable to successful treatment. Anoxia is usually preceded by a period of increasing hypoxia. For this reason the anesthetist must be familiar with the recognition and treatment of hypoxia.

## DETERMINATION OF ADVENT OF ANOXIA

The advent of anoxia during a particular anesthetic administration to a particular patient will be determined by (1) the presence and extent of physical abnormalities or disease (2) the presence and extent of reduction in the tension of oxygen to which the tissues are subjected and (3) the duration of exposure to such reduction in tension. As long as anesthetics were administered only to relatively normal subjects for minor operations of short duration, the problem of the transport of oxygen during anesthesia could be left largely to care for itself. As the surgeon has expanded the scope of his endeavor, a greater number of patients are encountered in the highly susceptible groups whose "margin of safety" is subnormal. Many of the commoner causes of inadequate delivery of oxygen to the tissues have been considered in a previous paper<sup>2</sup> and will not be repeated here. They are obvious to careful diagnostic observation. Forewarned is forearmed. If he realizes the danger, the anesthetist can usually help the patient to overcome defects in transport of oxygen by the selection of appropriate methods and scrupulous application of proper technic. He is less fortunate when he encounters a patient with variations in the supply of blood to an essential region. The size of the arteries and the condition of their walls, the angle at which they branch from larger arteries and the number and distribution of capillaries in a given area may in a particular patient, decrease the amount of blood delivered. Such conditions and the existence of the more obscure biochemical abnormalities in a patient's tissues exaggerate the effect of commoner defects in transport. Prolongation of anesthesia and the exact adjustment of dosage necessary to facilitate delicate and protracted operations increase the possibility of technical error or accident in administration. Physical abnormality and disease predispose the patient to greater damage from these hazards.

Whether anoxic effects are reached in a given patient will then depend on the relative degree of reduction in the tension of oxygen and on the duration of such reduction. The old adage is accurately fulfilled that "what is one man's meat is another man's poison." The terrific strain to which the military aviator subjects himself with safety on some occasions is ample evidence that both the degree and the duration of hypoxia may be considerable in a healthy person without apparent harm. In contrast, one need only gain the confidence of a hostess on a civilian transport plane to learn of the greater severity of symptoms resulting from far lesser decreases in tension in many supposedly normal civilian passengers. The patient handicapped by anatomic abnormality, by illness, by injury or by depressant drugs is merely a person with still less tolerance. Such a person may safely endure a very moderate degree of hypoxia for a considerable period of time or a greater degree for a very short period. The limit is an individual matter. His safety under anesthesia will depend on intelligent supervision, early

From the Department of Anesthesia, University of Wisconsin Medical School.

Read before the joint meeting of the Section on Nervous and Mental Diseases and the Section on Anesthesiology at the Ninety-Fourth Annual Session of the American Medical Association, Chicago, June 16, 1944.

<sup>1</sup> Wiggers, C. J. Cardiac Adaptations During Anoxia. *Ann. Int. Med.* 14: 1237 (Jan.) 1941. <sup>2</sup> Waters.

<sup>2</sup> Waters, R. M. Anoxia. *The Anesthetist's Point of View*. J. A. M. A. 113: 1687 (Nov. 16) 1940.

recognition of hypoxia, identification of its cause and application—sometimes instantaneous application—of the proper remedy before anoxia occurs

#### PRACTICAL CONSIDERATIONS

Our search for new drugs has so far failed to find even one which will relieve pain without adding the hazard of hypoxia either by its primary or by its secondary effects. It is true that the manner in which danger threatens varies with different drugs. But whether we administer procaine to make the field of operation insensitve, a derivative of barbituric acid to cause unconsciousness or ether to produce profound anesthesia, the road to disaster passes through hypoxia to anoxia in a majority of cases. The tragic results of total deprivation of oxygen have been appreciated by anesthetists for a great many years. That these effects have been emphasized and elucidated in recent times by the psychiatrist and the pathologist is most fortunate. One wonders however whether an undesirable result may not be creeping into our attitude. Are we "becoming jittery on the subject"? We ought not to fear hypoxia but rather become familiar with it that we may recognize it early and treat it promptly. To the experienced anesthetist hypoxia should be a zone of warning, constituting a margin of safety which must not be exceeded if the patient is to be protected from harm.

How are we to recognize this zone of warning? Physical signs are described in the textbooks and are taught in medical schools. But practical experience is the best instructor. Many older anesthetists of whom I am one, regard the present condemnation of nitrous oxide as deplorable. By its neglect we are depriving our students of the opportunity to become familiar with hypoxia under circumstances which can be made harmless. J. Q. Colton, the lecturer on chemistry who introduced nitrous oxide to Horace Wells utilized and taught a method of administering the pure gas (without oxygen) for the painless extraction of teeth. Literally hundreds of thousands of persons have had minor operations performed painlessly and safely by this method. Those who used it wisely recognized its limitations: physical abnormalities and disease were avoided, the degree of hypoxia was moderate and the duration of administration was brief. Nitrous oxide does not relax skeletal muscles. Attempts to produce this effect have been responsible for its unpopularity. That it is effective for relieving pain in concentrations of 35 per cent and that it produces unconsciousness within ten minutes in concentrations of from 40 to 60 per cent seems to have been overlooked by many.<sup>3</sup> To the uninitiated the rapidity of interchange of oxygen and nitrous oxide between the atmosphere inhaled and the tissues of reasonably healthy individuals is unbelievable. With apparatus adequate for the rapid manipulation of these two gases the beginner may be taught the characteristics of varying degrees of hypoxia and the technic of reversing their development at will. The anesthetist who has studied hypoxia under such safe and controlled conditions is in a better position to recognize and treat it early when it is encountered under less favorable circumstances. Let no anesthetist

quote these statements to his surgeon as justification for the prolonged presence of cyanosis. On the other hand it is to be hoped that no surgeon will use them to badger a conscientious anesthetist. A brief period of hypoxia in a healthy patient whether produced inadvertently or for purposes of instruction need not be harmful. A similar period of deprivation may result in anoxia and be fatal to a patient in cardiac decompensation. It ought always to be borne in mind that cyanosis is an unreliable sign. When present, it usually indicates some degree of hypoxia. The absence of cyanosis gives no assurance that the tissues are adequately supplied with oxygen. A pink skin may accompany general hypoxia of biochemical origin or localized hypoxia caused by variations in the supply of blood to a particular region.

#### USE OF NITROUS OXIDE AND OXYGEN

The medical student and the young anesthetist must learn as much about hypoxia as possible under conditions which are safe for the patient. Such studies can be carried out safely on healthy patients while they are being anesthetized with nitrous oxide-oxygen. The control—the reversal of hypoxic conditions—is sometimes accomplished by increasing the percentage of oxygen in the atmosphere inspired. Oxygen is not however, the only remedy necessary. Early recognition of obstructed, depressed or arrested respiration will require artificial airways, pressure inflation of the lungs or prolonged artificial respiration. The proper training of an anesthetist includes teaching which will familiarize him with all the multitudinous accidents, reflexes and physiologic defects which may be encountered. That these occur but rarely does not excuse us from recognizing them. Only by early recognition of hypoxia can time be gained to restore normal conditions before the zone of warning has been passed. The prompt treatment of mild hypoxia is simple; that of prolonged or severe hypoxia may be difficult but the treatment of anoxia will bring only disappointment.

#### SUMMARY

The state of anesthesia, however produced predisposes to reduced tension of oxygen.

The word hypoxia has been used in reference to degrees of lowered tension which modify function only while the lower tension persists. The word anoxia has been used in reference to lowered tension of sufficient degree to produce persistent functional disability or death of cells.

The completely reversible nature of hypoxia constitutes a zone of warning which if recognized promptly and treated adequately will serve to protect the patient from anoxia.

The present unpopularity of nitrous oxide-oxygen anesthesia is regrettable. If used intelligently, the rapidity of interchange of these two gases can be utilized to teach the recognition and treatment of hypoxia.

Wisdom seems to dictate to the anesthetist an attitude toward his work which apprehends the imminent possibility of hypoxia at all times. Without this attitude any anesthetic drug administered by any method is dangerous. With this outlook any agent administered by any technic is relatively safe.

1300 University Avenue

<sup>3</sup> Seevers, M. H., Bennett, J. H., Pohle, H. W. and Reinardy, E. W. The Analgesia Produced by Nitrous Oxide, Ethylene and Cyclopropane in the Human Subject. *J. Pharmacol. & Exper. Therap.* 59: 91 (March) 1937.



## PEDIATRIC ASPECTS OF ASPHYXIA NEONATORUM

ALFRED D. BIGGS, M.D.  
CHICAGO

When Ehsha, the prophet of Ancient Israel, restored the life of a Shunammite woman's boy by blowing his breath into the mouth of the child, he forced oxygen and carbon dioxide into the lungs under pressure. Add to this the obvious expedient of clearing the respiratory passages of the newborn and we have the essence of the modern treatment of asphyxia neonatorum.

A great deal of scientific research and clinical thought has been devoted to this problem during the last ten years, and real progress has been made. This activity has been stimulated by the still appalling death rate among infants<sup>1</sup> during the first twenty-four hours of life and also by the growing conviction that a large portion of mental and motor impairment in later life is due to insufficient oxygenation of the brain immediately after birth.

There is still wide disagreement on every essential involved in this problem, with two exceptions. All are agreed on the advisability of clearing the respiratory passages of debris and keeping the baby warm after delivery. There is disagreement about the use of carbon dioxide, oxygen, drugs of all kinds and cutaneous and other forms of stimulation about artificial respiration in its various forms, about every instrument and machine so far devised and about mouth to mouth insufflation. I have made an extensive appraisal of the literature and will present what appears to be the preponderance of opinion concerning the essential elements of this problem. I have given consideration not only to the number of writers holding a certain notion but also to the extent of the research which backs up that notion and the care with which it was executed. This applies both to scientific and to clinical research. To quote each of these writers individually would obviously be too tedious.

### ETIOLOGY

*Anatomic Factors*—In addition to malformation of the circulatory and respiratory organs, one must think of diaphragmatic hernia,<sup>2</sup> hypoplasia of the mandible<sup>3</sup> and abnormal mobility of the tongue.<sup>4</sup>

*Obstetric Factors*—The preponderance of the opinion of the most careful observers indicates that the incidence and severity of asphyxia neonatorum is directly proportional to the amount of operative work done,<sup>5</sup> also that it is directly proportional to the amount of anesthesia used in delivery<sup>6</sup> and to the amount of narcotics given to the mother a short time before delivery.<sup>7</sup> However, some observers specifically state that both anesthetics and narcotics may be used with discretion at a minimal risk.<sup>8</sup>

*Physiopathologic Factors*—Most observers agree that prematurity<sup>9</sup> and intracranial hemorrhage<sup>10</sup> are the two most important single causes of severe asphyxia of the newborn. Other obstetric factors such as prolonged labor and compression of the cord need only to be mentioned.

The term congenital atelectasis is of little value, since it gives no clue to the reason the air sacs fail to function. Is the cause anatomic or physiologic? Obviously damage to the brain stem by hemorrhage or other causes can inhibit the respiratory function. Obviously also prematurity and other debilitating conditions which weaken the muscular power or the general physiologic state are responsible in many cases. But what about the large number of cases of cyanosis in which none of these anatomic, obstetric or specific pathologic states exist?

The great majority of writers follow Henderson's conception that carbon dioxide is the normal physiologic regulator of respiration. However, Eastman has challenged the whole idea when applied to this problem. He argues that the fetus exists normally in a state of cyanosis,<sup>11</sup> that there is an excess of carbon dioxide in asphyxia neonatorum which fails to initiate respiration,<sup>12</sup> that asphyxia neonatorum is analogous to experimental asphyxia and that in his experience oxygen is superior to carbon dioxide in initiating respiration in the asphyxiated experimental animal.<sup>13</sup> A number of writers<sup>14</sup> agree with Eastman. Henderson admits the excess of carbon dioxide in the asphyxiated newborn. He states that in long labor the respiratory center of the brain is dulled by compression and the concomitant reduction of blood supply. Even the increased carbon dioxide of the asphyxiated baby is not sufficient to start respiration.<sup>15</sup> Therefore even greater quantities should be administered therapeutically. Referring to the work of Haldane and his co-workers, Henderson asserts "From their work and those who have confirmed and extended it, it is as certain as anything in the whole range of modern science that respiration is under a chemical control by the more or less direct action of arterial blood, chiefly through its content of carbon dioxide, on the respiratory center of the brain. It has been proved oxygen is not a stimulant."<sup>16</sup> No one can deny that Henderson's point of view is accepted by the great majority of writers.<sup>17</sup> However, it does not necessarily follow that carbon dioxide should be given to an infant whose brain is already overloaded with this gas.

The after-effects of sublethal asphyxia on the central nervous system need more emphasis than they have received. The most highly specialized tissue of the body is the most susceptible to damage from anoxemia. It has been conclusively demonstrated that irreparable damage is inflicted on the nerve cell by relatively short periods of oxygen want. Wundt and Becker,<sup>18</sup> by clamping the umbilical cord or the uterine artery for short periods, demonstrated these changes in guinea pigs.

Yant<sup>19</sup> and others have demonstrated that asphyxia results in congestion, in perivascular edema and hemorrhage into nerve tissue and finally in destruction of the neuron.

### TREATMENT

The trend of opinion is very definitely away from all types of cutaneous and other peripheral stimulation. Most authors condemn<sup>20</sup> severe types of stimulation such as hot and cold baths, spanking, swinging,<sup>21</sup> dilation of the anus or artificial respiration<sup>22</sup> with such adjectives as antiquated, useless, barbaric.<sup>23</sup> However, some still recommend or at least condone<sup>24</sup> them.

It is obvious that the air passages should be cleared of debris when it is present and that the baby should be kept warm. Most writers advise removal of debris

Read before the joint meeting of the Section on Nervous and Mental Diseases and the Section on Anesthesiology at the Ninety-Fourth Annual Session of the American Medical Association, Chicago, June 16, 1944.  
Owing to lack of space the bibliography on pediatric aspects of asphyxia neonatorum to which the superior figures in the text refer is omitted in THE JOURNAL but will appear in the reprints.



by suction through a catheter, its introduction being guided by the left index finger in the pharynx.<sup>26</sup> Several apparatuses have been devised with side traps to catch the mucus.<sup>26</sup>

Flagg<sup>27</sup> who has given a great deal of attention to this problem, champions the direct laryngoscopic method of clearing the passages, followed by insufflation of the lungs with carbon dioxide and oxygen, if necessary. Many favor Flagg's method.<sup>28</sup> In general, obstetricians feel that they have sufficient experience to do the job dexterously without a laryngoscope.

This important question remains. If the infant does not breathe spontaneously, what shall be done to initiate respiration? I shall discuss separately each procedure commonly used.

**First. Drugs.** The most favored is intracardiac epinephrine.<sup>29</sup> There are reports of infants revived by this means after five, ten or twenty minutes have elapsed without any detectable signs of life, during which time all other ordinary methods had failed. Other drugs less frequently advised are posterior pituitary injection,<sup>30</sup> alpha-lobeline<sup>31</sup> and nikethamide.<sup>32</sup> These are usually given subcutaneously.

**Second. Mouth to mouth insufflation.** Opinion is rather evenly divided on the value of this procedure. Many advise it.<sup>33</sup> Some advise against it because of the contamination from the operator's breath.<sup>34</sup> Others believe the control of the pressure is not accurate enough and rupture of the alveoli may occur.<sup>35</sup> One author advises placing several layers of gauze over the operator's mouth to filter out bacteria. Another devised a special apparatus to meet this problem.<sup>36</sup> Others use a catheter in the trachea.<sup>37</sup>

**Third. Drinker type of respirator.** Here, again opinion is divided.<sup>38</sup> Each side cites clinical and autopsic evidence. In general, opinion seems to be swinging away from the use of this type of apparatus.

**Fourth. Other types of respirators.** Alternately controlled negative and positive pressure instruments are now favored by many.<sup>39</sup> This type of apparatus is similar to that used in giving a closed anesthetic, using a small mask over the baby's face. Thus the gas or mixture of gases can be forced into the non-expanded lungs by alternating negative and positive pressure. The instrument is adjusted so that the positive pressure does not exceed a specified limit, usually 14 mm of mercury. Some advise a collapsible rubber bag fitted to an infant mask. The gas to be administered is forced into the respiratory passages by manual pressure.<sup>40</sup> This bag arrangement is simple, inexpensive and easily transported but lacks the automatic control of the respirator. These are the most satisfactory types of apparatus yet devised and are regarded as harmless by most writers. However, some believe they may cause rupture of the alveoli.<sup>41</sup> They do away with the chief objection to the mouth to mouth insufflation, i.e. contamination from the operator's breath.

The principle of rhythmic expansion and collapse of the lungs is based on sound physiology. Sampson Wright<sup>42</sup> in his Textbook of Applied Physiology, quoting Head's experiments, states that if the lungs are forcefully expanded a prolonged expiratory effort is produced, and if the lungs are collapsed a strong inspiratory effort is produced. These results are not obtained after section of the vagus. Other physiologists recognize these reflex actions. Howell<sup>43</sup> regards the reflex caused by expansion as the more significant of the two. Corvillo<sup>44</sup> thoroughly tested the mechanics of

one of these respirators known as the E and J resuscitator. He states that the pressure is constant and that in an opened dog's chest rupture of the alveoli does not occur until the positive pressure exceeds 52 mm of mercury. Birnbaum and his collaborators<sup>45</sup> have reported resuscitations in advanced experimental asphyxia with a similar positive (14 mm of mercury) and negative pressure (—9 mm of mercury) machine known as the Emerson resuscitator. These animals had ceased to breathe with a rapidly falling blood pressure and would ordinarily have died. Breathing was reestablished in 85 per cent of these animals by forceful rhythmic expansion and contraction of the lungs, although he used an inert gas. He thus demonstrated the aforementioned reflexes.

Considering the problem as a whole it does not make a great deal of difference what method is used to expand the lungs rhythmically. One may use mouth to mouth insufflation or a collapsible bag and mask or a positive and negative pressure respirator to inflate the lungs rhythmically. But if the newborn infant fails to breathe it is mandatory that the lungs be inflated rhythmically by one of these means. The objection that the alveoli may be ruptured has been brought against each of these methods, but this must be put aside in such a grave situation because there appears to be little else of value in initiating respiration after the air passages have been cleared.

**Fifth. Oxygen versus carbon dioxide.** Whether one uses pure oxygen or 95 per cent oxygen with 5 per cent carbon dioxide is an academic question. A cyanotic baby's brain must be overloaded with carbon dioxide. Why give it more? On the other hand it seems that there can be little difference between the efficacy of 95 per cent and 100 per cent oxygen.

#### SUMMARY AND CONCLUSIONS

The following outline for the treatment of severe asphyxia of the newborn is dictated by the consensus of the best opinion on this important question.

1. Avoid severe cutaneous or other types of peripheral stimulation, such as hot or cold baths, spanking, swinging and dilation of the anus.

2. Avoid manual types of artificial respiration. Opinion is now also swinging away from the infant Drinker respirator.

3. Keep the baby warm from the moment of birth.

4. Clear the air passages with direct laryngoscopic methods or by suction through a catheter introduced by the sense of touch.

5. If the baby does not breathe spontaneously, oxygen or a mixture of 95 per cent oxygen and 5 per cent carbon dioxide should be rhythmically forced into the cleared passages. This may be done with a controlled alternating positive and negative pressure apparatus or by the use of a rubber bag attached to a mask or by mouth to mouth insufflation or by the operator's breath through a tracheal catheter.

6. It makes little practical difference whether one uses oxygen or a mixture of 95 per cent oxygen and 5 per cent carbon dioxide.

7. One may use drugs such as epinephrine in the heart muscle or alpha-lobeline or nikethamide, subcutaneously, if one is so inclined.

There are some authors who believe that none of these things are effectual in the initiation of respiration. However, few wish to assume such a helpless attitude.

1713 West Ninety-Fifth Street

## ABSTRACT OF DISCUSSION

ON PAPERS OF DRs VOLPITTO, WOODBURY AND ABREU,  
DR WATERS AND DR BIGGS

DR HUBERTA M LIVINGSTONE, Chicago As pointed out by Dr Biggs, vigorous methods of resuscitation in the newborn are to be condemned. Nevertheless there should be no delay in rapidly and thoroughly clearing the upper air passages and gently and rhythmically inflating the lungs by mouth to mouth insufflation or the use of oxygen or carbon dioxide-oxygen mixtures. Postnatal oxygen should be used until ventilation is adequate. Dr Waters has clearly emphasized the anesthetist's responsibility for the recognition and treatment of hypoxia or anoxia. This condition may be produced by the improper use of any of our anesthetic agents. Blood arterial oxygen studies have demonstrated that hypoxia or anoxia is not present when nitrous oxide or ethylene is used correctly. The work by Drs Volpitto, Woodbury and Abreu substantiates the finding that prolonged excessive intrapulmonic pressures interfere with cardiac function. We have demonstrated in dogs a lowering of the systemic blood pressure with 10 to 15 mm of mercury of intrabronchial pressure, and right heart failure with higher pressures. Apparatus for delivering oxygen or anesthetic mixtures should be equipped with check valves to prevent increasing intrapulmonic pressures to a dangerous level. Certain methods of anesthesia as well as resuscitation may involve this hazard. The efficiency of various methods of resuscitation is of vital importance. The rocking method recently advocated by Evc deserves further investigation. Anesthetists must appreciate the vital need for the early recognition and treatment of any manifestation of oxygen want. They must also observe the amount of blood loss and see that adequate red blood cell replacement is made to provide not only sufficient circulating blood volume but enough hemoglobin for the transportation of oxygen. Buxton and White have recently reported the unappreciated magnitude of blood loss in even the less extensive surgical procedures. Studies made at the University of Chicago Clinics substantiate these findings, and clinical and experimental evidence emphasizes the importance of adequate whole blood replacement during the period of hemorrhage in order to prevent shock and associated anoxia.

DR W H CASSELS, Chicago The distinction which Dr Waters has made between hypoxia and anoxia is a helpful concept. If we regard hypoxia as the margin of safety between adequate oxygenation and irreversible tissue damage, our attitude toward oxygen want will be much better balanced. It remains of course for each anesthetist to acquire by his own experience and by instruction good clinical judgment as to how wide that margin of safety is in each case. I agree that the anesthetist in training should be given opportunities to familiarize himself with the manifestations of hypoxia. Too many of us, in our fear of any degree of oxygen want have neglected this phase of teaching. Drs Volpitto, Woodbury and Abreu throw valuable light on the dynamics of circulation. The anesthetist becomes familiar with the dynamics of respiration because respiratory activity is easily observed. He is therefore able to deal rationally with respiratory emergencies. If we could acquire equal familiarity with the dynamics of circulation we would be better able to cope with circulatory emergencies. Drs Volpitto, Woodbury and Abreu help us to understand one aspect of this and to evaluate the efficacy of treatment. In fact they have brought out some interesting interrelationships between the dynamics of respiration and circulation. The whole question of resuscitation is too confused in the mind of the average physician. This is because instruction in this matter is too confused or is sadly lacking in many medical schools. The term resuscitation is applied indiscriminately to entirely different methods of treatment for entirely different types of emergencies. Naturally the treatment often does not fit the emergency. If we will differentiate four types of acute emergencies we can resort to appropriate treatment in each case. Respiratory emergencies may involve (1) respiratory obstruction to be treated by relief of the obstruction, (2) respiratory arrest, to be treated by artificial respiration, or (3) a combination of respiratory obstruction and respiratory arrest, to be treated by relief of obstruction followed by artificial respiration.

The fourth emergency is cardiac arrest. This inevitably involves respiratory arrest. Artificial respiration is indicated, but, as Drs Volpitto, Woodbury and Abreu show it alone is not enough. Steps must be taken to restore circulation. Various steps may be taken of which I will take time to mention but one, rhythmic squeezing of the heart. This has usually been referred to as cardiac massage, but I would suggest that it should be called artificial circulation. If artificial respiration and artificial circulation are maintained, anoxia should be prevented and normal function may be restored.

DR R P MACKAY, Chicago I am interested to hear Dr Waters say something in favor of nitrous oxide anesthesia. I rise to express again doubts that have been expressed by so many before me. He speaks of the usefulness of nitrous oxide in "properly selected cases," but unfortunately he does not give us any detailed information on exactly how to select our cases properly. Presumably we should give particular attention to the cardiovascular efficiency of these individuals. Certainly I believe that nitrous oxide is sufficiently dangerous to warrant particular attention to the heart and circulation before we dare use such an anesthetic. I am particularly concerned over the prevalence of the use of nitrous oxide anesthesia in dentists' offices and other places where minor operations are to be done and where no proper selection of cases can be made. I believe that we must continue to look on nitrous oxide as a dangerous anesthetic.

CAPTAIN W ALLEN CONROY, M C, A U S I am happy to hear the emphasis by Dr Biggs on the dynamic method of resuscitation of the newborn infant. Many of us have emphasized it for a long time. We have had difficulty in putting the idea across with our obstetric colleagues, not because they were against new ideas but because we did not show a sufficient interest in their problem and help them with it. Those who will give a few anesthetics in obstetric cases will soon have an opportunity to demonstrate their methods of resuscitation. A good many times when the obstetrician is going to be busy with the mother he would be glad to have somebody in the room who can take care of the baby. At that time you will have the chance to throw overboard some of the ineffective methods and use a simple method involving the moving of oxygen in and out of the lungs. The infant that may be resuscitated short of what Dr Waters calls anoxia still has some circulation. If we move oxygen into the lungs from our lungs or from the simple bag and mask, that infant will revive. His difficulty is not an obscure one, it is simply that he is anesthetized by non-volatile and volatile drugs and, more important anesthetized by anoxia. His respiratory center is close to death from lack of oxygen and not from lack of carbon dioxide. His carbon dioxide is probably normal and may be elevated. Regarding Dr Biggs's remarks about the state of the infant in utero, I cannot help but feel that somebody has confused the issue of asphyxia with that of cyanosis. The implication that cyanosis itself is due to carbon dioxide accumulation is false. Many have overlooked that vital distinction. In the matter of recommending what to use for resuscitation, I think we are becoming remiss in even excusing the use of carbon dioxide. We should insist on its abandonment because of the narcotic effect of that substance itself. If we excuse 5 per cent, we shall find 10 per cent, 15 per cent or some unmeasured amount being used as the result of our excusing the smaller amounts.

DR PERRY P VOLPITTO, Augusta, Ga I think it is always worth mentioning at any time when resuscitators are discussed that we should focus our attention always on the principle of avoiding catastrophes—that is avoiding circumstances in which these various types of apparatus might have to be employed. Of course when the occasion comes to use them the proper application of resuscitative equipment is necessary. It is always timely to condemn the placing of mechanical apparatus for resuscitation in the hands of lay persons and medical men not familiar with their use.

DR RALPH M WATERS, Madison Wis I suppose that I was due to have to defend my statement of good will toward nitrous oxide. In obstetric anesthesia I prefer nitrous oxide for release of pain more readily and emphatically than any other agent because of the rapidity with which changes can be made and the baby can be oxygenated in utero or at the end of

delivery I stated that when Dr Colton talked about anesthesia for dental extractions he recommended three things first, that it be used in relatively normal individuals, second that it be used for short periods and, third that it be used with mild hypoxia and never with anoxia. It is true that thousands of patients were anesthetized that way, and safely. We have been making studies in recent years along this line. Dentists have seen long anesthetics administered with other agents and they try to do with nitrous oxide what is done with the other agents. If they would look at the technic used before 1900 they would not have the difficulties we are seeing now. Finally, I want to emphasize another idea. Do not think that oxygen is a sole remedy, that if it is available it will take care of any situation. It will not. It must get into the lungs and into the blood and into the tissues. I have had several experiences that have resulted in brain damage. One was due to electric shock. Before the patient and I had recovered from the electric shock permanent damage had taken place in the patient's brain. I think we must remember that the anesthetist handling the oxygen must get it where it belongs and must recognize the danger of lack of oxygen. We must retain the term "hypoxia" as a safety ground, not say that we must use no nitrous oxide but rather that we will use nitrous oxide to learn what hypoxia is and thus protect ourselves from injury.

DR ALFRED D BICCS Chicago Just one comment about the defective child having a good memory. A mother is always on the defensive concerning a defective child. She is looking for a redeeming feature. Although the memory is poor, the child does remember certain things. This fact is her main consolation so she dwells on it.

## ROLE OF INDUSTRIAL MEDICINE IN THE REHABILITATION OF VETERANS

J F JOHNSON, M.D.

Medical Director, Eastern Aircraft Trenton Division  
General Motors Corporation Trenton New Jersey

WITH THE COOPERATION OF

H V HOFFMAN

Employment Interviewer Eastern Aircraft Trenton Division,  
General Motors Corporation Trenton New Jersey

TRENTON, N J

The significance of my remarks will be confined to what they actually are, namely, the personal observations of a physician in an industry which is aware of its responsibility to some of these veterans. Table 1 lists the group studied.

One cannot talk about generalities and with these generalities settle any one particular case. The actual disposition and training of "G I Joe" is an individual problem, requiring individual evaluation and individual disposition, it may be incorrect to apply to any 1 case the general opinions gained from studying the group of veterans which we have handled so far. This necessarily individual evaluation is no more true of "G I Joe" than it is of John Doe or Mary Doe the ordinary civilian.

I should like to classify veterans as (1) those who have or have not been former employees and (2) those who have or have not service connected disabilities. I think it is obvious that the primary responsibility of manufacturing industry is to the former employee with a service connected disability.

Tables 2 and 3 show the percentage of workers gainfully employed during peacetime by industry as a whole. Approximately 15 to 24 per cent of gainfully employed persons have worked in manufacturing indus-

try so that this class of industry will be expected to absorb at least 15 to 24 per cent of the returned veterans possibly more.

Another factor that must be considered is that under present seniority rules it is our impression that strictly on the basis of seniority approximately 15 per cent of our former temporary employees-inductees do not have again speaking seniority-wise a right to a job until some 7000 former permanent employees who have longer seniority are placed at work. This is true if our long term seniority employees do not lose their seniority in the meanwhile. I do not wish to attach any more significance to these statements other than to say that these factors must be considered by those boards or committees which are now interviewing soldiers about to be discharged. At present, industry is able to absorb practically all veterans discharged. However there is a problem coming up which some such conference as this may help to solve.

## PHYSICAL AND MENTAL CONDITIONS OF VETERANS NOW BEING SEEN

Table 4 lists the type of disability which is present. It will be noticed that the neuropsychiatric group amounts to a large fraction of the whole. It is in this group that problem cases arise. It is not surprising because frequently inability to adapt to army life leads to or brings out the psychoneurotic tendencies of these people. I do not agree with the usual description that they are "simply nervous." If we are to be guided by our experience with the members of this group they are for the most part real psychoneurotic individuals who have sublimated their mental distress into the more material complaint of pain or dysfunction of certain parts of the body. A few case histories later illustrate this point.

The other groups are rather typical of what is found in the civilian population in the realization that at present industry is accepting employees who possibly would not have been accepted during peacetimes.

We find that there is not much difference between the returned veterans as a whole and the civilian group as a whole. The fact that over 25 per cent of this group would not acknowledge their shortcomings is not unusual. It has been our experience that most applicants for a job will not reveal their shortcomings or their defects, because they think such shortcomings will lessen their chance of getting a job, which of course is occasionally true, so it is not surprising that in spite of the fact that each of these veterans has an exit interview during which he is plainly told why he is being discharged, these same individuals were not willing to give promptly the cause for their discharge.

It should be recognized that not all veterans can safely be given a job in the field in which they wish to work. For instance, some with hypertensive or valvular heart disease should not be started on a training program intended to fit them for a laboring job. It is possible that such individuals could be trained to be crib attendants, time clerks or workers at some other nonlaborious type of occupation. We have classified physical conditions into four groups and correlated these groups with job placement possibilities.<sup>1</sup>

Table 6 shows how many are restricted in placement. Again the similarity to the civilian group is brought out. The 32 per cent of restricted placement of veterans is somewhat less than the number of civilians who have been restricted in placement because of physical or

<sup>1</sup> Modified presentation at Conference on Convalescence and Rehabilitation New York Academy of Medicine April 26 1944

mental defects That they should be less than the civilian group is not surprising, because this veteran group has been examined and filtered once during the induction examination It is interesting that the monthly turnover is approximately the same as that of the civilian group The type of restrictions placed on

TABLE 1—Reason for Discharge and Service Connection

|                                     |     |       |      |
|-------------------------------------|-----|-------|------|
| Total all veterans                  |     |       | 100% |
| Certificate of disability discharge |     |       |      |
| Service connection known            |     | 7 2%  |      |
| Injury in camp                      | 36  | 6 6%  |      |
| Injury in combat                    | 3   | 0 6%  |      |
| Service connection not known        | 314 | 53 4% |      |
| Total                               | 353 | 60 6% |      |
| Over age                            | 128 | 36 8% |      |
| Dependency                          | 13  | 2 2%  |      |
| Unknown                             | 44  | 8 2%  |      |
| Grand total                         | 538 | 99 8% |      |

TABLE 2—Role of Manufacturing Industry in Employment \*

|   |            |
|---|------------|
| Total gainfully employed in United States (1943)  | 53 000 000 |
| Total employed in manufacturing industry (14 28%) | 7 800 000  |
| Estimated total of returning veterans             | 10 000 000 |
| Manufacturing industry's share (based on 14 28%)  | 1 471 428  |

\* World Almanac 1944 pages 518 and 619

these people is shown by the breakdown of a group sample in table 7 Taking two grab samples, one in our plant and one in an associated plant, we see some of the reasons why these people terminated their employment (tables 8 and 9) Table 10 gives an index of the performance of these men Note that 84 per cent of these veterans show satisfactory work performance The actual technic of retraining these people depends on a proper and thorough individual evaluation.

As a veteran comes to the employment department, either spontaneously or on stimulation by the

TABLE 3—Record of Employment Average for Five Year Period 1936 1940 \*

|   |            | Per Cent of Total |
|---|------------|-------------------|
| Agriculture (Including forestry and fishing)  | 11 000 000 | 24                |
| Manufacturing (Fabrication of goods from food processing to the assembly of automobiles and locomotives)  | 10 600 000 | 24                |
| Other   | 5 500 000  | 12                |
| Mining  | 800 000    |                   |
| Construction  | 1 900 000  |                   |
| Transportation  | 1 900 000  |                   |
| Public utilities  | 300 000    |                   |
| Trade distribution and finance (Wholesale and retail trade including restaurants and filling stations banking real estate and insurance and business and repair services)                         | 7 500 000  | 16                |
| Government (Employees of federal state and local government including 900 000 school teachers)  | 3 700 000  | 8                 |
| Armed forces  | 400 000    | 1                 |
| Service and miscellaneous (Including personal services such as domestic workers hotels laundries and beauty shops professional services such as doctors and lawyers and amusement and recreation) | 6 500 000  | 15                |

\* Derived from estimates of the National Industrial Conference Board and from government sources as published in G. V. Folks Aug 4 1944 vol 7 number 8

U S E S or some other agency, his record is immediately marked as being that of a veteran he is given a thorough interview, his discharge papers are checked and, following a thorough medical examination and functional classification, depending on his knowledge and experience, he is either placed directly at work or trained either in a formal separate training

school with pay, or, in some instances, trained directly on the job The training period varies according to the individual's dexterity and rapidity of learning As soon as he can be placed confidently in the factory, he is transferred from the training school It might be added that the training facilities used are the same as those available for civilians The only difference so far as veterans are concerned is that whenever these individuals are doing unsatisfactory work they are further and more thoroughly interviewed, and if it is felt that treatment by a physician is necessary they are so advised Occasionally some of these interviews are in effect simply good personnel work in which the individual is advised of his privileges and of his responsibility to the soldiers who are still in service In some instances it can be said that the veteran discharged without a service connected disability has a greater obligation to his buddies still fighting than industry has to him One of our veterans expressed in his own way just such an obligation

It should be kept in mind that our experience with veterans as employees has been mutually satisfactory, and only rarely do we come across a veteran who leans

TABLE 4—Types of Disability Leading to Discharge

| Disability          | No  | Per Cent | Disability          | No       | Per Cent |
|---------------------|-----|----------|---------------------|----------|----------|
| Neuropsychiatric    | 111 | 31 44    | Hernia              | 10       | 2 83     |
| Leg and foot defect | 51  | 14 44    | High blood pressure | 9        | 2 55     |
| Ear defect          | 28  | 7 95     | Arm and hand defect | 9        | 2 55     |
| Eye defect          | 19  | 5 28     | Dermatitis          | 5        | 1 50     |
| Lung defect         | 16  | 4 53     | Varicose veins      | 8        | 2 28     |
| Back defect         | 15  | 4 22     | Kidney defect       | 7        | 1 98     |
| Heart defect        | 13  | 3 68     | Endocrine           | 7        | 1 98     |
| Stomach ulcer       | 11  | 3 16     | Inaptness           | 5        | 1 41     |
| Total               | 264 | 74 81    | Total               | 64       | 18 11    |
|                     |     |          | No                  | Per Cent |          |
|                     |     |          | 264                 | 74 81    |          |
|                     |     |          | 64                  | 18 11    |          |
| Others              |     |          | 25                  | 7 05     |          |
| Grand total         |     |          | 353                 | 100 00   |          |

on his service record and demands a certain job or a certain shift or certain privileges over and above those to which he is fairly entitled

I give a few case histories of individuals who, in my opinion, are veterans only because the preinduction military service examination did not weed them out I mention these cases not because they are typical but because it is just such a case as this that might cause the more deserving veteran some inconvenience (note the need of finding the "real" cause of discharge versus the "alleged" cause)

CASE 1—W. T., a man aged 26 in excellent physical condition came to work in October 1943 discharged because of what he stated at that time was asthma He worked satisfactorily for four months and then appeared in the medical department complaining of cramping pains in the abdomen and inability to work He stated that ever since a jeep accident a year before he had had recurring attacks of abdominal pain, some of which were accompanied by vomiting These attacks were terminated abruptly by rest in bed The present attack came on slowly in the past two or three days

Now from this history alone one would expect that this man had had an internal injury due to the jeep accident, but because of the flinching responses of the patient on examination and his failure to localize his cramps in any one particular spot, because repeated examination showed that what area was tender two minutes before was no longer tender, briefly because the examination suggested a psychoneurosis, considerable time was spent digging out the details of the man's life It was found

that at 4 years of age he had swallowed lye, which gave him a stricture of the esophagus, for which he had two abdominal operations. These abdominal operations were completely successful. He had no attacks of cramps until the jeep accident. Extensive x-ray examinations had failed to show any internal injury. Since then, however, worry had brought on the attacks. His present worry is that his common law wife wants him to marry her, and that he does not wish to marry her because of what we shall call incompatibility. He states that he doesn't love her and yet he doesn't have the nerve to tell her so. I think the solution to this problem is obvious, even though court action may result, and during the solution I have no doubt that he will have more abdominal cramps. He returned to work on being reassured.

CASE 2—R E T, a man aged 23, doesn't know why he was discharged on first examination in October 1943 and denied any dizziness or fainting at that examination. Four months later he came into the medical department, complaining of dizziness and shortness of breath and palpitation of the heart when he did heavy work or when bending over or stooping. Physical examination gave entirely normal results. The following history was obtained. In 1939, 18 tobacco workers and he were in a truck that was struck by a drunken driver, killing a baby who was on the truck and 2 of the veteran's fellow workers and injuring many of his friends. The drunken driver also was killed. Our veteran was thrown, to quote him,

TABLE 5—Attitude of Veteran Toward Own Disability

|                                |     |
|--------------------------------|-----|
| Acknowledged disability        | 245 |
| Did not acknowledge disability | 108 |
| Total                          | 353 |

TABLE 6—One Comparison with Present Civilians Working

|           | Restricted Placement | Turnover per Month |
|-----------|----------------------|--------------------|
| Veterans  | 32%                  | 6%                 |
| Civilians | 43%                  | 8%                 |

"100 feet," spinning over and over (he became excited during this description), following which he spent ten days in the hospital. Ever since then, whenever he gets into any physical or mental distress, such as embarrassment or fatigue, he has shortness of breath and palpitation.

His service experience was this. On his twenty-fourth day in service he reported sick because of such an attack, and he spent three and one-half months in the service hospital, following which he was discharged. His work was satisfactory while he was working on an assembly job and while he was working as a truck driver, but because he was involved in an accident which was clearly the veteran's fault, he was taken off the truck driving job and moved to a material handling job.

His personal habits were good. He did not drink or smoke, and he attended church regularly. His hobby was billiards, and when I questioned him as to whether he had any dizziness while bending over the billiard table he asserted that he had never had any. I believe this man's attacks are a hangover from the short period of consciousness during which time he was being thrown "spinning" through the air after his automobile accident. He was told that his mind was playing tricks on him, was encouraged about his good physical condition and advised to return to work. He was given some stimulation of a patriotic nature, and he appeared to have benefited greatly from the two hour interview. He has done a satisfactory job since.

CASE 3—R G V P, a man aged 24, was seen in the medical department because he complained that heavy lifting "hurt his stomach." He was discharged from service because of "nervous stomach." After approximately forty-five minutes of talking about this and that he began to get down to business. He stated that while in service and on furlough he married a girl whom he had known for a year and a half. After two days

of married life his furlough was up and he went back to the Army. Five months later, when he came home on furlough, his wife was frigid. On return to service he was seized with pernicious vomiting and symptoms of a "nervous stomach." He received another furlough in four months, during which

TABLE 7—Medical Restrictions in Plant A

|                               | No  | Per Cent |
|-------------------------------|-----|----------|
| No restriction                | 372 | 77.02    |
| No heavy labor                | 39  | 9.35     |
| No exposure to loud noise     | 16  | 3.85     |
| No climbing                   | 12  | 2.88     |
| No exposure to dust and fumes | 11  | 2.64     |
| Color blind                   | 5   | 1.19     |
| Other (less than 5 each)      | 12  | 2.88     |
| Total                         | 417 | 99.99    |

TABLE 8—Job Terminations in Plant A

| Laid Off          | No | Per Cent |
|-------------------|----|----------|
| Unknown           | 0  | 40.00    |
| Physically unable | 5  | 22.7     |
| Intoxication      | 4  | 18.2     |
| Cut in force      | 2  | 9.1      |
| Insubordination   | 1  | 4.55     |
| Failed to report  | 1  | 4.55     |
| Total             | 22 | 100.00   |

time there was an open break with his wife. He threatened to divorce her. On return to service his vomiting increased. Two months later he had another furlough. During this time he learned that his wife was pregnant. She was abusive and profane to him and to her own parents. On return to service he was hospitalized for two months because of continued vomiting which necessitated feeding by vein.

He was discharged from service after recovery and worked in the plant for three weeks. During this time he had sought legal counsel and was advised that he divorce his wife. He was also under the care of his family doctor, but strangely enough he had never told his family doctor of the onset of his

TABLE 9—Job Terminations in Plant B

| Quit                  | No | Per Cent |
|-----------------------|----|----------|
| Didn't like the job   | 11 | 31.43    |
| Unknown               | 7  | 20.00    |
| Poor health           | 6  | 17.14    |
| Leaving the area      | 3  | 8.57     |
| Another job preferred | 3  | 8.57     |
| Back to school        | 2  | 5.71     |
| Others                | 3  | 8.57     |
| Total                 | 35 | 100.00   |

TABLE 10—Job Performance in Plant A

| Quality of Services Rendered              | No  | Per Cent |
|---|-----|----------|
| Very satisfactory                         | 52  | 31.90    |
| Satisfactory                              | 63  | 38.60    |
| Fair                                      | 48  | 29.40    |
| Total                                     | 163 | 100.00   |
| Not satisfactory                          | 23  |          |
| No appraisal                              | 8   |          |
| Total                                     | 31  |          |
| Satisfactory work performance 84 per cent |     |          |

vomiting. To humor the man and as a concession to his being a veteran, he was temporarily restricted from heavy lifting and was advised to avoid the use of intoxicating drinks. He was advised to become interested again in sports or some other hobby and advised to tell his family doctor all about his family troubles. Because he was intelligent, of good physique and good habits, I believe that he is going to make a good employee, once he gets rid of his cause of trouble, namely, his wife.



CASE 4—S G aged 33, came into the medical department complaining that he couldn't stand noise or lifting, that both noise and lifting gave him pains in his arms and around his heart. He was discharged from service because of "flat feet" according to his history.

This man was a "mother's boy" all his life. He was in service a year and a half when he was discharged because of foot trouble, but on further analysis, the following story came out. He was devoted to his mother who died three and a half years ago. He then had a nervous breakdown. Two years ago his fiancée left him because he was too irritable and too jittery, so she said. He was unable to adapt himself to army life because any drilling or exercising or any heavy work, gave him pains in the arms and pains around his heart. He had good enough insight to know that there was no reason for him to have pains and yet he insisted that he did have pains. He was thoroughly examined and studied for peripheral vascular disease with completely negative results. He was finally discharged from the Army and since working at the plant he states he has made no friends, he has no hobby, and he just works, eats and sleeps. His lack of mechanical ability discouraged him. Because he had been a supervisor in a welfare agency under the W P A he felt that he was not properly placed. He wanted to do personnel work. He was given rather a long talk in which it was pointed out to him that his W P A welfare work did not fit him for any available jobs here. He was shown that his work was satisfactory to his foreman and he was advised in general to buck up and gain more confidence in himself. This man definitely has an unstable personality which manifested itself in at least two nervous breakdowns even before his mother died. He is going to take considerable nursing, and it is not impossible that he may go downhill and develop a paranoid psychosis unless he learns to occupy his time with more than eating, sleeping and working. I will quote verbatim what this veteran said because it gives an insight into the thoughts of some of these men.

"When I got my discharge papers, I felt glad, but then I felt bad. Then the world was a hazelike before me. I was glad to get out of the Army. I felt like a free man and I didn't feel so good getting out, knowing that I didn't make a good soldier. I didn't know what the civilians would think of me or what the other soldiers would think of me, but you see we're not soldiers, we're civilians but made over into soldiers, but we are not soldiers. We ain't professionals. And then I have been a mother's baby all my life. I didn't feel that I was being a man getting out of the Army. But the Major told me 'Sid, maybe you can do a good job in the war effort. You can't do one here. Go home and do a good job for us out here.' And I knew all the time just as I was talking to the Major, some of my buddies were getting killed."

I cite these 4 cases because if these men were handled in a disinterested way I am sure they would lose their jobs, either because of their professed inability to do their jobs, or because the foreman might have so much difficulty trying to understand them that he might discharge them. Whenever we come across any such personality problem the foreman is advised of the situation and influenced to bear with the shortcomings of the individual during the readjustment period. Occasionally we run across men who are incorrigible and, in extreme cases have had to refer them to the Veterans' Administration hospital facilities or some other appropriate agency.

Another aspect of the subject of veterans in industry is the procedure which we have used in handling veterans who need medical or welfare attention. When an emergency operation is necessary, the nearest Veterans' Administration hospital facility is contacted by phone. That hospital will then take up the disposition of the veteran if the disability is a service connected one. If the disability is non-service connected, the family physician then takes over the care of the nonindigent

person or the local hospital does. If the person is indigent, the local Red Cross chapter takes charge.

In nonemergency situations for service connected disabilities the veteran is referred to the nearest Veterans' Administration hospital. At present, local physicians are being designated as consultants for outpatient examination. For those veterans who are not emergency cases who have non-service connected disabilities community facilities must be relied on such as the State Rehabilitation Commission of the Department of Labor or a local welfare agency.

I should like to request that the Veterans' Administration issue a directive instructing all factories which employ veterans as to what to do with the various types of cases. In my opinion it is not sufficient to get the information for the veteran. It has been our experience that the veteran does not know where to turn or how to do what he is supposed to do in seeking aid.

#### SUMMARY

Manufacturing industry in the past has employed only 15 to 24 per cent of all people gainfully employed and most of these employees some 80 per cent of them, worked in factories with less than a total of 500 employees. The average number of employees per factory in the United States is approximately 42 per plant.

I would suggest that the Veterans' Administration set up a local medical or personnel consultant who will act as an adviser to those few veterans who were a community problem before they got into service, were a personality problem in service, and now as a veterans need a guiding hand.

Roughly 85 per cent of veterans working in industry will adjust themselves to their job with no more training or waste motion than industry is now experiencing with its present civilian personnel. I rather feel that training facilities will be available for those veterans, as well as for civilians, and I have no doubt that, as the more seriously injured veterans come back, industry will absorb its share, possibly more in a way that will establish the veteran as a wage earner, in a manner that will instill confidence and respect for himself.

We have had so few really physically disabled individuals that at this writing we cannot evaluate the adequacy of our present training school or methods. I cannot give any experience with totally blind, armless or legless veterans. I believe we must keep in mind that industry is not primarily an occupational therapy institution and that, in order to survive, the training of the more completely disabled veteran must be on a basis that is fair to industry and inspiring to the individual.

#### CONCLUSIONS

1 Manufacturing industry, especially the small plants, needs a true record of the physical and mental status of returning veterans for proper job placement.

2 In the absence of an intrinsic medical department, some local Veterans' Administration office must function to evaluate physically and mentally the proper placement of the veteran. This agency is urgently needed now.

3 Eighty-five per cent of veterans now returning are satisfactory employees.

4 They differ very little from the civilian worker in industry today.

5 Some veterans need advice in reconstructing their own life. The need for such reconstruction frequently existed before their induction into service.



6 In one manufacturing plant, strictly on a seniority basis 15 per cent of the short term employees who have gone in service will not have a right to a job until some 7,000 other individuals have been placed. Apparently there is a need for appraising the relative value of "seniority" and "being a veteran."

7 Manufacturing industry will probably employ one out of every seven veterans returning, according to our past experience.

8 There is an apparent immediate need for informing the various industrial plants as to what to do with a veteran who has either an emergency illness or needs medical or welfare help. A circular giving the names of the local agencies and phone numbers of the persons in charge of these local agencies is suggested. Such a circular could be issued by the Veterans' Administration service. Such an agency should be in operation now.

## URINARY RETENTION FOLLOWING SURGICAL OPERATION ON THE RECTUM AND SIGMOID

TREATMENT BY TRANSURETHRAL RESECTION

JOHN L. EMMETT, M.D.

AND

DAVID S. CRISTOL, M.D.

Fellow in Urology, Mayo Foundation  
ROCHESTER, MINN.

Among the complications which may follow surgical procedures to remove the rectum or sigmoid, none is more disturbing to the patient and to the surgeon than persistent urinary retention. The most common types of operations employed on this portion of the bowel are posterior resections or combined abdominoperineal resections (either one stage or two stage procedures). These operations are usually done for cancer which involves the rectum or sigmoid. The urologic problem involved after one of these operations has been performed is difficult. It consists chiefly in relieving the urinary retention and keeping the degree of urinary infection at a minimum.

The vesical dysfunction that may follow the operations mentioned in the preceding paragraph may express itself from a moderate difficulty of micturition with varying amounts of residual urine to complete inability of the patient to void, with total urinary retention. An attempt to explain the reason for this phenomenon has elicited much discussion. The most frequently accepted explanation has suggested operative injury to parasympathetic nerves which control the urinary bladder. However, studies with cystometrograms by Collier and Eastman<sup>1</sup> have failed to substantiate this hypothesis. Other explanations suggest edema of the prostatic or membranous urethra incident to the trauma of operation or decompensation of a previously compensated bladder embarrassed by some obstruction of the vesical neck. The weakening of the bladder has usually been ascribed to injury of nerves. Engel<sup>2</sup> has emphasized the fact that many of the male patients may have suffered from minimal degrees of prostatism for some time previous to operation. He has called attention to the

fact that most of the male patients on whom this type of operation is performed are in the age of prostatism. It is also common knowledge that other events in the life of a patient suffering from prostatism, such as alcoholic or sexual excess, overeating, chilling or surgical operations the site of which is well removed from the vicinity of the bladder and the prostate gland, may serve to precipitate urinary retention.

Transient difficulties following operations well removed from the bladder or urethra are difficult to explain in the light of our present theories of the physiology of micturition. This is especially true when they occur in young patients who have no degree of obstruction of the vesical neck or the urethra. Persistent difficulty, however, that continues for weeks or months in older patients does not present a puzzling diagnostic or therapeutic problem if it is considered in its simplest elements.

The key to the solution of this distressing postoperative complication is found in the past ten years' experience with transurethral resection for urinary obstruction. Previous to the modern era of transurethral resection, large numbers of patients suffering from urinary retention (unassociated with any surgical operation) were dismissed with a diagnosis of "cord bladder" or "atypical cord bladder." The reason for this diagnosis was that no obstruction at the vesical neck could be seen on cystoscopy and no palpable enlargement of the prostate gland was apparent on digital rectal examination. As experience in the field of transurethral resection increased, it became possible to recognize minimal degrees of obstruction of the vesical neck which theretofore had been missed entirely. This has become so important that no experienced transurethral surgeon will now state that there is no obstruction at the vesical neck until resection has actually been attempted. It is common experience that, after two or three pieces of tissue have been removed from the anterior quadrant at the vesical neck, lateral lobe tissue near the apex of the prostate not previously apparent will "roll" toward the midline and appear very obstructive. Urinary retention of "obscure etiology" has therefore resolved itself not so much into a problem of determining the strength of the detrusor and of the means of improving its tone as into a simple problem of imbalance between the detrusor and the vesical neck.<sup>3</sup> No matter how weak the detrusor, if the vesical neck can be weakened sufficiently by transurethral resection the bladder should be able to empty completely. Applying these principles to patients suffering from urinary retention following operations on the rectum and sigmoid, this postoperative complication has ceased to be a problem of importance.

In our earlier experience we approached this problem rather cautiously, especially in cases in which there had been no previous history of urinary difficulty. As experience increased, however, it was realized that nearly all of these male patients, being in the age of prostatism, had some degree of obstruction of the vesical neck even though of a mild degree. We were also happily surprised to find that almost all could be relieved of their urinary retention immediately by transurethral resection. We are presenting here a study of these cases in which resection has been performed.

From the Section on Urology, Mayo Clinic.  
1. Collier, F. A. and Eastman, P. F. Urinary Retention Following the Combined Abdominoperineal Resection. *Surgery* 14: 223-228 (Aug.) 1943.  
2. Engel, W. J. Bladder Neck Obstruction Associated with Carcinoma of the Rectum. *S. Clin. North America* 19: 1195-1203 (Oct.) 1939.

3. Emmett, J. L. Urinary Retention from Imbalance of Detrusor and Vesical Neck. Treatment by Transurethral Resection. *J. Urol.* 43: 692-704 (May) 1940. Emmett, J. L., and Beare, J. B. Bladder Difficulties of Tabetic Patients with Special Reference to Treatment by Transurethral Resection. *J. A. M. A.* 117: 1930-1934 (Dec. 6) 1941. Emmett, J. L. Unrecognized Obstruction of the Vesical Neck. *Surg. Gynec. & Obst.* 75: 669-670 (Nov.) 1942.

## PRESENTATION OF STUDY OF CASES

In the group of cases presented here we have included those in which transurethral resection was done after removal of the rectum or sigmoid for carcinoma. We have excluded from this study cases in which urinary obstructive symptoms were prominent previous to the rectal operation and in which the necessity of transurethral resection was recognized but it was elected to

TABLE 1—Type of Operation Performed

| Type  | Operations |
|---|------------|
| One stage abdominoperineal resection            | 17         |
| Two stage abdominoperineal resection            | 4          |
| Modified Harrison Cripps (sacral colostomy)     | 1          |
| Exteriorization operations (Mikulicz procedure) | 4          |
| Posterior resection (Lockhart Mummery)          | 5          |
| Segmental resection                             | 2          |
| Total operations                                | 33         |

proceed with the intestinal operation prior to operation on the prostate. In looking over our records of the past ten years we have found 33 cases which would meet the requirements and they form the basis for this study. The types of major surgical procedures done on these patients are recorded in table 1. It will be noticed that most of these were either posterior resections or combined abdominoperineal resections. The site of the malignant growth varied from 2 to 12 cm above the anal margin. The age of these patients (table 2) varied from 37 to 75 years, but the majority (29) were more than 50 years of age, while all but 1 were more than 40 years of age. It may be said, therefore, that practically all of the patients are in the age of prostatism.

**Preoperative Data**—In 24 of these cases no urinary symptoms of any kind were elicited in the history prior to the intestinal operation. In 6 there were symptoms which were so minimal that the question of obstruction of the vesical neck was not given consideration. In 3 cases the symptoms were a little more pronounced than in the other cases. In only 4 of the 33 cases did the symptoms seem to justify a determination of the residual urine. In 2 cases there was no residual urine and in the remaining 2 the amounts of residual urine found were 25 and 140 cc respectively. Microscopic examination of centrifuged specimens of urine prior to the intestinal operation disclosed that in 30 cases the urine either was negative or contained less than 10 leukocytes

TABLE 2—Age Distribution of Patients

| Age Years | Patients |
|-----------|----------|
| 30 to 39  | 1        |
| 40 to 49  | 3        |
| 50 to 59  | 7        |
| 60 to 69  | 17       |
| 70 to 79  | 5        |
| Total     | 33       |

per high power field. In 3 cases moderate amounts of pus were encountered. An examination of the records of these patients to determine how many had evidence of prostatic enlargement on digital rectal examination was somewhat disappointing. The reason for this, however, is that in many cases the rectal growth is of such size and in such a position that it makes accurate palpation of the prostate gland difficult or entirely impossible. In 18 of these 33 cases there was no preoperative description of the prostate by digital rectal examination. In 6 cases the prostate gland was

reported to be normal in size and consistency, in 5 it was enlarged 1 (on a basis of 1 to 4, in which 1 designates the least and 4 the greatest enlargement) and in 3 it was enlarged 1+ while in 1 other it was described as enlarged 2.

**Postoperative Data**—After the operation on the bowel, the urinary complications in these cases were quite similar. In all cases symptoms of urinary retention developed. Most patients were unable to void at all, while others were able to void small quantities of urine, but large quantities of residual urine persisted. Intermittent or indwelling catheterization was necessary in these cases, so that in nearly all pyuria developed in spite of urinary antiseptics. The most common organism found in the urine when cultured was *Streptococcus faecalis*, which was present in pure culture in 13 cases and was associated with other organisms in 6 more.

In most of these cases conservative measures of various types were employed in an effort to stimulate the

TABLE 3.—Time Interval Between Intestinal Operation and Transurethral Resection

| Interval            | Cases |
|---------------------|-------|
| 15 to 21 days       | 3     |
| 22 to 28 days       | 12    |
| 29 to 35 days       | 2     |
| 36 to 42 days       | 3     |
| 43 days to 2 months | 3     |
| 2 to 4 months       | 3     |
| 4 to 7 months       | 2     |
| 7 to 12 months      | 2     |
| 13 to 24 months     | 3     |
| Total operations    | 33    |

TABLE 4—Weight of Prostatic Tissue Removed at Transurethral Resection

| Weight Gm | Cases |
|-----------|-------|
| 1 to 5    | 8     |
| 6 to 10   | 9     |
| 11 to 15  | 5     |
| 16 to 20  | 5     |
| 21 to 30  | 3     |
| 31 to 40  | 1     |
| 41 to 50  | 0     |
| 51 to 60  | 1     |
| 61 to 70  | 0     |
| 71 to 80  | 1     |
| Total     | 33    |

bladder. They included subcutaneous injections of the choline drugs such as methylol chloride and carbamoylcholine chloride (doryl) and neostigmine (prostigmine) and lavage of the bladder with irritating solutions such as 1 per cent solution of mercurochrome and 1/750 gentian violet. None of these procedures proved effective in these cases. The time interval that elapsed between the intestinal operation and the transurethral resection is shown in table 3. It will be seen that nearly all of these patients were given a period of more than three weeks to allow the bladder to recover. Almost a third of the group were allowed to go more than two months, but most of these cases occurred during the earlier period when we were not so well acquainted with the possibilities of transurethral resection in such cases as we are now. We have now become so confident that most of these patients can be relieved in this manner that we do not advise waiting longer than three weeks, unless the patient's general condition is not satisfactory.

The cystoscopic findings in these cases are interesting. In the majority the most prominent finding is a rather deep bas-fond with a "sagging" type of bladder which gives the appearance that the supporting struc-

tures in the region of the base of the bladder are gone. It has been our feeling that this lack of support, rather than the disturbance of the nerve supply of the bladder, is one of the greatest factors in the vesical atony. Another reason in favor of this hypothesis is that we have yet to encounter an "autonomous" type of bladder such as is seen in animals after experimental section of both pelvic nerves or in man after traumatic destruction of the sacral portion of the spinal cord or of the cauda equina. It seems improbable that in every case only the sensory fibers of the pelvic nerves should be disturbed with a resulting "atonic" bladder. The cystometric studies of Collier and Eastman<sup>1</sup> would also lend support to this reasoning.

An accurate cystoscopic evaluation of the vesical neck is extremely important, as herein lies the solution of the entire problem. In 17 of the 33 cases under discussion cystoscopy was performed prior to resection, while in 16 it was performed only at the time of resection. From the cystoscopist's description of the vesical neck one gains the impression that there was no visible evidence of obstruction in 13 cases, a minimal amount of obstruction in 16 cases and a moderate amount of obstruction in only 4 cases. In spite of the cystoscopic appearance of the vesical neck transurethral resection was performed on all of these patients. The amount of prostatic tissue removed in each case is shown in table 4. It will be noticed that in 17, or half of the cases, less than 10 Gm of tissue was removed while in only 6 cases was it necessary to remove more than 20 Gm. It is interesting to try to correlate the amount of tissue removed with the preoperative cystoscopic description of the vesical neck. In 12 cases the cystoscopic findings and amount of tissue removed seemed to be proportional. In 3 cases the amount of tissue removed was less than one would have suspected from the cystoscopic description, while in 18 cases the amount of tissue removed at resection greatly exceeded the amount suggested to be present at cystoscopy. In 31 of the 33 cases microscopic examination of the tissue removed showed it to be benign adenofibromatous hyperplastic tissue. In 1 case the bulk of the tissue was benign with one small region of adenocarcinoma. In another case the tissue proved to be secondary extension from the carcinoma of the bowel.

**Results**—The results of transurethral resection in these cases have been exceptionally good. In 30 cases they are regarded as excellent, which means that normal vesical function returned and the residual urine was completely eliminated. In 1 case the result has been fair. This patient was 51 years of age. His difficulty following the intestinal operation consisted of nocturnal enuresis and residual urine of 50 cc. His residual urine was eliminated by transurethral resection, but the nocturnal enuresis continues. It seems quite possible that there may be some impairment of the nerve supply of the bladder or urethral sphincter in this case. In 2 cases the results were poor. One patient was a man aged 69 who had an extension of the cancer to involve the seminal vesicles. He died from metastasis seven and a half months after resection. The other patient was a man aged 37. Little if any tissue could be removed (a total of 2 Gm). No patients died after operation.

#### COMMENT

It is our opinion that the problem of urinary retention in the male patient after operations on the rectum and sigmoid is not as complex as has been heretofore supposed. Reduced to its basic components it may be

stated simply. Most patients subjected to this type of operation are in the age of prostaticism. It has been recognized for years that many factors, such as chilling, alcoholic or sexual excess, overeating or surgical operations on other parts of the body, will precipitate urinary retention in such cases. Trauma to the prostate and urethra plus the removal of the supporting structures around the base of the bladder (such as occurs after posterior resection or combined abdominoperineal resection) furnishes an ideal situation for the bladder to "decompensate" and become unable to expel urine through a moderately obstructed vesical neck. Instead of attempting to increase the vesical tone (which is impossible to do by any means available at present) the rational procedure is to weaken the vesical neck and obviate the imbalance that exists between the detrusor and the vesical neck. This can be easily accomplished by transurethral prostatic resection and will completely and quickly relieve nearly all patients suffering from this annoying condition. To avoid unnecessary operations it is probably best to allow the patient a period of at least three weeks after the intestinal operation to regain his vesical function before one advises transurethral resection.

## ORNITHOSIS AS A CAUSE OF SPORADIC ATYPICAL PNEUMONIA

LIEUTENANT DAVID C. LEVINSON  
MEDICAL CORPS, ARMY OF THE UNITED STATES

LIEUTENANT JOHN GIBBS  
MEDICAL CORPS, ARMY OF THE UNITED STATES  
AND

JOSEPH T. BEARDWOOD, JR., M.D.  
PHILADELPHIA

With the increasing incidence of primary atypical pneumonia in recent years it has become desirable to establish an etiologic diagnosis whenever possible. It is only during the past decade that this disease has come to be recognized as a definite clinical entity. Numerous reports concerning this condition are to be found in the current literature, most of which have come out of military establishments. Owen<sup>1</sup> reviewed the literature concerning primary atypical pneumonia and noted that over 1,750 cases had been reported from military posts since 1935. To these he added another 738 cases occurring at Scott Field during 1942. He also was able to find over 1,100 cases originating from civilian sources. It is significant that most of the reports available are concerned with epidemic outbreaks of the disease showing seasonal variations, being most frequent in the spring and late fall.

Atypical pneumonia occurs in a sporadic form as well as in an epidemic one. In both forms attempts to isolate an etiologic agent with ordinary laboratory procedures are usually unsuccessful. During the past two years we have observed 6 sporadic cases of atypical pneumonia occurring in the Philadelphia area in which we were able to confirm the diagnosis of ornithosis by means of the complement fixation test. During this period we observed a fair number of cases of atypical

From the Medical Services of Abington Memorial Hospital, Abington, Pa., and Presbyterian Hospital, Philadelphia.  
Dr. K. F. Meyer of the University of California made it possible for the complement fixation studies to be performed.  
<sup>1</sup> Owen, C. A. Primary Atypical Pneumonia. *Arch. Int. Med.* 73: 217 (March) 1944.

pneumonia. Unfortunately, it was possible to perform the complement fixation test for ornithosis in only a limited number of cases in which the diagnosis was suspected by reason of a history of contact with pigeons or through the nature of the clinical course.

In 1941 Meyer<sup>2</sup> first reported the isolation of a virus similar to that of psittacosis from the lung of a patient who had a history of exposure to a flock of racing pigeons. Of 33 pigeons in the flock, 19, or 63 per cent, were found to have a positive complement fixation titer in their serums, and in 4 pigeons a virus which was indistinguishable from that of the patient was isolated. About this time Meyer and his co-workers<sup>3</sup> suggested that the term psittacosis be reserved for those cases of human infection occurring after contact with psittacine birds such as parrots, parakeets, lovebirds and canaries and that the term ornithosis be applied to infections following exposure to doves, pigeons, chickens and the like.

Late in the nineteenth century Ritter<sup>4</sup> in Switzerland first described psittacosis as a pneumonic infection occurring after contact with tropical birds. Since that time the disease has become increasingly recognized and sporadic outbreaks have been reported in various countries. Human infection has been traced to parrots, parakeets, finches, arctic fulmar, doves and chickens and in 1941 Meyer first incriminated the pigeon. In 1942 he reported that 10 cases of human atypical pneumonia with two deaths could be traced to exposure to different species of pigeons, these cases being distributed among several states. Favour<sup>5</sup> in 1943 reported 3 cases of ornithosis confirmed by means of the complement fixation test. A history of contact with pigeons was obtained in 1 case, a sick canary in the second and there was no history of any direct contact in the third. Smadel<sup>6</sup> in 1943 studied 45 cases of sporadic atypical pneumonia occurring among large eastern urban populations. In these cases he was able to make a definite diagnosis in 10 instances by means of the complement fixation test. Six of these gave a history of contact with or proximity to pigeons. Smadel reached the conclusion that approximately one fourth of the sporadic cases of atypical pneumonia are due to infection by the virus of psittacosis (ornithosis). Recently Meikeljohn, Beck and Eaton<sup>7</sup> reported 10 cases of ornithosis which they had collected over a four year period. In all these cases the diagnosis was confirmed by isolation of the virus and through serologic means. Four of their cases were naturally occurring with a history of pigeon contact, 3 were in nurses who had contracted the disease from infected patients, and the last 3 were laboratory infections. Four of these cases were very severe and had a fatal termination.

#### CLINICAL FEATURES OF ORNITHOSIS

**Method of Transmission**—It is believed that infections in human beings usually originate from contact with material containing the virus which has been excreted by an infected bird. The point of entry is thought to be the respiratory tract. Although in most

cases which have been heretofore reported there is usually a history of direct contact with infected birds, it is significant that infected droppings may be blown about by air currents as dust. In this manner it is possible to produce human infection without direct contact and theoretically at sites remote from the home of the infected bird. It is our belief that the latter form of infection, in which there is no history of actual contact, may be responsible for some sporadic cases of endemic atypical pneumonia which pass unrecognized. Transmission of the disease from one human being to another has been known to occur. Meikeljohn and his collaborators<sup>7</sup> observed that in 5 cases of psittacosis 3 occurred in nurses who acquired the infection from the 2 original patients.

**Incubation Period**—The time interval between exposure and the onset of the acute illness is usually given as eight to fourteen days. Unfortunately, in many of the cases it is impossible to determine the incubation period as there is often no history of contact, or, on the other hand, in the case of pigeon fanciers the patient has been in daily contact with the birds for a considerable period of time.

**Symptomatology**—In most cases the onset is abrupt, with a rapid rise in temperature to 103 to 105 F.

The findings have been described as being characteristic of the typhoidal state. The complaints are not dissimilar to those seen in any acute infection, namely malaise, anorexia, backache, headache and muscle pains. Usually there is no shaking chill, but chilliness is very common. Headache is apt to be most distressing, at first being occipital in nature and later frontal. This is apt to be one of the most prominent features of the disease. Cough in most cases is nonproductive, but a few patients will bring up copious amounts of a thick, tenacious, whitish sputum. Pleuritic pain is usually absent. Perspiration is often quite profuse. Gastrointestinal symptoms, nausea and vomiting are often present early in the disease. Epistaxis is believed to occur in about 25 per cent of the cases.

**Physical Findings**—The temperature usually runs between 102 and 105 F and fluctuates from day to day. The pulse rate varies between 80 and 100, the increase being not at all in proportion to the rise in temperature. Actually there is a relative bradycardia. Respirations are usually normal or only slightly increased in rate. In a number of cases rose spots have been described.

Physical examination of the chest may result in any one of a number of findings. There may be no physical findings present at all, the x-rays being necessary to establish a diagnosis and usually revealing a small hilar or central pneumonic consolidation. Or there may be fine crepitant rales over the involved area with slight to moderate impairment of the percussion note. Finally there may be signs of frank consolidation. Usually the extent of pneumonic involvement will tend to parallel the severity of the infection, although this is not always the case. It is characteristic also that the physical findings will tend to migrate from time to time, traveling from one lobe to another.

**Laboratory Data**—The white blood cell count is normal or slightly elevated at the onset, with a tendency to develop a leukopenia later on in the disease. No characteristic change in the differential count has been observed. The sedimentation rate is elevated and tends to rise during the course of the disease. Sputum examination and culture reveal no organisms other than

<sup>2</sup> Meyer, K. F. Pigeons and Barnyard Lows as Possible Sources of Human Psittacosis or Ornithosis. *Schweiz med Wchnschr* 71: 1377 (Nov. 1) 1941.

<sup>3</sup> Meyer, K. F., Eddie, B. and Yanamura, H. Y. Ornithosis in Pigeons and Its Relation to Human Pneumonitis. *Proc Soc Exper Biol & Med* 49: 609 (April) 1942.

<sup>4</sup> Ritter, J. Beitrag zur Frage des Pneumotyphus. *Deutsches Arch f klin Med* 25: 33 (1879-1880).

<sup>5</sup> Favour, C. B. Ornithosis. *Am J M Sc* 205: 162 (Feb.) 1943.

<sup>6</sup> Smadel, J. E. Atypical Pneumonia and Psittacosis. *J Clin Investigation* 22: 57 (Jan.) 1943.

<sup>7</sup> Meikeljohn, G., Beck, M. D. and Eaton, M. D. Atypical Pneumonia Caused by Psittacosis-like Viruses. *J Clin Investigation* 23: 167 (March) 1944.

those normally present in the pharynx. Blood cultures likewise are negative.

**X-Ray Appearance**—This varies considerably in some cases, depending on the severity and duration of the disease. Early there may be only an increase in one or both hilar shadows, the disease never progressing beyond this stage in many mild and moderately ill patients. On the other hand, the shadow may extend to become an extensive mottled patchy lesion involving one or more lobes. Finally, in many cases of severe illness there may be frank pneumonic consolidation. Serial roentgenograms will often establish the fact that the disease tends to be migratory in nature, jumping from one lobe to another or from the hilar area of the lung out into the periphery, advancing in one area while receding in another. Like the physical findings, the x-ray appearance frequently parallels the severity of the infection.

**Course of the Disease**—The duration of the febrile period varies from one to five weeks. The mild cases in which the illness does not appear acute usually last from one to two weeks. Those who are moderately and severely ill frequently have an illness lasting from two to five weeks. The temperature ranges between 101 and 105 F, varying from day to day. It is not uncommon for the temperature to return to normal for a day or two, only to relapse again. In addition to the two clinical types just described it is necessary to mention the very severe form, which is so often fatal. The febrile course in the severe type varies, ranging from one to five weeks, accompanied often by cyanosis and toxic cerebral symptoms in addition to the other features of the disease heretofore described. The mortality of this disease has been reported as high as 35 to 45 per cent. Apparently most of the cases which have been recognized have occurred in the group with severe infections in which one would expect a correspondingly high mortality. Also the severe type is usually seen in the older age group, who frequently have complicating chronic illnesses which cloud the picture.

**Diagnosis**—In addition to the history and clinical picture there are laboratory aids which are of value in confirming the diagnosis. Foremost of these is the isolation of the virus from the sputum of the patient. The sputum is most likely to yield the virus while the disease is still active. Isolation of the virus is accomplished in the following manner. At first a suspension of the infected material is inoculated intranasally into mice. After a period of four to eight days the mice are killed and their lungs examined for areas of consolidation. Finally, suspensions of the lungs of these mice are inoculated intracerebrally, intranasally and intraperitoneally into three groups of mice. Smears of the lungs and brains of mice dying in this group are examined for elementary bodies. It is also possible to isolate the virus from the livers and spleens of infected animals.

The blood is known to contain the virus until the fourth to the tenth day of illness, and it is possible to isolate the virus from it as well as from the sputum. The complement fixation test using an antigen prepared from the virus has been of inestimable value in early diagnosis of the disease. In many cases it is impossible to obtain any sputum and because of this the complement fixation test has been the means of confirming the diagnosis by most clinicians. This test is reliable, provided the patient has not been infected with the virus of lymphogranuloma venereum. Rake, Eaton and

Shaffer<sup>8</sup> have shown that the viruses of lymphogranuloma venereum and meningopneumonitis psittacosis are antigenically related and that the serums of patients with lymphogranuloma venereum will fix complement with the psittacosis antigen.

**Treatment**—Until the present time there has been no specific treatment for ornithosis or psittacosis. Chemotherapeutic agents, specifically the sulfonamides, have had no influence on the course of the disease. This is likewise true in other cases of atypical pneumonia. Recent experimental evidence by Heilman and Herrell<sup>9</sup> of the Mayo Clinic suggests that penicillin may prove to be of value in the therapy of ornithosis. These investigators inoculated 80 mice with the virus of ornithosis. They report that of 40 mice that were untreated 35 died, a mortality of 88 per cent. Of the 40 mice treated with penicillin only 2 died, a mortality of only 5 per cent. As this infection in human beings is not infrequently severe and often fatal, it is desirable that further work be done along these lines and that penicillin be given a fair trial in human infections of the virus of ornithosis. To meet this end it is desirable, and in fact necessary, that the diagnosis of ornithosis be established as soon as possible. Since the psittacosis antigen for

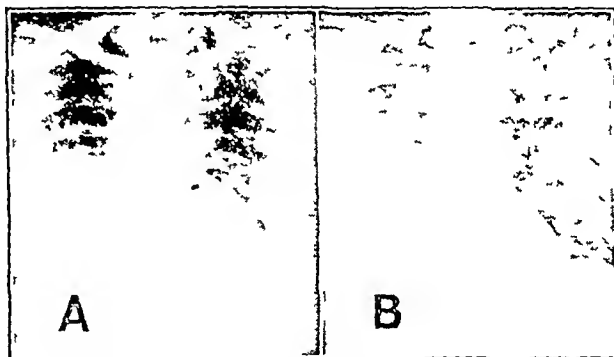


Fig 1—Case 1. A, tenth day and B, twenty-first day of illness.

complement fixation studies is not available commercially, it might be practical, in view of the cross reaction between the psittacosis virus and that of lymphogranuloma venereum, to employ the antigen prepared from the virus of lymphogranuloma venereum.

#### REPORT OF CASES

The following six sporadic cases of ornithosis were observed in the Philadelphia area during the past two years. In all 6 the diagnosis was confirmed by significant titers in the complement fixation test, which was possible only through the courtesy of Dr. K. F. Meyer of the George Williams Hooper Foundation at the University of California.

**CASE 1 (figs 1, 2 and 3)**—**History**—F. R., a white man aged 55, who was admitted to the hospital on Jan. 1, 1944 and discharged on February 10, first noticed the onset of general malaise and sore throat seventeen days prior to admission. Nine days before admission he had an abrupt onset of chills, fever, frontal headache, cough, nausea and vomiting, which persisted until entry into the hospital. Sulfadiazine had had no influence on the fever. On admission the patient perspired profusely and looked acutely ill. The temperature was 100.4 F, the pulse rate 78 and the respiratory rate 20. Examination of the chest

<sup>8</sup> Rake G., Eaton M. D., and Shaffer M. F. Similarity and Possible Relationship Among Viruses of Meningopneumonitis, Lymphogranuloma Venereum and Psittacosis. *Proc. Soc. Exper. Biol. & Med.* 48: 528 (Nov.) 1941.

<sup>9</sup> Heilman F. R. and Herrell W. E. Penicillin in the Treatment of Experimental Ornithosis. *Proc. Staff Meet., Mayo Clin.* 19: 57 (Feb. 9) 1944.



showed dulness, increased tactile fremitus and medium moist rales over the right lower lobe

**Laboratory Data**—White blood cells numbered 12,000, polymorphonuclears 82 per cent lymphocytes 18 per cent Blood and sputum cultures were negative X-ray examination revealed a pneumonic consolidation involving the posterior portion of the right lower lobe

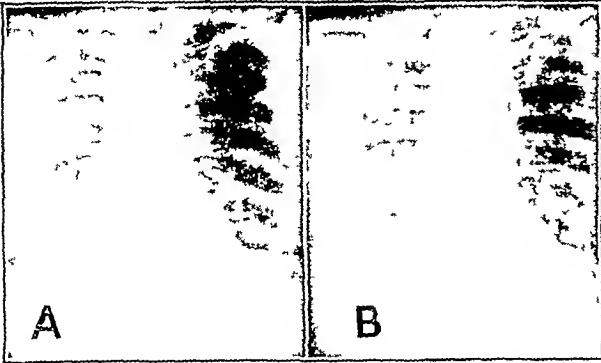


Fig 2—Case 1 A twenty sixth day and B thirty eighth day of illness (afebrile three days)

**Course**—Fever persisted twenty-four days with daily fluctuations in temperature ranging from 98.5 to 103.2 F Profuse perspiration accompanied the daily elevations in temperature By the end of the first week the pneumonic process had spread to involve the right upper lobe Cold agglutinin studies were done several days after admission and found to be negative On the twenty-fifth hospital day the temperature fell abruptly to normal

**Epidemiology**—The patient was the owner of a small pigeon flock Two weeks before the onset of his illness 1 of the pigeons had died and he had performed a layman's autopsy The cause of death of the pigeon is not known Serum obtained on the twenty-fourth day of his illness had a psittacosis complement fixation titer of 4+, 1:512

**CASE 2 (figs 4 and 5)—History**—H S, a white man aged 47, admitted to the hospital on Feb 2, 1944 and discharged on March 9, had a sudden onset of chills fever, aching pain in the chest and a nonproductive cough one week before admission, all of which had persisted The past history showed typhoid in 1913 On admission the patient did not look acutely or chronically ill The temperature was 103.4 F, pulse rate 98 respiratory rate 28 Blood pressure was 138/90 Examination of the chest was negative except for a few crepitant rales heard posteriorly over the right lower lobe There were no changes on percussion or tactile fremitus

**Laboratory Data**—White blood cells numbered 7,300, polymorphonuclears 81 per cent lymphocytes 19 per cent Blood culture was negative X-ray examination of the chest showed a small area of hilar consolidation present in the right cardiophrenic angle

**Course**—Fever persisted for fourteen days fluctuating between 101 and 104.4 F daily On the fourteenth day the temperature began to fall by lysis and was normal on the nineteenth hospital day Sulfamerazine was used with no effect Physical examination of the chest after admission was always negative On the fourth hospital day cold agglutinins were done and found to be negative

**Epidemiology**—There was no history of direct pigeon contact in this case However, there is quite a large flock of pigeons in the neighborhood surrounding his home and he states that the birds frequently rest on his window sills Serum obtained on the fourth hospital day had a psittacosis complement fixation titer of 4+, 1:128

**CASE 3—History**—M A, a white man aged 40 was admitted to the hospital on March 13, 1942 complaining of fever chills malaise, excruciating frontal headache, joint pains and cough of five days duration On admission the patient looked acutely ill The temperature was 103.6 F pulse rate 100, respiratory rate 24 Blood pressure was 110/80 Examination of the chest

showed slight dulness and diminution of breath sounds over the right lower lobe No rales were present There was also some tenderness over the right upper rectus muscle

**Laboratory Data**—White blood cells numbered 4,600, polymorphonuclears 78 per cent, lymphocytes 22 per cent Blood culture was negative X-ray examination of the chest showed fine, soft, diffuse mottling throughout both lung fields, with a slight increase in the size and density of both hilar shadows

**Course**—Fever persisted for seven days, fluctuating daily between 101 and 105 F After four days sulfathiazole was discontinued because of a drug rash On the seventh day the temperature fell abruptly to normal, where it remained Severe frontal headache was the most prominent feature of the patient's hospital stay

**Epidemiology**—This patient had played with a pair of love birds three days before admission, but at that time he had already been sick with fever for two days It was discovered that the patient's home adjoined a large park which contained many pigeons and that many of these birds nest on his home However, he had not fed or handled any birds Serum taken from the patient on April 29 had a psittacosis complement fixation titer of 4+, 1:64

**CASE 4—History**—G P, a white woman aged 25, a housewife, was admitted to the hospital on July 20, 1942 complaining of chills, fever, malaise and cough of three days' duration On admission the patient was not acutely ill but complained of a distressing cough The temperature was 103.3 F, pulse rate 104, respiratory rate 24 Blood pressure was 105/65 Physical examination of the chest was not remarkable outside of some dulness and diminished tactile fremitus over the right scapular region No rales were present

**Laboratory Data**—White blood cells numbered 6,800, polymorphonuclears 83 per cent, lymphocytes 17 per cent Blood culture was negative X-ray examination of the chest showed mottled clouding and peribronchial infiltration extending downward and laterally from the right hilus to the periphery in the right middle and lower lobes

**Course**—Fever persisted eighteen days, fluctuating daily between 100 and 103 F Sulfadiazine was given for four days

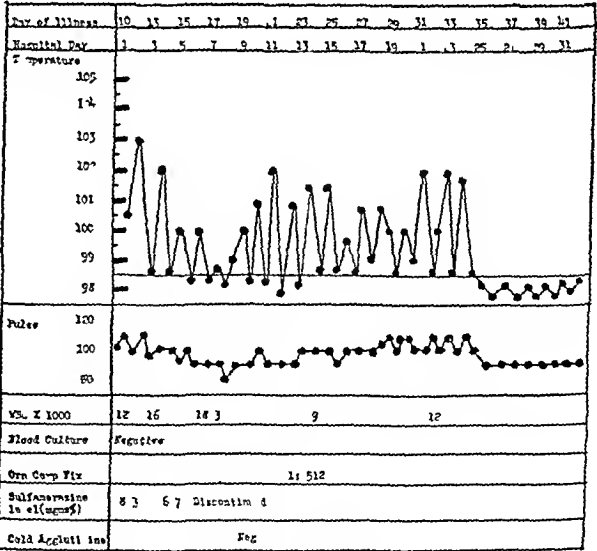


Fig 3—Course in case 1

and stopped when there was no response Several small transfusions seemed to have a beneficial effect On the fourteenth day of illness the temperature began to fall by lysis, and it was normal on the eighteenth hospital day

**Epidemiology**—This patient denied any direct contact with birds However, she stated that pigeons continually roost on her window sills, but she denied having handled or fed them Serum taken from the patient had a diagnostic titer in the psittacosis complement fixation test of 4+, 1:16



**CASE 5—History**—D A, a white woman aged 44 was admitted to the hospital on Aug 8 1942 complaining of chills, fever, headache and profuse perspiration of twelve days' duration Sulfonamide therapy had had no effect on the illness On admission the patient looked acutely ill and was complaining chiefly of severe frontal headache Examination of the chest showed only a few fine crepitant rales at the left base



Fig 4—Case 2 A eighth day of illness B eighteenth day of illness

**Laboratory Data**—White blood cells numbered 11,000, polymorphonuclears 75 per cent, lymphocytes 23 per cent, eosinophils 2 per cent Blood culture was negative X-ray examination of the chest showed accentuation and feathering of the bronchovascular markings, extending particularly into the lower lobes of both lungs, with similar but less definite changes in the upper lobe

**Course**—Fever persisted for sixteen days with daily fluctuation from 100 to 102 F On the sixteenth hospital day the temperature fell abruptly to normal There was no response to sulfathiazole

**Epidemiology**—No history of contact with pigeons or birds of any kind could be obtained The patient however, lived within several blocks of patient 3 and likewise had many pigeons about the roof and premises Serum taken from the patient had a diagnostic titer of 4+, 1:128 in the psittacosis complement fixation test

**CASE 6—History**—G P, a white man aged 68 noticed the abrupt onset of chills, fever, severe frontal headache nausea and vomiting about Nov 1, 1943 Despite this he continued working and one week later collapsed became delirious and was put to bed On examination he appeared acutely ill The temperature was 104 F, pulse rate 90, respiratory rate 24 Examination of the chest revealed slight dullness and fine crepitant rales at the right base On the seventh day the temperature began gradually to fall by lysis and reached normal by the thirteenth day of illness He was extremely toxic and acutely ill throughout the extent of his illness

**Epidemiology**—The patient keeps a flock of about 300 pigeons and is in daily contact with them The complement fixation reaction for psittacosis was 4+, 1:16

#### COMMENT

It is perhaps worthy of note that in 4 of the 6 cases observed there was no history of direct contact with pigeons or any other birds However, in all 4 cases there were pigeon flocks in the immediate vicinities of their homes This is not at all unusual, as it is known that infection may take place through the inhalation of infected droppings blown about as dust Because of the large potential reservoir of infection present in the many pigeon flocks throughout the country, it is important that the extent of ornithosis among pigeons be determined Meyer and his collaborators<sup>3</sup> made a survey of pigeon lofts in various areas throughout the country and found that a very high percentage of the flocks studied had significant titers in the psittacosis complement fixation test Meyer states that 40 to 50

per cent infection of pigeons with ornithosis is of universal occurrence Hoping to obtain further information on the extent of infection among pigeon flocks in this area, we captured 14 pigeons with the cooperation of the Philadelphia Department of Health Examination of their serums revealed diagnostic complement fixation titers in 6 pigeons, 42 per cent of the number examined However, a positive complement fixation titer does not necessarily mean active infection but may mean latent, inactive or subclinical infection Also birds with negative titers may harbor the active virus in their livers or spleens

The mortality of psittacosis has been reported as high as 40 per cent Meikeljohn Beck and Eaton<sup>7</sup> reported a fatal outcome in 4 of 10 cases They also noticed a high degree of secondary infection in that 3 nurses who attended the original 2 patients contracted the infection We have observed no such secondary infection It is likely that a mortality of 40 per cent is too high for ornithosis and that attention is focused on those cases in which the illness is very severe or prolonged and that perhaps many milder cases of shorter duration pass by unnoticed

In February 1943 Peterson, Ham and Finland<sup>10</sup> observed the presence of a reversible cold autohemagglutinin occurring in 2 patients who developed acute hemolytic anemia during the course of an atypical pneumonia Further study showed that cold agglutinins were present in significant titers in most cases of atypical pneumonia The titers obtained ranged from 1:10 to 1:10,000 A review of the literature indicated that cold agglutinins are rarely if ever present in bacterial pneumonias The suggestion was proposed that this test might be of value in confirming the diagnosis of an atypical pneumonia as distinct from a bacterial pneumonia, as at the present time the nature of the etiologic

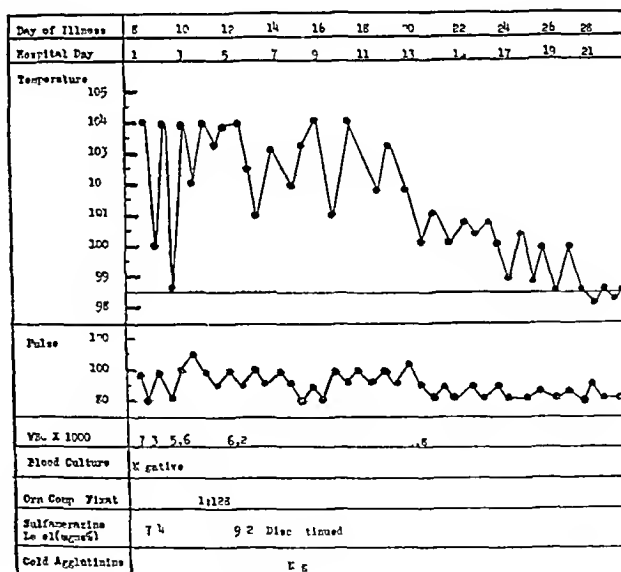


Fig 5—Course in case 2

agent of the atypical pneumonia in most cases has not been definitely established Meikeljohn<sup>11</sup> confirmed the observations of Finland and his co-workers The observation was made that the rise in titer of cold agglutinins begins on the eighth to the tenth day, reaches

<sup>10</sup> Peterson O L, Ham T H and Finland M. Cold Agglutinins in Primary Atypical Pneumonias. *Science* 97: 167 (Feb 12) 1943

<sup>11</sup> Meikeljohn G. The Cold Agglutinin Test in the Diagnosis of Primary Atypical Pneumonia. *Proc Soc Exper Biol & Med* 54: 181 (Nov.) 1943

a peak anywhere from the twelfth to the twenty-fifth day and falls off rapidly after the thirtieth day. During the past several months cold agglutinins have been investigated at the Abington Memorial Hospital.<sup>12</sup> The results in 40 cases of pneumonia, 20 being atypical and 20 bacterial (chiefly pneumococcal), are summarized in the accompanying table.

Among the bacterial pneumonias cold agglutinins were significantly absent and only 1 case had a questionable titer of 1:20. In the group of atypical pneumonias cold agglutinins were absent in 3 cases and present in significant titers in the remainder. Two of the 3 negative cases in the atypical group were cases of ornithosis which have been reported in this article. Cold agglutinins in these cases were determined on the twentieth and fifteenth days of their febrile periods when the cold agglutinins, if present, should have been at the peak of their titer. Meikeljohn<sup>11</sup> observed 2 cases of psittacosis in which cold agglutinins were performed. In 1 the titer was less than 10 and, in the other, titers of 10, 10, 20 and 10 were present on the sixth, tenth, fifteenth and thirtieth days of the disease respectively. They considered values of 20 and over as probably being significant. Whether or not these values of cold agglutinins in psittacosis will have any significance must await further studies along these lines. The value of cold agglutinins is as a means of confirming the diagnosis of an atypical pneumonia till the etiologic

*Cold Agglutinins in Atypical Pneumonia*  
(A. M. H.)

| Dilution                               | <10 | 10 | 20 | 40 | 50 | 100 | 320 | 640 | 2,560 | 2,500 |
|--|-----|----|----|----|----|-----|-----|-----|-------|-------|
| Atypical pneumonias                    | 3   | 0  | 8  | 8  | 4  | 2   | 0   | 0   | 0     | 0     |
| Bacterial pneumonias<br>(pneumococcus) | 20  | 0  | 1  | 0  | 0  | 0   | 0   | 0   | 0     | 0     |

agent can be better identified. Its use is limited as an early diagnostic aid, since a significant titer is not usually obtained until the end of the second week, at which time the patient is well on the road to recovery.

#### SUMMARY AND CONCLUSIONS

1 In 6 sporadic cases of ornithosis the diagnosis was confirmed by means of the complement fixation test.

2 A history of direct contact was obtained in 2 of the reported cases. In the others there was no history of any direct contact, but daily exposure to pigeons occurred in the immediate vicinity of the homes. It is known that infection may occur through the inhalation of the infected excreta of pigeons blown about as dust.

3 Examination of the serums of 14 pigeons captured in Philadelphia showed diagnostic complement fixation titers to ornithosis in 6 pigeons, 42 per cent of the total examined. Infection of pigeons with ornithosis averaging 40 to 50 per cent is thought to be of universal occurrence.

4 The absence of any fatalities among the 6 reported cases clouds the fact that the mortality is frequently reported as high as 40 per cent. Apparently many mild cases pass unrecognized.

5 Observations were made on the presence of cold agglutinins in atypical pneumonia. Two cases of ornithosis were examined for cold agglutinins and both found to be negative. The significance of this awaits further study.

6 Recent experimental work by Heilman and Herrell<sup>9</sup> of the Mayo Clinic suggests that penicillin may prove of value in the treatment of ornithosis.

7 In view of the high percentage of infection among the pigeon population in the United States, and since countless individuals are daily exposed to this potential reservoir of infection, it is probable that the virus of ornithosis may be responsible for many sporadic cases of primary atypical pneumonia which pass unrecognized.

## Clinical Notes, Suggestions and New Instruments

### THE USE OF THEOPHYLLINE ETHYLENEDIAMINE (AMINO-PHYLLINE) FOR THE RELIEF OF BILIARY COLIC A PRELIMINARY REPORT

ARTHUR GLADSTONE, M.D. AND LOUIS GOODMAN, M.D.  
BURLINGTON, VT.

Our purpose in this communication is to call attention to the use of theophylline ethylenediamine for the relief of biliary colic. For many years it has been known that the xanthines are capable of relaxing certain smooth muscles. Thus, theophylline has been employed for symptomatic relief of patients with angina pectoris and bronchial asthma.<sup>1</sup> The antispasmodic action of theophylline, however, is not manifested to any great extent on the gastrointestinal tract. Nevertheless it has been shown by Butsch, McGowan and Walters<sup>2</sup> that theophylline ethylenediamine is effective in overcoming spasm of the biliary tract produced in man by the injection of morphine, dihydromorphinone hydrochloride (dilaudid) or codeine. It is well known that the phenanthrene alkaloids of opium produce spasm of smooth muscles of hollow viscera. Morphine relieves pain due to such spasm only by virtue of its analgesic action on the central nervous system. Locally, the mechanism for the production of pain is augmented. Butsch and his associates<sup>2</sup> obtained kymographic tracings in man by means of a water manometer connected to a T tube inserted into the common bile duct for prolonged biliary drainage after exploratory operation. The subcutaneous injection of morphine, dihydromorphinone hydrochloride or codeine in the usual therapeutic doses quickly caused an increase in intrabiliary pressure which persisted for two hours or more and which was at times associated with typical biliary colic. Atropine and papaverine were not effective in relieving this morphine induced spasm of the biliary tract. In contrast, amyl nitrite by inhalation and glyceryl trinitrate sublingually decreased the elevated intrabiliary pressure and concomitantly relieved pain. Theophylline ethylenediamine (0.24 Gm.) given intravenously rapidly lowered intrabiliary pressure to normal, although the relaxation was temporary, owing to the continued action of morphine. It occurred to us, therefore, that theophylline ethylenediamine might be a useful therapeutic agent for the symptomatic relief of biliary colic. Indeed this suggestion has previously been recorded by one of us.<sup>1</sup>

We have thus far had occasion to observe the effects of theophylline ethylenediamine injected intravenously in 8 cases of acute biliary colic. Pain was usually promptly relieved. No untoward effects were observed. A brief presentation of representative cases follows.

Mrs. L. G., aged 35, experienced indigestion and upper abdominal discomfort during pregnancy in March 1942. Cholecystography in March 1944 revealed poor function and multiple small calculi. In May 1944 there occurred an acute attack of right upper quadrant abdominal pain, which began suddenly and became progressively worse. Theophylline ethylenediamine (0.5 Gm. in 20 cc. of aqueous solution) was injected intravenously over a period of four minutes. Relief from pain occurred before injection was completed. No untoward effects were experienced.

From the Departments of Surgery and Pharmacology, University of Vermont College of Medicine.

1 Goodman, L. and Gilman, A. *The Pharmacological Basis of Therapeutics*. New York, Macmillan Company, 1941, pp. 274-285.

2 Butsch, W. L., McGowan, J. M. and Walters, W. W. *Clinical Studies on the Influence of Certain Drugs in Relation to Biliary Pain and to the Variations in Intrabiliary Pressure*. Surg. Gynec. & Obst. 62: 451-456 (Oct.) 1936. Walters, W. McGowan, J. M., Butsch, W. L. and Knepper, P. A. *Pathological Physiology of Common Bile Duct: Its Relation to Biliary Colic*. J. A. M. A. 109: 1591-1597 (Nov. 13) 1937.

Mrs J L, aged 25, an obese mother of 4 children, had clinical evidence of gallbladder disease since her second pregnancy, four years before. In the second month of her fifth pregnancy there occurred an attack of fairly severe right subcostal pain, which was somewhat intermittent in character. The family physician had given medication orally four hours before without relief. Theophylline ethylenediamine (0.5 Gm) was injected slowly intravenously. The patient quickly experienced almost complete relief and slept fairly well during the night but still had some slight, dull aching discomfort in the upper abdomen the next morning. No untoward effects were observed.

Mrs O W, aged 51, had two previous hospital admissions for upper abdominal pain and a diagnosis of cholecystitis was made. In March 1944 she was admitted with severe abdominal pain, referred to the right shoulder and back and aggravated by breathing. The abdomen was considerably distended. She had had two injections of morphine without relief. Theophylline ethylenediamine (0.5 Gm) was injected very slowly intravenously. The patient, who was highly nervous, began to complain of "heart pounding." The blood pressure, which was 104/74 before injection, was 118/74 two minutes after injection. The pulse rate increased from 84 to 100 per minute. The cardiac rhythm was normal. Fifteen minutes after injection the patient admitted complete relief of abdominal pain.

Mrs I G, aged 35, had a cholecystectomy performed in December 1942 for acute cholecystitis. The common duct was not explored. In March 1944 she experienced very severe colicky pain in the right upper abdominal quadrant. Morphine, atropine and phenobarbital were administered by her physician over a period of twenty-four hours with little relief. On admission to the hospital her pain was severe. The icterus index was 35. She was given 0.5 Gm of theophylline ethylenediamine very slowly intravenously. During the injection a sensation of warmth accompanied by slight transitory nausea was experienced. No other untoward effects were noted. Almost immediately after completion of the injection the pain was altered in character and was entirely relieved in ten minutes. Sleep was possible for the first time in many hours. Six weeks later the patient complained of a dull, less severe pain in the same region and feared a recurrence of the severe pain. Only 0.25 Gm of theophylline ethylenediamine was given on this occasion. Complete relief again occurred in eight to ten minutes.

As a result of the experience recorded, it was thought that the use of theophylline might be helpful in obtaining specimens of gallbladder bile during duodenal intubation. The following case illustrates such a use.

Mrs H O, aged 45, with a chief complaint of chronic indigestion, was having a duodenal intubation for the purpose of obtaining specimens of gallbladder bile. None was obtained by the usual methods (instillation of magnesium sulfate solution olive oil, peptone). Theophylline ethylenediamine (0.5 Gm) was injected slowly intravenously. Immediately after completion of the injection an active flow of dark, concentrated bile was obtained. No untoward effects were experienced.

#### COMMENT

The use of theophylline ethylenediamine intravenously is not new, and physicians employing it for patients with bronchial asthma, paroxysmal nocturnal dyspnea, Cheyne-Stokes respiration and so on are well acquainted with the technique and necessary precautions for its intravenous use. The most important precaution is that the injection be made slowly in order to prevent the fall in blood pressure which may occur on rapid intravenous administration of xanthines.<sup>3</sup>

A fairly diligent search of the literature has yielded but scant reference to the clinical use of theophylline in biliary colic. Means and Delor<sup>4</sup> record having had "excellent results with 4 grains of aminophyllin intravenously or the inhalation of a pearl of amyl nitrite," but no details are given. They also mention the successful oral use of aminophylline (0.1 Gm) and theobromine with sodium sahey late (0.5 Gm) four to six times daily. Means and Delor refer to the use by Musser of theo-

phylline ethylenediamine in a series of cases without side effects but no reference is given and we have been unable to locate it.

Our experience would seem to warrant further clinical trial of theophylline as an antispasmodic for the biliary tract. The choice of drugs for this purpose is limited. Atropine and papaverine are usually not effective. The nitrites may provide some measure of relief, and occasionally the response to glyceryl trinitrate is dramatic. The synthetic atropine substitutes may at times be useful and have a more selective action than atropine. Morphine, the traditional drug employed in acute biliary colic, may fail to relieve pain and in certain cases may aggravate the pain. This also holds true for codeine and dihydromorphine hydrochloride. As stated, morphine and its congeners actually increase the degree of smooth muscle spasm and thus augment the mechanism for production of pain. If relief occurs, it is due entirely to a central analgesic action of morphine. Iso-nipecrine should prove more valuable than morphine for symptomatic therapy of pain due to smooth muscle spasm because it not only is a potent central analgesic but also has a local antispasmodic action.

Theophylline ethylenediamine has given relief to patients on whom morphine was without effect. Its action is usually prompt, and the full measure of relief to be expected occurs in two to twenty minutes. There would appear to be no reason why the intravenous injection of theophylline ethylenediamine should not be repeated in two or three hours, if biliary pain recurs. We have not had occasion to use it by mouth or by rectal suppository, nor have we tried salts of theobromine.

The results recorded here do not allow designation of the exact mechanism of action of theophylline in the relief of biliary colic, but it would seem likely that the antispasmodic action is operative. This is probably exerted directly on the musculature of the biliary tract and perhaps also on the gallbladder, rather than on the duodenum. The effect of xanthines on the tone and motility of the human intestine is not impressive. However, it is possible that theophylline may also cause relaxation of the sphincter of Oddi, as suggested by the case cited in which the obtaining of bile specimens transduodenally was facilitated.

#### SUMMARY

Our purpose in this report is to call attention to a useful but neglected application of the selective antispasmodic action of theophylline. The intravenous injection of 0.25 to 0.5 Gm of theophylline ethylenediamine has given satisfactory and often complete relief of pain in acute biliary colic. The drug may succeed when other measures fail. Untoward responses were not encountered in the small series of cases reported here. Theophylline may also prove useful in obtaining specimens of bile by means of duodenal intubation when other agents are without effect.

## Council on Pharmacy and Chemistry

The Council has authorized publication of the following statement  
AUSTIN SMITH, M.D., Secretary

### BENZESTROL, A NONPROPRIETARY DESIGNATION

The Council has accepted for inclusion in New and Non-official Remedies a synthetic estrogenic substance known chemically as 2,4-di(p-hydroxyphenyl)-3-ethyl hexane. The Council has recognized the right of Schieffelin & Company to a proprietary name, and their product has been accepted under the designation Octofollin (THE JOURNAL, March 3, 1944, p 647). The firm has since informed the Council that it will not use the name Octofollin but will market its product under the non-proprietary name Benzestrol.

Other firms will be licensed to supply the drug, and, to forestall confusion in the future, the Council has given consideration to a nonproprietary name for the drug and voted to recognize Benzestrol as the nonproprietary term for 2,4-di(p-hydroxyphenyl)-3-ethyl hexane.

5 Hurdobro T, Montero E and Cuevas F. The Effect of Certain Drugs on the Motility of Jejunoleum in Normal Man. Surg Gynec & Obst 78: 471-476 (May) 1944.

3 Hirschfeld S, Hyman H T and Wanger J J. Influence of Velocity on the Response to Intravenous Injections. Arch Int Med 44: 259-287 (Feb) 1931. Goodman and Gilman.<sup>1</sup>

4 Means J W and Delor C J. Surgery of the Biliary Passages with Special Reference to the Hazards and Their Management. J M A Albuca S 17 (July) 1938.

# THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

---

535 NORTH DEARBORN STREET - CHICAGO 10, ILL

---

Cable Address

'Medic Chicago

Subscription price

Eight dollars per annum in advance

---

*Please send in promptly notice of change of address giving both old and new always state whether the change is temporary or permanent Such notice should mention all journals received from this office Important information regarding contributions will be found on second advertising page following reading matter*

---

SATURDAY, DECEMBER 23 1944

---

## HEALTH EDUCATION IN BOSTON SCHOOLS

From Boston, renowned as a center of culture, comes the disturbing news that health education in the Boston schools is at a low ebb and health practices in these same schools leave much to be desired These are the claims made by the Strayer School Survey<sup>1</sup>

Among the criticisms the following are significant: "There is no excuse for teaching in the third grade the same health material presented in the first grade" Health teaching in the Boston schools is characterized as "halting, limited, superficial and indifferent" and the Strayer surveyors find it "difficult to understand the policy that started health instruction in the schools and have made no provision for textbooks for the pupils" Many of the health lessons are characterized as writing exercises rather than health lessons "The teacher dictates from a book and the children write what is dictated With this sort of thing going on it is not strange that public education is sharply criticized in its methods"

Health examinations are made in about one minute's time per pupil The Strayer report suggests eliminating the requirement that all pupils be examined every year and that more thorough examinations at longer intervals be substituted with special attention given to all new pupils, those competing in sports and those referred for special attention by teachers or nurses Special attention should be given to pupils returning to school after illness

Not only is health instruction and health examination practice unsatisfactory, but first aid and health rooms in some schools are found inadequate The school plant and its operation also are criticized

The school plant should be the place that exemplifies all the best that we know in the field of health This is not the case in Boston Children in the Boston schools may study the value

of fresh air and the importance of good ventilation But in one school there were double windows still on in May In another the windows cannot be opened because of broken window cords or chains

In still another there are so many plants on the window sills that the windows are not opened for fear of chilling the plants or injuring them Many of the school assembly halls are poorly ventilated One of them is grossly overheated regularly The children have their eyes tested for vision and are sent to the oculist, but in some of the old buildings the light is very faulty and artificial lighting is very inadequate

In certain schools children are not allowed to go to the toilet or even get a drink without the teacher's permission In some bubble fountains the water is so hot and bad tasting that children go without it Washing of hands is discouraged because of lack of facilities Not one container for soiled paper towels was found In some schools toilet rooms were dirty and uncared for Children study nutrition, but the lunchrooms offer menus that are largely carbohydrates

Recalling that Boston was a pioneer in health education, physical education and recreation, the Survey reports "these three areas, once so bravely pioneered, have not been maintained at the high level that might be expected"

The story about Boston and its schools is significant because in place of Boston one might put the names of a large number of American cities This condition, which in Boston is at least being studied as a first step toward providing remedies, exists in too many cities, large and small where it is not even recognized There are of course American communities, both large and small, in which school health work is done on a high level, where school health authorities are constantly on the alert and where health departments and the schools cooperate effectively for the health of school children School health conditions in the three principal fields, namely health instruction, health examination and guidance and healthful living practice, range from the very best to the very worst according to locality However, on a nationwide basis school health service is probably the spottiest and least effective branch of standard recognized public health procedure

The medical profession and the educational profession are alert to the situation For thirty-three years a joint committee of the National Education Association and the American Medical Association has been active in the field of health problems in education Its report "Health Education"<sup>2</sup> is a standard textbook in this field today, as it was a pioneer in its first edition in 1925 The American Association of School Administrators in

<sup>1</sup> Strayer School Survey by Louis M Lyons Boston Daily Globe Nov. 13 1944

<sup>2</sup> Health Education Joint Committee on Health Problems in Education of the National Education Association and the American Medical Association ed 3 1941

its 1942 Yearbook<sup>3</sup> recognized the importance of health in the schools and addressed the book directly to school administrators, recognizing in them the key to improvement in health conditions in the schools. Four of the scientific sections of the American Medical Association, cooperating with the Joint Committee and with four sections of the American Public Health Association and with the Association for Health Physical Education and Recreation, have issued a brief statement on suggested school health policies<sup>4</sup> which has been widely used by school administrators and in teachers' colleges. There is substantial agreement between the two great professions, medical and educational, concerned with health problems in education. Principles have been recognized and standard practices are well defined. Local communities need to apply these principles. Such studies as the Strayer Survey in Boston and the publicity given to them are constructive stimuli to improvement in the school health field. If the nation is going to have the physical fitness which military authorities, physicians and educators now demand, the basis for such fitness must be the good health of our young people. These young people are now being delivered to our schools in a better state of health than ever before. The schools must face the responsibility of delivering them back to the community at the end of their educational experience in a state of health better, if possible, than at the beginning but certainly no worse. Hundreds of American cities could profitably follow Boston's example, bringing to light and publicizing their own weaknesses and then taking steps to correct them.

#### DEMOBILIZATION AND DOCTORS

The ever tightening encirclement of Germany and the increased flow of men and supplies to the Allied Armies indicate ultimate victory in Europe in the not too distant future. Germany has not, however, been defeated, and military leaders assert that bitter fighting is still ahead. However, assurance has been given that victory will be ours in the European war. Without minimizing the efforts that must be given by all to attain an early defeat of Germany, the problems of winning the war against the Japanese must be considered also.

Armies and navies are organized and equipped to achieve specific objectives. They are no longer rigidly constituted bodies conforming to traditional tables of organization, instead, they are built now to accomplish definite aims. Successful operations against the Japanese will no doubt require a striking force different

from that used against the Germans. After the occupation of Germany a reorganization of the Army may be anticipated to make it the most effective striking power against the Japanese. The Navy has already transferred most of its amphibious forces from the Atlantic to the Pacific. Experience in the Pacific shows that jungle warfare requires tough, young, aggressive soldiers. The same qualifications are needed for medical officers, who must follow troops closely to render the most effective medical service. Discussions in the halls of Congress intimate that there will be a reduction in the size of the Army after the defeat of Germany but that the Navy will continue to expand until it reaches its full authorized strength.

The War Department has recently published a series of directives, called "Readjustment Regulations," outlining the mechanism by which men will be released from service. Soldiers will be released on a point system whereby credits are given for length of service overseas service, active participation in campaigns and battles, decorations and awards and dependents. Administrative details and techniques of operations are being perfected.

Medical officers occupy a unique position in the plans for partial demobilization of the Army after it conquers Germany. There are special considerations that must be given to a profession that has more than one third of its active members in the armed forces. A partial redistribution of physicians between the civilian population and the armed forces must be effected to equalize the tasks of physicians of a nation at war.

Definite plans for the reallocation of physicians between the services and civilian communities in Great Britain have been announced by a special committee known as the Demobilization Committee of the Central Medical War Committee. At the request of the Ministry of Health the Demobilization Committee made a special study of the situation and suggested the selection of two groups of men for return to civilian life. Class A, the larger group, will be chosen according to age and length of service.

Within class A there will be special priority for men of 50 years of age and over, who will be released before other men if they so wish. Otherwise, men in class A will be released by release groups determined by a combination of age and length of war service on the basis that two months of service are equivalent to one additional year of age. For example, a man of 22 with four years' service will be in the same release group as a man of 40 with one year's service.

The release of men in class A will begin as soon as practicable after the defeat of Germany, but there will necessarily be a pause to enable the services to identify the men who are to be released first and to arrange for the return to this country of those who are overseas. The number of releases in class A will depend on the reduction that is found to be possible in the strength of the forces and also on the number of new recruits called up.

<sup>3</sup> Health in Schools Yearbook, American Association of School Administrators.

<sup>4</sup> Suggested School Health Policies, American Medical Association. Single copies free when requested on official letterhead.

To assist in resettlement, men in class A will receive on release eight weeks leave with full pay and certain allowances, and additional leave and pay will be given in respect of foreign service. When the period of leave has expired these men will be placed in a special class of Reserve, from which they would be recalled only in an extreme emergency.

A smaller group, class B, will be used to supplement the labor force needed for construction after the war. Men will be transferred into class B on the basis of special occupational qualifications, age and length of service. Since such men will leave the service earlier than their turn, they will not be entitled to the same benefits as those in class A but will be held in the Reserve and be liable for further military duty. All transfers of medical officers from the services to class B will clear through the Central Medical War Committee. The release of men from class A will aid effectively in the hard pressed civilian medical services. In England there is a national service act that facilitates the solution of problems concerned in medical care.

The time is not too soon for serious thought on the many faceted problems of demobilization of doctors from the armed forces. Some of these problems are now being considered by the Committee on Postwar Medical Services.

#### STANDARDS OF PHYSICAL FITNESS

What is physical fitness? Is it the ability to resist fatigue? Is it longevity or is it muscular strength? Or is it a combination of these and perhaps other ingredients? Many discussions of physical fitness neglect to define accurately the standards and aims of physical fitness programs. Physical fitness is neither a fixed standard nor an average but rather an objective. A man of 20 to be physically fit should be able, perhaps, to carry a 40 pound pack 20 miles in eight hours, at the age of 14 or at 50 the same man probably would not be able to perform this task, and yet he could be considered physically fit. A farmer of 45 should have a different standard of physical effectiveness than a politician of the same age. The standards of physical fitness are different for men and for women. As a group, women have less muscular strength and endurance than men. They stand pain better and live longer on the average. Thus age, occupation and sex are important elements which must be considered in setting any kind of ideal standard. Other aspects of a standard offer fewer difficulties. Certainly a person with a hernia, carious teeth or poor vision, for example, cannot be considered physically fit, regardless of age, occupation or sex. The elimination of preventable or remediable defects is a step toward physical fitness.

Certain criteria of physical fitness may be eliminated in relation to particular occupations. The ability to run a mile, lift a heavy weight or perform similar feats of muscular strength or endurance may be useful only

for those who are required to do these things because of military or occupational necessity. At certain ages, of course, physical normality should include the potentiality of being trained into a degree of "physical fitness" and performing thereafter certain activities which had been impossible in the pretraining period.

The development of methods for the objective determination of standards of physical fitness at various ages for different types of occupation and for the two sexes is badly needed. To date the simplest tests of fitness are cardiovascular and respiratory, a third type of test evaluates the ability to resist fatigue in response to sensory stimuli. These measurements are still deficient in certain respects, however, and much further work remains to be done. Until there is more agreement on acceptable testing methods it will be difficult to adopt standards of physical fitness.

There is a recognizable difference between the ideal and a practical physical fitness program. Not all young men can develop equal degrees of muscular strength or endurance. Some who cannot attain perfection measured by those criteria may demonstrate by their greater longevity a higher degree of fitness, at least in that respect, than those who more closely approach the ideally developed physical specimens. Discrimination in these matters is essential, all physical "standards" should include recognition of the fact that deviations from them do not necessarily condemn the substandard person to a life of inactivity, to poor health or to early death.

The psychologic aspects of the physical fitness programs must not be neglected. Some people who do not measure up to any standards likely to be adopted may consider themselves physical wrecks, this may have serious psychologic repercussions. To counteract this possible hazard it is merely necessary to point out that human history contains the records of many persons who have achieved distinction, fame and fortune in the face of physical defects which would disqualify them on the basis of any conceivably acceptable standards. Indeed, the contemporary scene likewise presents many figures who have been notably successful in the face of severe physical defects.

To increase the general average of physical fitness is the purpose of the current campaign. The elimination of inherited defects is not commonly included in the physical fitness program, but its part in the problem should be recognized. Influencing the environment is the major avenue of approach. The environment may affect the physical condition by means of diet, disease, working conditions, presence of remediable defects and recreation, including physical exercise. The latter alone will alter the physical condition to a limited extent only. Such factors as those mentioned must be attacked if the highly desirable objective of improving the general physical condition of the American people is to be achieved with maximum success.



## GLUTAMINE

Glutamine in the blood, as previously pointed out in these columns,<sup>1</sup> is the source of the ammonia in the urine. The functional importance of ammonia as the endogenous base makes this fact especially significant in metabolism. Glutamine, an acid amide, is a constituent of the protein molecule. It may occur free in certain tissues, as indicated by its discovery in horse meat extract in a study<sup>2</sup> which, furthermore, proved its indispensability for the growth of the hemolytic streptococcus.

Glutamine is also present in body fluids. In 1942 Hamilton<sup>3</sup> pointed out that in picric acid filtrates of human and canine plasma there is present an organic compound containing nitrogen which behaves strikingly like glutamine when heated at an acid reaction. Shortly thereafter another report<sup>4</sup> called attention to a glutamine-like substance in the protein free filtrate of plasma and serum of man and rabbit in a concentration of 5 to 10 mg per hundred cubic centimeters. These observations are given added weight by the perfection of an analytic method depending on the highly specific enzyme glutaminase prepared from dog kidney. Using this procedure, Archibald<sup>5</sup> has found 6 to 10 mg of glutamine per hundred cubic centimeters in normal human plasma and has shown that the white and yolk of the egg contain this compound, the concentration in the latter decreasing during incubation. There seems little doubt, in the light of the foregoing observations, that glutamine is a normal constituent of the blood.

Glutamine has been recognized as a usual component of the cells of many plants for more than half a century. It can be prepared readily from the common beet,<sup>6</sup> and the concentration in plants has been shown to respond readily to nitrogenous fertilizers.<sup>7</sup> In plants glutamine is believed<sup>8</sup> to represent an intermediate stage in the transfer of nitrogen from the storage protein of the seed to the tissue protein of the growing parts, and its concentration is influenced by the respiratory activity of the plant.

Already the observation<sup>9</sup> has been made that carbohydrate metabolism is related to the presence of glutamine, administration either of insulin or of glucose decreases the amount of glutamine in the blood. More

data are needed before a complete picture of the metabolic function of glutamine can be suggested, there seems little doubt, however, that some current uncertainties with respect to intermediary metabolism will be removed when this is done.

## Current Comment

## VISCERAL REACTIONS TO ANOXIA

The occurrence of myocardial necrosis and calcification in dogs subjected to tourniquet shock<sup>1</sup> or histamine shock<sup>2</sup> attracts attention once more to the visceral reactions following anoxic episodes of varying duration affecting the heart, aorta, brain, testes and bone marrow. Similar degeneration, necrosis and fibrosis of the myocardium have been observed in man and in animals after poisoning with epinephrine, nicotine, digitalis glycosides, parathyroid injection, vitamin D, nitrites, carbon monoxide, carbon disulfide and reduced oxygen pressure and also after excessive physical labor. The lytic necrosis with cyst formation in the media of the ascending aorta of man after burn shock, of dogs after histamine shock and of rabbits following the injection of epinephrine are evidently also of anoxic genesis. Focal softening and gliosis of the brain often located in the basal ganglia and giving rise to parkinsonism have been observed in man and animals after poisoning with carbon monoxide, carbon disulfide, cyanide, nitrites, manganese, mercury, lead, digitalis glycosides and pitressin and after exposure to reduced oxygen pressure. The spermatogenic epithelium of the testis appears to be similarly sensitive to anoxia. Degeneration of this tissue was seen after prolonged exposure to reduced oxygen pressure (chronic mountain sickness) and after poisoning by carbon monoxide and disulfide, nitrites, mercury, manganese, nicotine and lead. After a transitory period of increased libido there follows in general loss of libido and sterility, which is reversible in the early stages but may ultimately become permanent. These regressive visceral reactions to anoxia contrast with the hyperplastic response of the marrow to this condition resulting in erythrocytosis. Anoxic erythrocytosis develops under the influence of reduced oxygen pressure (mountain sickness), after chronic exposures to carbon monoxide, nitrite and cyanide, and after manganese, epinephrine, amphetamine, ephedrine, posterior pituitary injection and lead, and also on insufficient oxygenation of the blood due to a reduced pulmonary circulation from various causes. Anoxic erythrocytosis, however, occurs only when the impairment of the oxygen metabolism is mild. Severe degrees of anoxia produce atrophic changes in the marrow resulting in anemia. From these data apparently those organs mainly are affected in anoxia which are most sensitive to deficient supply of oxygen.

1 The Source of Urinary Ammonia editorial J A M A 124 577 (Feb 26) 1944

2 Mellin H, Fildes T, Gladstone G P and Knight B C J G Biochem J 33 223 1939

3 Hamilton P J Biol Chem 145 711 1942

4 Harris M M Science 97 382 1943 Harris M M Roth R T and Harris R S J Clin Investigation 22 569 1943

5 Archibald R M J Biol Chem 154 643 1944

6 Vickery H B, Pucher G W and Clark H E J Biol Chem 109 39 1935

7 Vickery H B, Pucher G W and Clark H E Plant Physiol 11 413 1936

8 Chibnall A C Protein Metabolism in the Plant New Haven 1939

9 Harris M M, Roth R T and Harris R S J Clin Investigation 22 577 1943

1 Mylon E, Cashman C W and Winternitz M C Studies on Mechanisms Involved in Shock and Its Therapy Am J Physiol 142 299 (Oct) 1944

2 Hueper W C and Ichniowski C T Late Vascular Reactions of Histamine Shock in Dogs Am J Path 20 211 (Jan) 1944

# MEDICINE AND THE WAR

## ARMY

### ARMY NURSE SHORTAGE GRAVE

Major Gen Norman T Kirk, Surgeon General of the Army recently disclosed the seriousness of the present shortage of army nurses at a ceremony in which Col Florence Blanchfield, superintendent of the Army Nurse Corps, accepted an oil portrait of an army nurse painted by a soldier in an effort to promote nurse recruiting. General Kirk stated that the shortage of nurses in the Army is acute and is growing more so every day. He said that 40,000 civilian registered nurses in the United States who are eligible for service in the Army Nurse Corps may have been "lulled by the false impression that is prevalent in certain quarters that the war in Europe is practically over."

The painting, presented to Colonel Blanchfield by Private Rudolf Bernatschke of the Recruiting Publicity Bureau U S Army, has already been made into a poster in the current drive to obtain 10,000 more army nurses. The painting depicts a blue eyed blonde second lieutenant of the Army Nurse Corps in bold relief, with an ambulance in the background. The poster, which has been distributed throughout the nation by the Recruiting Publicity Bureau, emphasizes that "Nurses Are Needed Now!" and carries the message "If you are a registered nurse and not yet 45 years of age apply to the Surgeon General, United States Army, Washington 25 D C or to any Red Cross procurement office."

### SOUTHERN SURGICAL ASSOCIATION MEETS AT ASHFORD GENERAL HOSPITAL

Approximately 100 members of the Southern Surgical Association attended a preliminary meeting at the Ashford General Hospital, December 4, prior to their regular meeting at Hot Springs Ark. Following an address of welcome by the commanding officer, Col Clyde M Beek, the following clinical papers were presented by members of the hospital staff: Varus Deformity in Lower Third Humerus Fractures, Capt James W Riley, Choice of Anesthetic in Prolonged Operations, Capt William H Galvin, Osteomyelitis the Use of Skin Grafts, Major Robert P Kelly, Repair of Skull Defects, Major George L Maltby, Penicillin Therapy in Gas Gangrene Osteomyelitis and Cranial Injuries, Capt F W Cooper, War Wounds of the Urogenital Tract, Major George C Prather, The Circulation in Arteriovenous Fistula, Major Milton L Kramer, Vascular Injuries of Warfare, Col D C Elkin. The papers were discussed by Major Gen Norman T Kirk, Surgeon General of the Army, Dr Alton Ochsner, president of the Southern Surgical Association, Dr Frederick Collier, Ann Arbor Mich., Dr John Albert Key, St Louis, and Dr Rudolph Matas, New Orleans.

### DRS MAXSON AND BRIDGMAN COMMENDED

Major Gen Philip Hayes commanding general of the Third Service Command presented a certificate of commendation recently to Dr Charles W Maxson, Baltimore, for meritorious work as director of civilian medical examiners at the Fifth Regiment Armory induction center. General Hayes also awarded a certificate to Dr Eveleth W Bridgman, Baltimore, chairman of the examiners. The commendation of Dr Maxson said that since November 1940 he had "contributed materially to the war effort in his role of liaison between the civilian medical examiners of the state and the armed forces induction station. He has rendered notable and distinguished service in his keen judgment and marked acumen in appointing civilian medical examiners who were recognized as outstanding specialists in their respective fields and who were respected by the entire

citizenship of the state. His zeal for duty, both day and night, has led to innumerable sacrifices in his private life, all given with unstinting devotion."

Dr Maxson graduated from the College of Physicians and Surgeons of Baltimore in 1910, and Dr Bridgman graduated from Johns Hopkins University School of Medicine, Baltimore, in 1912.

### MEDICAL ADMINISTRATIVE CORPS OFFICERS

The thirty-fourth class of the Camp Berkeley Medical Administrative Corps Officer Candidate School graduated on November 15. Col Taylor Darby, 12th Medical Training Regiment, commander, presented the diplomas, and the graduation was presided over by Lieut Col John A Nave, assistant commandant of the school.

The thirty-fifth class of the Camp Berkeley Medical Administrative Corps Officer Candidate School graduated on December 6.

### ARMY AWARDS AND COMMENDATIONS

#### Captain William N Heffner

The Silver Star was recently presented to Capt William N Heffner, formerly of Northport, N Y, for gallantry in action against the enemy in Normandy, France. On July 19, 1944 during the attack in the vicinity of —, Capt Heffner established his aid station well forward in order that more effective evacuation might result and from there coolly administered medical aid to the seriously wounded while under decimating enemy fire. In addition, Captain Heffner, from a point well beyond his aid station, in an area which was constantly under enemy fire, personally supervised the evacuation of the wounded. At one time Captain Heffner, with complete disregard for his own safety, conducted searching parties looking for casualties in areas which were under intense enemy fire. During the course of the action Captain Heffner courageously led a medical party into a sector where part of a unit had been surrounded by enemy fire and removed the wounded to a point of evacuation. As a result of his heroic actions the casualties received the most prompt medical attention, undoubtedly saving the lives of the seriously wounded. Such actions reflect great credit on himself and on the military service. Dr Heffner graduated from Georgetown University School of Medicine, Washington, in 1940 and entered the service Oct 22, 1941.

#### Captain Roger E Watson

Capt Roger E Watson, formerly of Perrysburg, Ohio, was recently awarded the Silver Star Medal. His citation reads: "During the entire period of June 6 to 15, 1944 in France his untiring efforts with his unit in immediate contact with the enemy exhibited outstanding judgment as a soldier and a surgeon. It was largely because of his excellent supervision and instructions to others in tactical situations while under enemy fire that he could leave our own forces three times to render medical aid to wounded French civilians. On one occasion eight Germans surrounded the house in which he was attending a wounded French child. Because of his coolness and dignity of bearing the enemy withdrew and permitted him to complete his work and return to our lines. His courage, skill and ability reflect great credit on himself and the military service. Dr Watson graduated from the University of Pennsylvania School of Medicine, Philadelphia, in 1941 and entered the service in September 1942.

**Captain Hillard A Tolliver**

Capt Hillard A Tolliver, formerly of Charles City, Iowa, has been awarded the Bronze Star for heroic achievement in action. Battalion surgeon in the 91st Division on the 5th Army front, he was cited for his courage in administering first aid on the field of battle under intense enemy shell fire. Captain Tolliver volunteered to go forward to an area under intense enemy artillery and mortar fire when medical aid men were casualties and first aid was needed. Although shells burst near him, he administered first aid and blood plasma, saving the lives of many of the wounded. Dr Tolliver graduated from the State University of Iowa College of Medicine, Iowa City, in 1929 and entered the service Aug 21, 1942.

**Captain Raymond Wheeler**

The Silver Star and the Purple Heart were recently awarded to Capt Raymond Wheeler, formerly of Sanford, N C, for bravery and for wounds received in action. Dr Wheeler is now with a tank battalion in the European theater of war as a surgeon in the Medical Corps. He graduated from Washington University School of Medicine, St Louis, in 1943 and entered the service in January 1944.

**Captain Edward J Horodko**

The Bronze Star Medal was recently awarded to Capt Edward J Horodko, formerly of Chicago, for "meritorious achievement in connection with military operations against the

enemy at New Georgia, Solomon Islands, from July 22 to Sept 8, 1943." Dr Horodko graduated from Loyola University School of Medicine, Chicago, in 1941 and entered the service July 25, 1941.

**Captain William N Baker**

Capt William N Baker, formerly of Pueblo Colo, has been awarded the Soldier's Medal and the Presidential Citation. This award was for rescuing two officers from drowning. The rescue was in darkness and at complete disregard for his own safety. Dr Baker graduated from Northwestern University Medical School, Chicago in 1938 and entered the service July 29, 1941.

**Major John A Burden**

The Bronze Star Medal was recently awarded to Major John A Burden, formerly of Maui, T H, for "meritorious services against the Japanese forces at New Georgia and Vella Lavella, British Solomon Islands, from July 21 to December 18, 1943." Dr Burden graduated from the University of Louisville School of Medicine in 1936 and entered the service Dec 20, 1941.

**Captain Elmer G Lampert**

Capt Elmer G Lampert, formerly of Wheaton Ill, has been awarded the Bronze Star Medal for 'action outside the line of duty' in the European theater. Dr Lampert was in the Netherlands the last time he wrote his family. He graduated from Loyola University School of Medicine, Chicago, in 1940 and entered the service Aug 25, 1941.

---

**NAVY****SCHOOL OF AIR EVACUATION  
OF CASUALTIES**

Vice Admiral Ross T McIntire, Surgeon General of the Navy, recently announced the establishment of the Navy School for Air Evacuation of Casualties, which will introduce flying navy nurses for the first time. Scheduled to be launched at the U S Naval Air Station, Alameda, Calif, in mid-December, the school's first class will consist of 24 nurses and 24 pharmacist's mates. On completion of training, which will include flight indoctrination within the continental limits, the nurses and hospital corpsmen will report for duty with an air evacuation task unit with the fleet in the Pacific.

Although the Navy and Marine Corps pioneered in aerial evacuation of casualties—the South Pacific Combat Air Transport alone moved more than 25,000 patients, beginning with the Solomon operations in 1942—there has never been, until now, any formalized instruction of medical personnel making the flights. Naval flight surgeons who are especially trained in aviation medicine and air evacuation are exceptions. In the past, evacuees have been attended en route by hospital corpsmen in most instances.

Directed by the Deputy Chief of Naval Operations for Air to set up the new medical organization, the Bureau of Medicine and Surgery had the active cooperation of Naval Air Transport Service and the Bureau of Naval Personnel in planning the program. A number of VRH squadrons have been designated for the special duty. In addition to its regular flight and ground personnel, each twelve plane squadron will operate with 1 flight surgeon, 24 flight nurses, 1 hospital corps officer and 24 pharmacist's mates.

Ground school instruction will be under the cognizance of the medical department of the Naval Air Station at Alameda. Flight indoctrinal training will be directed by the Naval Air Transport Service, West Coast Command. Each squadron will train as a unit. All personnel are being selected carefully, for physical and professional qualifications. A distinctive working uniform, now being designed, will be worn by the flight nurses. Together with the hospital corpsmen, they will receive flight pay. Lieut (jg) Mary Ellen O'Connor, Nurse Corps, U S Naval Reserve, will serve as flight nurse in charge. She holds the record among American women for hours and miles in the air: 2,500,000 miles and 8,800 hours.

Capt J C Adams, Medical Corps, U S Navy, Chief of the Division of Aviation Medicine, had general supervision of the plans for establishment of the School for Air Evacuation of Casualties. Assisting him were Capt Leon D Carson (MC), U S N, liaison officer with Naval Air Transport Service, and Capt Sue S Dauser, Nurse Corps, U S N, superintendent of the Navy Nurse Corps.

---

**NAVY AWARDS AND COMMENDATIONS****Lieutenant Frank Martin Hall**

The Navy Cross was recently awarded to Lieut Frank Martin Hall, formerly of Jamestown, N Y. The citation accompanying the award read "For extraordinary heroism as medical officer in charge of a naval beach party medical team during the invasion of the coast of France on June 6, 1944. Forced to swim 3 miles to shore when his own landing craft was sunk during the initial assault, Lieutenant (then Lieutenant, junior grade) Hall gallantly carried on his mission with such meager supplies as he was able to salvage from the dead and wounded. Completely unmindful of his own danger he labored with untiring zeal under the terrific fire of the enemy, resolutely assuming command of all medical work on an additional beach when it was determined that the officer in charge was missing in action and, despite the extreme hazards and the grueling strain, skillfully covered two beaches without relief until the afternoon of D plus two days. His splendid example of leadership and courage and his valiant devotion to the fulfillment of a vital and perilous mission reflect the greatest credit on Lieutenant Hall, his high professional integrity and the United States Naval Service." Dr Hall graduated from the University of Buffalo Medical School in 1942.

**Lieutenant Robert E Walker**

Lieut Robert E Walker, formerly of Livingston, Mont, was recently cited by the Navy Department for heroism under fire during the invasion of Guam. Dr Walker landed with the first wave of Marines on Guam Island, and he and five other physicians had set up an advanced medical post and were performing major surgical operations within thirty minutes after firing had started. The post was set up in a wrecked concrete house within range of enemy machine gun and artillery fire. Dr Walker graduated from the Medical College of Virginia, Richmond in 1936 and entered the service in November 1942.

## MISCELLANEOUS

## WARTIME GRADUATE MEDICAL MEETINGS

The following subjects and speakers for Wartime Graduate Medical Meetings have just been announced

Induction Center Grand Central Palace, New York Cardiac Irregularities Dr Harry Gold January 5 Diagnosis and Treatment of Malaria, Dr Henry E Meleney January 12 and January 19, Diagnosis of Anorectal Disease Dr Max Cowett, January 26

U S Naval Hospital Philadelphia Coccidioid Mycosis and Wartime Dr F D Weidman January 12 Common Mistakes in the Diagnosis and Treatment of Gastrointestinal Diseases Dr H L Bockus January 26

A A F Regional Hospital Langley Field, Virginia Chemotherapy Dr Henry B Haag January 26 Dermatology, Dr Richard W Fowlkes January 26

Newton D Baker General Hospital, Martinsburg W Va Chest Injuries in War Dr I A Bigger January 8, Experiences with Direct Examination of the Bronchi, Esophagus and Stomach Dr Porter V Vinson January 8

Crisle General Hospital Cleveland Polycythemia, Dr Russell H Haden January 23

Fletcher General Hospital Cambridge Ohio Nutrition Dr Tom Spies January 18 Diabetes Dr Cecil Striker January 18

Air Base Hospital Patterson Field Ohio Therapy and Prevention of Rheumatic Fever Lieut Comdr Alvin Coburn January 18

Lockbourne Air Base Hospital Ohio Treatment of Burns Dr Paul Charlton January 11 Psychosomatic Medicine Dr George T Harding January 18

LaGarde General Hospital and U S Naval Hospital New Orleans Management of Difficult Obstetric Cases Dr E L King January 10 Urinary Infections Dr Edgar Burns, January 10 Cancer Prevention in Gynecology Dr Peter Grafagnino January 10 Surgical Aspects of Peripheral Vascular Diseases, Dr Howard Mahorner January 10, Bacterial Endocarditis Dr Edgar Hull January 10

Winter General Hospital Topeka Kan Gastrointestinal Diseases Dr Carl R Ferris January 18 General Surgery Dr Claude J Hunt January 18

Station Hospital Camp McCoy Wisconsin Peptic Ulcer and Gastritis Dr Carl W Eberbach January 3 Chemotherapy Present Status Dr Harry Beckman January 17, Gallbladder and Liver Disease Dr Erwin R Schmidt January 31

Station Hospital Truxa Field Wis Chronic Chest Diseases and Disease of the Larynx Dr John D Steele January 3 Head and Spine Injuries Dr T C Erickson January 17, Allergic States, Dr Theodore L Squier January 31

U S Naval Hospital, Oceanside Calif Internal Derangements of the Knee Joint Dr John C Wilson December 28

MEDICAL KITS FOR SCHOOLS  
IN EUROPE

The American Junior Red Cross is sending medicines sufficient for the needs of 1 000 000 school children in Yugoslavia Greece and Belgium The medicines in question are contained in kits now being purchased at a cost of \$87 500 Each kit will contain approximately thirty different standard medical items such as acetylsalicylic acid boric acid, soap and gauze The kits are designed to serve 400 children and are distributed to schools in the countries in question through the Joint Commission of the International Red Cross Committee Under this arrangement kits may be sent to occupied areas as well as those that have been liberated A total of 2 500 kits is being shipped, 1 000 to Yugoslavia, 1,000 to Greece and 500 to Belgium

These medical kits are being paid for from the American Junior Red Cross National Childrens Fund This fund is maintained by voluntary contributions on the part of the children and the purchase of medical kits is one of the ways in which the Junior Red Cross is participating in the rehabilitation of children in the liberated countries of Europe Another project is the classroom gift boxes which members of the Junior Red Cross have packed and which have been sent to

European countries for distribution among school children Altogether 450,000 of these boxes, each containing twelve articles such as crayons, pencils, rulers, sewing kits, soap and wash cloths have been packed and shipped for distribution

QUOTA RESTRICTIONS OF MEDICAL  
X-RAY EQUIPMENT FOR  
CIVILIANS

The X Ray Industry Advisory Committee was recently informed by the War Production Board representatives that the present quota restrictions on the manufacture of medical x ray equipment for civilian use cannot be lifted until certain components become less critical Components used in the manufacture of x ray equipment are also needed for combat equipment and there appears to be little likelihood that military demand for these components—including fractional horsepower motors shock proof cable, small transformers, meters, capacitors and resistors—will decrease sufficiently to justify removal of quota restrictions until after victory in Europe

A manufacturer's shipments of medical x-ray equipment for civilian use is limited to 75 per cent of his average annual shipments during 1937, 1938 and 1939 figured on the basis of dollar value This quota applies only to shipments within the United States to its possessions and territories and to Canada

## WISCONSIN VETERANS' HOSPITAL

It was reported recently that 300 acres of ground and school facilities at Tomah Wis, will be turned over to the Veterans Administration for use as a Veterans Neuropsychiatric Hospital The Army has discontinued operation of a military radio school there and negotiations have been under way for some time for the transfer to the Veterans Administration The Veterans Administration announced that it plans to build a \$4 880 000 1 328 bed neuropsychiatric hospital on the site The hospital will serve southern Wisconsin, eastern Iowa and northern Illinois

AIR SHIPMENTS OF RED CROSS MEDICINES TO CHINA ESTABLISH  
NEW RECORD

Air shipments of medicine into China set a new record in September with 44 tons flown over the Himalaya Mountains from India according to Basil O'Connor chairman of the American Red Cross The original Red Cross program of medicines for China called for shipment of 10 tons per month, but increased need of drugs and medicines and added flying facilities have led to an increase that will provide 40 to 50 tons a month September shipments were of particular importance, since they were made up largely of sulfonamide drugs, some of which were flown immediately into an area where there had been outbreaks of plague Medical shipments are sent to Calcutta shipped overland to the Assam air fields and flown from there into China

COLONEL ROWNTREE GIVEN SCROLL  
OF HONOR

Col Leonard G Rowntree chief of the Medical Division of the Selective Service, received a scroll of honor recently by the New York State Committee on Physical Fitness The scroll praised Colonel Rowntree for his interest, understanding and efforts in behalf of the physical fitness of a nation at war and the welfare of the youth of the future

## DOCTORS ASKED TO AID ITALY

Prof Arturo Castiglioni of Yale University School of Medicine New Haven, Conn is organizing the doctors of America into a unit to aid the needy people of liberated Italy with surgical instruments and medical supplies American Relief for Italy, Inc, recently announced Gifts donated by doctors will be shipped overseas through the agency a member of the National War Fund

# ORGANIZATION SECTION

## Washington Letter

(From a Special Correspondent)

Dec 18 1944

### Men Now in Army to Continue College Courses After War

Although the percentage of medical students is not given, figures released by the War Department for publication as of December 20 reveal that 500,000 of approximately 6,750,000 men now in the Army have definite plans to return to full time school or college courses. The Information and Education Division of the Army Service Forces bases the figure on a cross section survey of troops in the United States and overseas. An additional 300,000 are seriously considering resuming their education on a full time basis but are undecided or have conflicting job plans. Still another 1,200,000 men intend to attend part time school or college. Governing factors are the length of the war and prevailing economic conditions. No indication is given as to how anticipated resumption of studies will affect the flow of graduates from medical schools, although it is stated unofficially that most young men whose medical courses were interrupted will probably wish to resume their studies toward a medical career.

### Proposed Appropriation of \$2,000,000 Federal Aid to Cancer Research

Federal aid to cancer research, with an initial appropriation of \$2,000,000 to the National Cancer Institute, the federal agency which already leads in cancer research, was proposed by E. V. Cowdry, Ph.D., of Washington University and the Barnard Free Skin and Cancer Hospital, St. Louis, to the Senate Subcommittee on Health and Education the past week. Dr. Cowdry suggested that the plan might serve as a pilot program for future federal aid to medical research. He pointed out that cancer is the most dreaded of all diseases, and although heart, artery and kidney diseases are greater killers they are more merciful. The Cancer Institute, he suggested, would disburse the money to other institutions of recognized ability to conduct both short and long term research on cancer. Such institutions would be free to accept funds also from private sources. Additional federal aid, he said, would increase the value accruing from private donations to cancer research. An unusual feature of the proposal is that Congress should authorize the issue of a special series of government bonds to be nontransferable and bear 5 per cent interest. These could be purchased only by privately managed, nonprofit colleges and universities. In this way the less well endowed could get federal aid without giving up individual freedom.

### Compromise Offered on Social Security Legislation

Representative John D. Dingell, Democrat of Michigan, sponsor of the omnibus social security bills—introduced eighteen months ago but on which nothing has been done since not even committee hearings—has offered to drop or compromise some controversial parts of the program. To salvage portions of the project he proposes that the big bill be split into several sections to be submitted to the new Congress opening in January. Mr. Dingell said that he considers some form of public health and hospitalization insurance, with wage earners helping to pay for it as first on the list of items he believes should be made law, but he is against socialized medicine, which has been opposed by medical organizations. He suggests a simple system under which a poor man can get money to pay for medical or dental attention or hospital care when his family needs it. Under his

plan, doctors and dentists would not be employed directly by the government, but there would be supervision of the system by the United States Public Health Service. "There wouldn't be any big medical bureaucracy running all the doctors and hospitals from Washington," Mr. Dingell explained. Some people may have been able to read that into our bills, but it is a false alarm. He contends that it would benefit the medical profession as well as the masses of the people if more people could pay for medical attention. They would not be so slow in asking for it. The second item on his program would be inclusion of as many as possible of the 20,000,000 American workers who do not have guaranties of old age and survivors' insurance like the 40,000,000 now covered.

### Importance of Postwar Research Stressed

Research must not be neglected after the war, Brig. Gen. James S. Summons, chief of the preventive medicine section of the Office of the Surgeon General, informed the Kelley subcommittee. "We will neglect it at our own risk," he warned. "This nation affords unlimited natural resources in scientific talent which need only opportunity and facilities to bear upon the health programs of the nations in peace or war."

Dr. Lewis H. Weed, chairman of the division of medical sciences, National Research Council, said that federal aid to medical research should be planned with regard to the total medical problem, which includes medical practice, hospitals, preventive medicine and public health.

Several medical authorities told the subcommittee that the amazing speed with which such spectacular health aids as penicillin, DDT and blood substitutes, including plasma, were developed by federally sponsored and aided research during the war was evidence of what such assistance to medical research can accomplish.

### Pensions for Widows and Children of First World War Veterans

President Roosevelt has signed the bill providing pensions for widows and children of deceased veterans of the first world war. The cost is estimated at \$37,000,000 in its first year. The program provides benefits up to \$74 a month for families of men who served in the first world war. Pensions are provided regardless of the cause of death. Previously pensions were allowed widows and children only if the veteran died of war service disability and if he died of some other cause but had been disabled in the war. Widows without children will get \$35 a month, with one child \$45 and \$5 for each additional child. The child of a deceased veteran whose mother also is dead will get \$18, two orphans will receive \$27, three will get \$36, and \$4 is provided for each additional orphan. Veterans must have served at least ninety days for families to become eligible.

## Society Proceedings

### COMING MEETINGS

Annual Congress on Industrial Health Chicago Feb 13-15 Dr. Carl M. Peterson 535 N. Dearborn St. Chicago Secretary

Annual Congress on Medical Education and Licensure Chicago Feb 12-13 Dr. Victor Johnson 535 N. Dearborn St. Chicago Secretary

Annual Forum on Allergy Pittsburgh January 20-21 Dr. Jonathan Forman 926 Bryden Road Columbus Ohio Director

Society of Surgeons of New Jersey Jersey City January 31 Walter B. Mount 21 Plymouth St. Montclair N. J. Secretary

## Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES NEW HOSPITALS EDUCATION AND PUBLIC HEALTH)

### ARKANSAS

**Dr Fatherree Appointed Registrar of Vital Statistics**—Dr Leroy L. Fatherree, health officer of Little Rock, has been appointed registrar of vital statistics for the city. The appointment is a part of the recent transfer of the vital statistics bureau from the city clerk's office to the health department.

### CALIFORNIA

**Fatal Case of Botulism**—Home packed string beans were responsible for the death of a person from botulism in southern California recently.

**Changes in Health Personnel**—Dr John O. Rafferty, Santa Rosa, recently resigned as deputy director of the California State Department of Public Health to become resident physician at the Santa Cruz County Hospital. The city of Newman recently transferred the administration of its public health affairs to the Stanislaus County Health Department with headquarters at Modesto. Dr James E. Thompson had been local health officer.

**Woman Wills Body and Fund for Research**—Miss Edith Clawson who died recently at the age of 65 from a glandular disorder provided in her will that her body be used for research and bequeathed a fund of \$250,000 to Dr Edward F. F. Copp of the Scripps Metabolic Clinic, La Jolla, to carry out the study. The will stated that Miss Clawson offered her body to serve 'in medical and scientific research'. It also contained a bequest of \$50,000 to the Mercy Hospital, Hamilton, Ohio.

### COLORADO

**State Medical Election**—Dr George H. Unfug, Pueblo, was chosen president elect of the Colorado State Medical Society at its recent annual meeting in Denver, and Dr Edward R. Mudge, Denver, was installed as president. Other officers include Drs Harry C. Bryan, Colorado Springs; vice president John S. Bouslog, Denver; secretary and Lloyd R. Allen, Colorado Springs; treasurer.

### DISTRICT OF COLUMBIA

**Portrait of George Vaughan**—An oil portrait of Dr George Tully Vaughan, emeritus professor of surgery, Georgetown University School of Medicine, was presented to the medical school on October 16 by members of the Medical Alumni Association. The portrait is the work of John Bjorn Egeli, Washington artist. Dr Vaughan graduated at the University of Virginia Department of Medicine, Charlottesville, in 1879. He was professor of surgery at Georgetown University and chief of surgery at the Georgetown University Hospital from 1897 to 1933 and since then has been serving as a member of the executive faculty and council and as administrative adviser to the medical school. A plaque showing a photograph of the portrait and an engrossed scroll of the resolutions of the alumni association were presented to Dr Vaughan.

### ILLINOIS

#### Chicago

**Personal**—Lieut. (jg) Charles E. Nyberg, who served as assistant to Dr Rosco G. Leland, Director of the Bureau of Medical Economics, American Medical Association, participated in the Normandy and southern France invasions. Lieutenant Nyberg served on the staff of the division commander of attack transport of the amphibious force.

### KANSAS

**School Health Study**—Clair E. Turner, Dr P. H., formerly professor of public health, Massachusetts Institute of Technology, Cambridge, Mass., is conducting a statewide school health study in Kansas under the direction of Dr Floyd C. Beelman, Topeka, secretary and executive officer of the state board of health, and Miss May Hare, health education coordinator in the state health department. The study aims to formulate policies set up standards and make specific recommendations for building strong local health programs.

### KENTUCKY

**Physician Named Chairman of Negro Health Committee**—Dr Maurice F. Rabb, Shelbyville, has been named chairman of the health committee of the Negro Affairs Commission, which was created late in September by an executive decree of Governor Simon S. Willis to recommend 'practical solutions to problems confronting Negroes in Kentucky in the fields of education, health, housing, economics and civil affairs'. The commission organized itself into five units, one of which is that headed by Dr Rabb.

**Jane Crawford Day**—Governor Simon S. Willis recently designated December 13 as Jane Todd Crawford Day in Kentucky in honor of the woman who submitted to the first operation for removal of an ovarian tumor, conducted by Dr Ephraim McDowell. The occasion is of importance in Kentucky's medical history and a monument in honor of both Mrs. Crawford and Dr. McDowell was erected in Danville, where the operation was performed, by the Kentucky State Medical Association.

**Personal**—Dr Addie M. Lyon, Frankfort, state director of hospitals and mental hygiene, on November 1 assumed the additional duties of acting superintendent of the Central State Hospital, Lakeland. Dr Charles E. Youmans, superintendent of the State Institution for the Feeble-minded, Frankfort, will become acting assistant director of the state division of hospitals and mental hygiene in addition to his present work. Dr Lyon will be assisted at Lakeland by Dr Frank L. Peddicord, who was named acting superintendent when Dr Isham Kimbell resigned several weeks ago.

### LOUISIANA

**Student Prizes Awarded**—Ernest C. Faust, Ph.D., professor of parasitology, Tulane University of Louisiana School of Medicine, New Orleans, gave the Ivy Day address during the present commencement exercises of the medical school. His subject was 'The Heritage and Tradition of the Tulane University School of Medicine'. The prizes awarded to students during the ceremonies included the following:

**Queens Rives Shore Award** for the best senior thesis on a subject in the field of cardiology to Dr. Ross Frederick Bass, Chelsea, Mass., for his thesis, 'An Evaluation of the Cardiac Function Tests'.

**Walter Reed Memorial Medal** of the Louisiana State Medical Society for the best senior thesis on a subject in the field of tropical or preventive medicine to Dr. Emile Augustus Bertucci, Jr., New Orleans, for his thesis, 'Spirochetel Jaundice'.

**Jacob C. Geiger Medal** for the best senior thesis on a subject in the field of tropical or preventive medicine to Dr. Arnold Harvey Baum, San Francisco, for his thesis, 'Public Health Aspects of Rheumatic Heart Disease'.

**Sidney K. Simon Prize** for the best senior thesis on a subject in the field of digestive diseases, nutrition or tropical medicine to Dr. Charles Daniel Knight, Shreveport, La., for his thesis, 'Filariasis: A Future Problem in the United States'.

**Award by the professor of medicine** for the best senior thesis on a subject in the field of internal medicine given to two seniors: Drs. James Clinton Prose, Fairfield, Ala., for his thesis, 'Liver Function Tests', and John W. Bassett, Philadelphia, for his thesis, 'Friedreich's Ataxia'. Drs. Jura Arosemeny and Pascal Gayle, Baton Rouge, New Orleans, received honorable mention for their theses, 'The Therapy of Amebiasis' and 'The Blood Supply of the Heart', respectively.

**Isadore Dyer Medal** for the highest average for the four years of medical school to Dr. John Winton Deming, New Orleans.

### MASSACHUSETTS

**Symposium on Bursitis**—The New England Society of Physical Medicine devoted its first meeting of the season, November 15, at the Hotel Kenmore, Boston, to a symposium on 'Treatment of Bursitis of the Shoulders'.

**Research Fellowship Named for Physician**—The Helen Putnam Fellowship for advanced research has been established at Radcliffe College, Cambridge, bearing the name of the physician who gave the endowment for the award. The fellowship carries a stipend of \$1,750 and will be awarded each year for an eleven-month period to a resident fellow and will also provide a subsidy for the publication of manuscripts approved by the Radcliffe committee on publications. It will be available to mature women scholars in the field of genetics or mental health, and appointments will be limited to candidates submitting a plan of research that is already under way. Dr. Putnam, who graduated at Vassar College, Poughkeepsie, N. Y., received her degree in medicine at the Woman's Medical College of Pennsylvania, Philadelphia, in 1889. The first appointment to the fellowship will be made in February 1945 for an award to be dated October 1 of the same year.

### MINNESOTA

**Another County Accredited for Tuberculosis Control**—Martin County was recently accredited for the control of human tuberculosis, the ninth county in the state to receive this recognition under a program sponsored by the Minnesota



Department of Health and the state medical association as well as local cooperating authorities. The record in Martin County was far below that required for accreditation. The tuberculosis death rate is 32 per hundred thousand population for the current five year period, which is the lowest in the state, and the rate of infection among high school seniors of the county in a recent survey is less than 7 per cent. According to *Everybody's Health*, requirements for accreditation call for a death rate of less than 10 per hundred thousand and an infection rate among high school seniors of less than 15 per cent.

### MISSISSIPPI

**Changes in Health Officers**—Dr Kenneth W Navin has been named health officer of Yazoo City—Dr Henry G Waldrop has been appointed in charge of the Prentiss County Health Department, Booneville—Dr Norris C Knight, Meridian, has been appointed director of the Washington County Health Department

### MISSOURI

**Personal**—Dr Edward L Burns, associate professor of pathology and bacteriology, Louisiana State University School of Medicine, New Orleans, is serving for several weeks as visiting associate professor of pathology at Washington University School of Medicine, St Louis

**The First John Auer Lecture**—The Lambda chapter of Phi Beta Pi has established a lectureship at St Louis University School of Medicine in honor of Dr John Auer, professor and director of the department of pharmacology. The first lectureship was given November 29 by Dr Warfield T Longcope, professor of medicine at Johns Hopkins University School of Medicine, Baltimore, on "Allergic and Toxic Reactions of the Sulfonamide Drugs"

**Officers of New Medical Service**—Dr Carl F Vohs, St Louis, was elected president of the Missouri Medical Service, a new statewide medical-surgical plan sponsored by the Missouri State Medical Association (THE JOURNAL, July 22, p 859). Other officers include Dr Howard B Goodrich, Hannibal, and Louis W Reys, managing director of the Springfield Chamber of Commerce, vice presidents Dr Raymond O Muehler, St Louis, secretary, and George M Berry, St Louis, treasurer. The new plan, enrollment for which will begin January 15, includes medical and surgical illness in hospitals under an allowable benefit schedule, and payment will be made directly to the physician. Monthly dues for single members will be 85 cents, for families, regardless of dependents, \$2.25 while dues for man and wife will be \$1.85 a month

### NEBRASKA

**Personal**—Dr Henry R Miner, Falls City, recently completed fifty years in the practice of medicine—Dr Frank P Murphy, Omaha, has been appointed chief medical examiner on the main line of the Union Pacific railroad

**Dr Frary Resigns**—Dr Reginald A Frary, Lincoln who has been a member of the staff of the Nebraska Department of Health, has resigned as director of the division of venereal disease control. During his period of association with the department, Dr Frary has spent one year in special study at Johns Hopkins University in Baltimore

### NEW YORK

**Sidney Madden to Join Emory University**—Dr Sidney C Madden, associate professor of pathology, University of Rochester School of Medicine and Dentistry, Rochester has accepted a position as professor of pathology and head of the department at Emory University School of Medicine, Atlanta. The appointment will be effective in March and fills the vacancy that occurred when Dr Roy R Kracke left Emory to become dean of the University of Alabama School of Medicine, Birmingham

**Prize Awards**—The Rochester Academy of Medicine announces three prizes the competition for which will close March 1. The John W McCauley prize of \$25 accompanied by a certificate of merit, will be given for the best case history offered by a first or second year house officer of an accredited hospital in Monroe County. This award is made possible through the generosity of Mrs David B Jewett. The Taylor Instrument Companies prize of \$100, accompanied by a certificate of award, will be given for a thesis contributing to our knowledge of clinical medicine (including internal medicine, surgery, obstetrics, pediatrics or other subdivision) attained by deduction from accurate observation of cases, review of the literature, laboratory studies and public health survey or a combination of these. Competition for this prize is open to

any doctor of medicine whose degree was received from an approved medical school since April 30, 1940 and who is either a bona fide resident of Monroe County or is on the staff of an accredited medical institution located in Monroe County. This award has been made possible through the generosity of the Taylor Instrument Companies. The Paine Drug Company prize of \$100, accompanied by a certificate of award will be given for a thesis contributing to our knowledge of clinical medicine (including internal medicine, surgery, obstetrics, pediatrics or other subdivision) attained by deduction from accurate observation of cases, review of the literature, laboratory studies and public health survey or a combination of these. Competition for the prize is open to any member of the Rochester Academy of Medicine in good standing on May 1, 1944. This award has been made possible through the generosity of the Paine Drug Company. The theses should be sent to the Rochester Academy of Medicine, 1441 East Avenue on or before March 1. The thesis shall in no way bear the identity of the author but should be included with a scaled envelop carrying this identification

### New York City

**Course on the Heart**—The Mount Sinai Hospital announces that a course in fluoroscopy and x-ray of the heart and great vessels will be given January 5-March 23. Drs Marcy L Sussman and Arthur Grishman will give the course which is a repetition of one given earlier

**Portrait of Dr Joachim**—On November 21 unveiling ceremonies were held at the Medical Society of the County of Kings of a portrait of the late Dr Henry Joachim, president of the society in 1936. The portrait was presented by a group of his friends and former associates in the various hospitals with which he was affiliated. Dr Joachim, who died Aug 18, 1941, held a number of positions with his county medical society, serving several terms as censor, delegate to the state society, trustee and vice president. The portrait was unveiled by Dr Benjamin M Eis, Brooklyn who was associated with Dr Joachim for many years

**Amendment on "Fee Splitting"**—On December 7 the New York Academy of Medicine adopted an amendment to its constitution stipulating that both "fee splitting and receiving a rebate are unethical and in violation of the constitutional regulations of the academy. The amendment further empowered the academy's council, by a three-fourths vote of its total membership, to expel any fellow found guilty. Dr William W Herrick, professor of clinical medicine, Columbia University College of Physicians and Surgeons was elected president of the academy for a term of two years. Among other officers chosen were Drs J Burns Amberson Jr, vice president for a term of three years, and Shepard Krech, treasurer for three years

**Friday Afternoon Lectures**—Subsequent lectures included in the Friday afternoon series at the New York Academy of Medicine which opened November 3 (THE JOURNAL, October 14, p 445) are

- Dr Charles L Hoagland, The Therapy of Liver Disease, January 5
- Dr H McLeod Higgins, Present Trends in the Treatment of Pulmonary Tuberculosis, January 12
- Dr Robert F Watson, Modern Concept of Rheumatic Fever, January 19
- Dr Howard W Haggard, New Haven Conn, Problem of Alcoholism, January 26
- Dr Fred W Stewart, Hormone Therapy and Human Mammary Cancer, the L. Duncan Bulkley Lecture, February 2
- Dr Philip M Stimson, Specific Remedies in the Prevention and Treatment of the Exanthemata, February 9
- Dr Nolan D C Lewis, Shock Treatment of Psychoses, February 16

### OHIO

**Dr Quigley Goes to Tennessee**—John P Quigley, Ph D, a member of the staff of Western Reserve University School of Medicine, Cleveland, since 1929 and professor of gastrointestinal physiology since 1943, has accepted an appointment as professor of pharmacology and chief of the division at the University of Tennessee College of Medicine, Memphis

**Friedlander Lecture**—Dr Eugene A Stead Jr, Atlanta Ga., delivered the Alfred Friedlander Lecture at a joint meeting of the heart council of the Public Health Federation and the Academy of Medicine of Cincinnati in Cincinnati, December 5. His subject was "Mechanism and Treatment of Shock and Allied Disorders"

**Grant for Research on Glaucoma**—The Snyder Ophthalmic Foundation has given a grant of \$6,500 a year for a period of two years to the Toledo Hospital Institute of Medical Research for research on the physiology of the eye especially in relation to glaucoma. The grant will be extended, depending on the results obtained in the first two years. According to

Dr Bernhard Steinberg director of the Toledo Hospital Institute of Medical Research because of the war research will be delayed until a physiologist with specialized training in the eye can become available

### OKLAHOMA

**University News**—Louis Alvin Turley, Ph.D., who retired September 1 as professor of pathology at the University of Oklahoma School of Medicine, Oklahoma City (THE JOURNAL November 18 p. 781) recently gave to the library of the medical school a doctor's saddlebag given him by Dr. Nancy D. Campbell, Las Vegas, N. M., of the U. S. Indian Service. The bag was used in the Rio Arriba country, New Mexico, in the period before the horse and buggy made its appearance. By releasing the straps on either end of the bag it divides into two parts which hang over the skirt of the saddle.

### PENNSYLVANIA

**Personal**—Dr. Marvin R. Evans, Coal Dale, has been appointed chief surgeon of the Lehigh Navigation Coal Company in Panther Creek Valley to succeed the late Dr. Robert H. Kistler, Lansford.

#### Philadelphia

**Graduate Courses**—The graduate department of public health and preventive medicine of the University of Pennsylvania School of Medicine announces that a course in industrial medicine and hygiene will begin January 2 under the direction of Dr. Charles-Francis Long. A graduate course in the control of communicable diseases will begin January 6 with emphasis placed on the value and technique of public health education in preventing disease. Additional information may be obtained from the director, department of public health and preventive medicine, University of Pennsylvania, Philadelphia 4.

**Graduate Lectures**—A series of graduate lectures sponsored by the Woman's Medical College of Pennsylvania included a talk by Dr. William D. Stroud, November 22, on coronary disease and one on digitalis therapy. Drs. Samuel Bellet and William G. Leaman, Jr., discussed recent trends in the treatment of cardiovascular disease, December 6. Others in the series include:

Dr. Leandro M. Tocantins, Recent Advances in Hematology, January 3.  
Dr. Edward Weiss, Recent Advances in Our Knowledge of Kidney Disease, January 17.

Dr. Weiss, Practical Aspects of Essential Hypertension, January 31.

**Portrait of Dr. Croasdale**—Special ceremonies were held November 29 to mark the unveiling of a portrait of the late Dr. Hannah T. Croasdale, presented to the Woman's Medical College of Pennsylvania by Miss Marjorie Trump and Mr. Charles Croasdale, Trump's granddaughter and grandson, respectively. The physician, Dr. Croasdale, was said to be the first woman physician to occupy a chair of gynecology serving the Woman's Medical College of Pennsylvania, where she graduated in 1880 as instructor in the department of surgery from 1875 to 1879 and professor of gynecology from 1880 to 1902 when she became emerita professor. Among the speakers at the ceremonies were Dr. Catharine Macfarlane, professor of gynecology who worked with Dr. Croasdale first as a student and then as an intern, and Rachel Bulley Trump (Mrs. Charles C. Trump), the artist who executed the portrait.

### TEXAS

**Society News**—Arthur R. Colmer, Ph.D., department of botany and bacteriology, University of Texas, Austin, was elected November 18 secretary of the Texas branch of the Society of American Bacteriologists to succeed Dr. Gordon Worley, Jr., who resigned to enter the U. S. Navy. The election took place during the fall meeting of the Texas branch at the Baylor University College of Medicine, Houston, and was addressed, among others, by Howard W. Lundy, Dr. P.H., recently appointed director of health education of the Houston City Health Department and assistant professor of public health and preventive medicine of the Baylor University College of Medicine.

### GENERAL

**Orthopedic Surgeons Cancel Meeting**—The thirteenth annual convention of the American Academy of Orthopedic Surgeons, scheduled to be held in Chicago, January 21-24, has been canceled. Dr. Myron O. Henry, 825 Nicollet Avenue, Minneapolis, is the secretary.

**Crippled Children Society Changes Name**—The formal name, National Society for Crippled Children and Adults, was adopted at the recent meeting in Chicago of the national group for crippled children. Col. Elbridge W. Palmer, Kingsport, Tenn., was reelected president of the society and Mr. E. I. Howenstine, Elyria, Ohio, is secretary.

**Osborne Medal Goes to John Baker**—The Osborne Medal of the American Association of Cereal Chemists will be presented to John Clark Baker, Ph.D., Montclair, N. J., during the 1945 meeting of the association in Toronto, Canada. The medal is awarded for distinguished contributions to cereal chemistry and related sciences. Dr. Baker is known for his many inventions in sanitary and pharmaceutical fields.

**Society News**—Dr. Vlado A. Getting, Boston, commissioner of health of Massachusetts, was recently chosen secretary of the Association of State and Territorial Health Officers to succeed Dr. George C. Ruhland, Washington, D. C. Other officers of the association are Dr. Irl C. Riggins, Richmond, Va., president and Dr. Roy L. Cleere, Denver, vice president. The twenty-eighth annual meeting of the American Dietetic Association will be held at the Netherland Plaza Hotel, Cincinnati, October 15-19.

**Robert Fischelis Chosen Secretary of Pharmaceutical Association**—Robert P. Fischelis, Ph.D., chief chemist, drugs and health supplies branch, Office of Civilian Requirements War Production Board, has been elected to succeed the late Evander F. Kelly, Ph.D., as secretary and general manager of the American Pharmaceutical Association effective January 1. Dr. Fischelis, who has been executive secretary and chief chemist of the New Jersey Board of Pharmacy since 1926, resigned September 1 to devote more time to activities with the War Production Board.

**The Process of Group Therapy**—The American Group Therapy Association will hold its second annual meeting at the Russell Sage Foundation building, New York, January 12-13. The theme of the program will be "The Process of Group Therapy" and papers will cover treatment in groups of children, adolescents and adults and in rehabilitation of ex-servicemen. The American Group Therapy Association was organized Nov. 16, 1943, to stimulate interest and research in group therapy; issue publications; serve as a center for exchange of experience and provide consultation and training for group therapy. Offices of the association are 228 East Nineteenth Street, New York 3. Officers include S. R. Slavson, president and George Holland, secretary-treasurer.

**New Rulings of Board of Anesthesiology**—The American Board of Anesthesiology, Inc., announces that beginning January 1 all new applicants must be graduates of a grade A school recognized by the board must have completed a year's internship (preferably rotating) in a recognized hospital (as before) must have completed two years special training in a residency approved by the board (formerly "recommended" now required) and must have completed five calendar years (including training) 100 per cent limited in the specialty. Applicants are reminded that regardless of qualifications they must be prepared to take written oral and practical examinations. Applications must be filed ninety days prior to examination. The next written examination will be held January 19 at various centers and the next oral examination preceding the scientific assembly of the American Medical Association.

**Hospital Orderly Sentenced on Larceny Charge**—Harry Ward, who has been working at various hospitals throughout the country as an orderly, was sentenced in Milwaukee on a charge of grand larceny, recently. Ward is said to have a long prison record under his aliases as George Hamilton, Harry Harder, William Ralph, George Marlowe, Harry Ford, Harry Woods and Thomas Irvin. He will be confined at Waupun but was granted a fourteen-day stay so that federal authorities might prosecute him on a narcotic charge. At various times his application for employment indicated that he was a former brakeman. He is 54 years of age, about 5 feet 9 inches in height and weighs about 136 pounds. His hair is gray with a widow's peak in front and he has brown eyes. Ward is believed to be a narcotic user but his racket appears to be stealing from patients in hospitals where he is working.

**Vitamin D Patents Again Ruled Free**—For the second time within seventeen months the U. S. Circuit Court of Appeals, ninth judicial district, San Francisco, ruled invalid the Steenbock patents covering production of the antirachitic vitamin D through the use of ultraviolet ray lamps according to the New York Times, November 25. The University of Wisconsin Alumni Research Foundation, Madison, to which Harry Steenbock, Sc.D., assigned the patents taken out in 1924, 1926 and 1933 collected \$747,558 from licenses up to Dec. 31, 1939 at the rate of \$900,000 in the final five-year period it was stated. Judge William Denman wrote that on the evidence Dr. Steenbock's discoveries for the prevention and cure of rickets were a great boon to humanity but said that it was a public offense to withhold such processes from any or the principal foods of the rachitic poor or indeed from

those of any such sufferers" "Assuming that Dr Steenbock discovered, as he claims," he stated, "that the sun's rays coming from millions of miles away could irradiate foods with vitamin D and that this was the reason, unknown to them why farmers and coconut growers regarded their sun-cured hays and sun-dried copra as good foods, such a discovery does not entitle him to a patent on their processes" Judge William Healy agreed that Dr Steenbock did not invent anything but held that the court should stick to the issue as presented by the attorneys

**Sugar Research Grants**—More than a quarter of a million dollars has been allotted in six grants to scientists according to an announcement by the Sugar Research Foundation New York, December 8 The six recipients benefiting under these grants include

Dr L Emmett Holt Jr. department of pediatrics Johns Hopkins University School of Medicine Baltimore for studies relating to synthesis of B vitamins by bacteria in the human intestinal tract with special reference to the influence of various carbohydrates

Andrew F vanHook Ph D department of physical chemistry Lafayette College Easton Pa for study of the kinetics of sucrose crystallization

James M Neill Ph D department of bacteriology and immunology Cornell University Medical College New York for investigation of traces of serologically active polysaccharides in sugar

Curt P Richter Ph D psychobiologic laboratory Johns Hopkins University, for investigation of nutritive values of soft and raw sugars and of the carbohydrate:thiamine ratios taken by rats allowed free selection of all required nutrients

John Haldi Ph D department of physiology Emory University School of Medicine Atlanta Ga for study of blood sugar levels in human subjects following high protein and high carbohydrate meals of isocaloric value

William V Cruess Ph D, chief Fruit Products Division Agricultural Experimental Station University of California Berkeley for study of sugar in quick freezing of fruit products

Carl W Borgmann Ph D engineering experiment station University of Colorado Boulder for pilot plant production of D fructose (levulose) from sucrose and investigation of methods for separating dextrose and levulose

**Uniform Standards of Penicillin**—On October 20 Sir Henry Dale president of the Royal Society, London, announced that international agreement had been reached by the health committee of the League of Nations on a uniform standard and unit of penicillin and that there could be no doubt that the workers in Great Britain and America and eventually throughout the world would be using the same standard dosage The agreement was reached at a meeting in London attended by representatives of Great Britain, United States, Canada, Australia and Free France According to the *British Medical Journal* Sir Henry Dale said that it was in 1921 that the health committee first took in hand the question of measurement of a number of biologic remedies in terms of their activity This was done in order to obtain international uniformity, so that 1 unit of activity would mean the same wherever it was prescribed The first agreements of this kind were obtained in the case of antitoxins notably the antitoxin of diphtheria Another example was the standardization of insulin in 1925 The same standard was adopted outside the League—in Russia, which was not then a member, and in the United States which never became a member, the same standard was continued in Germany and Italy after they had left the League Standardization was also applied to hormones and vitamins The *British Medical Journal* pointed out that the new international standard penicillin would be finally purified and crystallized in the United States but the material for this purpose would be freely supplied by manufacturers in Great Britain and the United States There was no substance in the talk about trade rings in the manufacture of penicillin The manufacturers in both countries had pooled their information from the very first and had given their results to the Medical Research Council, thus making the manufacture of penicillin during the war a real national effort

## LATIN AMERICA

**Health Activities**—*Cuban Branch of Academy of Pediatrics*—The first meeting of the Cuban Branch of the American Academy of Pediatrics was held in Havana, August 30, with Drs Clifford G Grulee Evanston, Ill, secretary of the American Academy of Pediatrics, and Angel Vieta, Barahona, dean of the Medical School University of Havana, as guests of honor Consideration was given to the admission to the American Academy of Pediatrics of all Latin American pediatricians under the so called region 5

**Conference on Hospital Administration**—A conference on hospital administration was held in Lima, Peru December 3-16 under the auspices of the Inter-American Hospital Association cooperating with the Pan American Sanitary Bureau the Office of the Coordinator of Inter-American Affairs and the Peruvian government Representatives from the United States included Dr Malcolm T MacEachern, Chicago, chairman of the council of international relations for the American Hospital Association, Dr Donald C Smelzer, Philadelphia

president, and Dr Robin C Buerki Philadelphia of the American Hospital Association, Dr Claude W Munger New York president of the American College of Hospital Administrators, Mr James A Hamilton New Haven Conn representing the Inter-American Hospital Association, and the Rev John J Bingham New York of the council of Pan American Relations of the Catholic Hospital Association

## FOREIGN

**Funds for Health Work**—The sum of \$900,000 was earmarked for medical work during the thirtieth annual convention of Hadassah, the Women's Zionist Organization of America, in Cleveland, November 13-16 The general program will include the initiation of a building fund for a new 250 bed tuberculosis hospital which will be erected in Palestine as a postwar project and which will be an integral part of the Rothschild-Hadassah University Hospital the chief unit of the Hadassah Medical Center on Mount Scopus Dr Haim Yassky Jerusalem, Palestine, director of the Hadassah Medical Organization, attended the Cleveland convention he made his first visit to the United States in 1932

**Plan to Locate Royal Colleges on Same Site**—The Royal College of Surgeons, in a recent annual report invited the Royal College of Physicians and the Royal College of Obstetricians and Gynaecologists to move to Lincoln's Inn Fields and share the surgeons' site The location of the three groups on the same site would assist in the development of a medical center According to the *Lancet* the college owns a freehold of numbers 35 to 45 Lincoln's Inn Fields, a site twice the size of that occupied by its buildings before the war, which would allow for the erection of additional buildings The museum of the college of surgeons is now located at Lincoln's Inn Fields, and the college is arranging for the return of its research laboratories, planning for the new professorship of human and comparative pathology (THE JOURNAL Nov 27 1943 p 851) and preparing space for the 27,000 museum specimens now stored in the country as well as a large number of new specimens

## Deaths in Other Countries

Dr Carl von Noorden, known for his work in diabetes died in Germany according to a broadcast reported November 17—Dr Rafael A Bullrich, formerly dean of the faculty of medical sciences of the University of Buenos Aires died in Buenos Aires recently aged 67—Dr Julius Lowy, chairman of the Czechoslovak Medical Association in London and authority on occupational diseases, died in London November 25 aged 59

## Government Services

### Lawrence Kolb Retires

On October 31 Lawrence Kolb medical director U S Public Health Service, in charge of the mental hygiene division, Bureau of States Services, retired, concluding thirty-five years with the public health service Dr Robert H Felix was recently appointed to succeed Dr Kolb (THE JOURNAL November 11, p 713) Dr Kolb was born in Galesville Md Feb 20, 1881 and graduated at the University of Maryland School of Medicine, Baltimore, in 1908 He was commissioned an assistant surgeon in the public health service on July 21 1909 and promoted to passed assistant surgeon in 1913 to surgeon in 1921, to senior surgeon in 1930 and to medical director in 1935 Nearly his entire career with the public health service has been in the field of nervous and mental diseases

### Addition to Georgia Warm Springs Foundation

The President has approved a grant of \$171,580 to construct and equip an addition to the Georgia Warm Springs Foundation Hospital to provide additional facilities for service men victims in the treatment of poliomyelitis and spinal injuries The Army, Navy and Marine Corps requested the additional bed space at Warm Springs for the treatment of service connected cases For more than a year the Army has shared the hospital's facilities for this purpose The two story and part basement addition will provide room for 86 more patient beds The foundation is to supply \$171,580 of the \$343,159 total cost Twenty-three other communities in thirteen states were allotted additional funds, totaling \$444,205, toward the cost of maintenance and operation of child care and recreational facilities Among these are Baltimore, Evansville Ind., Holyoke Mass, Poughkeepsie, N Y, High Point, N C, Madison, Wis, and Houston, Texas The Orange (Texas) General Hospital will receive an additional \$15,000 to help defray expenses through March 3 1945

## Foreign Letters

### LONDON

(From Our Regular Correspondent)

Nov 18 1944

#### The Government's Compensation Plan for Industrial Injury

In the House of Commons Mr Herbert S Morrison, home secretary, opened a debate on the government's proposal to make workmen's compensation for industrial injury a state service. It would thus be part of the program for social security and national health. The proposal applies to all workers over school age working under a contract of service or apprenticeship. There will not be a special levy on hazardous industries, as proposed in the Beveridge scheme. Persons not in the hazardous industries were fortunate, the secretary felt and would not mind contributing to the bad luck of those in other, more hazardous, industries. Another departure from the Beveridge scheme is flat rates of benefit with supplements for family needs. A workman who loses an arm, leg, eye or other part will get an industrial injury pension no matter what his earnings or his status in industry. Delays due to litigation between workmen and employers would be abolished under the proposed plan it was stated. All claims would be paid by the government. Compensation would be based on the degree of disablement instead of on loss of earning capacity. The workman would be encouraged to cooperate in his restoration to health and earning capacity without the fear of losing his compensation. The scheme would apply to personal injuries arising out of employment and to specified industrial diseases.

#### The Suppressive Treatment of Malaria with Mepacrine (Quinacrine)

During the past year the medical services of the allied forces have learned much about the suppressive treatment of malaria with mepacrine. According to the *Army Medical Department Bulletin* mepacrine will not completely prevent malarial infection; there is no true prophylactic effect. But mepacrine has a valuable action in suppressing the clinical manifestations of malaria. This is shown in a reduced number of attacks, lesser severity of attacks which are not prevented and great diminution in mortality. If mepacrine is continued for four to six weeks after risks of exposure to fresh infection have passed, two good effects may be expected: a high proportion of radical cures, especially in malignant tertian malaria, and a substantial diminution in the number of gametocyte carriers. These results have an important bearing on military operations in malarious areas.

In areas where the risk of malaria is slight and mainly due to *Plasmodium vivax* (benign tertian) it has been found that a total weekly dosage of 0.4 Gm. will act as an efficient suppressive. But most of the areas in which our troops have been operating are highly malarious at some season. Therefore the recommended weekly dosage is 0.6 Gm. or preferably 0.7 Gm. Such doses have less effect on mental and physical efficiency than have equivalent amounts of quinine. These doses have been given over periods of a year or more without demonstrable ill effects. While taking the first few doses some may complain of slightly unpleasant side effects, mainly gastrointestinal but under the present system these effects have been negligible and they soon disappear if the treatment is persisted in. True intolerance to suppressive mepacrine so severe as to contraindicate is rare—only to 0.1 to 0.2 per cent at the outside. Observations in the field show that the more strictly and regularly a unit has mepacrine administered, the fewer the attacks of malaria. Benign tertian infections, however, are liable to reveal themselves at a later date. No treatment is known which will prevent this.

Suppressive treatment never justifies relaxation of personal protective measures against the bites of infective mosquitoes. Evidence accumulated in the past year emphasizes that while the medical services can do and have done much to mitigate and remedy the effects of malarial infections serious conditions may still arise, both at the time and at a later date, because of circumstances over which the services have no control. These are created by failure to enforce antimalarial measures in the strictest manner.

#### Social Adjustment and Venereal Diseases

The Medical Women's Federation has issued an important statement on the relation of venereal diseases to social and personal maladjustments. The statement says that while the war has brought out splendid qualities in our people and many display magnificent courage and devotion yet it is also responsible for an accompanying malaise. Social disorders are associated with failure to practice ideal conduct as well as lack of discipline and personal responsibility. Among the signs of social malaise are (1) lowering of the standards of honesty and consideration for others, (2) an increase in delinquency, including juvenile delinquency, (3) more widespread indulgence in alcohol among young people, (4) lessening of family ties, (5) sexual incontinence, promiscuity, an increase in soliciting and consequent rise in the incidence of venereal diseases and (6) tolerance of a low type of reading matter and public entertainment. An acceptance of materialistic ideals has led to spiritual poverty, the federation states. The sense of insecurity of life, the loss of home background and other dislocations of war have increased confusion. The immediate satisfaction of an impulse is often accepted. The federation believes that continence (apart from marital relations) is the ideal for both sexes if the vitality of the race and the happiness of individuals are to be assured. They condemn the view that incontinence is not detrimental if precautions are taken against disease and pregnancy. Continence is not harmful to either sex, it is stated. For the prevention of venereal diseases and other social disorders the federation puts forward as minimal essentials (1) recognition of the vital importance of home and family life with opportunities for early marriage, (2) training from an early age in moral responsibility and social obligation, (3) religious training, (4) physical training with instruction in the functions of hygiene and control of the body, (5) training in the understanding of the emotions, (6) extension of education into adult life, including parentcraft, for both sexes, (7) encouragement of a high standard of literature and entertainment and (8) suitable opportunities for social contacts and recreation.

#### Training the Blinded Who Have Also Lost Their Hands

St Dunstan's was founded for the training of men blinded in the first world war. It has to face a harder problem in this war. There are fewer blinded so far but blinded men who are also maimed have increased considerably in number. This is due to the greater blast and fragmentation of shells and bombs and to the increase of land mines. The result is that St Dunstan's has to train blind men who have lost their hands for entirely new occupations. It may be difficult to believe that such men can be trained to use a typewriter and similar instruments, but this is being done, thanks largely to research work in which other bodies have cooperated to produce devices to be used or gadgets that are attached to the cuffs of blinded handless men or one handed men. These consist of hooks, pegs and clips with which they can operate not only a typewriter but also an elevator, a telephone switchboard, a wireless relay switchboard and a phonograph.

The blinded with only one hand or part of a hand are also being trained to use lathes and some of the simpler machine tools. For typing, an ingenious keyboard cover has been

devised to assist in selecting and striking the keys. A switch-board has been produced for use in connection with a new postoffice, semiautomatic telephone exchange. Devices evolved for the comfort and convenience of these doubly handicapped people include a cigaret lighter and a striking braille watch.

## AUSTRALIA

(From Our Regular Correspondent)

Oct 6 1944

### The Future of Medical Practice in Australia

On August 19 every adult in Australia was asked to record his view as to whether or not he was prepared to grant the commonwealth government increased powers for five postwar years in a wide variety of fields, including "national health in cooperation with the states or any of them." The count of votes has now been completed and the final answer was a definite negative. The figures were 1,963,400 in the affirmative, 2,305,418 in the negative and 56,333 undecided. Because of this defeat in the referendum, two of the plans for the extension of commonwealth social services are in danger of collapse on constitutional grounds. The first scheme is that to provide free medicine, which was provided for in legislation passed early this year but is not yet in operation. In the financial budget for the forthcoming year, provision has been made for this scheme to become operable in January 1945. There has been a failure to reach a general agreement with the medical profession as regards its cooperation in this free medicine scheme. The second proposal was the national medical services scheme, which was promised when the national welfare fund was created last year. There is no provision in the constitution which authorizes the commonwealth to undertake this service or even such social services as have been operating for many years, such as the payment of maternity benefits. One of the difficulties of both the free medicine scheme and the national medical services scheme is that they both conflict sharply with the work and interest of the friendly societies and at the same time revolutionize the established practice of retail chemists and doctors. Any of these groups, or an individual from any group, could take action to have the legislation declared unconstitutional, and it is recognized in commonwealth quarters that any such action would probably be successful. The arrangement made at the premiers' conference for a commonwealth subsidy to provide free treatment in all public hospital beds in Australia is unconstitutional. The commonwealth, however, has a general constitutional power to make grants to the state, and the free hospital scheme legislation could doubtless be so framed as to depend on this power and thus survive a challenge. It is unlikely that the state governments will give the commonwealth government extended power to deal with health services. Alternatively, the states themselves may embark on separate schemes to be fused later into an Australiawide service.

### Nursing Reform

The first report of the committee for reorganization of the nursing profession has now been published. The chairman of the committee is Hon C. A. Kelly, M.L.A., minister for health in New South Wales. The primary reason for seeking to improve the status and training of nurses, as well as nursing conditions, is that for some time it has been apparent that not so many women have been volunteering for training as nurses, and even among those who complete their course many seek more lucrative employment elsewhere. Main questions for review by the committee were increased remuneration, providing for shorter hours and permitting nurses to start training at 17 instead of 18 years of age. The committee appointed three subcommittees to deal with the various aspects of the problem under the following headings: recruitment—to consider the establishment of a central recruitment bureau for a

publicity campaign, conditions—to consider the allotment of better salaries, better living conditions, improved diet and lay help for domestic duties in hospitals, training—to improve the standing and status of the nursing profession from preliminary training through postgraduate to higher specialized positions. The committee is opposed to reducing the training period from four years to three years but recommends that girls be allowed to enter a preliminary training school at the age of 17 and serve a twelve months course in that school, that year to be counted as one of the four year course. It is recommended that trainees be allowed £130 a year, including board and lodging. The term "student nurse" instead of "probationer" should be used in all training schools, the committee also suggests. The establishment of a college of nursing which will control the preliminary training schools is recommended. This will be a body constituted by the government, with representatives of the nursing profession, university, medical profession and other interested groups. Postgraduate courses for trained nurses wishing to qualify as hospital and ward administrators, and Sister Tutors should be inaugurated in conjunction with university and technical college, it is proposed. Salaries for nurses should be increased, and an allowance of £26 per annum, subject to a "means" test, be granted to girls between the ages of 15 and 17 years who wish to take up nursing, to enable them to stay at school and undergo training for nursing. Conditions which are often unfavorable to nurses need to be reviewed, the committee believes. These are working hours, leaves of absence, accommodations, social life, diet, fitness of seniors to handle staff, superannuation, volume of work and uniform. The educational standard of those taking up nursing should remain as at present, while the shortage of recruits persists, but eventually it should be raised, the committee states. All training schools should have the services available of Sister Tutors—one Sister Tutor to every fifty or sixty student nurses. Specialist work should be encouraged. The committee considers that the title "Sister" should apply to every graduate nurse and the term "general nurse" or "staff nurse" be abolished. This now applies throughout the army and air force nursing services.

### High Cost of Social Services in Australia

Ten years ago the total budget of the commonwealth of Australia was £71,000,000, and in 1939, when some war expenditure was met, it was £101,000,000. In the future it is estimated that social services alone will cost the commonwealth £100,000,000. This is made up as follows: invalid and old age pensions, child endowment and widows' pensions, £36,750,000, maternity allowances, funeral allowances, pharmaceutical benefits, sickness, unemployment and hospital benefits, £19,610,000, provision of medical and hospital benefits, £20,000,000, present repatriation costs, £10,400,000, and future repatriation commitments, £10,000,000. With a population of 7,000,000, this will represent an annual cost of £14 per capita.

---

## Marriages

---

CHARLES C. HARROLD, JR., Macon, Ga., to Lieut. Paulette Marguerite Devinc in Vesoul, France, recently.

JOHN EDWARD HUGHES, New York, to Miss Lucille Romona Hoffmann of Brooklyn, October 21.

JOHN CLAYTON O'DELL, JR., to Miss Glory Sims Mott, both of Jacksonville, Fla., September 29.

WILLIAM H. JACOBSON, Canton, Ohio, to Miss Elaine P. Rhein of Brooklyn, October 21.

ROBERT G. ROSSER, JR., Vass, N. C., to Miss Clara Holcombe of Weaverville, October 11.

PAUL A. MANKOVICH, Latrobe, Pa., to Miss Irene Petrick of Farrell, September 7.

FRANK J. IWERSEN, Omaha, to Miss Marcella O'Connor of San Francisco in April.



## Deaths

**William Alvin Bryan**, Norwich, Conn., George Washington University School of Medicine, Washington, D. C., 1908, specialist certified by the American Board of Psychiatry and Neurology, Inc. member of the American Medical Association, American Psychiatric Association, Massachusetts Psychiatric Society and the New England Society of Psychiatry, past president of the Worcester District Medical Society and Massachusetts Association for Occupational Therapy formerly member of the board of managers of the National Association for Occupational Therapy at one time worked with the U. S. Public Health Service served as chairman of the Massachusetts Board of Nursing Registration for many years lecturer in social administration Boston University School of Religious Education formerly on the staffs of the Cherokee State Hospital, Cherokee, Iowa, Psychopathic Hospital Boston and Danvers State Hospital, Hathorne, Mass. assistant to the commissioner Massachusetts Department of Mental Diseases Boston 1920-1921, for many years superintendent of the Worcester State Hospital, Worcester, Mass. since 1940 superintendent of the Norwich State Hospital where he also maintained his residence and where he died November 7, aged 60 of bronchio pneumonia.

**Henry S. Cole** ♂ Lieutenant Colonel U. S. Army retired Clearwater, Fla. Chicago Homeopathic Medical College, 1902, U. S. Army Medical School, 1925, Medical Field Service School, Carlisle Barracks, 1925 completing an advanced course in 1936 veteran of the Spanish-American War and World War I, served as captain of infantry in the Michigan National Guard instructor in medical officers' training camp at Fort Riley, Kansas 1917-1918, entered the medical corps of the U. S. Army as a captain in 1920 promoted to major in 1929 and retired with the rank of lieutenant colonel in 1937 for disability incurred in line of duty member of the Association of Military Surgeons of the United States, for four terms mayor of Owosso and Whitehall, Mich. served as health officer for many years and as chairman of the county Republican conventions, organized the Pinellas County medical defense in 1941, serving as a member of the draft board of Pinellas County since 1942 active in the Kiwanis Club died in the AAF Regional Station Hospital, Drew Field, November 6, aged 65, of hypertension and coronary heart disease.

**William Wesley Wright**, Utica, N. Y. University of Michigan Department of Medicine and Surgery, Ann Arbor 1904 formerly senior assistant physician at the Psychiatric Institute, New York served as clinical instructor in medicine in the departments of psychopathology and psychiatry at Cornell University Medical College and later chief of the Cornell Clinic, New York member of the American Medical Association and the American Psychiatric Association past president of the Utica Academy of Medicine served as acting clinical director of the Manhattan State Hospital in New York and as first assistant physician at the Buffalo State Hospital, Buffalo at one time superintendent of the Pilgrim State Hospital, Brentwood formerly assistant superintendent of the Marcy State Hospital, Marcy in July 1931, when it separated from the Utica State Hospital, retiring in 1943 on the staffs of the Faxon Hospital and St. Elizabeth Hospital where he died October 28, aged 71 of cerebral hemorrhage.

**Samuel Clifton Baldwin** ♂ Salt Lake City University of Louisville Department of Medicine Louisville, Ky. 1884 specialist certified by the American Board of Orthopedic Surgery Inc. member of the House of Delegates of the American Medical Association 1904 1905 and 1908, member of the American Orthopaedic Association and the American Academy of Orthopaedic Surgeons, fellow of the American College of Surgeons past president of the Utah State Medical Association lieutenant colonel in charge of the army orthopaedic department during World War I, colonel, medical reserve corps U. S. Army, not on active duty for many years chief of the Primary Children's Hospital on the staffs of the Dr. W. H. Groves Latter-Day Saints Hospital, Holy Cross Hospital and the Salt Lake County General Hospital consulting surgeon at the Utah State Hospital, Provo recently received the honorary degree of doctor of science from the University of Utah, where he had been a member of the board of regents died October 19, aged 89 of coronary heart disease.

**John Leeming** ♂ Chicago, Victoria University Medical Department, Coburg, Ont., Canada 1886 L.R.C.P., London, England, 1886, also a lawyer Second Vice President of the

American Medical Association, 1916-1917 formerly connected with Northwestern University Medical School as lecturer and professor of materia medica, served as professor of medical jurisprudence and lecturer at the Kent College of Law, formerly attending surgeon at the Chicago Baptist and Cook County hospitals, retired medical counsel for the Chicago Surface Lines, died in the Illinois Central Hospital November 4, aged 85 of cerebral hemorrhage.

**Fletcher Gladstone Asbill** ♂ Ridge Spring, S. C. University of Maryland School of Medicine, Baltimore 1894, vice president of the Ridge Banking Company, died in the Columbia Hospital, Columbia, November 5, aged 76, of carcinoma of the urinary bladder.

**George James Aste** ♂ Chicago, Chicago College of Medicine and Surgery, 1908, formerly assistant professor of operative surgery at the Chicago Polyclinic died November 14, aged 66, of carcinoma of the descending colon and rectum, with general metastasis.

**James Knox Polk Blackburn**, Pulaski, Tenn., Vanderbilt University School of Medicine, Nashville, 1893, president and formerly vice president and member of the state board of medical examiners, member of the state basic science board, city and county health officer, served during World War I, member of the American Medical Association and past president of the Middle Tennessee Medical Society, died October 31, aged 71, of heart disease.

**Thomas Francis Brennan** ♂ Ness City, Kan., Creighton University School of Medicine, Omaha, 1929, president of the Rush-Ness Counties Medical Society served an internship at the Creighton Memorial St. Joseph's Hospital, Omaha, died in Hays August 26, aged 39 of cerebral hemorrhage.

**Albert A. Brooks**, Orrville, Ohio, Homeopathic Hospital, Cleveland, 1882 died October 24, aged 86, of bronchopneumonia.

**Myron Ernest Carmer**, Lyons, N. Y. University of Vermont College of Medicine, Burlington 1885 member of the American Medical Association died November 6, aged 90, of myocarditis.

**Harry Elmore Clark** ♂ Pittsburgh, Western Pennsylvania Medical College, Pittsburgh, 1888 president of the Sheraden Bank, served as vice president of the University of Pittsburgh Fifty Year Alumni Club died October 23, aged 82, of coronary sclerosis.

**Leonard Hamilton Clark**, Mancos, Colo. Colorado School of Medicine, Boulder, 1894, died October 14, aged 82, of endocarditis and senility.

**Emmett Addis Corbin**, Eaton, Colo., College of Physicians and Surgeons, Baltimore, 1907, served during World War I, formerly on the staff of the Greeley Hospital, Greeley, died October 5, aged 61, of pulmonary embolism following an operation for cancer.

**Phillip G. Cowing**, Evansville, Minn. (licensed in Minn. 1894) died in Fergus Falls August 21, aged 72 of myocarditis.

**Matthew F. Creaven**, Pittsburgh, College of Physicians and Surgeons, Baltimore 1891 died October 21, aged 80 of chronic nephritis and general arteriosclerosis.

**Harvey Thomas Cuming** ♂ Pace, Miss. University of Tennessee Medical Department Nashville, 1899, served overseas during World War I died September 29, aged 67, of hypertensive heart disease.

**Dowdal Henry Davis** ♂ Independence, Kan., Howard University College of Medicine Washington D. C., 1906 died September 28, aged 61.

**Charles G. Dean**, Greeley, Colo. University of Louisville (Ky.) Medical Department 1893, died September 13, aged 77 of arteriosclerosis.

**James L. De Foe**, Chesterfield, Mo. Missouri Medical College St. Louis 1891 died in the Missouri Baptist Hospital St. Louis, September 28, aged 79, of lobar pneumonia.

**Robert Samuel Edwards**, Cedar Vale, Kan., Bennett Medical College, Chicago 1910 member of the American Medical Association died September 5, aged 78, of cardiovascular disease.

**William Henry Ewin**, Portland, Ore., University Medical College of Kansas City Mo., 1891 died September 24, aged 76 of cerebral thrombosis.

**George Lewis Fischer**, Buffalo, University of Buffalo School of Medicine, 1903, member of the American Medical Association, died October 12, aged 66 of cerebral hemorrhage and arteriosclerosis.



**Joseph Allen Fisher** \* Metropolis Ill., St. Louis University School of Medicine, 1905 founder and owner of the Fisher Hospital in 1942 had been chosen president of the Southern Illinois Medical Association died November 1 aged 63 of coronary thrombosis

**Frank Nathan Gaggin**, Chicago Reliance Medical College Chicago, 1909 College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois 1910, member of the American Medical Association past president and for many years a member of the staff of the Norwegian American Hospital, died October 27 aged 74 of chronic myocarditis

**Eugene A. Gilbert** \* Chattanooga Tenn., Vanderbilt University School of Medicine Nashville 1913 member of the American Society of Anesthetists past president of the Chattanooga and Hamilton County Medical Society on the staffs of the Pine Breeze Sanatorium and the Baroness Erlanger Hospital died in Sarasota Fla. October 16 aged 55 of heart disease

**Alexander Liddell Gillars** Philadelphia Jefferson Medical College of Philadelphia, 1888 member of the American Medical Association served during World War I formerly a resident of Pottsville Pa. where he had been on the staffs of the Pottsville Hospital deputy coroner member of the school board and physician for the Schuylkill County Jail died October 7 aged 78, of cardiovascular disease and prostatitis

**Robert Cunningham Hanna**, Varion Ala. Hospital College of Medicine Louisville 1902 member of the American Medical Association died in the Goldsby King Memorial Hospital, Salem, October 16, aged 66, of carcinoma of the liver

**Charles Henry Hayton** \* Los Angeles George Washington University School of Medicine Washington D. C., 1911 professor emeritus of otolaryngology at the College of Medical Evangelists, specialist certified by the American Board of Otolaryngology fellow of the American College of Surgeons on the staffs of the California and White Memorial hospitals died October 9, aged 75 of heart disease

**Cecil Theodore Heidel**, Evanston Ill. Northwestern University Medical School, Chicago 1912 formerly clinical instructor in pediatrics at Rush Medical College Chicago, died November 14, aged 62, of cerebral hemorrhage

**William Cephas Herman** \* Cincinnati Miami Medical College Cincinnati 1902 also a pharmacist died October 24, aged 71 of carcinoma

**William Henry Hogue**, Marietta, Ohio, University of Louisville (Ky.) Medical Department 1894 died September 21, aged 75, of chronic myocarditis

**John H. Lapointe**, Meriden Conn. School of Medicine and Surgery of Montreal, Faculty of Medicine of the University of Laval at Montreal 1892 member of the American Medical Association formerly police commissioner, on the staff of the Meriden Hospital died September 16 aged 78, of coronary thrombosis

**Jarl F. Lemstrom**, Minneapolis University of Minnesota College of Medicine and Surgery, Minneapolis, 1907 formerly assistant in embryology at his alma mater died September 24, aged 63 of carcinoma of the pancreas

**Joseph Moses Lindenbaum**, Chicago Rush Medical College Chicago, 1923 died October 25 aged 46 of melanoma

**William A. Lurie**, New Orleans Rush Medical College Chicago, 1903 member of the American Medical Association formerly clinical assistant in surgery at his alma mater died in the Toussaint Infirmary September 24 aged 63 of carcinoma of the pancreas

**Thomas Edward MacKedon**, Milwaukee Marquette University School of Medicine Milwaukee 1913 served overseas during World War I, on the staffs of the Deaconess and Misericordia hospitals died in the Veterans Administration Hospital, October 3 aged 57 of cerebral hemorrhage and essential arterial hypertension

**Angus Malcolm McAuley** \* Bvhalia, Miss. Memphis (Tenn.) Hospital Medical College 1904 examining physician for the draft board during World Wars I and II for many years county health officer died November 26 aged 66 of cerebral hemorrhage and arterial hypertension

**Harvey Benjamin McCrory**, Musings Mich. Detroit Homeopathic College 1909 served during World War I formerly physician of Saginaw County died in Grand Rapids October 1, aged 59 of interstitial nephritis and diabetes mellitus

**William Edward Merrick** \* Cleveland, University of Wooster Medical Department Cleveland, 1908, for many years physician for the W. S. Tyler Company, on the staffs of St.

Ann's Hospital, St. John's Hospital and St. Vincent Charity Hospital where he died October 11 aged 60 of cerebral hemorrhage

**James Mitchell**, Gladstone, Mich. Queen's University Faculty of Medicine Kingston Ont. Canada 1899 member of the American Medical Association city health officer served as president and for many years as a member of the board of education died October 20 aged 74, of nephritis

**Walter Willard Overfield**, Forrester Ill. Rush Medical College, Chicago, 1890, for many years president of the Commercial State Bank died October 1 aged 76 of heart disease

**Ivan Bryan Parker**, Hill City Kan. University Medical College of Kansas City Mo. 1894 member of the American Medical Association died October 4, aged 73 of hypertension

**Henry Vincent Pennington** \* London, Ky. Tennessee Medical College Knoxville 1891 Hospital College of Medicine Louisville Ky., 1899 Jefferson Medical College of Philadelphia 1900 served as president of the Laurel County Medical Society medical director and owner of the Pennington General Hospital where he died October 15 aged 74 of cerebral hemorrhage and diabetes mellitus

**John Charles Peters**, Amityville N. Y. New York Homeopathic Medical College and Flower Hospital New York 1931, member of the American Medical Association served an internship at the Flushing Hospital and Dispensary Flushing N. Y. and as resident physician at the Kingsway Hospital in Brooklyn, on the staffs of the Southside Hospital Bay Shore Nassau Suffolk General Hospital, Copiague and the Brunswick Home died October 6 aged 36 of coronary occlusion

**Joel C. Poindexter**, Imboden Ark. Hospital College of Medicine, Louisville Ky., 1896 died October 4, aged 79, of cerebral hemorrhage

**Michael L. Porvaznik** \* Duquesne, Pa. University of Pittsburgh School of Medicine 1928 president of the Duquesne Medical Society served an internship at the Western Pennsylvania Hospital Pittsburgh on the courtesy staff of the McKeesport Hospital, McKeesport, died October 11 aged 40 of pulmonary tuberculosis

**Wyeth Elliott Ray**, Pawling, N. Y. Yale University School of Medicine New Haven, Conn., 1898, formerly medical director of the Travelers' Life and the Germania Life Insurance companies, died October 25 aged 66, of coronary thrombosis

**James Powell Riffe**, Covington, Ky. Medical College of Ohio, Cincinnati, 1894 since 1933 coroner of Kenton County formerly health officer of Covington on the staffs of St. Elizabeth and William Booth Memorial hospitals served as chairman of the Kenton County Chapter of the American Red Cross, as president of the Kenton County Tuberculosis League Commission and as secretary of the Campbell-Kenton Counties Medical Milk Commission died October 20 aged 72 of carcinoma

**Arthur Garfield Ringer** \* Cambridge Ohio Ohio Medical University Columbus 1904 died in the White Cross Hospital Columbus, September 30 aged 63 of congestive heart failure and acute nephritis

**Frank Henry Sargent** \* Pittsfield, N. H. Dartmouth Medical School Hanover 1890 served on the school board and in 1929 member of the New Hampshire legislature, at one time physician in charge of Sargent Hall formerly president and later trustee of the Pittsfield Savings Bank died July 11 aged 83, of hypostatic pneumonia and intracranial hemorrhage due to a fall

**Theodore H. Schreuder**, Chicago Rush Medical College Chicago 1891 died in the Norwood Park Norwegian Old People's Home October 7 aged 84 of myocarditis and arteriosclerosis

**Herbert Emerson Smead**, Toledo Ohio, Western Reserve University Medical Department Cleveland 1897 at one time associate professor of pediatrics at the Toledo Medical College past president of the Academy of Medicine of Toledo and Lucas County formerly chief of staff of the Toledo Hospital, where he died October 21 aged 71 of bilateral bronchopneumonia

**Frank Clinton Smith**, Geneva Ohio, the Hahnemann Medical College and Hospital Chicago 1893 member of the American Medical Association member of the Ashtabula County Board of Health formerly health officer and secretary-treasurer of the board of education in Geneva, member of the Rotary Club anesthetist at the Community Hospital, where he died October 12 aged 77, of coronary thrombosis

**Joseph Benjamin Smith** \* Braddock, Pa., Medical Department of the Western University of Pennsylvania, Pittsburgh,

1907, on the staff of the Braddock General Hospital died October 16, aged 64, of coronary thrombosis

**Charles-William Snyder**, Louisville, Ky., Yale University School of Medicine New Haven, Conn, 1900, medical director of the Domestic Life and Accident Insurance Company, chairman of the board of directors of the Red Cross Hospital, died October 11, aged 74, of hypertensive heart disease

**Frederick George Speidel** Ⓢ Louisville, Ky., University of Louisville School of Medicine, 1917, assistant clinical professor of pharmacology at his alma mater, fellow of the American College of Physicians, member of the Southern Medical Association specialist certified by the American Board of Internal Medicine, served in the U S Navy during World War I on the staffs of the Norton Memorial Infirmary, Kentucky Baptist St Anthony's and Kosair Crippled Children hospitals died October 15, aged 55 of coronary occlusion

**Solomon Ellis Spratt**, Mount Sterling Ky Kentucky School of Medicine, Louisville, 1900 died in the Good Samaritan Hospital, Lexington, October 18, aged 75, of heart disease

**Enoch Lafayette Stamey**, Greensboro, N C., Atlanta Medical College 1895 died October 17 aged 84 of cardiovascular disease

**I**, formerly owner and medical director of the West Side Hospital, died in St Francis Hospital September 27, aged 65, of carcinoma of the cecum

**Burtrum L Ware**, Fort Smith, Ark. University of Arkansas School of Medicine, Little Rock, 1909, member of the American Medical Association, past president of the Sebastian County Medical Society, served as vice president of the Farmers Bank of Greenwood, on the staffs of the Sparks Memorial and St Edward's Mercy hospitals died October 11, aged 61 of heart disease

**Minerva Porter Wertz**, Spencer, Iowa, State University of Iowa College of Medicine, Iowa City, 1893, died September 13 aged 73, of myocarditis

**John Harrison Wood**, Georgetown, Miss., Memphis Hospital Medical College Memphis, Tenn, 1904, died October 2 aged 74, of heart disease

**Eugene Wynne**, Brooklyn, Long Island College Hospital, Brooklyn, 1908, member of the American Medical Association head physician of the Bethlehem Steel Company plant served on the staffs of the Norwegian Hospital, Samaritan Hospital and the Methodist Hospital, where he died October 21, aged 60 of heart disease



**CAPT WILLIAM E MCCLAIN JR**  
M C A U S, 1912-1944



**CAPT ZEPHANIAH B WEINGART JR**  
M C, A U S, 1917-1944



**CAPT ISADORE MARVIN SILVERMAN**  
M C, A U S, 1911-1944

**William McHenry Swickard** Ⓢ Charleston, Ill. Rush Medical College, Chicago 1926, on the staff of the M A Montgomery Memorial Hospital, died October 15, aged 46 of adenocarcinoma

**Colmore Hasty Tate**, Chicago, Chicago College of Medicine and Surgery, 1913, died October 5, aged 56, of coronary thrombosis

**David Thomas** Ⓢ Lorain Ohio, University of Michigan Department of Medicine and Surgery, Ann Arbor, 1912 member of the board of censors, past president and vice president of the Lorain County Medical Society, trustee of the Pleasant View Sanatorium, chief of the obstetric department of St Joseph's Hospital, a lieutenant in the medical corps of the U S Army during World War I died October 19, aged 58 of cardiac failure and carcinoma of the sigmoid

**Hubert Dale Joseph Thomas**, Dallas Texas Baylor University College of Medicine, Dallas, 1943, served an internship and residency in medicine at the Wichita Falls Clinic Hospital, Wichita Falls, died in a local hospital September 26, aged 31

**Thomas Raymond Usher** Ⓢ Maplewood, Mo. St Louis University School of Medicine, 1932, formerly an intern, resident in surgery and superintendent of St Louis County Hospital Clayton served on the staffs of Deaconess Hospital, St Mary's Hospital and the Missouri Baptist Hospital St Louis, where he died September 30, aged 40 of injuries received when his automobile collided with a street car

**Benjamin Van Campen**, Olean, N Y University of Buffalo School of Medicine 1908 served during World War

**Arthur John Zimlick** Philadelphia, Washington University School of Medicine, St Louis 1895 member of the American Medical Association, served during World War I died in St Joseph's Hospital September 2, aged 70, of arteriosclerotic heart disease

#### KILLED IN ACTION

**William E McClain Jr**, Seattle Creighton University School of Medicine, Omaha, 1938, served an internship and residency in surgery at the King County Hospital, commissioned a first lieutenant in the medical corps, Army of the United States, on July 7, 1942 later promoted to captain, a flight surgeon, killed in action in the European area June 19, aged 31

**Zephaniah Branch Weingart Jr**, Lecompte, La., Tulane University of Louisiana School of Medicine, New Orleans, 1942 served an internship and residency at the Charity Hospital in New Orleans, commissioned a first lieutenant in the medical corps, Army of the United States, on July 7 1942, later promoted to captain, killed in action in the European area July 13, aged 27

**Isadore Marvin Silverman**, Brooklyn Creighton University School of Medicine, Omaha, 1936 served an internship at the Hospital for Joint Diseases in New York commissioned a first lieutenant in the medical corps, Army of the United States on July 3, 1942 later promoted to captain, killed in action in France, August 26 aged 32

## Council on Medical Education and Hospitals

### GRADUATE CONTINUATION COURSES FOR PRACTICING PHYSICIANS

In accordance with the plan of the Council on Medical Education and Hospitals, advance information concerning graduate continuation courses for practicing physicians available in various centers is published semiannually. The following list consists

of courses beginning during the period January 1 through June 30, 1945. It is hoped that this material will be useful to physicians seeking opportunities for postgraduate work. Physicians called on to assume new responsibilities because of the war and physicians who are returning to practice may find here listed courses which will be of help to them. Since many of the classes are necessarily limited, those who contemplate enrolling in any of these courses are urged to communicate as early as possible with the institution listed.

Institutions offering continuation courses are invited to announce such courses in these semiannual lists compiled by the Council on Medical Education and Hospitals.

#### TABLE OF CONTENTS

| Subject                     | Page | Subject                   | Page | Subject                 | Page |
|-----------------------------|------|---------------------------|------|-------------------------|------|
| Allergy                     | 1103 | Fractures                 | 1103 | Otorhinolaryngology     | 1109 |
| Anatomy                     | 1103 | Gastroenterology          | 1105 | Pathology               | 1109 |
| Anesthesiology              | 1103 | Hematology                | 1106 | Pediatrics              | 1109 |
| Arthritis                   | 1104 | Industrial Medicine       | 1106 | Physical Medicine       | 1110 |
| Bacteriology                | 1104 | Laboratory                | 1106 | Poliomyelitis           | 1110 |
| Bronchoesophagology         | 1104 | Medicine General          | 1106 | Proctology              | 1110 |
| Cardiovascular Diseases     | 1104 | Neurology and Psychiatry  | 1107 | Public Health           | 1110 |
| Chest Diseases              | 1104 | Neurosurgery              | 1108 | Radiology               | 1110 |
| Dermatology and Syphilology | 1104 | Nutrition                 | 1108 | Surgery                 | 1111 |
| Diabetes                    | 1105 | Obstetrics and Gynecology | 1108 | Therapeutics            | 1111 |
| Electrocardiography         | 1105 | Ophthalmology             | 1108 | Tropical Medicine       | 1111 |
| Endocrinology               | 1105 | Orthopedic Surgery        | 1109 | Urology                 | 1111 |
| Endoscopy                   | 1105 | Otology                   | 1109 | Veneral Disease Control | 1111 |

#### Graduate Continuation Courses for Practicing Physicians—Jan 1 1945–June 30, 1945

| Institution  | Title of Course   | Schedule of Course  | Registration Fee and/or Tuition  |
|--|---|---|----------------------------------|
| <b>ALLERGY</b><br>(See also Dermatology and Syphilology)   |   |   |                                  |
| Tufts Medical School Postgraduate Division<br>Boston 11 Massachusetts<br>At Boston Dispensary  | Allergy   | May 14 thr 18 1945  | \$20.00                          |
| Long Island College of Medicine Medical Society of County of Kings and Academy of Medicine Brooklyn<br>At Kings County Hospital 451 Clarkson Brooklyn New York     | Allergy   | April 6 1945 for eight weeks<br>once a week   | 10                               |
| Columbia University New York Postgraduate Medical School<br>203 East 20th Street New York 3 New York   | Allergy   | January 5 thr February 23 1945<br>part time<br>April 9 thr 27, 1945 full time<br>March 12 thr 16 1945 | 25<br>200<br>50                  |
| Columbia University<br>At Mount Sinai Hospital 5th Avenue and 100th Street New York 29 New York  | Recent Advances in Allergy                              |   |                                  |
| New York Medical College Flower and Fifth Avenue Hospitals<br>1 East 10th Street New York New York   | Allergy   | Arranged 2 months   | 50                               |
| Seventh Annual Forum on Allergy, 950 Bryden Road Columbus 5 Ohio<br>At William Penn Hotel Pittsburgh Pennsylvania  | Seventh Annual Forum on Allergy                         | January 19 20 21 1945   |                                  |
| <b>ANATOMY</b><br>(See also Orthopedic Surgery Otology Otorhinolaryngology Proctology and Surgery)   |   |   |                                  |
| Resarch Study Club of Los Angeles 727 West 7th Street Los Angeles California<br>At University of California, North Broadway Clinic San Francisco California        | Applied Anatomy and Cadaver Surgery of Head and Neck    | February 2 thr 10 1945  | 50.00                            |
| University of Michigan Medical School Michigan State Medical Society Wayne University Michigan Department of Health<br>At East Medical Building Ann Arbor Michigan | Anatomy   | Spring 1945 once a week during spring term  | 25                               |
| Columbia University New York Postgraduate Medical School<br>203 East 20th Street New York 3, New York  | Dissection of Head and Neck                             | Arranged Part time  | per hour 10                      |
| New York Medical College Flower and Fifth Avenue Hospitals<br>1 East 10th Street New York New York   | Applied Anatomy of the Abdomen                          | Arranged 120 hours  | either sex 200<br>both sexes 500 |
|  | Applied Anatomy for the Anesthetist                     | Arranged 100 hours  | 275                              |
|  | Applied Anatomy of the Face and Throat                  | Arranged 80 hours   | 275                              |
|  | Applied Anatomy of the Head and Neck                    | Arranged 160 hours  | 300                              |
|  | Applied Anatomy of the Lower Extremity                  | Arranged 60 hours   | 115                              |
|  | Applied Anatomy for the Orthopedic Surgeon              | Arranged 100 hours  | 275                              |
|  | Applied Anatomy of the Thorax                           | Arranged 110 hours  | 275                              |
|  | Applied Anatomy of the Upper Extremity                  | Arranged 60 hours   | 115                              |
|  | Applied Anatomy of the Urogenital System                | Arranged 160 hours  | 250                              |
|  | Rhinolaryngologic (Cadaver) Operations                  | Arranged 10 days 20 hours   | 150                              |
| <b>ANESTHESIOLOGY</b><br>(See also Anatomy and Obstetrics and Gynecology)  |   |   |                                  |
| University of Georgia School of Medicine<br>At University Hospital Augusta Georgia   | General Anesthesia (Inhalation and Intravenous)         | Arranged 2 weeks  |                                  |
| Harvard Medical School Courses for Graduates<br>Street Boston 15 Massachusetts<br>At Boston City Hospital Harvard Teaching Service and Faulkner Hospital Boston    | Regional Anesthesia<br>Clinical Anesthesia              | Arranged 2 weeks<br>Arranged Monthly  |                                  |
| Columbia University New York Postgraduate Medical School<br>203 East 20th Street New York 3 New York   | Anesthesia  | January thr June 1945<br>2 weeks full time  | 100                              |
| New York Polyclinic Medical School and Hospital 345 West 50th Street New York 19 New York  | Regional Anesthesia<br>(Regional Spinal etc Anesthesia) | Arranged 12 sessions<br>First of any month<br>3 months full time                                      | 75.00<br>300.00                  |

References will be found on p 1111

## Graduate Continuation Courses for Practicing Physicians—Jan 1, 1945—June 30 1945—Continued

| ARTHRTIS   |   |   |  | Registration Fee and/or Tuition  |  |
|--|---|---|--|--|--|
| Institution  | Title of Course   | Schedule of Course  |  |  |  |
| Columbia University New York Postgraduate Medical School<br>303 East 20th Street New York 3 New York   | Arthritis and Allied Rheumatic Disorders  | January 2 thr February 27 1945<br>Part time<br>April 0 thr 13 1945 Full time  |  | \$45   | 45                                       |
| BACTERIOLOGY<br>(See also Laboratory and Ophthalmology)  |   |   |  |  |  |
| Columbia University New York Postgraduate Medical School<br>303 East 20th Street New York 3 New York   | Clinical Bacteriology and Serology  | January 2 thr 31 1945 Part time   |  |  | 50                                       |
| BRONCHOSOPHAGOGY<br>(See also Endoscopy)   |   |   |  |  |  |
| Temple University Broad and Ontario Streets Philadelphia<br>Pennsylvania   | Intensive Course in Laryngology and Bronchosophagology  | February 6 thr 16 1945  |  |  | Announced                                |
| CARDIOVASCULAR DISEASES<br>(See also Radiology)  |   |   |  |  |  |
| Harvard Medical School Courses for Graduates 25 Shattuck Street Boston 15 Massachusetts<br>At Beth Israel Hospital Boston  | Cardiology  | May 14 thr June 14 1945 Daily   |  |  | 150                                      |
| Tufts Medical School Postgraduate Division 30 Bennet Street Boston 11 Massachusetts  | Cardiology  | April 30 thr May 4 1945   |  |  | 25 <sup>1</sup>                          |
| University of Michigan Medical School Michigan State Medical Society Wayne University and Michigan Department of Health<br>At University of Michigan Hospital 1313 Ann Street Ann Arbor Michigan       | Diseases of Blood and Blood-forming Organs<br>Diseases of the Heart   | Spring 1945 5 days<br>Spring 1945 3 days  |  |  | 25<br>15                                 |
| Long Island College of Medicine Medical Society of County of Kings and Academy of Medicine Brooklyn<br>At Israel Zion Hospital, 4802 10th Avenue Brooklyn, New York                                    | Clinical Cardiology   | April 10 1945 4 Tuesdays  |  |  | 10                                       |
| At Jewish Hospital 355 Prospect Street Brooklyn New York<br>At Kings County Hospital 451 Clarkson Brooklyn New York  | Peripheral Vascular Diseases<br>Hypertension and Nephritis<br>Heart Disease in Childhood  | April 10 1945 6 weeks twice weekly<br>April 18 1945 8 Wednesdays<br>April 1945 10 sessions  |  |  | 10<br>10<br>10                           |
| American College of Physicians 4200 Pine Street Philadelphia Pennsylvania<br>At Columbia University College of Physicians and Surgeons New York New York   | Cardiology  | March 19, thr 24 1945   |  | Members 20<br>Nonmembers 40  |  |
| Columbia University<br>At Mount Sinai Hospital 5th Avenue and 100th Street New York 29 New York  | Bedside Clinics in Heart Disease<br>Comprehensive Course in Elements of Cardiovascular Diseases<br>Intensive Fluoroscopy and X Ray of Heart and Great Vessels   | February 5 thr March 26 1945<br>Part time<br>April 2 thr June 20 1945<br>January 5 thr March 23 1945<br>Part time   |  |  | 25<br>75<br>30                           |
| At Montefiore Hospital East Gun Hill Rd Bronx New York   | Clinical Cardiology   | February 15 thr May 24 1945<br>Thursday afternoons  |  |  | 50                                       |
| Columbia University New York Postgraduate Medical School<br>303 East 20th Street New York 3 New York   | Cardiology<br>Peripheral Vascular Diseases  | March 12 thr 10 1945 Full time<br>January 2 thr February 27 1945<br>Part time   |  |  | 45<br>30                                 |
| New York Medical College Flower and Fifth Avenue Hospitals<br>1 East 104th Street New York New York<br>(Given also at Metropolitan Hospital New York New York)   | Cardiology<br>Peripheral Vascular Diseases  | March 19 thr 23, 1945 Full time<br>Arranged 20 hours  |  |  | 45<br>150                                |
| Woman's Medical College of Pennsylvania Henry Avenue and Abbottsford Road Philadelphia 29 Pennsylvania<br>University of Texas Medical Branch Galveston Texas<br>At John Sealy Hospital Galveston Texas | Clinical Cardiology<br>Cardiology Conference  | Arranged 2 weeks<br>14 sessions<br>2 weeks<br>Announced 2 days  |  |  | 200<br>100<br>None                       |
| CHEST DISEASES<br>(See also Anatomy Medicine and Radiology)  |   |   |  |  |  |
| Municipal Tuberculosis Sanitarium 5601 North Pulaski Road Chicago, Illinois  | Postgraduate Course in Tuberculosis   | Arranged Continuous   |  |  | None                                     |
| State Sanatorium State Sanatorium Mississippi  | Chest Diseases and Internal Medicine  | Entire year 2 to 6 weeks  |  |  | None                                     |
| Missouri Tuberculosis Association 411 North 10th Street St Louis 1 Missouri Missouri Trudeau Society and Tuberculosis Committee of Missouri State Medical Association<br>At Towns throughout Missouri  | Refresher Course X Ray Conference   | Various dates 1 evening   |  |  | None                                     |
| Columbia University New York Postgraduate Medical School<br>303 East 20th Street, New York 3, New York   | Acute and Chronic Diseases of the Chest   | January 4 thr February 16 1945<br>Part time   |  |  | 45                                       |
| Columbia University<br>At Columbia Presbyterian Medical Center, 630 West 168th Street New York New York  | Physiologically Directed Therapy in Asthma Pulmonary Emphysema and Chronic Pulmonary Tuberculosis   | Arranged 2 weeks Full time  |  |  | 50                                       |
| New York Medical College Flower and Fifth Avenue Hospitals<br>1 East 104th Street New York New York<br>(Given also at Metropolitan Hospital New York New York)   | Diseases of the Respiratory System<br>Thoracic Surgery  | Arranged 1 month<br>Arranged 36 hours   |  |  | 150<br>250                               |
| DERMATOLOGY AND SYPHILOLOGY<br>(See also Medicine and Physical Medicine)   |   |   |  |  |  |
| Tufts Medical School Postgraduate Division 30 Bennet Street Boston 11 Massachusetts<br>At Boston Dispensary Skin Clinic and Pratt Diagnostic Hospital Boston<br>At Boston City Hospital Boston         | Dermatology A<br>Industrial Dermatology <sup>1</sup><br>Venereal Diseases   | May 14 thr 10 1945<br>January 15 thr 20 1945<br>February 6 thr March 29 1945<br>Part time   |  |  | 30 <sup>1</sup><br>50 <sup>1</sup><br>25 |
| Columbia University<br>At Mount Sinai Hospital 5th Ave and 100th St New York 29 New York   | Clinical Dermatology and Syphilology<br>Dermatology and Syphilology for Pediatricians <sup>4</sup><br>Diagnosis and Treatment of Syphilis<br>Practical Instruction in Dermatological Allergy and Immunology<br>Practical Instruction in Diagnosis and Management of Syphilis<br>Seminar in Practical Dermatology and Syphilology<br>Symposium on Dermatology and Syphilology <sup>4</sup> | Arranged 6 weeks or 3 months Part time<br>February 7 thr April 20 1945<br>Part time<br>Arranged 6 weeks or 3 months Part time<br>Arranged 6 weeks or 3 months Part time<br>Arranged 6 weeks or 3 months Part time<br>Arranged 6 weeks or 3 months Part time<br>April 30 thr May 5 1945<br>Full time<br>May 14 thr 19 1945 Full time |  | 6 weeks 50<br>3 months 50<br>100<br>6 weeks 30<br>3 months 50<br>6 weeks 0<br>3 months 50<br>6 weeks 50<br>3 months 50<br>50<br>50 |  |

## Graduate Continuation Courses for Practicing Physicians—Jan 1 1945—June 30 1945—Continued

| Institution  | Title of Course   | Schedule of Course  | Registration Fee and/or Tuition |
|--|---|---|---------------------------------|
| New York Polytechnic Medical School and Hospital 345 West 50th Street New York 19 New York   | Dermatology and Syphilology                                     | First of any month<br>3 month part time<br>6 weeks part time<br>Arranged 2 to 6 months  | \$75<br>50<br>per month 100     |
| University of Wisconsin Medical School 418 North Randall Street Madison, Wisconsin   | Dermatology for Specialists *                                   |   |                                 |
| <b>DIABETES</b>  |   |   |                                 |
| Tufts Medical School Postgraduate Division 30 Bennet Street Boston 11 Massachusetts  | Diabetes  | January 15 thr 20 1945  | 30 <sup>1</sup>                 |
| At Boston Dispensary and Pratt Diagnostic Hospital Boston  | Diabetes  | April 17 1945 8 Tuesdays  | 10                              |
| Long Island College of Medicine Medical Society of County of Kings and Academy of Medicine Brooklyn  | Diabetes  |   |                                 |
| At Jewish Hospital 555 Prospect Place Brooklyn New York  | Recent Advances in Diabetes Mellitus and Hyperinsulinism        | February 5 thr 10 1945 Daily  | 35                              |
| Columbia University<br>At Mount Sinai Hospital 5th Ave and 100th St New York 29 New York   | Diabetes Mellitus Nephritis and Hypertension                    | January 4 thr February 15 1945<br>Part time<br>May 21 thr 25 1945 Full time<br>Arranged 2 to 4 weeks 75 hours   | 45<br>45<br>150                 |
| Columbia University, New York Postgraduate Medical School 303 East 20th Street New York 3 New York   | Diabetes Mellitus   |   |                                 |
| University of Pennsylvania Graduate School of Medicine 237 Medical Laboratories Philadelphia Pennsylvania<br>At Philadelphia Hospital Philadelphia   |   |   |                                 |
| <b>ELECTROCARDIOGRAPHY</b>   |   |   |                                 |
| Michael Reese Hospital 29th St and Ellis Ave Chicago 16, Illinois  | Electrocardiographic Interpretation                             | February 14 thr May 2 1945<br>Part time<br>May 7 thr 11 1945  | 25<br>25 <sup>1</sup>           |
| Tufts Medical School Postgraduate Division 30 Bennet Street Boston 11 Massachusetts  | Electrocardiography   |   |                                 |
| At Pratt Diagnostic Hospital Boston  | Advanced Electrocardiography                                    | January 22 thr 24 1945<br>April 17 1945   | 25 <sup>1</sup><br>20           |
| Long Island College of Medicine Medical Society of County of Kings and Academy of Medicine Brooklyn  | Electrocardiography and Clinical Cardiology                     | 3 times weekly for 5 weeks<br>April 16 1945   | 20                              |
| At Jewish Hospital, 555 Prospect Place Brooklyn New York   | Electrocardiography   | 3 times weekly for 5 weeks<br>June 5 thr August 7 1945<br>Once per week   | 35                              |
| Columbia University<br>At Montefiore Hospital 150 East Gun Hill Road Bronx New York  | Elementary Electrocardiography                                  |   |                                 |
| Columbia University, New York Postgraduate Medical School 303 East 20th Street New York 3 New York   | Electrocardiography   | May 14 thr 18 1945 Full time  | 50                              |
| New York Medical College, Flower and Fifth Avenue Hospitals 1 East 10th Street New York New York   | Electrocardiography   | Arranged 20 hours   | 150                             |
| University of Pennsylvania Graduate School of Medicine 237 Medical Laboratories Philadelphia Pennsylvania<br>At Philadelphia Hospital Philadelphia   | Electrocardiology and Clinical Roentgenology *                  | Arranged 5 days 30 hours  | 60                              |
| <b>ENDOCRINOLOGY</b>   |   |   |                                 |
| (See also Medicine and Obstetrics and Gynecology)  |   |   |                                 |
| Tufts Medical School Postgraduate Division 30 Bennet Street Boston 11 Massachusetts  | Endocrinology   | May 21 thr 25 1945  | 25 <sup>1</sup>                 |
| Long Island College of Medicine Medical Society of County of Kings and Academy of Medicine Brooklyn  | Female Sex Endocrinology  | April 9 1945<br>Once per week for 10 weeks  | 15                              |
| At Jewish Hospital 555 Prospect Place Brooklyn New York  | Endocrine Diseases and Disorders in Children and Adolescents    | April 16 1945 8 Mondays   | 10                              |
| At Long Island College Hospital 340 Henry Street Brooklyn New York   | Endocrinology   | Arranged 2 weeks  | 100                             |
| New York Medical College Flower and Fifth Avenue Hospitals 1 East 10th Street New York New York  |   |   |                                 |
| <b>ENDOSCOPY</b>   |   |   |                                 |
| (See also Bronchoesophagology)   |   |   |                                 |
| Columbia University New York Eye and Ear Infirmary 218 2d Avenue New York New York   | Bronchoscopy (Work on Animals) *                                | Arranged 2 weeks intensive or 2 times a week for 6 weeks  | 250                             |
| Columbia University, New York Postgraduate Medical School 303 East 20th Street New York 3 New York   | Cystoscopy and Endoscopy  | January 3 thr June 29 1945<br>Part time   | 75                              |
| Columbia University<br>At Columbia Presbyterian Medical Center 630 West 165th Street, New York New York  | Bronchoscopy *  | Arranged January thr April 1945<br>3 weeks  | 250                             |
| University of Pennsylvania Graduate School of Medicine 237 Medical Laboratories Philadelphia Pennsylvania<br>At Graduate and Presbyterian Hospital Philadelphia Pennsylvania                 | Cystoscopy Chromoureteroscopia and Pyelography                  | Arranged 6 weeks 36 hours   | 300                             |
| At University of Pennsylvania Surgical and Anatomical Laboratories Graduate, University Philadelphia and Mount Sinai Hospitals Philadelphia Pennsylvania                                     | Bronchoesophagology Gastroscopy and Laryngeal Surgery           | Arranged 2 weeks 25 hours   | 250                             |
| <b>FRACTURES</b>   |   |   |                                 |
| Long Island College of Medicine Medical Society of County of Kings and Academy of Medicine Brooklyn  | Fractures   | April 14 1945 10 sessions   | 10                              |
| At Kings County Hospital 451 Clarkson Brooklyn New York  | Fractures and Allied Trauma                                     | Arranged  | 150                             |
| New York Medical College Flower and Fifth Avenue Hospitals 1 East 10th Street New York New York and Metropolitan Hospital New York New York  |   |   |                                 |
| <b>GASTROENTEROLOGY</b>  |   |   |                                 |
| (See also Proctology Radiology and Surgery)  |   |   |                                 |
| University of Michigan Medical School Michigan State Medical Society Wayne University Michigan Department of Health<br>At University of Michigan Hospital 1313 Ann Street Ann Arbor Michigan | Gastroenterology  | Spring 1945 3 days  | 15                              |
| Long Island College of Medicine Medical Society of County of Kings and Academy of Medicine Brooklyn  | Gastroenterology  | April 17 1945 2 times weekly for 6 weeks  | 10                              |
| At Greenpoint Hospital Kingsland and Skillman Avenues Brooklyn New York  |   |   |                                 |
| Columbia University<br>At Columbia Presbyterian Medical Center 630 West 165th Street New York New York   | Gastroscopy *   | January thr June 1945 Arranged 2 months 3 times weekly  | 200                             |
| At Montefiore Hospital 150 East Gun Hill Road Bronx New York   | Clinical Gastroenterology                                       | February 8 thr April 12 1945  | 35                              |
| At Mount Sinai Hospital 5th Ave and 100th St New York 29 New York  | Comprehensive Gastroenterology (Supplementary Gastroenterology) | April 2 thr June 20 1945<br>February 7 thr March 28 1945<br>8 Wednesdays (mornings)<br>January 3 thr February 28 1945<br>Part time<br>March 5 thr 10 1945 Full time | 75<br>35<br>45<br>45            |
| Columbia University, New York Postgraduate Medical School 303 East 20th Street New York 3 New York   | Gastroenterology  |   |                                 |

## Graduate Continuation Courses for Practicing Physicians—Jan 1, 1945–June 30 1945—Continued

| Institution   | Title of Course  | Schedule of Course  | Registration Fee and/or Tuition  |
|---|--|---|--|
| New York Medical College Flower and Fifth Avenue Hospitals<br>1 East 100th Street, New York New York<br>(Given also at Metropolitan Hospital New York New York)   | Gastroenterology<br>Peritoneoscopy<br>Gastroscopy<br>Gastrointestinal Surgery<br>Gastroenterology  | Arranged 1 month<br>Arranged<br>Arranged 1 month<br>Arranged 14 sessions<br>January 2 and April 1 1945<br>4 weeks part time   | \$100<br>100<br>100<br>200<br>50   |
| New York Polytechnic Medical School and Hospital 345 West 50th Street New York 19 New York  | Proctology and Gastroenterology (also Cadaver Proctology)<br>Gastrointestinal Diseases   | January 2 and April 1 1945<br>6 weeks part time<br>April 23 thr 28 1945   | 200<br>20 -<br>Nonmembers 40   |
| American College of Physicians 4200 Pine Street Philadelphia Pennsylvania<br>At Graduate Hospital University of Pennsylvania Philadelphia Pennsylvania  | Clinical Gastroenterology *  | Arranged 16 weeks 500 hours   | 400  |
| University of Pennsylvania Graduate School of Medicine<br>237 Medical Laboratories Philadelphia Pennsylvania<br>At Graduate Hospital Philadelphia   |  |   |  |
| <b>HEMATOLOGY</b><br>(See also Pathology)   |  |   |  |
| Tufts Medical School Postgraduate Division 30 Bennet Street Boston 11 Massachusetts   | Hematology O   | Announced 2 weeks   | 75   |
| Long Island College of Medicine Medical Society of County of Kings and Academy of Medicine Brooklyn<br>At Jewish Hospital 300 Prospect Place Brooklyn New York<br>Columbia University<br>At Mount Sinai Hospital 5th Ave and 100th St New York 29 New York  | Clinical Hematology<br>Advanced Clinical Hematology  | April 12 1945 8 Thursdays<br>February 5 thr March 29 1945   | 20<br>50   |
| New York Medical College Flower and Fifth Avenue Hospitals<br>1 East 100th Street New York New York   | Hematology   | Arranged 1 month  | 100  |
| <b>INDUSTRIAL MEDICINE</b>  |  |   |  |
| University of Michigan<br>At University of Michigan School of Public Health Ann Arbor Michigan<br>Columbia University New York Postgraduate Medical School<br>303 East 20th Street New York 3 New York  | Industrial Health<br>Industrial Medicine   | Announced 3 days to 2 weeks<br>April 2 thr 6 1945 Full time   | 10<br>40   |
| <b>LABORATORY</b><br>(See also Bacteriology)  |  |   |  |
| University of Michigan Medical School Michigan State Medical Society Wayne University Michigan Department of Health<br>At University of Michigan Hospital 1313 Ann Street Ann Arbor Michigan<br>New York Polytechnic Medical School and Hospital 345 West 50th Street New York 19 New York  | Clinical Laboratory Diagnosis<br>Practical Laboratory Instruction in Pathology and Bacteriology  | Spring 1945 5 days<br>Arranged  | 20<br>Arranged   |
| <b>MEDICINE GENERAL</b><br>(See also Chest Diseases Electrocardiography Gastroenterology Obstetrics and Gynecology Neurology and Psychiatry and Surgery)  |  |   |  |
| American College of Surgeons 43 East Erie Street Chicago 11 Illinois<br>At Various cities throughout United States<br>University of Georgia School of Medicine University Place Augusta Georgia<br>At University Hospital Augusta Georgia<br>University of Kansas School of Medicine 39th Street and Rainbow Boulevard Kansas City Kansas<br>Ellis Goodridge Hospital of Dillard University 242½ Louisiana Avenue New Orleans Louisiana<br>New Orleans Graduate Medical Assembly 1430 Tulane Avenue New Orleans Louisiana<br>Tulane University and Commonwealth Fund<br>At Tulane University 1430 Tulane Avenue New Orleans Louisiana<br>American College of Physicians 4200 Pine Street Philadelphia Pennsylvania<br>At Peter Bent Brigham Hospital Boston Massachusetts (Tentatively)<br>Tufts Medical School Postgraduate Division 30 Bennet Street Boston 11 Massachusetts<br>University of Michigan Medical School Michigan State Medical Society Wayne University Michigan Department of Health<br>At University of Michigan Hospital 1313 Ann Street Ann Arbor Michigan<br>At Nine centers in Michigan<br>Mayo Clinic and Mayo Foundation<br>At Mayo Clinic Rochester Minnesota<br>State Sanatorium State Sanatorium Mississippi<br>University of Buffalo School of Medicine 24 High Street Buffalo 2 New York<br>Columbia University<br>At Mount Sinai Hospital 5th Ave and 100th St New York 29 New York<br>Columbia University New York Postgraduate Medical School<br>303 East 20th Street New York 3 New York<br>New York Medical College Flower and Fifth Avenue Hospitals<br>1 East 100th Street New York New York<br>(Given also at Metropolitan Hospital New York New York) | War Sessions<br>General Medicine and Surgery *<br>Review Course in Clinical Medicine<br>Annual Postgraduate Course<br>New Orleans Graduate Medical Assembly<br>Diagnosis and Treatment of Neoplasia<br>Special Phases of Internal Medicine<br>Internal Medicine<br>Common Problems in Differential Diagnosis<br>Recent Advances in Therapeutics<br>Personal Courses<br>Extramural Courses<br>Courses for Medical Officers *<br>Chest Diseases and Internal Medicine<br>Short Courses in Medicine<br>Normal and Pathological Physiology of Water and Electrolyte Balance<br>Geriatrics—Disease in the Aged<br>Bedside Clinics in Diseases of the Liver<br>Diseases of Liver and Biliary Tract<br>Diseases of Thyroid and Other Endocrine Glands and Nutrition<br>Psychological Aspects of Internal Medicine<br>Problems in Diagnosis<br>Symposium on Internal Medicine<br>Physical Diagnosis<br>Internal Medicine<br>Diseases of Liver and Biliary System | January 30 thr April 27 1945<br>1 day full time in each city<br>June 1945 1 week<br>May 1 thr June 30 1945<br>2 weeks to 2 months<br>June 1945 2 weeks<br>April 9 thr 12 1945<br>April 30 thr May 4 1945<br>Announced 2 weeks<br>May 7 thr June 1 1945<br>Spring 1945 3 days<br>Spring 1945 3 days<br>Throughout year Varying lengths<br>Spring 1945 1 day per week for 4 weeks<br>Arranged Approximately 3 months<br>Arranged 2 to 6 weeks<br>Arranged<br>Beginning week of February 5 1945 20 hours<br>February 6 thr March 29 1945<br>Arranged February 7 thr March 23 1945 Part time<br>January 3 thr February 28 1945 Part time<br>January 5 thr February 23 1945 Part time<br>January 8 thr February 26 1945 Part time<br>June 18 thr 29 1945 Full time<br>Arranged 1 month<br>Arranged 1 month<br>Arranged 1 month | None<br>None<br>Announced<br>5<br>12500<br>25<br>Members 40<br>Nonmembers 50<br>50<br>15<br>15<br>per month %<br>None<br>None<br>None<br>Arranged<br>30<br>20<br>30<br>40<br>20<br>40<br>5 days 35<br>10 days 60<br>150<br>150 |



## Graduate Continuation Courses for Practicing Physicians—Jan 1, 1945–June 30, 1945—Continued

| Institution  | Title of Course   | Schedule of Course  | Registration Fee and/or Tuition    |
|--|---|---|------------------------------------|
| New York Polyclinic Medical School and Hospital 340 West 30th Street New York 19 New York  | Course for General Practitioners  | Arranged  | 6 weeks \$100 - 3<br>3 months 1.00 |
| Duke University Durham North Carolina  | General Medicine  | Arranged 1 or 2 weeks   | None                               |
| American College of Physicians 4200 Pine Street Philadelphia Pennsylvania  | Clinical Medicine with Special Emphasis upon Hematologic Viewpoint                    | April 16 thr 21 1945  | Members 20.00<br>Nonmembers 40     |
| At Ohio State University College of Medicine Columbus Ohio   | General Sessions  | May 1 2 3 1945  | None                               |
| Ohio State Medical Association 79 East State Street Columbus 4t Columbus, Ohio   |   |   |                                    |
| Philadelphia County Medical Society 301 South 21st Street Philadelphia 3 Pennsylvania  | Modern Diagnosis and Treatment (Annual Postgraduate Institute)                        | April 10 thr 13 1945  | 5 *                                |
| At Bellevue Stratford Hotel Philadelphia   |   |   |                                    |
| Texas Tuberculosis Association 700 Brazos Street Austin Texas  | Second Annual International Medical Congress <sup>10</sup>                            | Latter part of February 1945<br>To be announced 2 days          | None                               |
| At Laredo Texas  | Ninth Annual Post Graduate Medical Assembly of Negro Physicians in Texas <sup>6</sup> | March 5, 6 7 1945   | None                               |
| At Prairie View State Normal and Industrial College Prairie View Texas   | Saint Philip Hospital Post graduate Clinic <sup>6</sup>                               | June 1945 2 to 5 days   | 2                                  |
| Medical College of Virginia 12th and Marshall Streets Richmond Virginia  | Observation Course in Medical and Surgical Subjects                                   | Arranged 1 to 5 months  | per month 100                      |
| University of Wisconsin Medical School 418 North Randall Street Madison Wisconsin  | Course for Specialists in Internal Medicine <sup>4</sup>                              | Arranged 2 to 6 months  | per month 100                      |
|  | 12 Week Postgraduate Course (In Various Subjects)                                     | Arranged  | 1.00                               |
| <b>NEUROLOGY AND PSYCHIATRY</b><br>(See also Medicine and Ophthalmology)   |   |   |                                    |
| Catholic University of America Washington D C  | Analytic Therapy  | January June 1945 1 semester                                    | per semester hour 10               |
|  | Clinical Psychiatry   | January June 1945 1 semester                                    | per semester hour 10               |
|  | Electric Shock Therapy  | January June 1945 1 semester                                    | per semester hour 10               |
|  | Neurology and Neuropathology  | January June 1945 1 semester                                    | per semester hour 10               |
| Institute for Psychoanalysis 43 East Ohio Street Chicago 11 Illinois and University of Illinois  | Psychosomatic Medicine  | January and March 1945<br>Tuesdays 1 quarter                    | None                               |
| At Illinois Neuropsychiatric Institute 912 South Wood Street Chicago Illinois  |   |   |                                    |
| University Extension Division University of Kansas Lawrence Kansas Medical Society and Kansas State Board of Health                                  | Neuro Psychiatry  | April 1945 2 days 3 sessions                                    | 5                                  |
| At Various areas throughout Kansas   |   |   |                                    |
| Topeka Institute for Psychoanalysis  | Clinical Conferences (Case Seminar) <sup>11</sup>                                     | January 1 thr June 30 1945 Weekly                               | Arranged                           |
| At Menninger Clinic 617 West 6th Street Topeka Kansas  | Psychoanalytic Technique <sup>11</sup>  | January 15 thr March 15 1945 Bi weekly                          | Arranged                           |
| Boston Psychoanalytic Institute  | Civilian War Neuroses and Their Treatment   | January thr May 1945  | None                               |
| At Psychiatry Clinic 82 Marlborough Street Boston  |   |   |                                    |
| American Institute for Psychoanalysis 135 East 63rd Street New York New York   | Continuous Case Seminar <sup>4</sup>  | January 16 1945 10 weeks  | 12.50                              |
|  | Introductory Lectures on Psychoanalytic Technique <sup>4</sup>                        | February 5 1945 5 weekly lectures                               | 7.50                               |
|  | Seminar on Dreams <sup>4</sup>  | April 9 1945 10 weeks   | 12.50                              |
|  | Meaning of Love and Sex <sup>12</sup>   | February 9 1945 15 weekly lectures                              | 15                                 |
| American Institute for Psychoanalysis and New School for Social Research   |   |   |                                    |
| At New School for Social Research 66 West 12th Street New York New York  |   |   |                                    |
| Columbia University  | Recent Advances in Neurology and Psychiatry   | March 5 thr 9 1945  | 30                                 |
| At Mount Sinai Hospital 5th Ave and 100th St New York 29 New York  |   |   |                                    |
| At Neurological and Psychiatric Institute 706 West 165th Street New York 32 New York   | Trimester in Neurology and Psychiatry <sup>4</sup>                                    | Arranged 2 months part time or full time                        | 2 months full time 2.00            |
|  | Neurological and Psychiatric Diagnosis and Treatment in General Practice              | April 9 thr 13 1945 Full time                                   | 45                                 |
| Columbia University New York Postgraduate Medical School 303 East 20th Street New York 3 New York  | Neurology and Psychiatry in Childhood   | April 16 thr 21 1945 Full time                                  | 50                                 |
|  | Psychoanalysis in General Practice  | January 3 thr March 28 1945 13 sessions part time               | 60                                 |
|  | Clinical Neurology  | January February March and May 1945 1 month or longer Part time | per month 60                       |
|  | Child Psychiatry  | Spring 1945 12 lectures   | 20                                 |
|  | Introduction to Psychoanalysis  | Arranged 10 lectures  | 20                                 |
|  | Psychoanalysis and Psychiatry   | Arranged 15 sessions  | 30                                 |
|  | Readings in Psychoanalytic Literature   | Arranged 15 sessions  | 30                                 |
| New York Medical College Flower and Fifth Avenue Hospitals 1 East 10th Street New York New York  | Seminar in Psychosomatic Medicine   | Arranged 12 sessions  | 20                                 |
|  | Introduction to Rorschach Technique of Personality Diagnosis                          | Spring Semester 1945 10 lectures                                | 20                                 |
| (Given also at Metropolitan Hospital New York New York)  | Neurology   | Arranged 1 month full time                                      | 200                                |
| New York Psychoanalytic Institute and New York Psychoanalytic Society  | Clinical Conferences Advanced <sup>4</sup>  | January 26 thr June 1 1945 18 sessions                          | 20                                 |
| At New York Psychoanalytic Institute 245 East 82d Street New York New York   |   |   |                                    |
| Philadelphia Psychoanalytic Institute Philadelphia Pennsylvania  | Psychopathology of Childhood  | January thr April 10 1945 1½ hour sessions                      | 9                                  |
| At Bellevue Stratford Hotel Philadelphia Pennsylvania  | Development of the Mind in the Child  | January thr March 20 1945 1½ hour sessions                      | 7.50                               |
|  | Colloquium on Problems in Psychosomatic Medicine                                      | Arranged  | Arranged                           |
|  | Pediatric Psychiatry  | Arranged  | Arranged                           |
|  | Seminar on Psychoanalytic Psychiatry  | Arranged  | Arranged                           |
| University of Pennsylvania Graduate School of Medicine 237 Medical Laboratories Philadelphia Pennsylvania  | Clinicobiologic Neurology and Psychiatry <sup>13</sup>                                | Arranged 10 weeks 250 hours                                     | 100                                |
| At University of Pennsylvania Medical Laboratory Graduate University Philadelphia and Pennsylvania Hospitals and Pennsylvania Institute Philadelphia |   |   |                                    |
| At Philadelphia Hospital Philadelphia  |   |   |                                    |
| American College of Physicians 4200 Pine Street Philadelphia Pennsylvania  | Clinical Psychiatry   | Arranged 8 weeks 240 hours                                      | 160                                |
| At University of Wisconsin Medical School (Tentatively)  | Applications of Psychiatry to Practice of Internal Medicine                           | Announced 1 week  | Members 20.00<br>Nonmembers 40     |
| University of Wisconsin Medical School 418 North Randall Street Madison Wisconsin  | Course in Neuro Psychiatry for Specialists <sup>4</sup>                               | Arranged 2 to 6 months  | per month 100                      |

## Graduate Continuation Courses for Practicing Physicians—Jan 1 1945–June 30, 1945—Continued

| Institution  | Title of Course  | Schedule of Course   | Registration Fee and/or Tuition    |
|--|--|--|------------------------------------|
| <b>NEUROSURGERY</b>  |  |  |                                    |
| University of Wisconsin Medical School 418 North Randall Street<br>Madison Wisconsin   | Neurosurgery for Specialists *   | Arranged 2 to 6 months   | per month 100                      |
| <b>NUTRITION</b><br>(See also Medicine)  |  |  |                                    |
| Tulane University and Commonwealth Fund<br>At Tulane University 1430 Tulane Avenue<br>Louisiana  | Metabolic and Nutritional Disturbances   | February 5 thr 10 1945   | 25                                 |
| <b>OBSTETRICS AND GYNECOLOGY</b><br>(See also Medicine Pathology and Surgery)  |  |  |                                    |
| University of Illinois College of Medicine 1833 West Polk Street<br>Chicago 12 Illinois  | Obstetrics and Gynecology<br>Combined Obstetric and Pediatric Refresher Course (Some Gynecology may be substituted)    | Throughout 1945 2 weeks<br>April 1945 1 week   | 10 14<br>10                        |
| Tulane University Commonwealth Fund and Mississippi State Board of Health<br>At Tulane University 1430 Tulane Avenue, New Orleans<br>Louisiana   | Obstetrics and Gynecology  | January 15 thr 19 1945   | 25                                 |
| Harvard Medical School Courses for Graduates 25 Shattuck Street Boston 15 Massachusetts<br>At Free Hospital for Women Boston<br>At Boston Lying In Hospital Boston<br>Columbia University                | Cynecology 15<br>Clinical Obstetrics<br>Observation Course in Obstetrics<br>Practical Course in Obstetrics             | June 1 thr 30 1945<br>Given monthly 1 month daily<br>First of any month 1 month<br>First of any month 3 months full time | 75<br>125<br>100<br>250 15         |
| Long Island College of Medicine, Medical Society of County of Kings and Academy of Medicine Brooklyn<br>At Israel Zion Hospital 4802 10th Avenue Brooklyn<br>New York                                    | Gynecological Pathology  | April 3 1945 16 sessions   | 50                                 |
| Columbia University New York Postgraduate Medical School<br>303 East 20th Street New York 3 New York   | Diagnosis and Office Treatment   | January 2 thr June 29 1945<br>Arranged part time   | 40 60                              |
|  | Gynecological Endocrinology  | January 2 thr June 30 1945<br>2 months part time   | 100                                |
|  | Seminar in Gynecology  | January 2 thr February 28 and April 2 through May 31 1945 1 or 2 months full time  | 1 month 125<br>2 months 225        |
| New York Polyclinic Medical School and Hospital 345 West 50th Street New York 19 New York<br>Pennsylvania Hospital<br>At Philadelphia Lying In Hospital 5th and Spruce Streets Philadelphia Pennsylvania | Symposium on Recent Advances in Gynecology<br>Obstetrics and Gynecology<br>Graduate Medical Course in Caudal Analgesia | March 19 thr 24 and June 4 thr 10 1945 Full time<br>April 1 1945 2 months full time<br>Weekly 1 week                     | 50<br>20<br>50                     |
| Woman's Medical College of Pennsylvania Henry Avenue and Abbottsford Road Philadelphia 29 Pennsylvania   | Diagnosis and Treatment of Gynecology<br>Practical Obstetrics  | June 1945 Arranged   | Arranged                           |
| Meharry Medical College 1005 18th Avenue North at Jefferson Street Nashville 8 Tennessee   | Gynecological Diagnosis and Office Treatment *   | Arranged<br>March 10 thr 24 1945   | Arranged<br>6                      |
| Tennessee State Medical Association Committee on Postgraduate Instruction in Surgical Diagnosis 4 University Center Building Memphis Tennessee<br>At Various areas throughout Tennessee                  | Gynecology Endocrinology<br>Irradiation and Medical Gynecology   | January 15 to March 19 1945<br>March 26 to June 4 1945 and June 18 to August 20 1945                                     | 10<br>Negroes 3.00<br>interns 2.50 |
| University of Wisconsin Medical School 418 North Randall Street<br>Madison Wisconsin   | Obstetrics and Gynecology for Specialists *  | Arranged 2 to 6 months   | per month 100                      |
| <b>OPHTHALMOLOGY</b><br>(See also Medicine and Otorhinolaryngology)  |  |  |                                    |
| Research Study Club of Los Angeles 727 West 7th Street Los Angeles California<br>At Elks Club Los Angeles California   | Annual Mid Winter Postgraduate Course in Ophthalmology and Otolaryngology<br>Gonioscopy *                              | January 22 thr February 2 1945<br>Announced 2 days   | 50<br>50                           |
| University of Illinois<br>At Illinois Eye and Ear Infirmary 904 West Adams Street Chicago 6 Illinois   | Neuromuscular Anomalies of the Eye *   | May 1945 announced 6 days  | 55                                 |
| Children's Memorial Hospital 707 Fullerton Avenue Chicago 4 Illinois<br>Tufts Medical School Postgraduate Division 30 Bennet Street Boston 11 Massachusetts<br>At Boston City Hospital Boston            | Ophthalmology  | Monthly 3 times per week mornings  | 50 1                               |
| University of Michigan Medical School Michigan State Medical Society Wayne University Michigan Department of Health<br>At University of Michigan Hospital 1513 Ann Street Ann Arbor Michigan             | Ophthalmology and Otolaryngology *   | Spring 1945 1 week   | 25                                 |
| Columbia University<br>At Mount Sinai Hospital 5th Avenue and 100th Street New York 29 New York  | Advanced Ophthalmoscopy *<br>Embryology of the Eye *<br>Ophthalmic Neurology   | February 5 thr April 2, 1945<br>February 6 thr March 2, 1945<br>February 10 thr March 30 1945<br>Part time               | 25<br>25<br>25                     |
| Columbia University<br>At New York Eye and Ear Infirmary 215 2d Avenue New York 3 New York   | Anatomy and Physiology *   | Arranged 1 month   | 40                                 |
|  | Bacteriology Serology and Immunology *   | Arranged 1 month   | 40                                 |
|  | Embryology *   | Arranged 1 month   | 40                                 |
|  | External Eye Diseases (Ocular Therapy) *   | Arranged 1 month   | 40                                 |
|  | Claudication Clinic *  | Arranged 10 hours  | 40                                 |
|  | Histopathology *   | Arranged 3 months  | 85                                 |
|  | Motor Anomalies and Orthoptics *   | Arranged 1 month   | 40                                 |
|  | Neuro Ophthalmology *  | Arranged 1 month   | 30                                 |
|  | Operative Eye Surgery (Cadaver) *  | Arranged 1 month   | 75                                 |
|  | Ophthalmoscopy *   | Arranged 1 month   | 40                                 |
|  | Optics *   | Arranged 2 months  | 75                                 |
|  | Orthoptics *   | Arranged 1 month   | 40                                 |
|  | Perimetry *  | Arranged 1 month   | 40                                 |
|  | Plastic Surgery *  | Arranged 13 hours  | 75                                 |
|  | Refraction *   | Arranged 3 months  | 100                                |
|  | Slit Lamp Microscopy *   | Arranged 1 month   | 50                                 |

## Graduate Continuation Courses for Practicing Physicians—Jan 1, 1945—June 30, 1945—Continued

| Institution  | Title of Course   | Schedule of Course   | Registration Fee and/or Tuition |
|--|---|--|---------------------------------|
| Columbia University New York Postgraduate Medical School<br>303 East 20th Street New York 3 New York   | Embryology Histology and Pathology of the Eye <sup>4</sup>                | January 2 thr June 30 1945<br>15 sessions arranged Part time | 75                              |
|  | Ophthalmic Neurology <sup>4</sup>   | February 26 thr March 2, 1945<br>Part time                   | 45                              |
|  | Slit Lamp Diagnosis <sup>4</sup>  | February 26 thr March 2 1945<br>Part time                    | 45                              |
|  | Motor Anomalies of the Eye <sup>4</sup>                                   | March 5 thr 10 1945 Full time                                | 60                              |
|  | Anomalies of Ocular Muscles <sup>4</sup>                                  | March 12 thr 16 1945 Full time                               | 50                              |
| New York Polyclinic Medical School and Hospital 345 West 30th Street New York 19 New York  | Surgery of the Eye <sup>4</sup>   | March 19 thr 24 1945 Full time                               | 75                              |
|  | Ophthalmology   | January 2 and April 1 1945<br>6 weeks part time              | 50                              |
|  | Ophthalmology (Also Cadaver and Refraction)                               | January 2 and April 1 1945<br>3 months part time             | 275                             |
|  | Otolaryngology and Ophthalmology (Also Cadaver) Refraction                | January 2 and April 1 1945<br>3 months full time             | 600                             |
|  | Ophthalmology for Specialists <sup>4</sup>                                | January 2 and April 1 1945<br>6 weeks part time              | 100                             |
| University of Wisconsin Medical School 418 North Randall Street Madison Wisconsin  | Ophthalmology for Specialists <sup>4</sup>                                | Arranged 2 to 6 months                                       | per month 100                   |
| <b>ORTHOPEDIC SURGERY</b><br>(See also Anatomy)  |   |  |                                 |
| State University of Iowa Iowa City Iowa  | Orthopedic Surgery  | Arranged 1 year  | 110                             |
|  | Seminar in Orthopedic Surgery <sup>4</sup>                                | January 29 thr February 9 1945<br>Full time                  | 75                              |
|  | Orthopedics in General Practice   | April 9 thr May 5 1945 Full time                             | 0                               |
| Columbia University New York Postgraduate Medical School<br>303 East 20th Street New York 3 New York   | Functional Anatomy in Relation to Orthopedics                             | May 7 thr June 7 1945 20 hours                               | 60                              |
|  | Orthopedics for Specialists <sup>4</sup>                                  | Arranged 2 to 6 months                                       | per month 100                   |
| <b>OTOLOGY</b>   |   |  |                                 |
| Columbia University<br>At New York Eye and Ear Infirmary 218 2d Avenue New York 3 New York   | Anatomy of the Temporal Bone <sup>4</sup>                                 | Arranged 1 month   | 45                              |
|  | Clinical Otology <sup>4</sup>   | Arranged 1 month   | 40                              |
| Columbia University New York Postgraduate Medical School<br>303 East 20th Street New York 3 New York   | Operative Ear Surgery <sup>4</sup>  | Arranged 1 month   | 110                             |
|  | Surgical Anatomy as Applied to Otology <sup>4</sup>                       | Arranged Arranged part time                                  | per hour 10                     |
| University of Pennsylvania Graduate School of Medicine 227 Medical Laboratories Philadelphia Pennsylvania<br>At University of Pennsylvania Anatomical Laboratory Philadelphia Pennsylvania   | Otologic (Cadaver) Operations   | Arranged 2 weeks 20 hours                                    | 100                             |
| <b>OTORHINOLARYNGOLOGY</b><br>(See also Anatomy)   |   |  |                                 |
| Research Study Club of Los Angeles 727 West 7th Street Los Angeles California<br>At Elks Club Los Angeles California   | Annual Mid Winter Postgraduate Course in Ophthalmology and Otolaryngology | January 22 thr February 2 1945                               | 50                              |
|  | Refresher Course in Otolaryngology for Specialists <sup>4</sup>           | March 1945 1 week  | 50                              |
| University of Illinois College of Medicine 1833 West Polk Street Chicago 12 Illinois   | Anatomical and Clinical Course in Otolaryngology <sup>4</sup>             | April 16 1945 2 weeks  | 150                             |
| Indiana University Medical Center 1040 1232 West Michigan Street Indianapolis 7 Indiana  | Otolaryngology  | Monthly 3 or 5 mornings per week                             | 30 50 1                         |
| Tufts Medical School Postgraduate Division 30 Bennett Street Boston 11 Massachusetts<br>At Boston Dispensary Boston Massachusetts  | Ophthalmology and Otolaryngology <sup>4</sup>                             | Spring 1945 1 week   | 25                              |
| University of Michigan Medical School Michigan State Medical Society Wayne University Michigan Department of Health<br>At University of Michigan Hospital 1113 Ann Street Ann Arbor Michigan | Operative Ear Surgery Nasal Sinuses (Cadaver) <sup>4</sup>                | Arranged 1 month   | 110                             |
|  | X-ray <sup>4</sup>  | Arranged 6 hours   | 75                              |
| Columbia University New York Postgraduate Medical School<br>303 East 20th Street New York 3 New York   | Diagnostic Procedures in Otolaryngology                                   | Arranged part time January thr June 20 1945                  | 40 60                           |
|  | Embryology Histology and Pathology of Ear Nose and Throat <sup>4</sup>    | Arranged part time 15 sessions January 2 thr June 30 1945    | 5                               |
| Columbia University New York Postgraduate Medical School<br>303 East 20th Street New York 3 New York   | Surgical Anatomy as Applied to Rhinology and Laryngology <sup>4</sup>     | Arranged Part time   | per hour 10                     |
|  | Otolaryngologic Procedures  | Arranged 1 month   | 100                             |
| New York Medical College 11 lower and Fifth Avenue Hospital 1 East 10th Street New York 16 New York  | Otolaryngology (Ear Nose and Throat)                                      | January 2 and April 1 1945<br>6 weeks part time              | 75                              |
|  | Otolaryngology (Eye Ear Nose and Throat)                                  | January 2 and April 1 1945<br>6 weeks full time              | 100                             |
| New York Polyclinic Medical School and Hospital 45 West 50th Street New York 19 New York   | Otolaryngology and Ophthalmology (Also Cadaver)                           | January 2 and April 1 1945<br>3 months full time             | 600                             |
|  | Otorhinology for Specialists <sup>4</sup>                                 | Arranged 2 to 6 months                                       | per month 100                   |
| <b>PATHOLOGY</b><br>(See also Laboratory Medicine Obstetrics and Gynecology Ophthalmology and Otorhinolaryngology)   |   |  |                                 |
| Columbia University<br>At Mount Sinai Hospital 5th Avenue and 100th Street New York 29 New York  | Surgical Pathology  | Beginning in March 1945<br>30 hours                          | 100                             |
|  | Pathological Physiology Functional and Chemical Aspects                   | January 3 thr February 25 1945<br>Part time                  | 50                              |
| Columbia University New York Postgraduate Medical School<br>303 East 20th Street New York 3 New York   | Gynecological Pathology <sup>4</sup>                                      | January 9 thr February 15 1945<br>Part time                  | 75                              |
|  | Pathology of Blood and Blood Forming Organs                               | March 2 thr 25 1945 Part time                                | 75                              |
| Columbia University New York Postgraduate Medical School<br>303 East 20th Street New York 3 New York   | Surgical Pathology  | March 6 thr June 15 1945<br>Part time                        | 150                             |
|  | Gross and Microscopic Pathology   | April 16 thr May 25 1945<br>Part time                        | 75                              |
| Columbia University New York Postgraduate Medical School<br>303 East 20th Street New York 3 New York   | Pathological Physiology Functional and Chemical Aspects                   | April 16 thr 20 1945 Full time                               | 45                              |
|  | Pathological Physiology Functional and Chemical Aspects                   | April 16 thr 20 1945 Full time                               | 45                              |
| <b>PEDIATRICS</b><br>(See also Cardiovascular Diseases Dermatology and Syphilology Endocrinology Medicine Neurology and Psychiatry and Obstetrics and Gynecology)                            |   |  |                                 |
| Tufts Medical School Postgraduate Division 30 Bennett Street Boston 11 Massachusetts<br>At Boston Floating Hospital and Boston Dispensary Boston Massachusetts                               | Pediatrics  | January 2 thr 26 1945  | 55                              |

*Graduate Continuation Courses for Practicing Physicians—Jan 1, 1945—June 30 1945—Continued*

| Institution   | Title of Course  | Schedule of Course   | Registration Fee and/or Tuition        |
|---|--|--|--|
| University of Michigan Medical School, Michigan State Medical Society, Wayne University, Michigan Department of Health<br>At University of Michigan Hospital 1313 Ann Street Ann Arbor Michigan                                   | Recent Advances in Care and Treatment of Children                                      | Spring 1945 3 days   | 15                                     |
| Columbia University New York Postgraduate Medical School 303 East 20th Street New York 3, New York  | Symposium on Recent Advances in Pediatrics   | April 23 thr 28 and June 4 thr 9 1945 Full time  | 50                                     |
| New York Medical College Flower and Fifth Avenue Hospitals 1 East 104th Street New York New York<br>(Given also at Metropolitan Hospital New York New York)   | Clinical Pediatrics  | Arranged 1 month   | 150                                    |
| New York Polyclinic Medical School and Hospital 345 West 50th Street New York 19 New York   | Pediatrics   | Arranged 4 weeks part time   | 50 <sup>2</sup>                        |
| William Buchanan Foundation<br>At Children's Hospital and University of Texas Medical Branch Galveston Texas  | Pediatric Conference   | March 30 and 31 1945   | None                                   |
| University of Wisconsin Medical School 418 North Randall Street Madison Wisconsin   | Course in Pediatrics for Specialists <sup>4</sup>                                      | Arranged 2 to 6 months per month   | 100                                    |
| <b>PHYSICAL MEDICINE</b>  |  |  |  |
| Northwestern University Medical School 303 East Chicago Avenue Chicago 11 Illinois  | Physical Medicine  | Arranged 1 month   | None                                   |
| Columbia University New York Postgraduate Medical School 303 East 20th Street New York 3 New York   | Physical Therapy   | April 23 thr 27 1945 Full time   | 45                                     |
| New York Polyclinic Medical School and Hospital 345 West 50th Street New York 19 New York   | Practical Instruction in Physical Therapy as Applied to Diseases of the Skin           | Arranged 6 weeks or 3 months Part time   | 50-80                                  |
| University of Texas Galveston Texas   | General Course in Physical Therapy   | Arranged 4 weeks part time   | 100 <sup>3</sup>                       |
| At Randall Hall John Sealy Hospital Galveston Texas   | Physical Medicine Conference   | Announced 2 days   | None                                   |
| University of Wisconsin Medical School 418 North Randall Street Madison Wisconsin   | Physical Medicine for Specialists <sup>4</sup>   | Arranged 2 to 6 months per month   | 100                                    |
| <b>POLIOMYELITIS</b>  |  |  |  |
| Postgraduate School of Physical Therapy Warm Springs Foundation<br>At Georgia Warm Springs Foundation Warm Springs Georgia  | Treatment of Acute and Convalescent Poliomyelitis                                      | First Monday of each month 5 consecutive days  | None                                   |
| University Extension Division University of Kansas Lawrence Kansas<br>Kansas Medical Society and Kansas State Board of Health<br>At Various areas throughout Kansas   | Poliomyelitis  | February 1945 2 days 3 sessions  | 5                                      |
| <b>PROCTOLOGY</b><br>(See also Gastroenterology)  |  |  |  |
| Tufts Medical School Postgraduate Division 30 Bennet Street Boston 11 Massachusetts   | Proctology I<br>Proctology II  | April 23 thr 28 1945<br>April 30 thr May 2 1945 2 to 4 weeks                                 | 20 <sup>1</sup><br>50 100 <sup>1</sup> |
| Columbia University New York Postgraduate Medical School 303 East 20th Street New York 3 New York   | Surgical Anatomy as Applied to Colon and Rectal Surgery <sup>4</sup>                   | Arranged January thr June 1945 12 hours part time  | 100                                    |
| Long Island College of Medicine Medical Society of County of Kings and Academy of Medicine Brooklyn<br>At Jewish Hospital 555 Prospect Street Brooklyn New York   | Proctology   | April 16 1945 Twice a week for 4 weeks   | 20                                     |
| New York Medical College Flower and Fifth Avenue Hospitals 1 East 104th Street New York New York<br>(Given also at Metropolitan Hospital New York New York)   | Proctology   | Arranged 2 months  | 70                                     |
| New York Polyclinic Medical School and Hospital 345 West 50th Street New York 19 New York   | Proctology<br>Proctology and Gastroenterology (Also Cadaver Proctology)                | January 2 and April 1 1945 6 weeks part time<br>January 2 and April 1 1945 6 weeks part time | 70 <sup>2</sup><br>200 <sup>3</sup>    |
| <b>PUBLIC HEALTH</b><br>(See also Medicine)   |  |  |  |
| University of Michigan School of Public Health Ann Arbor Michigan   | Evaluation of Public Health Procedures <sup>4</sup>                                    | March 1945 3 to 5 days   | 10                                     |
| University of North Carolina School of Public Health Chapel Hill North Carolina   | Public Health Economics<br>Public Health and Related Fields                            | Announced 3 days to 2 weeks<br>Arranged 1 to 3 quarters per quarter                          | 10<br>100                              |
| <b>RADIOLOGY</b><br>(See also Cardiovascular Diseases Chest Diseases Electrocardiography and Otorhinolaryngology)   |  |  |  |
| Harvard Medical School Courses for Graduates 20 Shattuck Street Boston 10 Massachusetts<br>At Boston City Hospital<br>At Peter Bent Brigham Hospital  | General Roentgenology  | Monthly 1 month mornings   | 50                                     |
| Tufts Medical School Postgraduate Division 30 Bennet Street Boston 11 Massachusetts<br>At Pratt Diagnostic Hospital Boston Massachusetts  | General Roentgenology<br>Radiology   | Monthly 1 month daily<br>January 8 thr 11 1945   | 100<br>30 <sup>1</sup>                 |
| University of Michigan Medical School Michigan State Medical Society, Wayne University, Michigan Department of Health<br>At University of Michigan Hospital 313 Ann Street Ann Arbor Michigan                                     | Diagnostic Roentgenology   | Spring 1945 5 days   | 20                                     |
| Missouri Tuberculosis Association 411 North 10th Street St Louis Missouri<br>Missouri Missouri Trudeau Society and Tuberculosis Committee of Missouri State Medical Association<br>At Centrally located towns throughout Missouri | Refresher Course X-ray Conference  | Various 1 evening  | None                                   |
| Columbia University<br>At Columbia Presbyterian Medical Center 630 West 168th Street New York New York  | Radiological Physics <sup>4</sup>  | January 10 thr May 2 1945  | 50                                     |
| At Montefiore Hospital East Gun Hill Road Bronx New York  | Roentgenology of the Gastrointestinal Tract<br>Elementary Cardiovascular Roentgenology | March 9 thr April 27 1945<br>June 4 thr August 7 1945  | 35<br>35                               |
| At Mount Sinai Hospital 5th Avenue and 100th Street New York 29 New York  | Recent Advances in Radiology <sup>4</sup>  | February 26 thr March 2 1945   | 40                                     |
| Long Island College of Medicine Medical Society of County of Kings and Academy of Medicine Brooklyn<br>At Jewish Hospital 555 Prospect Street Brooklyn New York   | Cardiovascular Roentgenology   | April 12 1945 8 sessions   | 10                                     |
| New York Medical College Flower and Fifth Avenue Hospitals 1 East 104th Street New York New York  | Radiology  | Arranged   | 150                                    |
| New York Polyclinic Medical School and Hospital 345 West 50th Street New York 19 New York   | Diagnostic Roentgenology and Radiotherapy (Advanced)                                   | First of any month 6 weeks or 3 months Full time   | 150 300 <sup>3</sup>                   |

## Graduate Continuation Courses for Practicing Physicians—Jan 1 1945—June 30 1945—Continued

| Institution   | Title of Course  | Schedule of Course   | Registration Fee and/or Tuition |
|---|--|--|---------------------------------|
| <b>SURGERY</b>  |  |  |                                 |
| (See also Anatomy Chest Diseases Gastroenterology Medicine Ophthalmology Otolaryngology Pathology and Practology) |  |  |                                 |
| American College of Surgeons 43 East Erie Street Chicago 11 Illinois  | War Sessions   | January 30 thr April 27 1945<br>1 day full time in each city | None                            |
| At Various cities throughout United States  |  |  |                                 |
| Research Study Club of Los Angeles 727 West 7th Street Los Angeles California                                     | Applied Anatomy and Cadaver Surgery of Head and Neck           | February 2 thr 6 1945  | 50*                             |
| At University of California North Broadway Clinic San Francisco California  |  |  |                                 |
| University of Georgia School of Medicine University Place Augusta Georgia   | General Medicine and Surgery*                                  | June 1945 1 week   | None                            |
| At University Hospital Augusta Georgia  |  |  |                                 |
| Mayo Clinic and Mayo Foundation   | Courses for Medical Officers <sup>18</sup>                     | Arranged Approximately 3 months                              | None                            |
| At Mayo Clinic Rochester Minnesota  |  |  |                                 |
| University of Buffalo School of Medicine 24 High Street Buffalo 2 New York  | Short Courses in Surgery                                       | Arranged   | Arranged                        |
| Columbia University   | Symposium on General Surgery <sup>4</sup>                      | May 14 thr 15, 1945 Full time                                | 75                              |
| At Mount Sinai New York Postgraduate Presbyterian and Roosevelt Hospitals New York New York                       |  |  |                                 |
| Columbia University New York Postgraduate Medical School 303 East 20th Street New York 3 New York                 | Dissection and Surgical Anatomy <sup>4</sup>                   | Arranged January thr June 1945 24 hours part time            | 150                             |
|   | Surgical Anatomy as Applied to Thoracic Surgery <sup>4</sup>   | Arranged January thr June 1945 12 sessions part time         | 200                             |
|   | Surgery of the Gastrointestinal Tract <sup>4</sup>             | January 3 thr March 25 1945 13 sessions part time            | 200                             |
|   | Seminar in Traumatic Surgery <sup>4</sup>                      | March 5 thr 16 1945 Full time                                | 90                              |
|   | Diagnosis and Treatment of Trauma                              | May 7 thr 12 1945 Full time                                  | 50                              |
| New York Medical College Flower and Fifth Avenue Hospitals 1 East 106th Street New York, New York                 | Surgical Technique   | Arranged 75 hours  | 375                             |
| New York Polyclinic Medical School and Hospital 345 West 50th Street, New York 19 New York                        | Combined Surgical Course (Also Cadaver Surgery and Gynecology) | January 2 and April 1 1945 3 months full time                | 350 <sup>3</sup>                |
|   | Surgical Operative Clinic and Lecture Course                   | January 2 and April 1, 1945 6 weeks full time                | 100 <sup>2</sup>                |
| University of Wisconsin Medical School 415 North Randall Street Madison Wisconsin                                 | Surgery Course for Specialists <sup>4</sup>                    | Arranged 2 to 6 months                                       | per month 100                   |
| At Wisconsin General Hospital Madison   | Observation Course in Medical and Surgical Subjects            | Arranged 1 to 5 months                                       | per month 100                   |
| <b>THERAPEUTICS</b>   |  |  |                                 |
| (See also Medicine)   |  |  |                                 |
| Tulane University and Commonwealth Fund   | Recent Advances in Therapy                                     | March 5 thr 10 1945  | 25                              |
| At Tulane University 1430 Tulane Avenue New Orleans Louisiana   |  |  |                                 |
| Columbia University New York Postgraduate Medical School 303 East 20th Street, New York 3 New York                | Physiological Principles of Therapeutics                       | April 30 thr May 4, 1945 Full time                           | 45                              |
| New York Medical College Flower and Fifth Avenue Hospitals 1 East 106th Street, New York New York                 | Therapeutics   | Arranged 1 month   | 100                             |
| <b>TROPICAL MEDICINE</b>  |  |  |                                 |
| Tulane University and Commonwealth Fund   | Tropical Medicine and Parasitology                             | January 15 thr 27 1945 and April 16 thr 28, 1945             | 50                              |
| At Tulane University 1430 Tulane Ave., New Orleans La   |  |  |                                 |
| Columbia University   | Tropical Medicine  | March May 1945 8 weeks full time                             | 100                             |
| At DeLamar Institute of Public Health, 600 West 16th Street New York 32, New York                                 |  |  |                                 |
| University of Texas Medical Branch, Galveston Texas   | Symposium on Tropical Diseases                                 | Announced 2 days   | None                            |
| <b>UROLOGY</b>  |  |  |                                 |
| (See also Anatomy)  |  |  |                                 |
| Tulane University and Commonwealth Fund   | Genitourinary Diseases   | May 7 thr 11 1945  | 25                              |
| At Tulane University 1430 Tulane Ave New Orleans La   |  |  |                                 |
| Columbia University New York Postgraduate Medical School 303 East 20th Street, New York 3 New York                | Recent Advances in Urology                                     | Feb 26 thr March 3 1945 May 21 thr 26 1945 Full time         | 60                              |
|   | Urological Diagnosis in General Practice                       | January 8 thr 26 1945 and April 30 thr May 18 1945 Part time | 40                              |
| Long Island College of Medicine Medical Society of County of Kings and Academy of Medicine Brooklyn               | Urology  | First of each month 1 month or longer                        | per month 25                    |
| At Long Island College Hospital 340 Henry Street Brooklyn   |  |  |                                 |
| Woman's Medical College of Pennsylvania Henry Avenue and Abbottsford Road Philadelphia 29, Pennsylvania           | Female Urology   | Arranged 16 weeks 3 hours per week                           | 100                             |
| University of Wisconsin Medical School, 415 North Randall Street Madison Wisconsin                                | Course in Urology for Specialists <sup>4</sup>                 | Arranged 2 to 6 months                                       | per month 100                   |
| <b>VENEREAL DISEASE CONTROL</b>   |  |  |                                 |
| (See also Dermatology and Syphilology)  |  |  |                                 |
| Bureau of Social Hygiene New York City Department of Health 125 Worth Street New York New York                    | Postgraduate Course in Venereal Disease <sup>17</sup>          | February March and April 1945 10 weeks                       | None                            |
|   | Three Month Course in Applied Venereal Disease Epidemiology    | March 1945 3 months  | Arranged                        |
|   | Ten Day Intensive Training Course in Venereal Disease Control  | Arranged 10 days   | 25                              |
| University of Pennsylvania  | Three Week Venereal Disease Review Course                      | Arranged 3 weeks   | 35                              |
| At Institute for Control of Syphilis 3400 Spruce Street Philadelphia, Pennsylvania                                | Four Week Intensive Review Course                              | Arranged 4 weeks   | 50                              |
|   | Six Month Essential Basic Training Course                      | Arranged 6 months  | 125                             |

1 Fellowships for physicians practicing in Maine and who are members of Maine Medical Association  
2 Free or special fee to physicians in service  
3 Grants may be made from scholarship fund  
4 Specialists only  
5 For Negro physicians  
6 Including luncheons  
7 Fee for non member physicians  
8 Senior medical students and interns free  
9 Additional sponsorship agencies Texas State Health Department, Texas State Medical Association Lone Star State Medical Dental and Pharmaceutical Association Prairie View State College National Tuberculosis Association Pan American Sanitary Bureau USPHS and Southwest Texas District Medical Association  
10 Also for Latin American physicians  
11 Restricted to physician candidates of Topeka Institute for Psychoanalysis  
12 Laymen also admitted  
13 For staff members of mental institutions  
14 Illinois physicians free  
15 Women not admitted  
16 Maintenance supplied  
17 For licensed physicians in New York  
18 Civilian physicians also admitted

10 Also for Latin American physicians  
11 Restricted to physician candidates of Topeka Institute for Psychoanalysis  
12 Laymen also admitted  
13 For staff members of mental institutions  
14 Illinois physicians free  
15 Women not admitted  
16 Maintenance supplied  
17 For licensed physicians in New York  
18 Civilian physicians also admitted

## Medical Examinations and Licensure

### COMING EXAMINATIONS AND MEETINGS

#### BOARDS OF MEDICAL EXAMINERS BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Examinations of the boards of medical examiners and board of examiners in the basic sciences were published in *THE JOURNAL* December 16 page 1049

#### NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS Part III New York Jan 8 10 and Boston Jan 23 25 Exec Sec Mr E S Elwood 225 S 15th St Philadelphia

#### EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF DERMATOLOGY AND SYPHILIGOLOGY New York June 8 9 Final date for filing application is March 12 Sec Dr George M Lewis 66 E 66th St New York 21

AMERICAN BOARD OF NEUROLOGICAL SURGERY Spring Final date for filing application is Feb 1 Sec Dr Paul C Bucy 912 S Wood St Chicago 12

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY Written Part I Various centers Feb 3 Sec Dr Paul Titus 1015 Highland Bldg Pittsburgh 6

AMERICAN BOARD OF OPHTHALMOLOGY New York, June 13 16 Chicago, Oct 3 6 Final date for filing application is Jan 1 Sec Dr S Judd Beach 36 Ixie Road Cape Cottage Maine

AMERICAN BOARD OF OTOLARYNGOLOGY New York, June 5 8 Final date for filing application is March 1 Chicago, Oct 3 6 Sec Dr Denn M Lierle University Hospital Iowa City Ia

AMERICAN BOARD OF PEDIATRICS Chicago, May 19 20 Final date for filing application is Jan 19 Sec Dr C A Aldrich 115 1/2 First Ave S W Rochester Minn

AMERICAN BOARD OF RADIOLOGY Oral New York, June 3 Final date for filing application is May 1 Sec Dr B R Kirkin 102 110 Second Ave S W Rochester, Minn

AMERICAN BOARD OF UROLOGY Oral Chicago, Feb 19 22 Sec Dr C J Thomas 1409 Willow St Minneapolis 4

## Bureau of Legal Medicine and Legislation

### MEDICOLEGAL ABSTRACTS

**Workmen's Compensation Acts Hydrocele Allegedly Resulting from Blow to Leg**—In the course of his employment on Sept 8 1939 Chambers was struck on the right leg below the knee by a heavy iron beam. He was given first aid and continued working. A few days later his leg became infected and on September 18 he was sent to a physician who then observed an infected area about an inch or an inch and a half wide and 3 inches long. The workman was in bed for a week thereafter did not return to work for another week and so far as the infected leg was concerned was thereafter able to work. The infected leg however did not heal and treatments by his attending physician were continued. Finally sulfanilamide was administered internally, and the infection cleared up sometime in January 1940. The employer's insurance carrier paid the workman compensation under the workmen's compensation act of Nebraska for two weeks and paid Chambers' physician for the services he had rendered up to that time. Sometime later a hydrocele developed on the left side and he instituted proceedings under the Nebraska Workmen's Compensation Act claiming the hydrocele resulted from the blow. The lower tribunals denied him recovery and he then appealed to the Supreme Court of Nebraska.

The sole question to be determined said the Supreme Court, is whether or not the evidence adduced in the lower courts was sufficient to show a causal relation between the injury to the right leg suffered in the course of employment and the subsequent hydrocele that developed in the region of the left testicle. In arriving at a determination as to the presence or nonpresence of such a causal relation the following rules of law must be kept in mind: first the burden of proof is on the claimant to establish by a preponderance of the evidence that the personal injury sustained was sustained from an accident arising out of and in the course of employment; secondly, a compensation award cannot be based on possibilities or probabilities but must be based on sufficient evidence that the claimant incurred a disability arising out of and in the course of his employment. The court then went on to test the evidence adduced before the lower courts in the light of the rules

of law just stated. The plaintiff, the court continued, testified that the hydrocele first appeared three days after he "went to bed" Sept 18, 1939, about two weeks after the industrial accident, that he called it to his physician's attention, that the physician first treated it from four to six weeks after it appeared, that since that time it has been drained once every six to eight weeks, and that he has never had any venereal disease and no infection in his system other than that resulting from the leg injury. The workman's physician, a general practitioner, testified that the workman had a severe traumatic ulceration at the point of the bruise caused by the industrial accident that his patient's leg was swollen to the groin, and that there was a glandular involvement on both sides. This physician did not fix a time when the hydrocele appeared but stated that it "was probably developing" on Sept 21, 1939 but that he was not sure it was a hydrocele for two or three weeks thereafter. The physician believed that the industrial accident caused the injury which was followed by infection, that the infection spread to the groin, finally reaching the left testicle and settled there causing the hydrocele, and that there was a direct causal connection between the wound and the hydrocele. He admitted however that he had never encountered in his practice nor had he read of, a similar result from such an infection. On behalf of the employer and its insurance carrier "a specialist engaged in both teaching and practice testified that he had examined the plaintiff that an infection or trauma of the scrotum or contents or circulatory disturbances might cause an acute hydrocele that the cause of a chronic hydrocele is not known that he had never heard nor read of a chronic hydrocele being caused by a leg infection, such as the workman in this case had that an infection from the right leg might "by a wild stretch of the imagination involve the right testicle, but that he had never seen nor heard of such a case, and that had such a case occurred it would have been reported in the medical literature. He gave it as his opinion that the hydrocele was purely 'coincidental' and that there was no connection between the industrial accident in this case and the hydrocele.

The following facts continued the court must be considered in this connection. The workman's physician, while having definite knowledge of the hydrocele a few weeks after the infection, made no mention of that fact in his reports to the insurance carrier submitted during the period of treatment for the leg. While he testified that he was treating the hydrocele during that period he made no charge for that treatment, as such during the period from September 1939 to January 1940. His bill for services submitted to the carrier and paid by it stated that it was for services to the infected leg. While he testified that he prescribed the use of a suspensory the bill of drugs submitted to and paid by the insurance carrier made no mention of that device. The physician prepared a second statement for services rendered from March 1940 to May 31 1941. The testimony shows that while there was an aspiration performed on March 11 1940 it was described in the statement rendered to the insurance company as an "office call." The first entry on the charge account which has reference to the hydrocele was made on Oct 1 1940. The employer and his insurance carrier were not then notified of the disability and so far as can be discovered from the record the defendants were not advised of the claim that the hydrocele resulted from the infection until the present court proceedings were instituted.

It further appears continued the court, from the testimony of both the physician called by the workman and the physician called by the employer and his insurance carrier that the etiology of a chronic hydrocele such as the workman has, is not known to the medical profession and that there are no cases in medical literature showing that a hydrocele has been caused by an infection such as the workman had. Injuries of this kind with resulting infections occur quite commonly to men. If there was a cause and effect relationship between such an infection and a hydrocele it seems to us that the medical profession would ere now have discovered that fact. The most that can be said, concluded the court, for the evidence adduced by the workman is that it indicates that there might possibly be a connection between the industrial accident and the hydrocele. That is not sufficient to warrant a recovery for the workman.

The court accordingly denied compensation.—*Chambers v. Bilhorn, Boxer & Peters* 16 N W (2d) 173 (Neb 1944)



## Current Medical Literature

### AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1934 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (\*) are abstracted below.

### American Journal of Clinical Pathology, Baltimore

14 425-460 (Aug) 1944

- Advocatus Diaboli W S Thomas—p 425  
Further Observations on Rh Agglutinin Studies on an Anti Rh Serum of Unusual Specificity and Occurrence of Same Agglutinin in Breast Milk R T Fisk and A G Foord—p 431  
Glucose Necessary to Stimulate Insulin Production J S Sweeney J W Tunnell and Rose Tunnel—p 437  
Carcinoma of Appendix B Chomet—p 447

### American J Digestive Diseases, Fort Wayne, Ind

11 305-344 (Oct) 1944

- Physiologic and Clinical Aspects of Ketosis S Soskin and R Levine—p 305  
\*Differential Diagnosis of Glycosuria H J John—p 313  
Prevention of Gastric Ulcer Formation During Alarm Reaction H Selye and A McClean—p 319  
\*Salmonella Enterocolitis in Infants and Children E R Neter and Phyllis Clark—p 323  
Role of Fat Soluble Vitamins A and D in Nutrition J Buckstein—p 326  
Changes in Systems Affected by Allergenic Foods J A Turnbull—p 329

**Differential Diagnosis of Glycosuria**—John suggests the following test for diagnosis of diabetic glycosuria. After sugar has been discovered in the urine, the patient should eat a heavy carbohydrate lunch at 11:30 a.m. The blood sugar should be determined two and a half hours from this time. About 2 cc of blood is adequate for this purpose. If the blood sugar is below 120 mg per hundred cubic centimeters the patient is non-diabetic. If the blood sugar is above 120 he is probably diabetic. If it is well above 120, say 200 or more a frank diabetes exists. If it is 126 or 136, one needs to go into the problem further and do a glucose tolerance test the next morning. Non-diabetic glycosuria is not a precursor of diabetes. The renal threshold in a nondiabetic glycosuria is usually low. It varies on the ascent and descent of the curve, being higher on the former and lower on the latter. On the finding of glycosuria, a diagnosis should be arrived at within twenty-four hours. This will eliminate the possibility of self-imposed dietary restrictions which distort the glucose tolerance curve (toward the diabetic side) and thus give false information. There is no treatment for nondiabetic glycosuria and none is needed.

**Salmonella Enterocolitis in Infants and Children**—Neter and Clark studied 21 bacteriologically proved cases of Salmonella enterocolitis at the Children's Hospital of Buffalo. The ages of the patients ranged from 11 days to 12 years. Eighteen were less than 2 years and 10 less than 3 months of age. One of the cases represents an unusual instance of Salmonella thompson enterocolitis. Eleven cases of enterocolitis were due to Salmonella typhi murium. Several of the patients were admitted because of this condition, while others developed the diarrheal disorder during hospitalization for unrelated illnesses. Added precautions checked the outbreak. In several cases Salmonella enterocolitis developed during or following other diseases namely meningococcal meningitis streptococcal bacteremia and bronchopneumonia. Eighteen patients recovered and 3 died. Fourteen of the 21 patients including 1 who died, were treated with sulfonamides. No definite statement can be made regarding beneficial effects resulting from this treatment. In several instances chemotherapy with sulfonamides, including the use of succinylsulfathiazole, failed to eradicate the paratyphoid bacilli from the intestinal tract.

### American Journal of Public Health, New York

34 1049-1132 (Oct) 1944

- Surveys of Nutrition of Populations 4 The Vitamin D and Calcium Nutrition of Rural Population in Middle Tennessee J B Youmans E W Patton W R Sutton Ruth Kern and Ruth Steinkamp—p 1049  
Early Days of Public Health Education Section H E Kleinschmidt—p 1058  
\*Rheumatic Fever in Cincinnati in Relation to Rentals: Crowding Density of Population and Negroes A G Wedum and Bernice G Wedum—p 1065  
Salmonella Isolated in Florida During 1943 with Combined Enrichment Method of Kauffmann Mildred M Galton and M S Quan—p 1071  
\*Epidemiologic Study of Lymphogranuloma Venereum Employing Complement Fixation Test P B Beeson and E S Miller—p 1076  
\*Serologic Types of Hemolytic Streptococci Isolated from Multiple Cases of Scarlet Fever in Same Households G E Foley S M Wheeler and W L Aycock—p 1083  
Citrate Gold of Optimal and Reproducible Sensitivity for Use in Colloidal Gold Reaction Its Preparation and Control C Lange and A H Harris—p 1087  
Backflow Preventer Installations I Reichman—p 1093

**Rheumatic Fever in Cincinnati**—The Wedums recently completed an investigation of persons hospitalized for rheumatic conditions in Cincinnati for the eleven year period 1930 to 1940. Out of a total of 2,178 cases 583 were subjected to a socioeconomic analysis. Data obtained are recorded in maps showing distribution by city census tracts of cases of rheumatic fever admitted to Cincinnati hospitals during 1930 to 1940 and also the annual incidence of hospitalized rheumatic fever per hundred thousand of population in each census tract in relation to rentals, crowding, density of population and Negro population. The survey emphasizes the importance of poverty and crowding in the genesis of rheumatic fever.

**Complement Fixation Test of Lymphogranuloma Venereum**—According to Beeson and Miller immunologic evidence of infection with the virus of lymphogranuloma venereum is frequently encountered in persons who show no sign of the clinical disease. The present report is an analysis of a series of complement fixation tests done on clinic patients at Grady Hospital, Atlanta. Complement fixation tests for lymphogranuloma venereum were done on 879 patients. Approximately 40 per cent of adult Negroes and 12 per cent of adult white persons gave positive reactions. There were only 6 positive reactions among 116 Negro children under the age of 14 years, and only 1 positive reaction among 58 white children in the same age group. A sharp rise in incidence occurred after the age of 14 years. This is believed to be due to acquired venereal infection. The incidence of positive reactions was approximately the same in all age groups beyond the fourth decade. This persistence of an immune reaction in age groups with less sexual contacts suggests that the virus persists in the body, providing continued antigenic stimulus. Comparisons were made in newborn Negro infants and their mothers. It was found that immediately after birth the reaction in the infant's serum is the same as that of the mother. Nine infants who had given positive reactions were retested two to four months later, they had all become negative. A positive test at birth seems due to the passive transfer of antibodies from the mother. The error introduced by the fact that infection with other members of the lymphogranuloma-psittacosis group of viruses will give rise to a positive complement fixation test for lymphogranuloma venereum cannot be assessed. It is not likely that the prevalence of infection by the other agents in this group is sufficient to distort greatly the picture of the prevalence of lymphogranuloma venereum.

**Types of Hemolytic Streptococci in Same Household**—During a twenty-six month period throat cultures on 824 of 1,048 scarlet fever admissions to a contagious disease hospital were examined by Foley and his co-workers for hemolytic streptococci. Cultural and serologic data were available for 57.1 per cent of all scarlet fever admissions during this period. Of the cases studied 134 occurred as multiple infections in 55 families. There were seven different serologic types of hemolytic streptococci involved in these 55 households, and, as would be expected, the type isolated from multiple cases in a given household was the same in all instances. Family outbreaks in general probably are single source outbreaks caused by a single serologic type of hemolytic streptococci, whereas scarlet fever in a sizable community appears to be caused by multiple types, perhaps the

result of the introduction of a number of strains from different sources. It may be postulated that endemic scarlet fever is composed of numerous outbreaks occurring in basic units of population such as the family, the whole of which gives the varied type pattern characteristic of the disease in its endemic form. Epidemiology of endemic scarlet fever is complicated by the unavoidable multiplicity of human contacts, but in those circumstances in which the movement of a particular serologic type of hemolytic streptococci can be followed, person to person spread can be demonstrated.

### American Journal of Tropical Medicine, Baltimore 24 281-330 (Sept.) 1944

- \*Serologic Studies of Bullis Fever H. R. Livesay and M. Pollard —p. 281
- \*Early Filariasis: Diagnosis and Clinical Findings. Report of 268 Cases in American Troops B. G. King —p. 285
- \*Lesions of Lymphatic System in Early Filariasis W. B. Wartman —p. 299
- Precipitin Reactions with Antigen Prepared from Microfilariae of *Wuchereria bancrofti* Preliminary Report J. Oliver Gonzalez and Z. T. Bercovitz —p. 315
- Death Due to Estivoautumnal Malaria. Resume of 100 Autopsy Cases 1925-1942 B. H. Kean and J. A. Smith —p. 317
- Preparation and Properties of Antigens from *Plasmodium knowlesi* Anna Dean Dulancy and D. B. Morrison —p. 323
- Rearing and Maintenance of Laboratory Colony of Body Louse G. H. Culpepper —p. 327

**Serologic Studies of Bullis Fever**—Livesay and Pollard studied Bullis fever for serologic identification or differentiation from some of the known rickettsial diseases. The majority of the cases occurred in a group of men stationed at Camp Bullis, Texas, during a high degree of insect infestation of the area. Two months after the outbreak 261 serums were collected from those who had had Bullis fever. All presented a history of tick and chigger bites, sudden onset of illness, severe headache, lymphadenopathy and leukopenia. Deer, rabbits, raccoons and 1 armadillo from the Camp Bullis area were shot, and serum specimens were collected for examination. Serum specimens were tested for Weil-Felix agglutination reaction and by the complement fixation reaction for endemic typhus, American Q fever and Bullis fever. One hundred and ninety-two human and 50 animal specimens were examined. The Bullis fever antigen was prepared by triturating with sand the enlarged infected spleens of mice and adding approximately 20 per cent by volume sterile isotonic solution of sodium chloride. The specificity of the antigen was supported by the negative reactions with serum from cases of endemic typhus fever, Q fever, Rocky Mountain spotted fever, scrub typhus and normal serums. The positive serologic tests for Bullis fever in 4 of 40 deer and 2 of 7 rabbits might mean that these animals constitute the reservoir species. The authors tabulate 50 random cases all of which gave negative Weil-Felix reactions and were negative for endemic typhus. Two cases were positive for American Q fever. Forty seven gave positive results for Bullis fever. Of the total number of 192 human specimens 76 per cent gave positive complement fixation for Bullis fever. The authors stress the following points: 1. The Bullis fever syndrome is not characterized by a significant Proteus OX-19, OX-K or OX-2 agglutination reaction. 2. There does not appear to be any serologic relationship between the rickettsia-like agent of Bullis fever and the rickettsia of American Q fever by the complement fixation test. 3. From the results obtained there does appear to be some significant serologic relationship between the agent isolated from a human case of Bullis fever and the serums of convalescent cases.

**Early Filariasis in American Troops**—King studied 268 American troops who had lived an average of four months in Pacific islands and who presented symptoms and signs believed to be due to filariasis. Attention was first drawn to the possibility of filariasis by a patient with epididymitis who later developed lymphangitis of one arm. Biopsy of a lymph node of another patient showed adult filariae in the subcapsular sinuses. Similar cases were observed by other investigators among these troops as early as five months after exposure. The earliest onset was three months after arrival at the island. The syndromes observed fall into three categories: lymphangitis of an extremity or of the trunk, acute inflammation of the scrotum or its contents and lymph node enlargement. The relapsing

nature of the symptoms was verified. Inflammation of the spermatic cord, epididymis, testicle or scrotum, or a combined involvement of more than one of the intrascrotal structures was the most common lesion observed, occurring in 192 (71.6 per cent) persons. The usual history was one of a painful swelling of the testicle, which may have been intermittent for weeks or months. The search for microfilariae in the blood remained negative even in those in whom biopsies showed adult female filariae in the lymphatic tissues. The diagnosis of filarial infection can be made by three methods: the finding of adult or larval filariae in tissue obtained at biopsy or postmortem examination; the finding of microfilariae in the blood; or the finding of calcified worms by x-ray. The diagnosis can be established clinically on the basis of a history of a prolonged stay in an endemic area, lymphangitis of an extremity, the trunk or the genitalia coming on after an interval of at least three months, adenopathy, eosinophilia and a positive intradermal reaction. Syphilis, tuberculosis, Hodgkin's disease and all other causes for lymphadenopathy must be ruled out. Filariasis of the spermatic cord has been mistaken for hernia. The intradermal reactions impress the author as being corroborative evidence of past or present infection with *Wuchereria bancrofti*. The diagnosis should be supported by clinical evidence.

**Lesions of Lymphatic System in Early Filariasis**—Wartman describes the early lesions of acute filarial lymphadenitis and lymphangitis, due presumably to *Wuchereria bancrofti*. Material was obtained by biopsy on 17 otherwise healthy young white men who had resided in the islands of the Southwest Pacific for four months and were exposed to the bites of mosquitoes harboring the nonperiodic form of *Wuchereria bancrofti*. The clinical manifestations included acute epididymitis, acute transient retrograde lymphangitis and lymphadenopathy especially of the upper extremities. Intradermal tests were positive in all but 1 case. Microfilariae were not demonstrated in the peripheral blood. Adult male and female filarial worms were found in 5 of the specimens. Both living and dead worms were present, and the females contained in their uteri large numbers of eggs and microfilariae which appeared morphologically mature. No free microfilariae were found in the tissues. Cultures of the biopsies, as well as tissue sections specially stained for bacteria, were negative, indicating that the lesions were due to the worms and not to bacteria. The tissue reactions in the nodes consisted of granulomatous inflammation with hyperplasia of the macrophage (reticuloendothelial) system and tissue eosinophilia. The lymphatic vessels showed reticuloendothelial hyperplasia, lymph thrombi and varying degrees of inflammation with or without thrombosis. It is suggested that the absence of microfilariae from the blood may be due to the avascular nature of the granulomas, the hyperplasia of macrophages and the small numbers of worms found in the specimens. The history of these patients proves that white persons can be infected during short visits to endemic areas and that signs and symptoms of filariasis may develop as early as three months after the first exposure to infected mosquitoes.

### Annals of Allergy, Minneapolis

2 365-456 (Sept.-Oct.) 1944

- Army Allergy Fourth Service Command 1943 S. W. French and L. J. Halpin —p. 365
- Allergic Skin Diseases in Navy M. B. Sulzberger —p. 380
- Allergic Occupational Dermatitis in Our War Industries L. Schwartz —p. 387
- Allergy in Relation to Genitourinary Tract J. W. Thomas and V. P. Wicksten —p. 396
- \*Clinical Evaluation of Soy Bean Food in Eczema of Child A. V. Stoesser —p. 404
- Allergic Problem of Inductee Soldier and Veteran H. I. Shanon —p. 413
- Experimental Approach to Oral Treatment of Food Allergy I. Chemistry of Food Proteins E. Urbach, G. Jaggard and D. W. Crisman —p. 424
- Allergy in Mexico M. S. Mallen —p. 433

**Soy Bean Food in Eczema of Child**—Stoesser states that a soy bean food may produce a beneficial effect in eczema of infants and children both in the milk sensitive and in the multiple food sensitive patients. Not all children can take the soy bean formula. Some refuse it and others have gastrointestinal symptoms indicating a possible allergic reaction. Almost one half of the patients develop a diarrhea, but fortunately in most cases this can be controlled.

## Archives of Internal Medicine, Chicago

74 155-234 (Sept) 1944

- \*Pneumonitis Associated with Malaria I L Applebaum and J Shrager —p 155  
Clinical Significance of Deeper Anatomic Changes in Lymphoid Diseases D Symmers —p 163  
Effect of Administration of Digitalis on Coagulability of Human Blood E Massie H S Stullerman, C S Wright and Virginia Minnich —p 172  
\*Use of Fluorescein Method in Establishment of Diagnosis and Prognosis of Peripheral Vascular Diseases K Lange and L J Boyd —p 175  
Hematologic and Genetic Study of Transmission of Thalassemia (Cooley's Anemia Mediterranean Anemia) W N Valentine and J V Neel —p 183  
Blood Review of Recent Literature F H Bethell C C Sturgis O T Mallery Jr and R W Rundles —p 197

**Pneumonitis Associated with Malaria**—Applebaum and Shrager report studies on 125 consecutive patients with pneumonia associated with malaria admitted to Gorgas Hospital during the seventeen month period from January 1942 through May 1943. The most important group, comprising 70 per cent of the total, consisted of young white men belonging to the military personnel. In this group the incidence of pneumonitis associated with malaria as compared with that of uncomplicated malaria was 37 per cent. The disease occurred mainly during the "rainy" season and corresponded in general to the peak of the incidence of malaria and also of pneumonitis. The symptoms, both systemic and respiratory, were similar to the subjective findings of primary pneumonitis. The main objective signs of pneumonitis such as rales, dullness and diminished breath sounds, were likewise elicited. There was a greater percentage of negative findings and additional manifestations of malaria, such as enlarged spleen. X-ray examinations revealed a high percentage of lesions in the lower lobes and of the lobular type. Estivoautumnal malaria and tertian malaria were associated with pneumonitis to approximately the same extent. Negative results of cultures of sputum were reported in the majority of the cases. The white cell counts were normal or showed a leukopenic trend. Complications of pneumonitis were few and not serious. Most of the patients had mild or moderate symptoms. There was only one death, due to cerebral malaria, in the entire series, and the pneumonitis was considered non-contributory. Pneumonitis in malaria is a relatively benign disease and may be classified as (1) atypical or virus pneumonitis, with inadequate response to the therapy employed, running a self-limited course, (2) bacterial pneumonitis, with adequate response to sulfonamide compounds, and (3) malarial pneumonitis, with favorable response to antimalarial drugs.

**Fluorescein Method in Peripheral Vascular Diseases**—Lange and Boyd show that fluorescein when injected intravenously can be made visible by a beam of long wave ultraviolet radiation on reaching any area of exposed skin or mucous membranes with the blood stream. The physical prerequisites for a good visualization are an appropriate long wave ultraviolet ray source and a dark room. A photoelectric method to indicate the arrival of the dye and to measure the intensity of staining may also be used. Fluorescein is not toxic. Over 1,000 patients have been examined without untoward reactions, except that 11 patients had vomiting of short duration. The dye travels with the blood stream and diffuses immediately through the capillaries into the interstitial spaces. Fluorescein is partly adsorbed to the plasma proteins. Changes in capillary permeability change the amount which diffuses as well as the concentration. Even slight inflammation increases the fluorescence of the tissue. Pigmentation, especially in colored people, makes the test unreliable, although certain basic facts can still be elicited. Nine patients with acute embolism of the legs were examined. It was possible to define exactly the lowest possible level of amputation as far as the skin was concerned and to decide immediately on the probable formation of sufficient collateral circulation to avoid amputation. Block of the sympathetic lumbar ganglions should be performed to avoid mistakes caused by vasospasm. Thrombotic occlusion can be immediately diagnosed. Small gangrenous areas in arteriosclerotic peripheral vascular disease can be judged as to the prospect for healing, localization or further spread. There are two functional types of arteriosclerotic peripheral vascular disease as shown by this test. The first form concerns the larger vessels mainly

causing rapidly spreading gangrene in the periphery, while the other occludes mainly small arteries with capillaries, thereby not necessitating large amputations. Thromboangitis obliterans has usually a higher fluorescence than one would expect from the lack of arterial pulsations. This discrepancy is a leading sign. Spotty fluorescence may complete the picture. Vaso-spastic disorders have a low fluorescence during the attack which immediately returns to normal or even increases above normal on blockage of the sympathetic chain. Rubor on an inflammatory basis in a limb with arteriosclerotic peripheral vascular disease can be well differentiated from venous congestion (rubor on dependence). Thrombophlebitis of superficial vessels can be well made out as long as it is inflammatory, and the extent of the inflammation can be outlined. Ulcers of the leg on a varicose vein basis can be judged as to their outlook for healing and skin grafting. Syphilitic ulcers of the leg have a specific picture in the fluorescein test which distinguishes them from varicose vein ulcers.

## Archives of Surgery, Chicago

49 147-212 (Sept) 1944

- Experimental Tourniquet Shock with Particular Reference to Toxic Factor Method of Production Eliminating Influence of General Anesthesia and Nervous Impulses S Chess, Dorothy Chess and W H Cole —p 147  
Meckel's Diverticulum Dyspepsia Meckel's from Heterotopic Gastric Mucosa W L Sibley —p 156  
Utilization of Oxygen by Brain in Traumatic Shock A Blalock —p 167  
Treatment of Traumatic Aneurysms and Arteriovenous Fistulas I A Bigger —p 170  
\*Surgical Treatment of Hypertension Effect of Radical (Lumbodorsal) Splanchnicectomy on Hypertensive State of 156 Patients Followed One to Five Years R H Smithwick —p 180

**Surgical Treatment of Hypertension**—Smithwick reports the results of lumbodorsal splanchnicectomy performed during the past five years on 156 hypertensive patients, who were followed for one to five years. This is a more extensive procedure than most other operations which have been performed for the relief of hypertension. In all cases the great splanchnic nerves were removed from the semilunar ganglion to the mid-thoracic level or higher. Various portions of the sympathetic trunks were excised. The minimal operation included removal of the tenth thoracic to the first lumbar ganglion inclusive and the maximal operation excision of the sixth thoracic to the third lumbar ganglion inclusive. The effect of operation varies considerably from no change to a distinct lowering of blood pressure. According to the magnitude of the effect on the horizontal resting diastolic blood pressure level the results have been subdivided into five groups. In group 1 there was lowering of 30 mm or more, in group 2 of 20 to 29 mm, in group 3 of 10 to 20 mm and in group 4 up to 10 mm. In group 5 the blood pressure was higher. A study of the postural and cold test charts has revealed certain important differences in the type of hypertension. The patients have been divided into three classes. Patients with narrow pulse pressures, which are less than one-half the diastolic pressure, have type 1 hypertension. Those with wider pulse pressures, equal to or up to 19 mm more than one-half the diastolic pressure, have type 2 hypertension. Those with the widest pulse pressures, 20 mm or more greater than one-half the diastolic pressure, have type 3 hypertension. The result of operation varied with the type, being best for type 1 and poorest for type 3. This subdivision has been helpful in indicating the circumstances under which better results may be expected. Favorable changes in eye-grounds, electrocardiograms and renal function, together with an improvement in the well-being of the patients, suggest that lowering of blood pressure is not harmful. The response of patients with pyelonephritis and hypertension to this form of treatment was unusually satisfactory. There was no significant difference in the results in patients with mild or no renal arteriolar disease as compared with those in patients with more advanced changes. The effect of operation on blood pressure does not appear to be primarily dependent on the state of the renal arterioles, as judged by biopsy material, or on known renal disease, such as pyelonephritis, when present. The results strongly suggest that the state of the extrarenal portion of the visceral vascular bed is important and that the lowering of blood

pressure following operation may be largely the result of decreased peripheral resistance to blood flow through this area. Further observation is needed to determine the duration of the effect.

## Bulletin of Johns Hopkins Hospital, Baltimore

75 73-148 (Aug.) 1944

- Dissecting Aneurysm Producing Coronary Occlusion by Dissection of Coronary Artery C. W. Wainwright—p. 81  
Influence of Number of Androgenic Steroids on Urinary Excretion of Neutral 17 Ketosteroids Elizabeth G. Frame, W. Fleischmann and L. Wilkins—p. 95  
Riboflavin Deficiency in Swine with Special Reference to Occurrence of Cataracts M. M. Wintrobe, W. Buschke, R. H. Folins Jr. and S. H. Humphreys—p. 102  
Further Experimental Cardiac Lesions of Rheumatic Type Produced by Anaphylactic Hypersensitivity A. R. Rich and T. E. Gregory—p. 115  
\*Nonprotein Nitrogen and Protein Concentrations of Serum and Cerebrospinal Fluid in Shock G. W. Duncan, J. L. Irvin and S. J. Saroff—p. 135

**Proteins in Serum and Cerebrospinal Fluid in Shock**—Duncan and his co-workers compare the nonprotein nitrogen and protein concentrations of serum and cerebrospinal fluid during experimental shock. The type of shock which appeared to be most suitable for this study was that produced by experimental crushing injury, since it has been shown to be characterized by low blood pressure, progressive hemoconcentration, evidence of renal damage and death unless treatment is instituted. Dogs weighing between 7 and 12 Kg. were used as experimental animals. The mean concentration of protein in the cerebrospinal fluid of the animals in shock was greater than the corresponding value for the control group. However, this increase was of small magnitude and may be explained on the basis of a slight shift of water from the spinal fluid resulting from the hemoconcentration. The mean ratios of the concentrations of protein in serum to the corresponding concentrations in cerebrospinal fluid were essentially the same for the two groups of animals. These experiments indicate that if alteration in the barrier relationship between plasma and cerebrospinal fluid does occur in shock produced by this method it is not sufficient to permit extensive passage of plasma proteins into the spinal fluid.

## Canadian Medical Association Journal, Montreal

51 293 398 (Oct.) 1944

- \*Polyvinyl Alcohols as Blood Substitutes N. W. Roome, L. Ruttle, L. Williams and W. Smith—p. 293  
Prevention of Premature Arteriosclerosis in Diabetes Mellitus I. M. Rabinowitch—p. 300  
Psychoneuroses in Army Overseas H. H. Hyland—p. 306  
Root Neuritis vs. Appendicitis G. Murray—p. 309  
\*Use of Pentothal Sodium in an Army Anesthesia Service G. D. M. Boddington—p. 312  
Emotional Reactions in Survivors of H. M. C. S. Valleyfield, J. F. Simpson and M. Wellman—p. 316  
Air Transport of Patients J. W. Tice and W. D. Rankin—p. 321  
Congenital Malformations of Extremities J. D. Stenstrom—p. 325  
Radiation Therapy of Carcinoma of Breast M. V. Peters—p. 335  
Sickle Cell Anemia Associated with Cardiac Failure J. B. R. McKenney—p. 343  
Spontaneous Dissection of Aorta D. Levy and D. C. Wilson—p. 345  
Chemical Estimation of Protein in Cerebrospinal Fluid W. R. Campbell and M. I. Hanna—p. 347  
Hemoglobin Concentration in College Women F. G. Pedley—p. 351  
Maintenance of Sedimentation Rate of Erythrocytes in Cases of Cancer Hodgkin's Disease and Leukemia D. L. Mendel and M. Korenberg—p. 353  
\*Four Years Experience in Massive Dose Therapy of Early Syphilis N. E. Berry and L. I. Mitchell—p. 356  
Observations Regarding Enemas E. S. Hicks—p. 358  
\*Acute Acetone Poisoning G. F. Strong—p. 359

**Polyvinyl Alcohols as Blood Substitutes**—Roome and his associates compared the supportive effect on the blood pressure of several grades of polyvinyl alcohols with other materials after severe hemorrhage. Their experiments were made on dogs, in which half of the blood removed was replaced by various agents including citrated dog blood, citrated plasma, acacia and three grades of polyvinyl alcohols. The studies revealed that polyvinyl alcohol Rh623 is a suitable colloid for a plasma substitute. It maintained the blood pressure as well as did blood transfusions. It was lost from the blood stream in dogs at about the same rate at which the plasma proteins regenerate. Solu-

tions of 4 per cent polyvinyl alcohol Rh623 were given to 4 human subjects. There were no untoward effects. Dilution of the blood occurred and persisted for twenty-four hours after large doses. Inert substitutes, however, do not promote wound healing or act as foodstuffs, as a protein might. They do not contribute to hemostasis. Large amounts might impede clotting by diluting the fibrinogen. Their nonprotein nature is also an advantage in lessening the likelihood of anaphylactic reactions. They obviously do not provide antibodies and erythrocytes and hence are valueless in anemias and in infections except to improve the peripheral circulation. If limited to its proper field, polyvinyl alcohol would appear very desirable as a first treatment for hemorrhage or shock, assuming that hemostasis can be obtained or that direct bleeding is not a prominent feature. Its small cost, ease of preparation and stability in storage would permit keeping it available for emergency use in amounts larger than can be economically kept in a blood or plasma bank.

**Pentothal Sodium in an Army Anesthesia Service**—Boddington shows that pentothal sodium has gained a deserved popularity in army anesthesia practice. In a Canadian camp hospital sodium pentothal was used in 35 per cent of the cases requiring anesthetics. It is equally popular with patient, surgeon and anesthetist. Referring to the mild state of euphoria sometimes occurring with the return to consciousness, soldiers have dubbed pentothal "the G. I. drunk." A preoperative sedative consisting of morphine  $\frac{1}{4}$  grain (16 mg.) and atropine  $\frac{1}{150}$  grain (0.4 mg.) is given three quarters to half an hour prior to operation. The 5 per cent solution of pentothal has been used in almost all cases. The apparatus consists of a syringe and needle. Any suitable vein may be used but most often it is the antecubital vein. At the beginning of the anesthesia an injection of 3 cc. is made. The anesthetist then chats quietly with the patient or instructs him to count. Thirty-five seconds later an additional 2 cc. is added. Additional amounts of 2 cc. are given as required. The level of anesthesia is gaged by the depth of respiration, eye movement, conjunctival reflex, muscular relaxation and response to stimulation. Because of the respiratory depression, oxygen is always kept close at hand. As contraindications to anesthesia with sodium pentothal the author mentions impaired pulmonary ventilation, respiratory obstruction and liver disease.

**Massive Dose Therapy of Early Syphilis**—Berry and Mitchell have used the five day massive dose therapy of syphilis for four years. They had treated over a hundred cases up to the end of 1942. The authors were able to follow 50 of these cases. While troublesome complications, such as pain in the arm, fever or nausea, occur in a sufficient proportion of cases to make the treatment somewhat unpleasant, serious complications are relatively infrequent. They do occur sufficiently often so that vigilance can never be relaxed. The most dreaded complication is hemorrhagic encephalitis. The authors observed this complication in 1 case, which had a fatal outcome. A second complication was one of toxic hepatitis and polyneuritis. This patient was last seen nearly a year after treatment and at this time he still had a good deal of numbness of his hands and feet and could walk only with the use of a cane. His blood and spinal fluid were normal. Two other serious complications are acute nephritis and exfoliative dermatitis. These conditions are much less common and do not constitute a hazard peculiar to the intensive type of treatment. Eleven patients who have been followed for three years are known to have negative blood. The same is true of 12 patients who have been followed for two years and of 23 patients who have been followed for over one year. One patient, who was treated in November 1940, was found to be positive in March 1941. A boy of 13 with primary syphilis was given 1,320 mg. of mapharsen in the course of six days. This excessive amount was well tolerated. Three months later the boy's blood was negative, but after six months it was positive again. The authors describe an unusual case in which the five day method of antisyphilitic treatment seems to have saved the patient's life.

**Acute Acetone Poisoning**—Strong's patient was a man aged 42 who had had a giant cell tumor of the ligamentum teres removed and on whom an arthrodesis had been done. Because there was still incomplete union after the second cast

had been removed a body spica was applied to protect the hip and allow walking with the knee free. For this third cast a material lighter than plaster of paris a compound consisting of polymerized vinylacetate, pyroxylin, boric acid, acetone and surgical gauze was chosen. This was applied over two layers of stockinet. Following the application of the material a lacquer also an acetone-containing product was applied and two and a half hours was spent with hot air blower and suction apparatus in an attempt to dry the cast. The patient was returned to his room at 4 p. m. in good condition. At 7 o'clock he refused his supper and at 11 p. m. developed nausea and vomiting. At 2 a. m. the patient vomited large quantities of brown material. He became gradually more and more difficult to arouse, so that by 6 a. m. he was semiconscious. The patient presented the picture of a severe diabetic coma. It was suggested by consultants that the man had had diabetes and that application of the cast had precipitated a coma. A severe ketosis was produced like that occurring in diabetic coma. There was no acidosis, however, as shown by the normal carbon dioxide combining power of the blood. Hemorrhagic esophagitis was a prominent feature. The hemorrhage was aggravated by the presence of the Levine tube. The fact that urticaria-like welts were found on the skin after the removal of the cast raises the question of idiosyncrasy. It is to be noted, however, that the patient himself had used this material in the application of casts to his own patients without irritation of the skin of his hands. The question whether the acetone was absorbed through the intact skin or by inhalation is an open one. It would appear that the latter route was more likely. Nothing in this report should be taken as a condemnation of the material used. The lacquer in this instance was applied before the cast had had a chance to dry.

### Illinois Medical Journal, Chicago

86 181-236 (Oct) 1944

- \*Transurethral Drainage of Seminal Vesicles in Seminal Vesiculitis R. H. Herbst and J. W. Merricks—p. 190  
Bedside Diagnosis of Parenchymatous Liver Disease C. J. Watson—p. 196  
Pharyngo-esophageal Diverticula M. M. Kulvin—p. 198  
Nasal Sinusitis: Prognosis and Treatment Based on More Rational Histopathologic Interpretation A. R. Hollender and M. F. Snitman—p. 206  
Medical Not Surgical After Care of Brain Injuries and Cerebral Asthenia H. S. Hulbert—p. 212  
Use of Gelatin as Blood Substitute H. C. Hopps—p. 215  
Period of Hospitalization for Premature Infants C. Newberger—p. 219

**Transurethral Drainage in Seminal Vesiculitis**—Herbst and Merricks discuss involvement of the seminal vesicles in association with obstructive vesiculitis, prostatic calculi, hematospermia and obstructive sterility. When routine adequate treatment by massage and instillations, with removal of distant foci of infection, fail to relieve infection involving the prostate and seminal vesicles, satisfactory results may often be obtained by providing adequate drainage of obstructed infected seminal vesicles. Transurethral dilation of the ejaculatory ducts alone or at times combined with transurethral prostatotomy for removal of prostatic calculi are the methods of choice. By these procedures the fundamental surgical principles of drainage of these organs is best obtained. The authors have performed transurethral dilation and catheterization of approximately 730 ejaculatory ducts.

### Journal of Clin Endocrinology, Springfield, Ill

4 357-416 (Aug) 1944

- Ovarian Agenesis: Pathologic Associated Clinical Symptoms and Bearing on Theories of Sex Differentiation L. Wilkins and W. Fleischmann—p. 357  
Some Effects of Testosterone Testosterone Propionate Methyl Testosterone Stilbestrol and X-Ray Therapy in Patient with Cushing's Syndrome M. L. Deakins, H. B. Friedgood and J. W. Terrebee—p. 376  
Further Studies of Absorption Distribution and Elimination of Thiothracil R. H. William, with technical assistance of Gloria A. Kay—p. 385  
Control of Induced Estrogen Bleeding M. S. Margolese—p. 394  
Observations on Experimental Use of Gonadotropic Extracts in Human Female M. E. Davis and A. A. Hellbaum—p. 400

### Journal of Infectious Diseases, Chicago

75 103-178 (Sept-Oct) 1944

- Preservation of Classic Rickettsia prowazekii in Lungs of Mice After 75 Consecutive Transfers M. R. Castaneda and R. Silva G.—p. 103  
Report on Six Strains of Shigella paradysenteriae Type P274 Isolated from Cases of Dysentery in Georgia Janie F. Morris Alice Brim T. F. Sellers and R. F. Payne—p. 106  
Use of Yolk Sac of Developing Chicken Embryo in Isolation of Agent of Lymphogranuloma venereum M. T. Shaffer Helen Jones A. W. Grace Dorothy M. Hamre and G. Rake—p. 109  
Study of Para-Aminobenzoic Acid Requirement of Clostridium acetobutylicum Application to Assay Procedure R. D. Housewright and S. A. Koser—p. 113  
Influence of B Vitamins on Resistance of Rats to Induced Pneumococcal Lobar Pneumonia H. J. Robinson and H. Siegel—p. 127  
Studies on Experimental Bartonella Anemia in Albino Rat III Potassium and Other Blood Changes W. R. Kessler and R. L. Ziemer—p. 134  
Changes Associated with Acquired Immunity During Intestinal Infections in Saurian Malaria P. E. Thompson—p. 138  
Bactericidal Action of Antibiotic Substances S. A. Waxman and H. C. Reilly—p. 150  
Isolation of Three Neurotropic Viruses from Forest Mosquitoes in Eastern Colombia M. Roca Garcia—p. 160  
Influence of Intracutaneous Injection of Somatic Filtrate of Brucella Abortus on Blood Leukocyte Picture of Cattle Positive to Brucella Lysis I. Live F. L. Stubbs and W. L. Mackey, Jr.—p. 170  
Effect of Riboflavin Deficiency on Course of Plasmodium Lophurae Infection in Chicks A. O. Seeler and W. H. Ott—p. 175

### Journal of Thoracic Surgery, St. Louis

13 357-444 (Oct) 1944

- \*Arteriovenous Fistula of Lung Report of Patient Cured by Pneumonectomy J. C. Jones and W. F. Thompson—p. 357  
Indications for Pericardiectomy with Special Reference to Exposure of an Infected Patent Ductus H. Neuhoef—p. 374  
Management of Stricture of Esophagus with Special Reference to Complete Stricture of Midesophagus Detailed Report of 2 Cases R. Adams and W. B. Hoover—p. 383  
Surgical Treatment and Clinical Manifestations of Benign Tumors of Esophagus Report of 7 Cases S. W. Harrington and H. J. Moersch—p. 394  
Causes of Mortality Following Radical Resection of Esophagus for Carcinoma J. H. Garlock—p. 415  
Muscle Splitting Thoracoplasty R. M. Lewis—p. 431  
Postlobectomy Lobar Collapse H. H. Sampson and J. L. Collins—p. 435  
Flap Valve Constructed from Medicine Dropper E. Windsberg—p. 442

**Arteriovenous Fistula of Lung Cured by Pneumonectomy**—According to Jones and Thompson arteriovenous fistula of the lung usually masquerades in a cyanotic young patient with clubbing of fingers and toes as congenital heart disease or polycythemia until either a tumor of the lung or a continuous murmur in the chest is finally discovered. The authors report the history of a woman aged 24 who had been cyanotic from birth and intensely so until the age of 16. Clubbing of the fingers began at the age of 9 years increased until 16 and then remained stationary. Her activities were restricted until the age of 16 but subsequently she became quite active without symptoms. Eighteen months before being seen by the authors the patient was examined by an internist, and for the first time x-ray examination revealed an intrathoracic mass. On a presumptive diagnosis of tumor a course of radiation therapy was given, but it affected neither the mass nor the cyanosis. At that time polycythemia was noted and thought to be primary. The red blood cell count had ranged between 65 and 75 millions with a hemoglobin of 130 per cent for the last one and one-half years. She had been working steadily as a stenographer and leading a normal life. The conjunctivas and mucous membranes were intensely cyanotic. A provisional diagnosis of arteriovenous aneurysm of the right lung was made on the history of cyanosis since birth the persistent secondary or symptomatic polycythemia, the presence of a continuous murmur over the tumor mass in the right lung, clubbing of the fingers and a normal heart. Pneumothorax on the right side was tried in the hope that it might collapse the arteriovenous communication. The pneumothorax was maintained for five months, but, since it had been impossible to collapse the fistula, surgical treatment was considered necessary. A right total pneumonectomy proved necessary and was done by dissection and individual ligation. A checkup four months after the operation revealed that the patient was well and leading an active life. To the question why surgery should be performed on a young patient



when the lesion has imposed no incapacitation, the author states that rupture of the fistula led to sudden death of Rodes's patient and that in his own patient the sac was extremely thin. There is also a hazard of thromboses secondary to the polycythemia.

### Kansas Medical Society Journal, Topeka

45 305-338 (Sept.) 1944

Newer Aspects in Management of Hypertension E. Massie—p. 305  
Chronic Cystic Mastitis Therapeutic Problem H. H. Hesser—p. 311  
Recent Advances in Anesthesiology P. H. Lorhan—p. 318

45 341-376 (Oct.) 1944

Renal Tuberculosis W. G. Gordon—p. 341  
Fetal Asphyxiation R. E. Pfuetze—p. 344  
Case of Complete Absence of Inferior Vena Cava H. B. Latimer and H. H. Virden—p. 346

### Michigan State Medical Society Journal, Lansing

43 841-936 (Oct.) 1944

What it Means to Be a Doctor C. R. Keyport—p. 883  
Significance of Complete Preventive Medical Program for Children C. A. Aldrich—p. 885  
Survey of 180 Cases of Syphilis in Suburban and Rural Community, Ingham County Michigan C. D. Barrett and L. E. Kerr—p. 889  
Suggested Inquiry into Possible Relationship Between Albuminuria, Essential Hypertension and Nutritional Deficiency W. DeKleine—p. 897  
Tubal Pregnancy Unusual Occurrence of 7 Cases in One Year of General Surgical Practice J. M. Sisson—p. 900

### North Carolina Medical Journal, Winston-Salem

5 477-516 (Oct.) 1944

Salicylate Therapy for Rheumatic Fever and Atrophic Arthritis (Still's Disease) in Children R. B. Lawson—p. 477  
\*Ophthalmologic Lesions Encountered in Tropics with Special Reference to Ocular Manifestations of Malaria J. N. Robertson—p. 483  
Results of Thoracoplasty for Pulmonary Tuberculosis at Western North Carolina Sanatorium J. A. Moore and S. M. Bittinger—p. 485  
Comment Following Movie on Continuous Caudal Analgesia in Obstetrics Eleanor Beamer Easley—p. 491  
Physiologic Basis of Treatment in Shock and Hemorrhage J. H. Ferguson—p. 493  
Postwar Planning for Medical Care of Rural Population of North Carolina I. H. Manning—p. 496  
Thumbnail Sketches of Eminent Physicians J. C. Trent—p. 497

**Ocular Manifestations of Malaria**—According to Robertson, optic neuritis and amblyopia are at times associated with malaria. The amblyopia has to be differentiated from that which is due to quinine. In quinine amblyopia the condition depends on the retinal anemia resulting from the toxic spasm of the arterioles, there is extreme pallor of the optic disks and contraction of the visual fields. This picture is in direct contrast to the hyperemic disk and retina associated with malarial toxemia. Malarial amblyopia occurs as a result of the action of the malarial toxin on the optic nerve and retina. Often optic neuritis and papillary edema result from the blocking of the retinal and choroidal vessels by parasites and leukocytes. The retinal hemorrhages are usually small, multiple and peripheral, large macular hemorrhages do occur in the malignant types of malaria. Ulceration of the cornea is the most common ocular sequela of malaria, and recurrent iritis is frequently associated with this keratitis. Supraorbital neuralgia precedes the corneal lesions. Photophobia and lacrimation are characteristic signs and often precede the corneal lesions by days or weeks. On an island in the Southwest Pacific the author encountered many patients with intraocular disturbance among men between the ages of 20 and 30. Many had suffered some depletion of the powers of accommodation and convergence, as was manifested by the complaints of reading difficulties, scotomas and muscle imbalance, particularly exophorias. Subjectively the complaints were loss of vision, frequent headaches in the occipital and temporal regions, dizziness, pain in the eyeballs, tenderness on palpation, photophobia, lacrimation and spots before the eyes. The objective findings were irregularity of the pupils, retinitis of the atrophic type, usually in or around the macular area, unusual concentration of choroidal pigmentation, generalized hyperemia of the retina and nerve head, optic neuritis both mild and severe, optic atrophy and in a few cases a severe progressive choroidoretinitis and uveitis. Some of the patients who were evacuated were followed up by the author since his return. Some of them now have a chronic uveitis.

### Radiology, Syracuse, N. Y.

43 319-424 (Oct.) 1944

Extravesical Lesions Causing Bladder Neck Obstruction S. W. Donaldson—p. 319  
Effects of Radiation Therapy in Clostridium Infection in Sheep E. A. Merritt, A. J. Den and U. V. Wilcox—p. 325  
Effect of X-Ray Irradiation on Bacterial Toxemia in Rabbits J. D. Bisgard, H. B. Hunt and R. H. Dickinson—p. 330  
\*Roentgen Therapy in Gas Bacillus Infection Report of 9 Cases with Recovery S. T. Cantril and F. Buschke—p. 333  
\*Clinical and Roentgenologic Study of Effects of Hormonal Therapy on Bone Growth Rita S. Finkler, N. J. Furst and M. Klein—p. 346  
Pituitrin for Concentrating Diodrast in Excretion Urography M. H. Wald and A. F. Galloway—p. 358  
Angiocardiography Anatomy of Heart in Health and Disease H. K. Taylor and Teresa McGovern—p. 364  
Erythroblastic Anemia Report of Case in Boy 8 Years Old W. J. Corcoran—p. 373  
Simple Fluoroscopic Method of Foreign Body Localization C. J. Zintbeo Jr.—p. 376

**Roentgen Therapy in Gas Bacillus Infection**—Cantril and Buschke present 9 cases to demonstrate that x-ray therapy can in itself, or in conjunction with surgery, save patients with an overwhelming gas bacillus infection superimposed on the shock of severe trauma. The interval between injury and x-ray therapy varied between six hours and nineteen days. Five patients received antitoxin therapy and 4 did not. One patient received only 10,000 units and developed a severe serum reaction. The other 4 patients received it in full therapeutic amounts. Chemotherapy in the form of sulfonamide was administered to all but 3 of the 9 patients. There was no evidence that chemotherapy had a place in controlling the progression of the gas bacillus infection. When used to combat the secondary bacterial invasion after the spread of gas infection had been brought under control it seems to have produced good results in 3 cases. The mortality in the 9 cases was zero, but the authors do not expect that this record can be maintained. A mortality of 11.2 per cent in 125 cases, as reported by Kelly, still represents a large saving in lives over reports prior to the use of x-rays in this disease. X-ray therapy has saved both lives and limbs in gas bacillus infection. The combination of surgery and x-ray therapy can produce results not heretofore obtained by any approach to this most severe complication of traumatic wounds.

**Effects of Endocrine Therapy on Bone Growth**—According to Finkler and her associates the effect of endocrine therapy on growth in children has been under investigation in the Endocrine Clinic of the Beth Israel Hospital for the past eight years. The influence of endocrine therapy on bone growth has been observed in 81 children, 18 of whom were treated with thyroid substance, 26 with anterior pituitary growth extract, 19 with chorionic gonadotropin and 18 with testosterone. Thyroid therapy tended to improve bone density and epiphyseal union. At the conclusion of therapy the bone density was normal in all children, but in 5 the delay in epiphyseal union persisted. There was an improvement in growth rate, physical development and mental alertness. Best results were obtained in children with thyroid deficiency. Therapy with anterior pituitary growth extract did not yield conclusive evidence of changes in skeletal growth in the majority of the 26 patients. There was, however, a general improvement in vitality, muscle tone and mental alertness in the majority of the children. Chorionic gonadotropin therapy stimulated bone growth in the longitudinal axis but did not accelerate epiphyseal union, bone maturation or density in the majority of the cases. Seventeen children responded by an increase in growth rate, 2 children maintained their original rate of growth. All children showed an improvement in genital development, muscular tone, mental alertness and social adjustment. There was also a loss of weight in the majority of the obese children. Testosterone therapy showed a tendency to accelerate skeletal growth in length to a somewhat greater degree than chorionic gonadotropin. Clinically 16 children showed an increase in growth rate and 2 maintained their original rate of growth. All children showed improvement in genital development, muscular tone and self assurance. Before endocrine therapy all the children presented various psychologic maladjustments. Following endocrine therapy, with improvement in growth and genital and muscular development there was a tendency to improvement in mental and emotional stability.



## FOREIGN

An asterisk (\*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

## British Journal of Ophthalmology, London

28 481-532 (Oct) 1944

- Case of Polycythemia Vera Extraction of Both Lenses Satisfactory Result J C Marshall—p 481  
Case of Cornea Plana C Cockburn—p 486  
Effects of Paradoxically Induced Currents on Extrinsic and Intrinsic Ocular Musculature Clinical Self Experiment J H Young—p 488  
Dynamic Factors in Formation and Reabsorption of Aqueous Humor J S Friedenwald—p 503  
Mucocoele of Maxillary Antrum G E Dodds—p 510  
Retrolbulbar Neuritis (Five Cases) Due to Paranasal Sinusitis Rosa Ford—p 511  
Reconstruction of Lower Lid by Hughes Method J Foster—p 515  
Congenital Ectropion Associated with Bilateral Ptosis Case Report S Gordon and B H Craig—p 520  
Angioma of Retina I C Michaelson—p 522

## British Journal of Radiology, London

17 261-290 (Sept) 1944

- Some Problems of Appendix Radiology A M Rackow—p 265  
Effect of Ionizing Radiations on Broad Bean Root L H Gray and J Read—p 271  
Particular Type of Tuberculous Pulmonary Cavitation Tending to Heal Spontaneously L Dunner—p 274  
Air Absorption Corrections for Soft X Rays C E Eddy and J L Farrant—p 278  
Radiologic Estimation of Splenic Enlargement in Malignant Tertian Malaria W H T Shepherd—p 280  
Importance of Air Encephalography in Investigation of Epilepsy of Late Onset J McM Mennell—p 286  
Amebic Perinephric Abscess J A Ross—p 289

## British Medical Journal, London

2 363-392 (Sept 16) 1944

- Laboratory Tests in Diagnosis of Liver Disease Report on Three Procedures N F MacLagan—p 363  
\*Artificial Respiration Need for Greatly Increased Rate in Asphyxia P R Tingley—p 366  
Psychiatry in Detention R R Prewer—p 368  
Proteolyzed Beef in Treatment of Celiac Disease A C Adamson and D Lewis—p 370  
Fracture Dislocation of Ankle Occurring in Flying Accidents T James—p 372  
Survey of Hemoglobin Levels of Poor Classes in Aberdeen H W Fullerton M Isobel Mair and Patricia Unsworth—p 373

**Artificial Respiration in Asphyxia**—Tingley points out that the rate in all methods of artificial respiration varies between twelve and eighteen times a minute. It is his aim to demonstrate the error in the application of all methods of artificial respiration to cases of asphyxia without at the same time considering the greatly increased respiratory requirements. All cases for which artificial respiration is required fall into two main groups: group 1, cases without asphyxia, e.g., under anesthesia, from electric shock; group 2, cases with asphyxia, e.g., suffocation from drowning, from lack of air from smoke, from gases. Artificial respiration done at the usual rate of fifteen times a minute is adequate and excellent for group 1 cases, as the respiratory requirements are approximately the same as in natural respiration at rest, but the same rate is quite inadequate to deal satisfactorily with group 2 cases of asphyxia. He differentiates three degrees of asphyxia: degree 1 up to loss of consciousness; degree 2 up to cessation of respiration; degree 3 up to final heart failure. He describes experiments on degree 1 asphyxia which revealed that the deeper the asphyxia the greater is the respiratory requirement, that the total volume of air exchanged in a given time largely determines the extent of relief from asphyxia and that the faster the rate of tidal respiration the greater the relief from asphyxia. In every method of artificial respiration employed at present the rate is slow. Four seconds is a long time when applied to one respiratory cycle. In most methods it has been necessary to include a pause of one to two seconds in each cycle in order to keep the rate down to the so-called normal. He thinks that in natural respiration for even mild degrees of asphyxia there is no time for a pause at all. In Schafer's method it is difficult to occupy fully three seconds with the actual movements necessary for one cycle. It is much cruder, and just as effective, to do all the movements in two seconds instead of three. The second so saved could be utilized along with the second previously set aside for an inter-

val, by providing the two seconds necessary for another cycle. Thus the rate may be doubled without undue effort. This rate of thirty times a minute can be doubled again. It is not difficult to do Schafer's method at a rate of sixty times a minute without loss of volume per respiration. Silvester's method, because of the nature of the movements necessary, takes more time to perform than Schafer's, and a rate of about forty-five times a minute would seem to be the efficient maximum.

2 393-424 (Sept 23) 1944

- \*Influence of Synthetic Estrogens on Advanced Malignant Disease A Haddow J M Watkinson Edith Paterson and P C Koller—p 393  
Reactive Hyperinsulinism Case Report with Discussion of Differentiation from Islet Tumor F T G Prunty—p 398  
Traumatic Rupture of Aorta G Forbes—p 400  
\*Fatal Case of Purpura After Sulfapyridine Sheila Sherlock and J C White—p 401  
Hemoglobin Levels in Women's Auxiliary Air Force S Yudin—p 403

**Influence of Synthetic Estrogens on Advanced Malignant Disease**—Haddow and his associates report observations on 40 cases of carcinoma of the breast and 33 cases of malignant disease of other organs. These 73 patients with advanced cancer were treated with the synthetic estrogens triphenylchloroethylene, triphenylmethylethylene or diethylstilbestrol. Of 22 cases of late malignant disease of the breast treated with triphenylchloroethylene (usually in doses of 3 to 6 Gm per day) 10 showed a significant although temporary retardation or even partial regression of the tumor. No evidence was obtained to suggest that the drug will prevent the development of metastases. The initial effect of treatment in these cases passed off comparatively rapidly, and only 1 has shown prolonged arrest, the ultimate course of the disease being in no way altered in the remainder. The degree of retardation was less than could be expected from local palliative X-irradiation. Of 30 cases of advanced malignant disease other than cancer of the breast (including carcinoma of the skin, maxillary antrum, urinary bladder, ovary, rectum and testis with reticuloendothelial growths and leukemia) and similarly treated with triphenylchloroethylene, only 2 showed undoubted partial regression of the tumor. Of 4 cases of mammary cancer and 3 cases of Hodgkin's disease treated with triphenylmethylethylene only 1 showed even a temporarily favorable response. Of 14 cases of carcinoma of the breast treated with diethylstilbestrol, 5 showed alterations in the growth and behavior of the tumor similar in nature to those produced by triphenylchloroethylene. Serial biopsies in cases with clinical response showed microscopic alterations of a type not resembling the changes following X-irradiation. The secondary signs of drug action included nausea, pigmentation of the mammary areola, mastitis in the male, uterine bleeding and edema of the lower extremities. One or more of such changes occurred with special frequency in cases showing some degree of tumor regression. Several of these patients also manifested improved appetite, gain in weight and diminution of pain.

**Fatal Purpura After Sulfapyridine**—Sherlock and White observed acute purpura during the course of sulfapyridine therapy of pneumonia in a man aged 52. He was given 30 Gm of sulfapyridine in seven days, and the immediate response was satisfactory. However five days after cessation of treatment there was a rise of temperature. Recrudescence of pneumonia or empyema was considered. Sulfapyridine therapy was restarted 4.5 Gm being given during the next five days. The malaise and pyrexia persisted. It was noted that the temperature rose after each dose of sulfapyridine. Then a slight epistaxis developed, and several days later an extensive purpuric eruption appeared on the palate, arms and legs. Epistaxis persisted, and blood was oozing from the gums. He vomited coffee ground material giving a positive benzidine reaction. The urine, normal in quantity, had become frankly blood stained. The ankles presented pitting edema. Later purpura was even more gross, and blood was flowing freely from the nose and mouth. Compatible blood was transfused. As the procedure was started the patient complained of a bursting sensation in the head two and one-half hours later he was in coma. Several hours later the patient died. The authors are convinced that the patient's fatal illness was the result of sulfapyridine. Necropsy disclosed that pneumonia had resolved. The authors think that vascular lesions caused the fatal purpura. The effect

on the vessels may be due to hypersensitivity. If drugs are administered in two courses, hypersensitive phenomena are more likely to occur. In the reported case the drug was given for seven days, then a five day interval was allowed to elapse before restarting it. It was only on the second occasion that the supposed intolerance became apparent. The high mortality of this condition makes early recognition essential. The first clinical sign is nearly always epistaxis. If this or other spontaneous bleeding is discovered in a patient receiving sulfonamide drugs, the administration should be stopped immediately and a bleeding time and capillary resistance test done. Adequate transfusion of fresh blood is probably the best treatment.

### Edinburgh Medical Journal

51 305-352 (July-Aug) 1944

- Administration of Drugs J H Gaddum—p 305  
Bacterium Enteritidis Septicemia S McDonald—p 320  
Nitrogen Balance in Chronic Kidney Disease O Olbrich—p 327  
Effect of Surgical Operation on Capillary Resistance H Scarborough—p 335  
Prophylaxis of Cutaneous Cancer R Aitken—p 339

### J of Neurol, Neurosurg & Psychiatry, London

7 1-56 (Jan-April) 1944

- Traumatic Dilatation of Cerebral Ventricles D W C Northfield—p 1  
Effect of Galvanic Exercise on Denervated and Reinnervated Muscles in Rabbit E Gutmann and L Guttmann—p 7  
Myelitis Due to Vaccination G J Dixon—p 18  
Physical Examination of 2000 Cases of Neurosis H G McGregor—p 21  
Cause of Mongolism M Engler—p 27  
Case of Partial Congenital Hemiplegia A Huse—p 30  
Post-Traumatic Pain and Causalgic Syndrome J Doupe C H Cullen and G Q Chance—p 33  
Heuristic Theory of Neurosis E Slater and P Slater—p 49

### Medical Journal of Australia, Sydney

2 225-264 (Sept 2) 1944

- \*Congenital Dental Defects in Infants Subsequent to Maternal Rubella During Pregnancy M W Evans—p 225  
Otitis Externa in New Guinea A F Quayle—p 228  
Commentary on Guillain Barre Syndrome from General Practitioners Viewpoint R T Kennedy—p 231

**Congenital Dental Defects and Maternal Rubella During Pregnancy**—Evans points out that the association of congenital defects in infants with maternal rubella during pregnancy is now well established. The parents of each infant were questioned with regard to the time of eruption of the teeth, especially the first, and the occurrence of convulsions. Each child was examined from the point of view of such dental defects as (a) variation in the number of teeth from normal, (b) hypoplasia, (c) abnormal tooth form, (d) restricted arch formation, (e) dental caries and (f) gingivitis. Of 34 babies whose mothers suffered during pregnancy from German measles, 23 exhibited congenital dental abnormalities, in 18 cases major in nature. All except 2 of the infants with dental defects showed other congenital malformations. There were also other defects such as deaf mutism, cataract, heart disease, microcephaly and mental deficiency. With the exception of 2 cases the mothers of all the children with congenital dental abnormalities had contracted rubella at some period during the first three months of pregnancy. Dental defects were most severe in infants belonging to the mothers who had suffered from German measles between the sixth and the ninth week of pregnancy, considered to be the "critical" period of dental development. The main dental abnormalities comprised retardation of eruption, enamel hypoplasia and dental caries.

### Revista Clínica de São Paulo, São Paulo

15 97-126 (April) 1944 Partial Index

- \*American Visceral Leishmaniasis Case O Monteiro de Barros and G Rosenfeld—p 97

**American Visceral Leishmaniasis**—Monteiro de Barros and Rosenfeld direct attention to the importance of splenic puncture for the diagnosis of American visceral leishmaniasis. The authors' patient, 19 years of age, complained for eight months of symptoms suggestive of malaria. The progressive anemia and emaciation did not respond to malarial therapy. There was enlargement of the spleen but no malarial parasites on repeated

blood examinations. American leishmaniasis were identified in preparations from material obtained by puncture of the spleen. Treatment consisted of intramuscular injections of Neostibosan (a pentavalent antimony compound) in doses of 6 cc (0.30 Gm) each, every other day up to a total number of thirty injections. Antianemic therapy was also administered. Permanent recovery and disappearance of splenomegaly followed.

### Acta Pathol & Microbiol Scandinav, Copenhagen

20 425-632, Part 3, 1943 Partial Index

- Serum Research Against Mucin Infections with Dysentery Bacteria Poor in Toxins V Sindbjerg Hansen—p 442  
\*Demonstration of Neoplastic Cells in the Sputum H H Wandall—p 485  
Culture of Gonococci in Diagnosis and Treatment of Gonorrhea G Hagerman—p 495  
Natural and Synthetic Estrogenic Substances T Kemp and K Pedersen Bjerregaard—p 552  
Modification of Dominici's Method for Elective Staining of Eosinophil Cells of Anterior Lobe of Pituitary Gland P Fonss Bech—p 560  
\*Effect of p (Aminomethyl) Benzenesulfonamide ('Marfanil') a Chemotherapeutic with a Fundamentally New Mode of Action K Schmith—p 563  
Motility of Fusobacterium J Boe—p 573  
Relation Between Fusobacterium and Accompanying Spirochetes J Boe and J Jonsen—p 585  
Demonstration of New Salmonella Type (S Sundsvall) in Sweden G Olin and K Alin—p 607  
Contribution to Problem of Geographic Variations in Anatomic Aspect of Ulcus Gastritidis N Ringertz—p 615

**Neoplastic Cells in Sputum**—Wandall states that the cytologic examination of sputum may become an aid to the roentgenologic and bronchoscopic examinations in diagnosis of primary pulmonary carcinoma. The radium station and the surgical department of the State Hospital in Copenhagen examined the sputum in 60 cases. Diagnosis of primary pulmonary carcinoma was made in 30 cases; diagnosis of secondary pulmonary carcinoma in 5 and diagnosis of a benign bronchial tumor in 1 case. Twenty two of the 30 cases of primary pulmonary carcinoma were confirmed histologically, while the remaining 8 were roentgenologically positive. In 19 of the 22 histologically confirmed cases and in 7 of the 8 roentgenologically positive cases neoplastic cells were demonstrated in the sputum. In the case of the benign bronchial tumor neoplastic cells could not be demonstrated in the sputum. Neoplastic cells were found in the sputum of patients with metastases to the lung from osteosarcoma, hypernephroma, carcinoma of the ovary and seminoma. The frequency of neoplastic cells in the sputum depends on the extent, the localization and the histologic type of the tumor. Thirteen of the 22 histologically verified cases were inoperable. In 12 of these 13 cases neoplastic cells were demonstrated in the sputum. In the remaining 9 cases it was decided to operate. Seven of the cases proved inoperable. Radical operation was performed in 2 cases, both of which presented neoplastic cells in the sputum. Two cases presented a peripheral localization of the tumor. Neoplastic cells were demonstrated more frequently in the differentiated than in the undifferentiated types of tumor.

**Chemotherapeutic Effect of p-(Aminomethyl)-Benzenesulfonamide ('Marfanil')**—Schmith reports studies in which, among other compounds, p (aminomethyl)-benzenesulfonamide ("Mesudin," "Marfanil") has been examined as a link in a systematic investigation on the relationship between the chemical structure of the sulfonamides and their bacteriostatic effect. These studies showed that p-(aminomethyl) benzenesulfonamide has a chemotherapeutic effect of a fundamentally different character from that of the other sulfonamides. The effect of this substance is not neutralized by para-aminobenzoic acid. It has just as strong a bacteriostatic effect on the resistant strains as on the sensitive strains of bacteria. P-(aminomethyl)-benzenesulfonamide is able to reduce the number of bacteria at once, i.e. without any initial phase of growth. The effect of p-(aminomethyl)-benzenesulfonamide does not depend on the size of the inoculum; i.e. its effect on large inocula is not weaker than that on small inocula. So far, p-(aminomethyl)-benzenesulfonamide has been employed clinically only to such a slight extent that it would be impossible to say anything about its therapeutic value. Further experiments are necessary to ascertain whether its effect may be increased by the introduction of heterocyclic substituents as in sulfanilamide.

## Book Notices

**The Blood Pressure and Its Disorders Including Angina Pectoris** By John Plesch M.D. Cloth Price \$4.50 Pp 149 with 61 illustrations Baltimore William Wood & Company 1944

This little monograph with its overly ambitious title and high price, is concerned primarily with a thorough discussion of the theory, technique and interpretation of tonoscillographic mensuration of the vascular tension. As a research monograph on this particular phase of abnormal physiology of the circulation it is a stimulating book of interest to those internists and investigators concentrating their attention on hypertensive arterial disease. To others it offers little that is useful. The approach to the multifaceted and complex problems of circulatory disease lacks breadth of view and clinical insight. Etiology, pathogenesis and prognosis are mentioned only superficially. The discussion of therapy in hypertension in general and for angina pectoris in particular is a curious mixture of archaic and modern concepts. It was rather a shock to discover the author advocating blood letting in angina pectoris. As an alternative he suggests a reduction of blood volume by a diet low in protein sodium chloride and other water-retaining substances. Such concepts hardly warrant attention today.

Dr Plesch according to the title page was formerly professor of internal medicine in the University of Berlin. His presentation therefore gives us some insight into recent continental medical thinking. Apparently it has not changed appreciably remaining purely somatic in point of view. The psychosomatic aspects of cardiovascular disorders are totally ignored. His presentation is wholly individualistic no consideration is given the significant literature on hypertensive disease which has been accumulating over the last twenty years. Though the author's discussions are clear and the text well written, the dogmatic assurance of finality is unlike that of a true scientist, who invariably doubts his own conclusions. The book can be recommended only to those who are particularly interested in circulatory disorders and sufficiently advanced students of these problems to read it critically. It can perform no particular service for the general practitioner or internist of broad interest.

**La organizacion de la Universidad y la Investigacion científica** Por el Prof. Dr. Alejandro Lipschutz director del departamento de medicina experimental del Servicio nacional de salubridad. Paper Price 25 pesos Pp 216 Santiago Chile Editorial Nascimento 1943

The author has published a series of lectures delivered in different cultural institutions of Chile in which he approached varied problems concerned with education, science, culture, philosophy, religion and politics. The reader has the impression that the author has taken advantage of these opportunities to expose those points of view that every cultured person has about the complexities of life and which, in general are kept as a subject for private conversations of a high intellectual sort. This sort of lecturing can be highly instructive and amusing especially if the lecturer presents his subject with both clarity and charm, as undoubtedly Dr Lipschutz did. The frequent imperfections of the Spanish used which are obvious to the eyes of the Spanish authority, no doubt passed unnoticed to the ears of the listener.

**Ourselves Unborn An Embryologist's Essay on Man** By George N. Corner The Terry Lectures 1944 Cloth Price \$3 Pp 188 with 18 illustrations New Haven Yale University Press London Oxford University Press 1944

The Terry Lectures were established at Yale so that the truths of science and philosophy might be integrated into a broadened and purified religion. The committee for the last lectures selected embryology as the science and Dr George Corner as the interpreter and integrator. The excellence of this little book is conclusive evidence of wisdom in both selections. Embryology is significant for religion and Dr Corner is a capable scholarly and sympathetic interpreter.

The book is brief, being concluded in three chapters. In the first Dr Corner with consummate skill describes briefly in intelligible and nontechnical terms what to anatomists is the most wonderful phenomenon in our universe—the phenomenon in which one microscopic particle of protoplasm becomes by self impelled progression a living man—perhaps another Shake-

spere or a Newton. This is the miracle of Ourselves Unborn. We are at that stage both germs and archives—germs because that small but busy bit of life becomes a man with all his hopes, ideals and religion—archives, because its life is just the life of our ancestors continued in a line necessarily unbroken from the beginning of life on this planet and reporting and repeating in its progress the long history of its past.

The second chapter deals with accidents during life in the womb before birth. These accidents are so common that from one third to one half of us die then mostly unrecognized even by the mothers. Religion prompts the questions: Did these dead have souls? Have they eternal life? Is one of them because unbaptized a little soul playing in a green field outside the gates of heaven not in torment nor even unhappy but certainly very wistful because he is not permitted to walk hand in hand with his mother before the Throne of Grace?

The third chapter deals with embryologic evidence of our place in nature and our evolutionary origin. It concludes that we are in intimate relationship with the animal world tempered by powers of the mind that bestow dignity and honor upon the life of the body.

An index helps in the study of this fascinating book and a bibliography will show some interested readers how to make a more thorough and intensive study. Dr Corner has provided a reliable and inspiring vision of our earliest days and his book is a contribution to literature as well as to science and religion.

**Technic of Electrotherapy and Its Physical and Physiological Basis** By Stafford L. Osborne M.S. Ph.D. Assistant Professor Department of Physical Therapy Northwestern University Medical School and Harold J. Holmquest B.S. B.S.(M.E.) Cloth Price \$7.50 Pp 780 with 241 illustrations Springfield Illinois & Baltimore Charles C Thomas 1944

This excellent new textbook dealing with a limited but important phase of physical medicine is divided into four parts. The first part deals with the effect and technical application of the direct current, the second with electrical stimulation of muscles, the third with radiation and the fourth with high frequency electrical currents.

The authors are eminently qualified to present the subject with which they are dealing. Osborne as a trained physiologist who has devoted many years to the subject of physical medicine, and Holmquest, the qualified physicist who has interested himself particularly in medical physics have collaborated in presenting a difficult subject in an understandable fashion.

The authors state that the book has been written with two groups of students in mind: first those who are well grounded in science and who desire a thorough and comprehensive training in the fundamentals of electrotherapy for whom the more advanced work in physics and mathematics appears in the form of footnotes; second, those students whose training in science is limited and who might therefore find the subject matter in the footnotes difficult to follow. For the latter group of students the technical material in footnotes may be eliminated without interfering with the clarity or continuity of the text. The authors have succeeded very well in their purpose and the procedure which has been described has been accomplished successfully.

This textbook is unquestionably the most complete modern volume on the physical and physiologic basis of electrotherapy. Every physician who is interested in physical medicine and every physical therapy technician would do well to study it carefully. The authors are to be congratulated on a difficult task well done.

**Del estado del niño del médico** Por Eduardo D. Ocampo Garl. Tesis del alumno Universidad nacional de Buenos Aires Facultad de ciencias medicas Escuela de medicina Paper 1p 131 with illustrations Buenos Aires Guillermo Kraft Ltda. Sociedad Anonima de Impresiones Generales 1942

The first chapter includes useful statistics on childbirth and infantile mortality in the city of Buenos Aires. The second chapter deals with the measures taken in different countries for the protection of mothers and the infantile population. The third chapter deals with analogous measures in the Argentine Republic and gives interesting statistical and graphic information on a model kindergarten in Buenos Aires, the "Jardín de la Infancia Mitre." The last chapter summarizes the topic and draws plans for the future.

## Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

### EFFECT OF CAFFEINE ON HUMAN BEINGS

*To the Editor*—What is the present opinion on the effect of caffeine on human beings and the possibility of hypercaffeinemia? Are there recent studies on the subject? Bennett W Kantola Lieutenant (MC) U S N

**ANSWER**—As ordinarily taken in beverages, caffeine produces a mild stimulation of the cortical centers characterized by wakefulness and alertness. In some persons or with larger amounts restlessness, muscle tenseness and an inability to concentrate are also produced. There is little effect on the medullary centers and peripheral organs except for mild diuresis until medicinal doses are administered. Then there may be respiratory and circulatory stimulation. With extratherapeutic doses these effects become more pronounced and delirium may be produced but fatal poisoning is almost unknown. A certain amount of tolerance is produced by continued use of beverages containing caffeine, and headache has been described as a withdrawal symptom.

Moderate continued use of beverages containing caffeine would not appear to be harmful. Immoderate use probably impairs both mental and physical performance in the direction of inexactness and misjudgment.

#### Reference

Dreisbach R H and Pfeiffer Carl. Caffeine Withdrawal Headache. *J Lab & Clin Med* 28: 1212 (July) 1943.

### TEST OF LABOR OR CESAREAN SECTION

*To the Editor*—A slender white woman aged 35 is six months pregnant. She had one other child seventeen years ago. She has had several cervical cauterizations; the right kidney has been removed; her tonsils have been removed; a Baldy-Webster suspension has been done. She has been in a psychopathic hospital and her case diagnosed as hysteria. Another psychiatrist diagnosed her condition as true convulsive seizures. Should this woman be delivered by cesarean section or given a test of labor? M D Texas

**ANSWER**—A patient like this should preferably be given a test of labor and delivered from below. Hysteria or convulsions are not indications for cesarean section; neither is the nephrectomy, the cervical cauterization or the Baldy-Webster suspension. Normal labor is less of a strain than an abdominal operation in a secundipara with one kidney; the majority of women have normal labor following nephrectomy. Likewise if the cauterization was properly performed there should be no interference with the first stage of labor. This woman should have much more supervision than other women during the remainder of her pregnancy. She should have at least weekly examinations of the urine and Mosenthal tests of renal function to be certain that trouble does not arise in the one kidney she has. Should evidence of nephritis, toxemia or severe pyelitis appear, the pregnancy should be terminated. However, there need not be alarm in finding albumin in the urine during the last few weeks, because this occurs in more than half the cases of pregnancy following nephrectomy. If any obstetric indication for cesarean section arises, fear of performing the operation is not indicated, but it should not be an elective one simply because of the patient's past history.

### TRANSFUSIONS WITH POLYCYTHEMIC BLOOD

*To the Editor*—Is there any contraindication to the use of polycythemic blood in transfusion work? In the case of a person with polycythemia whose hemoglobin is 20 Gm and red blood cell count is 8,000,000, what should be the dilution with isotonic solution of sodium chloride in the event that this blood can be used? M D Brooklyn

**ANSWER**—Since the cause of polycythemia vera is still unknown, the possibility cannot be excluded that the disease may be transmissible by blood transfusions. In addition as the best policy is to use only perfectly healthy donors, the use of polycythemic blood for transfusion may be objectionable. There should be no mechanical difficulty in transfusing polycythemic blood, so there is no need to add any saline solution. When packed red cells are used for transfusions, the usual policy is to restore the original volume by adding a volume of saline solution equal to the volume of plasma removed. However, some workers transfuse the packed cells without adding saline solution or adding only minimal amounts sufficient to reduce the viscosity.

### DERMATITIS FROM SMOKE AND FUMES

*To the Editor*—A woman aged 35 suffers from a dermatitis caused by contact with smoke fumes or any product of combustion of kerosene coal wood even the fumes from the exhaust pipe of an automobile. A rash appears on all exposed surfaces and resembles a weeping chronic eczema. She first consulted me about this condition in March 1943 and since then has consulted many other physicians, including several excellent dermatologists who have been unable to provide or suggest any means of relief. Please forward any information that may be of help in desensitizing or treating this patient.

D K Matthews M D Dresden Ohio

**ANSWER**—Dermatitis from exposure to fumes is rare. Search of the literature failed to reveal any definite cases of this nature. Tuft (Clinical Allergy, Philadelphia, W B Saunders Company 1938, p 508) mentions contact dermatitis from occupational dusts of all kinds and from certain hydrocarbons, e. g. raw petroleum lubricating oils, cutting emulsions, benzene, naphtha and carbon disulfide. Such cases are frequent. Shelmire mentions that a patient susceptible to contact with poison ivy did not develop dermatitis when exposed to the smoke of burning poison ivy plants (*Arch Dermat & Syph* 43: 384 [Feb] 1941). Avoidance of fumes seems to be the only important method of treatment. Desensitization or hyposensitization is impossible because proper extracts cannot be readily made, and even if they could be correctly prepared, the results of treatment would probably be unsuccessful.

### INDUCTOTHERMY AFTER IMPLANTATION OF METAL PIN

*To the Editor*—Will the use of inductothermy in a case in which a metal pin has been placed for fracture of the neck of the femur be permissible? Is there experience to indicate whether calcification of callus may be induced? J D Holston M D Massillon Ohio

**ANSWER**—It would be better not to use inductothermy in a case in which a metal pin has been placed for fracture of the neck of the femur. With ordinary treatment dosages it is probable that the danger of excessive heating of the pin is slight; nevertheless it could occur. There is no definite proof that hyperemia in itself would promote more rapid repair of the fracture, although some experiments have pointed that way. On the other hand, it is generally agreed that excessive hyperemia could cause decalcification.

One of our large military medical centers now, it is believed, is carrying on extensive studies on the effect of diathermy on metallic implants, but thus far no conclusions have been reached. Therefore it would seem better, for the present, to avoid the use of a short wave diathermy induction coil over a metallic implant.

### RABBITS VERSUS FROGS FOR ECTOPIC PREGNANCY TESTS

*To the Editor*—I should appreciate an opinion relative to the incidence of positive Aschheim-Zondek tests in ectopic pregnancy. It is my understanding that the rabbit is most frequently negative but the frog test is positive in a high percentage of cases. Is this correct? A A Skemp M D La Crosse Wis

**ANSWER**—In order to obtain a positive test for pregnancy using either the rabbit or the frog for the test, it is necessary to have an excess of chorionic gonadotropin in the blood or the urine of the patient to be tested. Since in many ectopic pregnancies there is a poor development of the trophoblast or the chorionic villi plus a poor connection with the maternal tissue, the incidence of negative tests for pregnancy is high. In most series the discrepancies run to about 25 to 30 per cent, so that the Xenopus (frog) test will not show a higher rate of positive tests in ectopic pregnancy than will tests on the rabbit. The only advantage of the frog test over the rabbit test is that it is possible to obtain a result in the former in eight hours while the latter needs eighteen to thirty-six hours of running time.

### DEAFNESS FROM MENINGITIS

*To the Editor*—Is there any new treatment now available for a patient who is totally deaf as a result of meningitis fifteen years ago, which apparently destroyed the auditory nerves? His inner ear mechanism is apparently intact for he has no trouble with his balance or with vertigo.

C Ronald Fulkerson M D Oakland Calif

**ANSWER**—Deafness from meningitis is always due to invasion of the inner ear by the infection with destruction of the nerve of hearing. Generally the static labyrinth is destroyed along with the acoustic labyrinth as could be determined by the caloric test. The fact that the patient is no longer unsteady or dizzy is not surprising, since compensation occurs after both labyrinths have been completely destroyed. There is no possibility of any improvement in the hearing by medical or surgical means in such a case. Lip reading must be resorted to.

# The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL 126, No 18

CHICAGO, ILLINOIS  
COPYRIGHT 1944 BY AMERICAN MEDICAL ASSOCIATION

DECEMBER 30, 1944

## THE PRESENT STATUS OF THE SURGICAL TREATMENT OF PRIMARY CARCINOMA OF THE LUNG

WILLIAM FRANCIS RIENHOFF JR, MD  
BALTIMORE

Slightly more than one decade has elapsed since the first one stage total pneumonectomy in the Johns Hopkins Hospital was performed on July 24 1933<sup>1</sup> After extrapulmonary individual ligation of the hilar structures the entire left lung was removed from a 3½ year old girl for primary fibrosarcoma of the left main bronchus The child had a remarkably uneventful convalescence and lived to be 8 years of age when she succumbed to an accident Postmortem examination showed no recurrence of the original growth nor any abnormality of the remaining thoracic viscera except a compensatory dilatation of the right lung In April 1933 Graham<sup>2</sup> had performed the first one stage total pneumonectomy for a primary carcinoma of the lung In this instance the patient, a physician, is still alive and actively engaged in practice The series of cases herein reported and that of Graham,<sup>3</sup> recently published, not only parallel each other in respect to their approximately simultaneous beginning but also in number, survival time and results, a source not only of great interest and gratification but also of supportive and corroborative data Two series so identical in every respect, built up independently and in different parts of the country and showing essentially the same results must be unique

My purpose in this report is to record the clinical analysis and the results of 181 consecutive cases of primary carcinoma of the lung in which operation has been performed over a period of eleven years Of this total group 71, or 39 per cent, have been operable, whereas 110, or 61 per cent, were inoperable at the time of exploration A large number of patients who were seen examined and rejected for operation because of obvious clinical signs of inoperability are not included

Since 1933 the clinical importance of primary cancer of the lung has been emphasized because of the fact that during these years a surgical technic for the removal of an entire lung has been developed In the years previous to 1933 the physician made such a diagnosis for academic reasons alone because there were no therapeutic methods which offered the patient more than palliation Medicinal and radiation therapy were equally ineffective, and the disease when so treated was always fatal

Surgical treatment of malignant tumors of the lung has been a boon to patients and a lively stimulus to clinicians interested in pulmonary lesions Because of this increased interest on the part of physicians the diagnosis of primary tumors of the lung is made much more frequently than in the past with the result that a greater number of such patients are being referred for operation In certain medical centers in which a special interest in this type of surgery has been manifested what seems a disproportionate increase in the frequency of these cases is apt to occur but it is a fact that the incidence of primary pulmonary cancer is increasing It is not within the province of this clinical report to discuss the probable reasons for this increase except to state that in the series of cases reported the majority of authors agree that the constant inhalation of irritating substances undoubtedly plays an important part Ochsner,<sup>4</sup> in his inclusive review of the literature, has collected much interesting information on this subject

### CLINICAL ANALYSIS

Because of occupational hazards and habits a higher incidence of primary malignant tumors of the lung would be expected in the male than in the female Table 1 shows the distribution according to sex of the patients in this series It is to be noted that there was a much higher incidence in the males than in the females, a ratio of almost 6 to 1 in favor of the males The incidence of involvement of the right and left sides was approximately the same

Table 2 shows the age limits of the series and demonstrates that the age incidence of carcinoma of the lung does not differ to any great extent from the age incidence of malignant growths elsewhere in the body Sixty-four of the patients were in the fourth to sixth decades inclusive Perhaps patients in the second to fourth decades were more frequently affected than would be the case with carcinoma of other viscera, however, this series of cases although relatively large, is far too small to warrant an exact statement Twelve of the cases fell in the sixth decade In this series the oldest patient operated on was 69 and the youngest 19 Age, in itself seemed to offer no contraindication to operation Not infrequently an older patient, from a physiologic point of view, is a far better operative risk than a younger one In this series the older patients were surprisingly unaffected by the operative procedure and, including the patient aged 69, generally had an uneventful postoperative convalescence Pulmonary carcinoma, however, is a disease of advanced age

In table 3 are listed the most frequent signs and symptoms which were found in this series of patients All symptoms or signs which were referable to invasion of contiguous structures by the direct spread of the

From the Department of Surgery of the Johns Hopkins University School of Medicine and Hospital

1 Rienhoff W F Bull Johns Hopkins Hosp 53:390 1933  
2 Graham E A and Singer J J Successful Removal of Entire Lung for Carcinoma of Bronchus JAMA 101:1371 (Oct 28) 1933  
3 Graham E A Dis of Chest 10:87 1944

4 Ochsner Alton Personal communication to the author Dis of Chest to be published



growth from the lung or which were due to metastasis in remote organs or structures were excluded. Only those clinical manifestations which were referable to the lung were considered. In 71 per cent of the patients in this series cough was the chief symptom. In a nation of heavy cigaret smokers in which the population sup-

TABLE 1—Distribution According to Sex of Cases of Primary Carcinoma of the Lung and Involvement of Right or Left Side

|            | Operable | Inoperable |
|------------|----------|------------|
| Male       | 87%      | 85%        |
| Female     | 14%      | 15%        |
| Right side | 55%      | 51%        |
| Left side  | 44%      | 49%        |

plying the majority of our patients breathes the polluted atmosphere of cities, cough is almost universal and is due mainly to nonspecific irritation of the respiratory tract. The important point about coughing that should make one suspicious of the presence of an intrabronchial growth is the departure from the normal for any individual. If in an adult "chronic cough" the type of cough changes to a spasmodic productive or nocturnal type or, again, if a person who has heretofore coughed infrequently suddenly begins to be annoyed by a hacking cough day and night attention should be focused on the bronchial tree and the presence of a bronchial neoplasm should be suspected. The development of a cough or changes in the character of coughing can portend an extremely serious condition. Until physicians as a whole as well as the lay public, become more acutely aware of the serious significance of this sign the opportunity for early and satisfactory treatment of pulmonary neoplasms will be denied to many patients. It is to be noted that the outcome in this condition unless recourse is had to surgery, is always fatal.

In 63 per cent of our patients hemoptysis was associated with coughing. This varied from streaking of the sputum to the expectoration of rather copious amounts of blood, up to 6 ounces (180 cc). In the latter group of patients the accumulation of blood in the mouth was preceded by a "gurgling" in the chest on one side which

lung. This is true even though a small number of tubercle bacilli may be present in the sputum. Tuberculosis and carcinoma were associated in 2 of the cases in this series. Clinical examinations to diagnose an intrabronchial tumor in no way interfere with the treatment of pulmonary tuberculosis, but if a patient bleeding from a tumor of the lung is observed for months in an attempt to prove the case to be tuberculous in many instances he will have lost his only opportunity for successful treatment. The discovery that the bleeding was originally from a neoplasm will have come too late.

Pain was present in 50 per cent of the patients in this series. Pain arising from an intrabronchial neoplasm must be differentiated from the pain due to direct invasion of contiguous structures. Pain arising from the lung itself is not associated with the respiratory cycle, as is the pain of pleuritis. It is most often described by the patient as a constant dull ache deep in the chest. The frequency with which the actual position of the tumor as shown by roentgenography coincided with the location of the level of pain on the chest wall as indicated by the patient was surprising. In all probability pain does not arise within the tumor itself but is a result of pressure on the bronchial wall. Persistent pain in the chest, in the absence of inflamma-

TABLE 3—Signs and Symptoms of Carcinoma of the Lung

|                |      |
|----------------|------|
| Cough          | 75%  |
| Hemoptysis     | 63%  |
| Pain           | 50%  |
| Loss of weight | 39%  |
| Hyperpnea      | 23%  |
| Pneumonitis    | 18%  |
| Fever          | 15%  |
| Dyspnea in the | 8%   |
|                | 100% |

tory disease or aspiration of a foreign body, should always lead to careful investigation of the respiratory tract. Pain down the arm or in the chest wall so characteristically found in the so-called "superior sulcus" or "Pancoast tumor" is as a rule due to direct invasion of the ribs or the brachial plexus or both. This distribution of pain is considered a very unfavorable symptom from the standpoint of operability.

Loss of weight due to cachexia in advanced cases of carcinoma of any organ in the body, particularly the gastrointestinal tract is well known and obvious, but not so easily understood was a striking loss of weight in 39 per cent of the patients with pulmonary carcinoma. This loss of weight was, of course, due in part to coughing, loss of appetite because of hemoptysis and sputum worry and so on, but the rapid gain of 30 to 50 pounds in a few months after total pneumonectomy for the removal of a relatively small growth remains unexplained.

Fifth on the list of signs and symptoms is hyperpnea, occurring in 23 per cent of the patients. These patients complained of a sudden desire to breathe in deeper breaths not exactly similar to air hunger but approximating this condition. The deep breathing sensation one experiences when breathing carbon dioxide would seem to be similar. This paroxysmal hyperpnea came on suddenly and lasted for a few seconds or a few hours. The mechanism of this respiratory phenomenon is difficult to explain. It may possibly be caused by a plug of mucus occluding a secondary or tertiary bronchus already partly plugged by an intrabronchial neoplasm, the bronchopulmonary segment of lung to

TABLE 2—Age Incidence of Cases of Primary Carcinoma of the Lung

|          |                    |            |
|----------|--------------------|------------|
| Youngest | 19                 |            |
| Oldest   | 63                 |            |
| Average  | 45                 |            |
| Age      | Number of Patients | Percentage |
| 19       | 1                  | 1          |
| 20-30    | 6                  | 9          |
| 30-40    | 6                  | 9          |
| 40-50    | 16                 | 22         |
| 50-60    | 30                 | 42         |
| 60-70    | 12                 | 16         |
|          | 71                 |            |

warned the patient of an impending hemoptysis. In our experience copious hemoptysis has usually been associated with the adenocarcinoma type of intrabronchial growth. Unless the x-ray and sputum examinations are indisputably those of tuberculosis or bronchiectasis hemoptysis must be considered to be due to an intrabronchial growth until this has been ruled out by the main types of examination at our command. The burden of proof is on the physician who in any given case states that hemoptysis is not due to a tumor of the



which the occluded bronchus is a tributary, thus becoming the site of an obstructive emphysema. Reflex disturbances in the respiratory rate and amplitude are thus set up. With expulsion of the mucous plug the respiratory rate returns to normal. Such unusual changes in the respiratory cycle, even though of very short duration, should excite one's curiosity sufficiently to suggest a thorough examination of the bronchial tree.

Eighteen per cent of the patients had suffered from attacks of pneumonitis associated with bouts of fever and all the signs and symptoms characteristic of pneumonia. It was frequently possible to obtain a history of numerous attacks of so-called "pneumonia" in the recent past. The chief characteristic of these attacks was that they had occurred at any time of the year with apparently no tendency toward seasonal incidence as in the true epidemic pneumonia. Furthermore physical signs were atypical and in unusual locations as regards the lung itself. Lobar pneumonia or bronchopneumonia, as a rule presents fairly typical physical signs. This is not the case in pneumonitis due to bronchial obstruction associated with primary carcinoma of the lung. The explanation for these unusual observations is not far to seek when their pathogenesis is considered. When obstruction of a secondary or tertiary bronchus occurs as a result of a new growth alone or in association with a mucous plug there is filling of the bronchial tree peripheral to the point of occlusion. Eventually infection of this bronchopulmonary segment occurs and the clinical syndrome of localized pneumonitis is produced. A portion of a lobe of greater or lesser dimensions, the entire lobe or even the entire lung may be involved. If exacerbations of such a pneumonitis are of sufficient frequency, bronchiectasis or even an abscess will at times supervene. Often such an abscess perforates into the pleura and produces putrefactive empyema. The point to be emphasized is that when such an unusual sequence of events takes place, or when any one of the aforementioned inflammatory episodes occurs that cannot be explained as a complication of a typical pneumonia or as a result of aspiration of a foreign body, an intra-bronchial growth should be suspected.

Recurrent bouts of unexplained fever unassociated with abnormal physical signs were present in 13 per cent of the patients for some time before the diagnosis of a lung tumor was confirmed. Such an elevation of temperature is in all probability associated with infection in and distal to the involved bronchus.

In general, it may be stated that there are no characteristic signs and symptoms of primary carcinoma of the lung. This lesion masquerades as many of the commoner disorders of the lung. The onset is often insidious, but the recurrent nature of signs and symptoms previously described should call the attention of the patient and the physician to the respiratory tract so that a thorough examination will be carried out. Especially is this true of a patient who has previously had excellent health and in whom after the second decade there develops a cough associated with hemoptysis. Too often precious time is lost because of a diagnosis of pulmonary tuberculosis, lung abscess, unresolved pneumonia, bronchiectasis or heart disease. The methods of examination employed to rule out the presence of an intrabronchial growth in no way interferes with the diagnosis or treatment of any of the conditions which are at times mistaken for such a growth.

#### DIAGNOSIS

In this series of 181 cases the roentgenogram of the chest was positive in every instance. It is not suggested that a diagnosis of primary carcinoma of the lung could be made from the roentgenographic studies alone, but there was in each case an abnormal shadow which necessitated further study and examination. Thus it can be stated emphatically that in every instance in which roentgenograms of the chest show a departure from normal and in which this departure is not in every way characteristic of one of the commoner lesions of the lung the presence of bronchogenic carcinoma should be inferred. Unquestionably the roentgenogram is the most important and the simplest method of examination at our disposal. Even in the earliest stages of growth of a primary carcinoma of the lung the lesion as a rule can be discovered. In the early part of the last decade it was disheartening to watch an early pulmonary lesion develop over a period of months into an inoperable cancer of the lung because physicians who were not aware of this danger would advise the patient to "wait and see what happens." Sometimes shadows cast by hilar infiltration due to other conditions such as tuberculosis or even normal structures are confusing. However an infiltrating hilar shadow in a patient past middle age associated with cough, hemoptysis and the absence of tubercle bacilli in the sputum almost certainly indicates a bronchogenic carcinoma, most of these carcinomas are located at or near the hilus. The diagnosis of carcinoma of any organ cannot be positively made by x-ray examination alone but the more experienced the observer the greater the likelihood of an accurate interpretation. Particularly is this true of lesions of the chest. Positive roentgenograms may show a shadow produced by the new growth itself or by an area of atelectasis, bronchiectasis, pneumonitis or abscess caused indirectly by occlusion by the growth of a bronchus leading to a bronchopulmonary segment or segments.

In my experience second to the roentgenogram in importance in yielding information which is helpful in arriving at a definite diagnosis is bronchoscopy. In fact either by direct vision or biopsy or both a positive diagnosis of primary carcinoma of the lung can be made only in this manner. In 61 per cent of the patients in this series a bronchogenic carcinoma was seen by this method and a positive biopsy secured. In 39 per cent the bronchoscopy was negative. Graham was able to establish a positive diagnosis in 75 per cent of the cases in his series. Ochsner believes that positive bronchoscopy will parallel hilar involvement in from 70 per cent to 85 per cent of the cases. A pulmonary growth in the periphery or even hilar lesions confined to the upper lobes may be beyond the vision of the bronchoscopist. Valuable information can be elicited by bronchoscopy even when the growth cannot be seen such as fixation or deformity or both due to pressure of any visible portion of the bronchial tree. The presence of blood or purulent discharge from certain bronchi serve as a lead. In this series of cases there have been no untoward results during or after bronchoscopies and in the hands of experts the patients have little if any discomfort.

In my experience bronchography is a useful diagnostic method only to reveal occlusion of a bronchus by a small growth which does not produce a shadow in the roentgenogram. As all the patients in this series had positive roentgenograms it was unnecessary to

resort to bronchography. However, with benign growths and other lesions this diagnostic method has proved useful.

Aspiration biopsy is mentioned only to condemn it as a diagnostic procedure. This method has been found generally uninformative and very dangerous. The danger arises from the fact that cancer cells or infection or both, may be implanted at any point along the path of the withdrawn cannula or needle.

Exploratory thoracotomy should be resorted to far more frequently in the future than it has been in the past. In the presence of suggestive signs or symptoms of a dangerous pulmonary lesion such as primary carcinoma, when it has been impossible to arrive at a definite diagnosis by all the means at our disposal exploratory thoracotomy should be performed at once. No deaths and no complications have followed such a procedure in a series of 25 cases. Incisions into the thoracic cage heal rapidly, and as a rule the patients are out of bed much earlier than those on whom exploratory laparotomy has been performed. If direct observation and palpation do not reveal the true nature of the lesion, excision of the entire area in the lobe should be performed for immediate microscopic examination, and the diagnosis is made as is customary in questionable cases of carcinoma of the breast. If further

in origin, grew grossly in two separate fashions. The one, an intrabronchial tumor arising apparently from the bronchial mucosa, grew into the lumen of the bronchus and toward the trachea. The centripetal tendency of the growth, occluding completely or partly the primary or secondary bronchus, was characteristic. The other type of hilar growth was an extrabronchial tumor which, probably arising in the wall of a secondary, tertiary or quaternary bronchus, would break through the wall and grow along outside of and often completely around the bronchus. This type of growth also showed this centripetal tendency, growing around and about the secondary and primary bronchi and then spreading directly into the mediastinum to involve the structures contained therein.

The clinical course is dependent to a great extent on method of growth. It is, of course, obvious that the intrabronchial type will produce respiratory difficulties, cough, sputum and hemoptysis much earlier than the extrabronchial tumor. The first symptoms caused by the latter method of growth may be, for example, interference with the venous return from the neck owing to involvement of the superior vena cava on the right side, or recurrent laryngeal palsy or Horner's syndrome on the left. Malignant tumors arising in the periphery are as a rule asymptomatic. They may be said to arise in the silent area of the lung and as they do not as a rule produce bronchial obstruction or erode pulmonary vessels the symptoms and signs are usually those dependent on invasion of the pleura and chest wall and, by direct extension, the brachial plexus.

In 70 per cent of the 71 patients on whom total pneumonectomy was performed in this series there were metastases to the bronchial and tracheal nodes. This fact emphasizes the necessity of performing total pneumonectomy with dissection of these regional nodes in order to effect a permanent cure. In the remaining 110 cases that were inoperable, in addition to metastases in the regional nodes the various organs and structures that were the site of metastases are listed in the order of their frequency of involvement: supraclavicular and axillary lymph nodes, liver, pleura, pericardium and heart, contralateral lung, osseous tissue, brain and multiple areas in the skin and subcutaneous tissue.

The histologic structure of the tumors occurring in this series of cases was determined by examination of the specimen removed at operation and also from biopsies performed in the inoperable cases. The microscopic appearance of these tumors made it possible to divide them into two large groups, the flat and squamous cell carcinoma and the adenocarcinoma. In the latter were included the adenocarcinomas, oat cell types and cylindric cell carcinomas. These various examples are thought to be different forms of the same tumor. In fact, the adenocarcinoma type is pleomorphic. Sections of the tumor differ, depending on the region from which they were cut. Rich, however, is of the opinion that the cellular classifications should be maintained until there is more convincing evidence of a common origin. Womack and Graham, on the other hand, believe that all bronchogenic carcinomas in this group as distinct from the flat or squamous cell group originate in a "mixed tumor" of the bronchus, which gives rise to the small round cell and alveolar carcinomas in addition to those in our classification. As shown in table 4, the flat or squamous cell carcinomas comprised 64 per cent of the cases in this series, whereas the adenocarcinoma group included 36 per cent.

TABLE 4—Pathology

|                         |     |
|-------------------------|-----|
| Squamous cell carcinoma | 50% |
| Flat cell               | 14% |
|                         | 64% |
| Adenocarcinoma          | 28% |
| Cylindric cell          | 4%  |
| Oat cell                | 4%  |
|                         | 36% |

discussion of the situation with the patient seems advisable, the clean thoracotomy wound should be closed and the patient returned to his room for consultation. Later in the week the chest can be reopened and the definitive procedure carried out. With good surgical technic and with the proper administration of one of the many light gas anesthetics, such as cyclopropane, such a procedure has practically no danger and is, to say the least, far less hazardous than awaiting positive proof of the presence of cancer of the lung in the form of metastasis. The old idea that opening the thoracic cage as an operation of election is a form of euthanasia must be abandoned. The impression that all primary malignant tumors of the lung are slow growing and are late in metastasizing is incorrect.

#### PATHOLOGY

The surgical removal of primary carcinoma of the lung in a relatively early stage has brought about changes in our ideas of the origin and nature of the growth of such tumors. In the past practically all the data assembled were based on the autopsy in very late cases when it was impossible, on account of the almost universal involvement of the lung and contiguous structures to determine the nature, origin or progress of the growth within the lung. In this series of cases the majority of the tumors occurred at or adjacent to the hilus, the minority in the periphery of the lung. The latter seemed to spread throughout the area of the lung in which they originated by centrifugal growth, most of them apparently having arisen in the alveolar lining cells. The hilar tumors, all of which were bronchogenic

The length of life computed on the basis of the microscopic characteristics of the tumor is shown in table 5. Of those patients who survived to be discharged from the hospital as well, but who died at various intervals of time following their departure, the largest percentage 65, had the squamous or flat cell type and lived a greater length of time than those with the adenocarcinoma type, with the exception of 1 patient, in whom a cylindric cell tumor was found, and 1 in whom an oat cell type occurred who lived three years and six months and two years and two months respectively. The patients in the adenocarcinoma group, including the cylindric and oat cell varieties, had a less favorable prognosis than those in the flat cell group. Of the patients who are living, 63 per cent were classified histologically as having tumors belonging to the flat cell type, whereas only 37 per cent were found having those of the adenocarcinoma group. With the exception of 1 patient, who is alive after eleven years, the outlook for those patients whose tumors were of the flat or

TABLE 5—Pathologic Findings in Relation to Length of Life in Primary Carcinoma of the Lung

| Pathologic Structure    | No of Cases | Per centage | Duration of Life |                |                 |
|-------------------------|-------------|-------------|------------------|----------------|-----------------|
|                         |             |             | Shortest Period  | Longest Period | Average         |
| Patients who have died  |             |             |                  |                |                 |
| Squamous                | 16          | 51          | 2 months         | 2 yrs 10 mos   | 1 year 3 months |
| Flat cell               | 4           | 13          | 1 month          | 7 months       |                 |
|                         |             | 65          |                  |                |                 |
| Adenocarcinoma          | 8           | 26          | 3 months         | 2 yrs 1 mo     | 9 months        |
| Cylindric cell          | 2           | 6           | 4 months         | 3 yrs 6 mos    | 17 months       |
| Oat cell                | 1           | 3           | 2 yrs 3 mos      | 2 yrs 3 mos    | Same            |
|                         | 31          | 33          |                  |                |                 |
| Patients who are living |             |             |                  |                |                 |
| Squamous                | 9           | 47          | 3 months         | 9 yrs 7 mos    | 4 yrs 1 mo      |
| Flat cell               | 3           | 16          | 3 months         | 1 yr 4 mos     | 10 months       |
|                         |             | 63          |                  |                |                 |
| Adenocarcinoma          | 6           | 31          | 1 yr 2 mos       | 11 years       | 4 yrs 9 mos     |
| Oat cell                | 1           | 5           | 6 months         | 6 months       | Same            |
|                         | 19          | 37          |                  |                |                 |
| (Last 6 not classified) |             |             |                  |                |                 |
|                         | 20          |             |                  |                |                 |

squamous cell type seems to be better. This would appear to be fortunate, since the majority of tumors in this series were of this microscopic structure. It will be interesting to note whether or not this histologic distribution will prove to be constant in the future and in reports from other clinics.

#### TREATMENT

In our present state of knowledge the only efficacious method for treatment of pulmonary carcinoma is by surgical removal of the entire organ together with the regional lymphatic nodes. Medicinal therapy is only palliative and as these tumors are radioresistant, radiation therapy is of no benefit. From an anatomic standpoint the lung lends itself to surgical removal more readily than any other organ in the body, with the possible exception of the breast. From the point of view of the biologic characteristics of primary carcinoma of the lung surgical removal is more apt to be successful because of the relatively slow growth and spread of these tumors as compared with similar tumors in other regions of the body. Finally the remarkable ability and tendency of the contralateral lung to undergo compensatory changes prevents incapacitation of the patient from a physiologic point of view.

It is not within the province of this report to discuss the problems of surgical technic except to state that any operation designed to cure primary malignant tumor of the lung must of necessity consist of total and not partial pneumonectomy or lobectomy. There is no instance with which I am familiar of a

TABLE 6—Number of Total Pneumonectomies

|                                 |    |
|---------------------------------|----|
| Carcinoma                       | 71 |
| Sarcoma                         | 2  |
| Tuberculosis                    | 9  |
| Tuberculosis and carcinoma      | 1  |
| Tuberculosis and bronchiectasis | 1  |
| Nontuberculous abscess          | 2  |
| Nontuberculous bronchiectasis   | 2  |
| Congenital cystic disease       | 1  |
| Actinomycosis                   | 1  |
| Total                           | 90 |

TABLE 7—Mortality Rate Following Pneumonectomy

| Condition            | Number of Cases | Death in Hospital | Percentage |
|----------------------|-----------------|-------------------|------------|
| Carcinoma            | 71              | 15                | 21         |
| Other than carcinoma | 19              | 0                 | 0          |
| Total                | 90              | 15                | 17         |

case of indisputable carcinoma of the lung having been cured by partial pneumonectomy or lobectomy.

The final proof of the efficacy of any method of therapy naturally is obtained from a critical analysis of the immediate and remote results. Tables 6 to 9 present a summary of the successes and failures following operation in this series during a period of eleven years. Ninety-five total pneumonectomies have been performed and table 6 presents the type of case in which total removal of the lung is indicated. In this entire group, as shown in table 7 the immediate mortality was 25 per cent. Twenty-four patients died as a result of the operation or from complications resulting indirectly from the operation. The causes of these deaths are summarized in table 8 and will be

TABLE 8—Causes of Postoperative Deaths in Hospital

| Causes of Death                                  | Carcinoma of Lung | Lesions Other than Carcinoma | Total Death |
|--|-------------------|------------------------------|-------------|
| Bronchopneumonia                                 | 3                 | 3                            | 6           |
| Empyema  | 2                 | 1                            | 3           |
| Pulmonary embolism                               | 1                 | 0                            | 1           |
| Cardiac failure                                  | 1                 | 0                            | 1           |
| Coronary thrombosis                              | 2                 | 0                            | 2           |
| Accidental puncture of heart during thoracostomy | 0                 | 1                            | 1           |
| Tumor of heart valve                             | 1                 | 0                            | 1           |
| Pericarditis                                     | 1                 | 0                            | 1           |
| Air embolus                                      | 1                 | 0                            | 1           |
| Hemorrhagic pancreatitis                         | 1                 | 0                            | 1           |
| Cerebral hemorrhage                              | 1                 | 0                            | 1           |
| Tuberculous pneumonia spread to other lung       | 0                 | 1                            | 1           |
| Cause unknown                                    | 1                 | 1                            | 2           |
|  | 15                | 9                            | 24          |

discussed later. In Graham's series of 75 total pneumonectomies in which 70 were for carcinoma, there were 21 deaths in the hospital, or a mortality of 30 per cent. Because of the striking similarity in the results both immediate and late in Graham's and this series it is interesting to compare them. Of the 71 cases of carcinoma of the lung in this series there were 15 deaths in the hospital, or a mortality of 21 per cent. It is to be noted that these figures include the early deaths before the technic of anesthesia was worked out to the

degree of perfection that now exists, and that closure of the bronchus in the early cases was far less secure than the method now employed. These points are emphasized in order to explain the rather high mortality of 21 per cent and to point out that it is only reasonable to expect a substantial reduction in the future. The use of the sulfonamide drugs and recently of penicillin has added greatly to the safety of the operative procedure. Mention should also be made of the fact that since physicians now as a rule refer these patients at an earlier stage of the disease, the technical difficulties have been lessened to a considerable degree. As a matter of fact there was a succession of 17 cases in this series with no deaths and another of 23 patients with only 3 deaths or a mortality of 13 per cent. It is interesting to compare this figure with the last 25 cases of Graham's, in which there were also 3 deaths, or a mortality of 12 per cent. With further technical progress an even lower mortality may eventually be

One has survived for nine years, 3 for seven years 1 for four years, and so on. It would seem desirable to call attention to the fact that all these patients, except 1 who was a professional boxer, have been restored to their normal activity in every respect. They have been able to return to their former vocations and even recreations, such as golf, swimming, fishing and hunting. In all except the occasional case, since it has not been found necessary to perform a thoracoplasty, no deformity of the patient's chest is visible. The remaining lung expands to fill the dead space resulting from the removal of the affected organ. This intrathoracic readjustment has been reported in detail elsewhere. If these results, including Graham's and Ochsner's are compared to those obtained from the surgical treatment of carcinoma of the thyroid, breast, esophagus, stomach and large and small intestine, reported over a corresponding length of time (ten years), it will be evident that removal of the lung for primary carcinoma offers a greater probability of permanent cure than the surgical treatment of carcinoma of any other organ in the body.

Forty-four per cent or 31 patients, lived for one month to five years after discharge. The majority of these patients were definitely improved, being relieved of cough, hemoptysis and often extensive pulmonary suppuration with its attendant discomfort and toxic manifestations.

Table 8 shows the number of patients who died as a result of the operation before discharge from the hospital and the cause of death as proved by autopsy. Fifteen deaths occurred in the series of 71 pneumonectomies performed for primary carcinoma of the lung, a mortality of 21 per cent. In 7 cases death was due to causes unrelated to the operative procedure, such as pulmonary embolism, cardiac failure, coronary thrombosis, cerebral hemorrhage, pedunculated tumor of the left auricle plugging the mitral orifice, and acute hemorrhagic pancreatitis. If these complications had not occurred the mortality in this group might have been reduced considerably, perhaps almost half. In 24 total pneumonectomies for conditions other than carcinoma, that is, tuberculosis and nontuberculous infections, there were 9 deaths or a mortality of 37 per cent. This higher mortality is to be expected because the presence of long standing infections would, of course, increase the technical operative difficulties and at the same time lower the patient's resistance to operation. In this group 2 patients succumbed to massive pulmonary embolism and 1 to an accidental traumatic severance of the anterior branch of the left coronary artery during an unnecessary thoracentesis by an inexperienced operator. It is clear that even this mortality should be reduced somewhat. However, total pneumonectomy for inflammatory lesions of the lung probably will always carry a higher mortality rate than pneumonectomy for carcinoma.

#### CONCLUSIONS

An otherwise fatal disease, primary carcinoma of the lung, can be satisfactorily treated by surgical removal of the entire organ. Surgical measures short of total pneumonectomy are not efficacious. Postoperative mortality and longevity are at least as good as, if not better than, the postoperative results following the surgical treatment of carcinoma of other organs.

1201 North Calvert Street, Baltimore 2

TABLE 9—*Pneumonectomy for Carcinoma of the Lung*

| Duration of Life                             | No. of Cases | Total    | Percentage |
|--|--------------|----------|------------|
| Patients dying after various periods of time |              |          |            |
| Less than 6 weeks                            | 10           | 10       | 21         |
| 1 month to 5 years                           |              |          |            |
| 1 month to 6 months                          | 13           |          |            |
| 6 months to 1 year                           | 10           |          |            |
| 1 year to 2 years                            | 1            |          |            |
| 3 years                                      | 1            |          |            |
| 5 years                                      | 1            | 31       | 44         |
| Patients living                              |              |          |            |
| 1 month to 6 months                          | 9            |          |            |
| 6 months to 1 year                           | 3            |          |            |
| 1 year +                                     | 2            |          |            |
| 2 years +                                    | 2            |          |            |
| 3 years +                                    | 3            |          |            |
| 4 years +                                    | 1            |          |            |
| 7 years +                                    | 1            |          |            |
| 9 years +                                    | 1            |          |            |
| 11 years                                     | 1            |          |            |
|  |              | 20       | 28         |
|  |              | 71 cases | 100        |

reached. Of his last 30 patients Ochsner lost only 2 in the hospital, a mortality of 6⅔ per cent. Such brilliant results probably could not be obtained in a larger series, but a mortality rate of 15 per cent would seem to be within the realm not only of possibility but also of probability. When the fact is considered that without operation the disease is always fatal, the alternative risk of operation seems small.

The success of the operative treatment of carcinoma of the lung cannot be judged solely by the immediate operative mortality, although of course this figure is of the utmost importance. The proof of the statement that total pneumonectomy is not just another surgical experiment but is an operation which has gained a permanent place in our surgical procedures is to be found in the remote or ultimate results. If the patient is offered the opportunity for a permanent cure without serious handicaps, the operative treatment should be considered successful. These results are summarized in table 9. It will be noted that 25 patients or 35 per cent of those on whom total pneumonectomy was performed for primary carcinoma of the lung are still alive, well and leading active lives. One has survived for eleven years and in this time has raised a family of 2 children besides doing all her own housework. The lesion was adenocarcinoma of the left lung.

## CONTINUOUS CAUDAL ANALGESIA

AN INTERIM REPORT

ROBERT A. HINGSON, M.D.

Surgeon United States Public Health Service  
PHILADELPHIA

Since the first report to the medical profession two years ago, continuous caudal analgesia has been the subject of much comment in both professional and lay publications. At one extreme is the bitter criticism from those who have made no effort to study the procedure in clinics where it has been used successfully. At the other extreme are euphoric promises made to the public by journalists equally ignorant of the procedure—promises which grossly exaggerate the clinical observations of the originators.

Some physician critics have attributed to the method complications and sequelae properly chargeable to elementary technical lapses on the part of the operator. The physician who attempts the use of caudal analgesia without first seeing it properly performed, who bypasses the coccyx and then punctures the rectum or lethally deposits a dose of local anesthetic into the cerebrum of the unborn baby has not performed continuous caudal analgesia. The physician who injects 100 per cent alcohol by mistake into the sacral canal or who injects hot saline solution immediately removed from the autoclave into the sacral canal is not justified in condemning this technic because of the subsequent paralysis of his patient. Likewise, the physician who walks into the labor room in street clothes, rolls up his sleeves without washing his hands and slips on a pair of gloves to insert a needle through improperly cleansed skin into the caudal canal has no right to attribute the ensuing infection in his patient to the technic.

All these complications have occurred and will recur if members of our profession continue to derive their scientific impetus from the popular magazines. It is to avoid such hazards that the following observations are presented to you who are specialists in the field of anesthesiology, to you whose hands safeguard the divine work of controlling pain. Special studies in regional anatomy, physiology, pharmacology, roentgenology and the obstetrics associated with continuous extradural nerve block by means of medication introduced through the sacral hiatus are integral parts of this new technic in anesthesiology.

Continuous caudal analgesia should be administered only by the specialists and the specially trained physicians. It has worked more satisfactorily in clinics fortunate enough to have a physician-anesthetist and an obstetrician working as a team. It has been repeatedly emphasized that this is a technic to be used in well staffed hospitals where the patient is surrounded with the safeguards of adequate antepartum care, oxygen, vasopressor regulators and antiseptic precautions. The hospitals which can provide the services of physician-anesthetist-obstetrician teams working on a divided schedule throughout a twenty-four hour service will become the maternity centers to which parturient women will come in increasing numbers. It is here that infant and maternal mortality and morbidity will diminish to an inconsequential minimum.

This technic in the first three years of its existence has provided 42,000 parturients with comfortable labors and deliveries of babies born without narcotization and anesthesia. In a careful analysis of these data, it has been determined that the average spontaneous breathing time of the baby from the moment the head was born has been thirteen seconds and the average lusty crying time twenty-two seconds. This study compares so favorably with all other forms of pain relief in obstetrics that its significance is self evident. The fetal mortality in this group has been 1.7 per cent as compared with the fetal mortality in the death registration area of the United States of 5.2 per cent. Out of these 42,000 cases there have been sixteen maternal deaths. Six were attributed to obstetric complications, seven to the misuse of caudal analgesia in unskilled hands and three may be considered anesthetic deaths—emphasizing the small permanent hazard to the mother associated with this form of pain relief.

Continuous caudal analgesia in its numerous presentations to the profession through medical literature has never been advocated by me as a panacea for pain in childbirth. I recommend it only as an agent to relieve the distressing pains of progressive and established labor and delivery. I condemn its use for the discomforts of preliminary and early labor.

Parturients in whom fear can be controlled by confidence in the physician and in their surroundings are the ideal ones for the use of continuous caudal and spinal analgesia. Parturients in whom fear is uncontrolled can still be more satisfactorily managed with amnesia and general anesthesia. These facts emphasize that there is no one single method of pain relief suited to every type of case.

Since anesthetists are more concerned with technics, anatomy, pharmacology and sociological aspects of pain relief procedures I shall summarize the recent advances in these branches of the basic sciences concerned with this procedure.

## ANATOMY

Anatomic studies have been carried out in eight medical schools from which careful measurements of more than 20,000 sacra have been performed. The anomalies studied have indicated that malformations of the sacrum are more frequent than of any other bone in the body. Dr. Mildred Trotter and her group at Washington University in St. Louis, in an analysis of 5,000 sacra from the anatomic collections of two medical schools, have determined the incidence of the more common anomalies as follows:

1. Twenty-two per cent of sacra have accessory apertures in the roof varying in size from 2 mm to 3 cm.
2. Eleven per cent of sacra have a bony defect produced by failure of the superior dorsal arches to close.
3. Eighteen per cent of sacra have a bony defect produced by failure of the inferior dorsal arches to close.
4. Two per cent of male sacra and 0.5 per cent of female sacra in the series studied have no osseous roof to the sacral canal at all.
5. Five and five-tenths per cent of the sacra have either an obliterated hiatus or a diminished anteroposterior diameter to the point that introduction of average sized caudal needles would probably result in failure.
6. From another study there have been collected 6 cases of hemisacra associated with large sacroceles that projected into the pelvis. All these were diagnosed as ovarian cysts. In several of them laparotomy and removal of the cyst did not reveal the cause of the pathologic condition, all the patients died of meningitis.

In advanced cases of arthritis and in diseases from nutritional deficiency there are oftentimes osseous projections within the sacral canal which resemble the stalactites and stalagmites of subterranean formations. The frequency of these projections indicates the need for further roentgenologic study in cases of unexplained lumbosacral backache.

Bishop has utilized the Caldwell-Molloy subpubic angle roentgenograms of the sacrum to present information of importance to the physician-anesthetist using caudal analgesia.

#### NEUROLOGY AND PHARMACOLOGY

In numerous medical publications I have already substantiated the pioneer work of Cleland, who was the first accurately to locate the afferent uterine neurology.

In more than 3,000 personally observed and managed obstetric cases I have not found a single case in which a complete block of the eleventh and twelfth thoracic nerves was not accompanied by a total relief of the abdominal cramps of labor. Likewise I have not found a single case in which well established contractions of the uterus did not continue if the level of analgesia was not permitted to rise above the tenth thoracic segment. Thus I have confirmed the natural anatomic dissociation between the motor and sensory components of the uterine nerves. This fact makes possible the clinical application of caudal analgesia in such a manner that the pains of labor are relieved and the cramps of labor continued without interruption.

A third component of uterine neurology should also be considered, namely, the nerve supply to the cervix. The nerve fibers which run to this fibromuscular structure have been determined to be both sympathetic and parasympathetic. The afferent divisions of these nerves transmit the sensation interpreted by the parturient as the intense agonizing crescendo of pain across the lower part of the back.

The efferent parasympathetic components, which are derived from the second, third and fourth sacral nerves, produce a more or less constant contraction of the smooth muscle bundle guarding the cervical os. Thus an anesthetic block of these nerves produces a welcome relief of pain and a relaxation of musculature which in the presence of forceful uterine contractions from above develops into a rapid dilatation of the cervix and expulsion of the baby through the birth canal.

I have determined in more than 2,000 cases that the use of the three chlorides of Ringer's solution will intensify and prolong the action of metycape on the nerves in the peridural space.

Because of the pronounced vasomotor block with the associated peripheral vascular dilatation, there is produced a hypotension on a purely mechanical basis. Direct observation of the spleen in cesarean section under this type of analgesia reveals that it does not vary in size to account for this lowered blood pressure. Recently this hypotension has been combated in the following manner:

- 1 The use of 50 mg. of ephedrine sulfate as needed
- 2 Elevation of the extremities to right angles with the body in cases in which a fall in pressure develops of more than 20 mm. of mercury systolic
- 3 The use of 100 per cent oxygen inhalations in cases of nausea, hypotension or fetal bradycardia

From the therapeutic indications I have utilized continuous caudal analgesia to produce a hypotension in the preeclamptic, in the eclamptic with convulsions, and

in medical cases with essential hypertension. In all of these cases I have observed striking clinical improvement immediately after the institution of the technic on the basis of the following phenomena:

- 1 Peripheral vasomotor dilatation in the pelvis and lower extremities
- 2 Vasomotor changes in the kidneys with an associated increase in the output of urine

Altogether 42 eclamptic patients in a convulsive state have been relieved of all nervous system symptoms. Of these, 40 have delivered live babies without maternal mortality. In 6 such cases continuous caudal analgesia was utilized with surgical induction of labor by rupturing the membranes. In these labor and delivery progressed with accelerated rapidity.

My experience suggests that this technic in which the nerve block is continued for four to six hours in the treatment of thrombophlebitis, sciatica, intractable pain of pelvic carcinoma, ureteral or vesical colic, Dietl's crisis, burns of the lower extremity, arterial emboli of the legs and peripheral vascular angiospastic diseases should be further investigated in the hands of competent specialists. I have treated more than 200 patients with the listed diseases who have improved, oftentimes dramatically. This technic can also be used as a test index prior to surgical sympathectomy.

In surgery the technic is found to be an indicated method in operations below the umbilicus in the debilitated, aged and cachectic patient who does not tolerate many of the other forms of anesthesia. I have found this technic applicable in the management of industrial and war trauma of the lower half of the body, in which it may be used to control pain for many hours before, during and after surgical and orthopedic operations.

In another report my associates Lull and Ullery have described the use of caudal analgesia in 160 cesarean sections without loss of mother or baby.

Certain improvements in the technic of the production and maintenance of caudal analgesia have been advanced. The malleable stainless steel caudal needle, so successfully used in the last 3,000 cases, has almost eliminated the hazard of needle breakage (with the straight stiff steel or the malleable German silver needle) provided the needle is used in parturients who labor on their sides and provided the needles are discarded after five administrations of continuous caudal analgesia. Lundy and his co-workers developed a substitution technic that was simultaneously but independently presented by Manalan of Indiana, namely, the use of the ureteral catheter. This technic has advantages for parturients who are uncooperative and for those eclamptic patients who have lost their central nervous system motor control. It also is the procedure of choice for certain parturients with large pendulous abdomens who, for obstetric reasons, should labor on their backs.

The continuous drip method of caudal analgesia introduced by Block and Rotstein presented a few useful advantages over the other technics. At the same time new hazards were incurred to the patient. To overcome these hazards Major James L. Siever of Fort Sam Houston, Texas, who has supervised more than 2,000 continuous caudal confinements, introduced the regulated intermittent modification of the continuous drip technic. This refinement consists in the conventional injection of the test dose and the first dose of the



analgesic agent. All subsequent doses however are permitted to flow by gravity through a special apparatus that automatically regulates 20 cc doses at a time.

The latest modification of technic is my introduction of the nontraumatic nylon needle which is inserted by means of a stiff steel stylet that is withdrawn as soon as the sacrococcygeal ligament is penetrated. This needle may be left in for many hours without fear of trauma.

Thus I emphasize that continuous caudal analgesia is a new technic, still in the developmental state. In its use in the various branches of medicine I implore your caution and solicit your consultation and report.

807 Spruce Street

#### ABSTRACT OF DISCUSSION

DR JOHN G P CLELAND, Oregon City, Ore. I agree with Dr Hingson that caudal analgesia is definitely a specialized procedure requiring a thorough knowledge of anatomy and physiology, surgical training, equanimity and painstaking care in addition to a good obstetrician with special hospital facilities. As an example of what special training and team work will do, witness the record of the Lundy department of the Mayo Clinic with more than 15,000 caudal analgesias (surgical and obstetric) without a death—the largest series of any form of anesthetic at that clinic without a fatality. Relative failures may be prevented by secal sodium premedication followed by paravertebral block of the eleventh and twelfth thoracic nerves, which I have proved by hysterographs to permit strong contractions with pain relief to continue until progressive labor has been established, at which period I believe caudal analgesia to be indicated. If inability to enter the hiatus has not been foreseen by routine x-rays, and general narcosis and general anesthesia are not desired, paravertebral block repeated at infrequent intervals with nupercaine hydrochloride may be given and delivery accomplished under the pudendal block of De Lee and Greenhill. To insure pain relief in obstetrics without interfering unnecessarily with the expulsive powers of the uterus, no matter whether one uses Hingson and Edwards' malleable needle, Lundy and Manalan's catheter or Block and Rotstein's or Siever's drip method the main thing is to keep the level of analgesia below the umbilicus and yet to include the eleventh thoracic nerve. I have experimental evidence by hysterographs that contractions become weaker if the tenth nerve is involved. I have found the catheter method of Lundy and Manalan most satisfactory, but Dr Hingson's announcement of the nylon needle seems to combine the atraumatic during movement advantage of the catheter with the smaller opening of the needle. I have found continuous caudal analgesia the anesthetic of choice for extensive gynecologic repair operations, which usually are on poor risks for general or spinal anesthesia, for bladder operations and for tedious operations on the lower extremities.

DR H CLOSE HESSELTINE, Chicago. From his experience at the Chicago Lying-In Hospital Gready has indicated particular dangers and complications which confront those who contemplate or use this method. We found that the method is not a practical one in view of our shortage of doctors and anesthetists. Every patient receiving this procedure must have a competent and experienced person or persons from the obstetric as well as the anesthetic and analgesic point of view in constant attendance. Dr Hingson mentions that they have used this method in 42 cases of eclampsia with favorable results but did not mention the other therapy used at the time. One of the fears confronting every obstetrician in association with delivery of a toxemic patient is the possibility of a vasomotor collapse. In vasomotor collapse there is a definite decrease in the output of urine or often an actual anuria. J Robert Wilson also at the Lying-In Hospital reduced the blood pressure in toxemic patients by Veratrine (pyrocatechin dimethyl ether) but at the same time there was an appreciable decrease or a complete cessation of urinary output. It might be postulated

that this drug had a toxic effect, but the same situation is evidenced in vasomotor collapse. Because of this it seems evident that there is great hazard in the use of caudal anesthesia for patients with labile blood pressure. It is recommended that Dr Hingson make a study on a far greater number of toxemic patients (a significant adequate number) in all details with respect to physiologic and toxemic stages before giving any endorsements for this therapeutic procedure lest a large number of women lose their lives as the result of complications secondarily superimposed by this method. Again as we make medical progress we must first do no harm. These observations are stimulating but must be critically confirmed or reputed before offering them to the profession at large. I agree with Hingson in his recommendation on the limitations. It should be used only on direct indication. It cannot be a routine procedure as it is now understood. Unless abuses of the method are eliminated, the procedure will be forced into discard. Only the skilled and experienced should use it and then only with great caution. In over 40,000 deliveries at the Chicago Lying-In Hospital there have been but two deaths attributed to anesthesia and analgesia. In the 36,000 reported caudal anesthetics three deaths occurred from misuse and three resulting from the anesthesia. Since Hingson condemns its use for discomfort of preliminary and early labor, when is it started? How do you give relief prior to this time?

DR ROBERT A HINGSON, U S P H S. It was Dr Cleland who first pointed the way to the control of pain in childbirth. It took about seven years for Dr Cleland to convince the medical editors of our journals that there was something which really had value. I have substantiated Dr Cleland's report in 3,000 cases and without exception he is absolutely correct. Therefore I should like to propose that the afferent pathway of the uterus be known henceforth as the pathway of Cleland because across that pathway has come the answer to the riddle that has puzzled physicians for ages. I would like to commend the attitude of Dr Hesselstine who has used this method sparingly in the Chicago Lying-In Hospital. I am anxious to get this type of questions and report. I believe that only in this manner can there be due consideration to the problems involved. Dr Hesselstine raised the question of the time we start the caudal analgesia. In the Philadelphia Lying-In Hospital, in the last 1,000 cases the longest continuous caudal analgesia was thirteen and a half hours. We are not using it for the prolonged period of time that we did. The average duration of the analgesia in the uniparous patient has been five hours, the average analgesia in the multiparous patient has been three and a half hours. Thus we recommend it to relieve the distressing pains of labor and not the discomforts of the induction stages. For the discomforts of the induction the obstetrician may use any of the bland methods which have been advocated in the past and which have stood the test of time. The barbiturates are good. Isonipocaine, one of the latest drugs to be introduced demands consideration. Continuous caudal analgesia has spread far too rapidly. I still express to you considered caution. When used properly it is the best method for the control of pains of childbirth. It protects a great majority of patients from fear and the distressing aftermath of narcosis cerebri. I would like you to be wary of the reports of those who have personally observed less than 50 cases. Those are not the reports that will teach the foundations of the technic or the development of the method in the future. Rather these reports are to be looked on as the preliminary learning efforts of the physician. With regard to the fall in blood pressure in eclampsia, I agree that further study should be given this method and we are carrying it out in our hospital. We now have the consultation of specialists from several medical centers on this problem. Perhaps within a few months we will be able to give more complete information. However, of all the methods used in the control of hypertension and convulsions, continuous analgesia reduces the pain and relieves the pressure and removes the convulsion more effectively than anything we have ever seen. Dr Hesselstine did not mention that the baby who had mental damage was delivered by cesarean section under ether anesthesia.

# THE USE OF PENICILLIN IN THE TREATMENT OF PERITONITIS

## AN EXPERIMENTAL STUDY

LIEUTENANT COMMANDER G B FAULEY  
MC-V(S), USNR

LIEUTENANT COMMANDER T L DUGGAN  
H-V(S), USNR

LIEUTENANT (jg) R T STORMONT  
MC-V(G), USNR

AND

LIEUTENANT C C PREIFFER, MC-V(S), USNR

Peritonitis is the cause of death of 92 per cent of those patients who die after being admitted to a hospital with the diagnosis of acute appendicitis, according to the results of a survey made in Philadelphia by Bower and his associates<sup>1</sup>. Peritonitis is also a frequent cause

of peritonitis in the dog by occlusion of the blood supply of the appendix and the subsequent oral administration of castor oil. The bacteriologic flora of this experimental peritonitis is quite similar to that of peritonitis in man.<sup>2</sup> In addition, it has been found that the mortality from this type of experimental peritonitis can be reduced from approximately 100 per cent to approximately 50 per cent by treating animals with relatively large doses of sulfanilamide or sulfathiazole.<sup>3</sup>

## EXPERIMENTAL METHOD

**Operative Technic**—Gangrene of the appendix with a fulminating, diffuse peritonitis was produced in dogs by ligating the blood vessels in the mesentery of the appendix with linen thread and the base of the appendix with umbilical tape under anesthesia, using aseptic surgical technic. Immediately after the operation 50 cc of castor oil was given by stomach tube.

It should be pointed out that the appendix of the dog is considerably larger than that of the human being (fig. 3). This would predispose the dog to a larger inoculum and local area of infection than a similar procedure in man. The castor oil, by increasing the motility of the intestine and the activity of the animal, predisposes to the spread of the local peritonitis and increases the mortality from approximately 50 per cent to approximately 100 per cent.<sup>3</sup>

**Postoperative Treatment**—After the operation and the administration of castor oil, each animal was given intravenously 10 cc of 2.5 per cent glucose in 0.45 per cent sodium chloride for each pound of body weight twice daily.

The pulse rate, respiratory rate and rectal temperature were recorded every eight hours. Blood cell studies were usually made daily. No food was allowed during the first three or four days, and the animals were not disturbed except for treatment and observations.

Autopsy was performed on the animals which recovered after treatment with penicillin on the twenty-first postoperative day. All other animals were examined shortly after death.

**Bacteriology**—Cultures were made of the appendical site at the time of the operation, and smears and cultures were made of the

peritoneal exudate at autopsy. Details of technic and significance of the results will form the substance of a later report.

**Experimental Design**—The animals were selected at random and divided into three groups. One group served as a control. A second group was given the same supportive treatment as the control group, and in addition intramuscular penicillin therapy was instituted one hour after the operation and repeated every four hours until the clinical evidence of recovery was

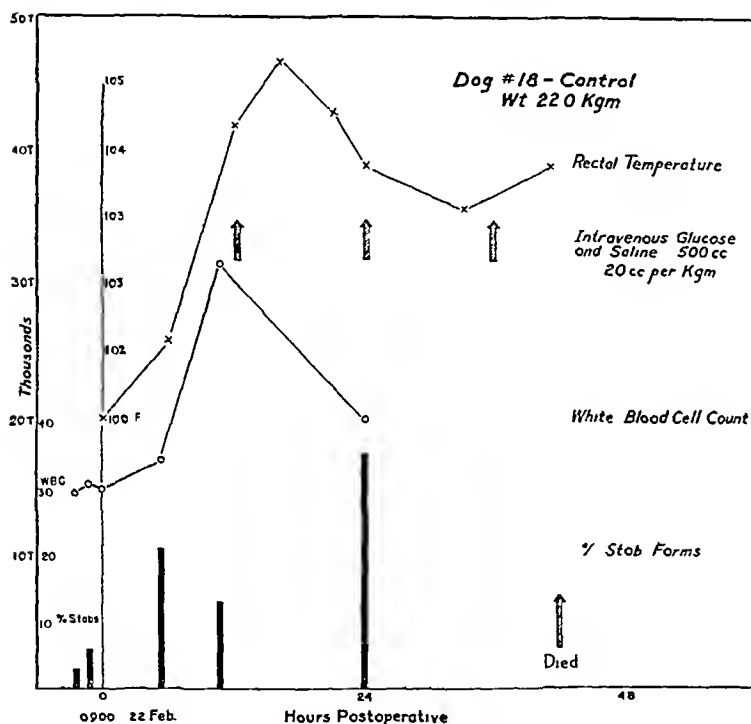


Fig. 1—A typical postoperative course in an untreated animal

of death in ruptured "peptic" ulcer and penetrating wounds of the abdomen.

Whether the administration of penicillin may provide any hope for a favorable outcome in fulminating, diffuse peritonitis may be readily ascertained by a controlled study in animals. For example Bower and his associates<sup>1</sup> have described a method for the production

From the Naval Medical Research Institute, National Naval Medical Center, Bethesda, Md.

Read before the Section on Pathology and Physiology at the Ninety-Fourth Annual Session of the American Medical Association, Chicago, June 16, 1944.

This article has been released for publication by the Division of Publications of the Bureau of Medicine and Surgery of the U. S. Navy. The opinions and views set forth in this article are those of the writers and are not to be considered as reflecting the policies of the Navy Department.

Dr. A. C. Ivy offered criticisms and suggestions throughout this experimental study. H. Holland, PhM1c, V10, USNR; T. Bryon, PhM2c, V10, USNR; M. Harvey, PhM1c, USNR; W. Fertig, PhM2c, USNR; and H. Williams, PhM2c, USNR, rendered extensive technical assistance throughout the study.

1. Bower, J. O., Burns, J. C., and Mengle, H. A. Induced Spreading Peritonitis Complicating Acute Perforated Appendicitis. *Surg. Gynec. & Obst.* 66: 947, 1938.

2. Bower, J. O., Burns, J. C., and Mengle, H. A. The Bacteriology of Spreading Peritonitis Complicating Acute Perforated Appendicitis. A Clinical and Experimental Study. *Surgery* 3: 645, 1938. Meleney, F. L., Olpp, J., Harvey, H. D., and Jern, Helen Z. Peritonitis. Synergism of Bacteria Commonly Found in Peritoneal Exudates. *Arch. Surg.* 25: 709 (Oct.) 1932.

3. Bower, J. O., Burns, J. C., and Mengle, H. A. Prontosil and the Treatment of Spreading Peritonitis in Dogs. *J. Lab. & Clin. Med.* 24: 240, 1938. Epps, C. H., Ley, E. B., and Howard, R. M. Intraperitoneal Use of Sulfonamides Based upon Animal Experiments. *Surg. Gynec. & Obst.* 74: 176, 1942.

present The third group was treated as the second group except that the penicillin therapy was not instituted until twelve hours after the operation

#### RESULTS

**Clinical Findings**—The clinical symptoms following an induced gangrene of the appendix in the dog are similar to those observed in appendicitis in man. The temperature and pulse rate are moderately elevated, and vomiting often occurs. Blood examinations show a characteristic leukocytosis with a high incidence of immature forms. When rupture of the appendix occurs, the temperature and pulse rate rise sharply, the abdomen becomes tender, rigid and slightly distended, and the respiration is labored.

**Operative Complications**—An internal fecal fistula due to the cutting action of the ligature at the base of the appendix was responsible for the death of 28 of the 98 dogs used in this study. Penicillin was not effective at the dosage used when the bowel contents were continuously contaminating the abdominal cavity. Hence these 28 animals were omitted from the two series treated with penicillin and the deaths were considered as due to surgical complications. It should be stated that in most instances the fecal fistula resulted in death from the seventh to the seventeenth day postoperatively. Postoperative pneumonia secondary to distemper was the cause of death of 4 of the 98 dogs. The omission of these two groups of animals was considered justifiable, since we were studying the effect of penicillin on peritonitis and not on internal fecal fistula and pneumonia.

**GROUP A Controls** No penicillin given—Twenty-five of 27, or 92.6 per cent of the animals in this group, died of a fulminating diffuse peritonitis. The average survival time was fifty-seven hours. A typical postoperative course of a control animal is shown in figure 1. All results are summarized in the table.

**GROUP B** Penicillin treatment started one hour postoperatively—In 20 animals penicillin treatment was started one hour after the operation. A dose of 100 Oxford units per pound of body weight per hour was administered intramuscularly at four hour intervals to the first 5 dogs. After observing the critical clinical condition of these animals during treatment it was decided that a larger dose would be likely to be more effective in controlling this type of infection. To the remaining animals 150 units per pound was given every four hours for thirty-six or forty hours after which the dose was decreased to a total of 5,000 units every four hours for two or three days and then to a total of 5,000 units every eight hours for two or three days.

All of the 20 animals in this group survived. When they were anesthetized and examined twenty-one days after operation gross evidence of generalized peritonitis was not detectable. A typical protocol of a treated animal is shown in figure 2.

#### Summary of Results

| Procedure                                   | No. of Dogs | Per Cent Survival | Average Hours Survival of Those Dying | Duration of Treatment |
|---|-------------|-------------------|---------------------------------------|-----------------------|
| Controls                                    | 27          | 7.4               | 57                                    | None                  |
| Penicillin started 1 hour after operation   | 20          | 100               |                                       | 7 days                |
| Penicillin started 12 hours after operation | 19          | 79                | 45                                    | 7 days                |

**GROUP C** Penicillin treatment started twelve hours postoperatively—This group was designed to ascertain the effectiveness of penicillin after the infection was

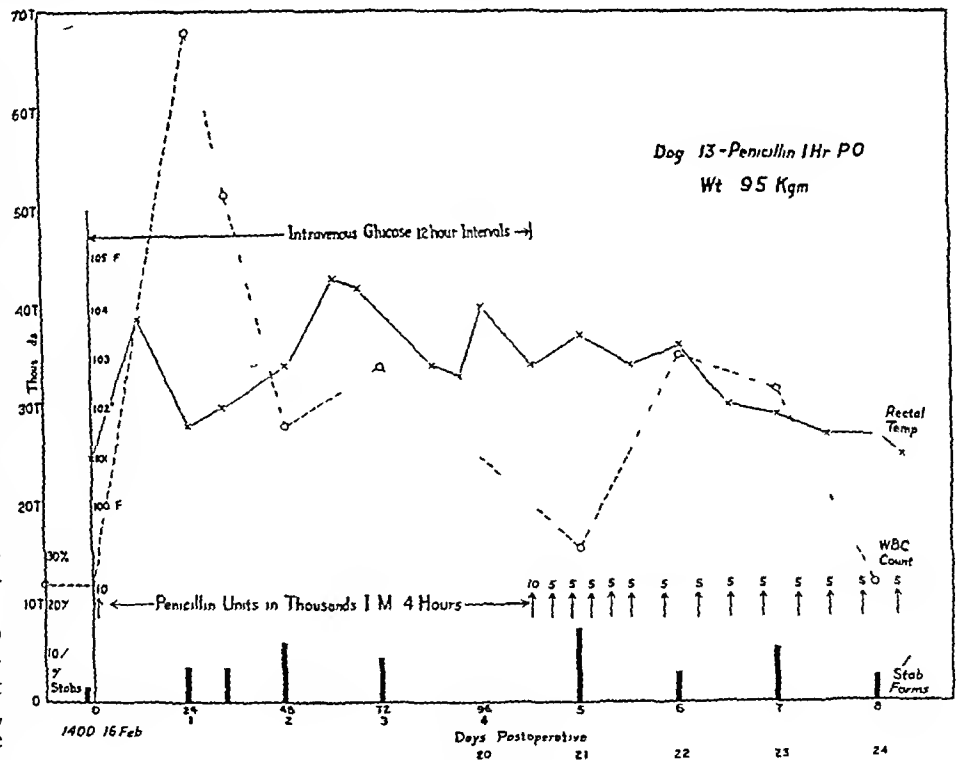


Fig 2—A typical postoperative course in a treated animal. Ten thousand units was given every four hours for four and a half days, then 5,000 units every four hours for one day and then every eight hours for three days.

well established. Accordingly, the treatment was not started until the twelfth postoperative hour, at which time definite evidence of abdominal rigidity appeared.

The animals received penicillin according to the plan outlined for those in group B. Four of the 19 animals in this group died, yielding a mortality of 21 per cent. It is possible that a larger initial dose of penicillin would have prevented these deaths.

#### COMMENT

It is evident from this study that penicillin if given early in adequate dosage will completely control uncomplicated experimental peritonitis in the dog. Since this peritonitis closely resembles that found after rupture of the appendix in man, it seems reasonable to assume that adequate amounts of penicillin will have a favorable

chemotherapeutic effect in the treatment of peritonitis in man. From the results of the group in which the therapy was delayed for twelve hours after the appendiceal ligation, one may predict that the longer penicillin therapy in peritonitis is delayed the less favorable will be the results.

It should be noted that on the basis of body weight relatively large doses of penicillin were used in these experiments. It would seem to be certain that, in the treatment of a fulminating, diffuse infection of the type produced in this study, large initial doses of the antibiotic would be necessary. This is indicated by the loss of 4 animals when treatment was delayed for twelve hours and when the animals were given only the dose

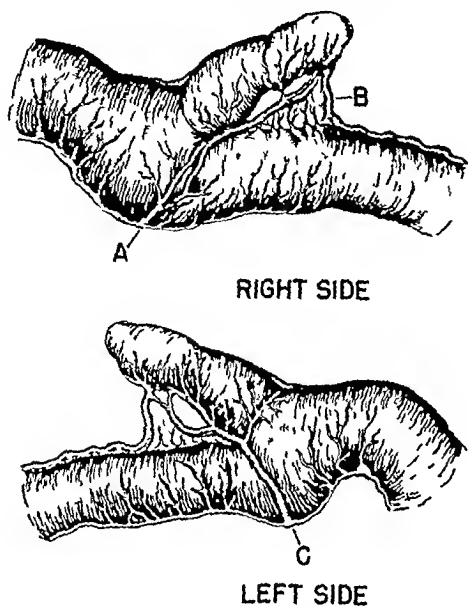


Fig 3—Blood supply of appendix

which saved all animals when given one hour after the onset of the infection. Thus, the results of these experiments indicate that large doses of penicillin should be given initially in generalized peritonitis. How large the dose should be for man will have to be determined clinically. If one calculates the dose that might be required on the basis of equivalent body weight, a 150 pound (68 Kg) man with a diffuse peritonitis should receive 22,500 units per hour, or approximately  $\frac{1}{2}$  million units per day. If the therapy is initiated before rupture of the appendix occurs, smaller doses might be effective, but if the signs of diffuse peritonitis are present larger doses than  $\frac{1}{2}$  million units may be required. Since the large doses of penicillin used in these experiments failed to produce evident symptoms of toxicity, and since no serious symptoms have been described after "massive" doses in man,<sup>4</sup> it would appear that very large doses are innocuous, especially when considered in relation to the critical nature of a fulminating, diffuse peritonitis.

While penicillin therapy cannot be considered to be a substitute for early surgery based on sound surgical judgment, there are numerous instances in which such therapy may be indicated. Some of the most obvious are (a) operations in which peritonitis is encountered or localized abscesses are inadvertently broken into, (b) those operations on the large bowel or other portions of the intestine in which some degree of soiling of the

peritoneum frequently occurs (c) following gunshot wounds or traumatic injuries to the abdomen, such as underwater blast, and (d) the possible use in the fleet aboard small ships or submarines and at isolated posts where adequate surgery is not available.

#### SUMMARY

1 A fulminating diffuse type of peritonitis was produced in dogs by ligating the appendiceal base, mesentery and the blood supply.

2 The mortality rate in a series of 27 untreated dogs was 92.6 per cent and the average survival time was fifty-seven hours.

3 There were no deaths from peritonitis uncomplicated by fecal fistula in a series of 48 dogs in which penicillin treatment was started one hour postoperatively. Twenty-eight dogs, however, that developed fecal fistulas died under penicillin treatment.

4 In a series of 19 dogs in which the initial treatment with penicillin was delayed for twelve hours the mortality was 21 per cent.

#### CONCLUSIONS

1 Penicillin is a remarkably effective agent in the treatment of peritonitis induced in dogs by ligation of the appendiceal base and occlusion of the blood supply.

2 For the treatment of peritonitis in man penicillin should prove to be effective as a therapeutic adjunct to surgery in the treatment of battle wounds of the abdomen and appendicitis and its complications.

3 Penicillin should prove to be invaluable for the treatment of these conditions aboard small ships or submarines and in isolated units ashore where adequate facilities for immediate surgical procedures are not available.

### AN EVALUATION OF RADIATION IN THE TREATMENT OF CARCINOMA OF THE CORPUS UTERI

JAMES A. CORSCADEN, M.D.

NEW YORK

During the past three years three out of five and in the latest group all the candidates for the National Board certificate, when asked by me for the treatment of cancer of the corpus, gave hysterectomy as the only method. If the teaching received by these students is reflected in these answers, it is at variance with the practice and published reports of most of those particularly interested in the development of treatment for this disease, who with few exceptions give radiation an important role in the treatment of both operable and inoperable cases. In view of this apparent discrepancy between precept and practice, it seems important that the therapy of cancer of the corpus be reviewed until the merits of the various procedures become established. While with few exceptions all agree that hysterectomy, if feasible, should be performed at some time, some operators question the value of radiation. This study is an attempt to answer this question and, since in the treatment of inoperable cases there is no disagreement, will consider only operable cases, approaching the matter from the clinical, pathologic and technical standpoints.

From the Department of Obstetrics and Gynecology, Columbia University College of Physicians and Surgeons.

Read before the Section on Obstetrics and Gynecology at the Ninety-Fourth Annual Session of the American Medical Association, Chicago, June 15, 1944.

<sup>4</sup> Lyons, C. Penicillin Therapy of Surgical Infections in the U. S. Army, J. A. M. A. 123: 1007 (Dec. 18) 1943.

From the clinical standpoint a precise appraisal of the results of any given form of therapy is made difficult by the relatively small total of cases reported which have been treated by any one method, by the fact that the reports cover the work of half a century during which technics, especially in the case of radium, have been more or less altered by differences in clinical and pathologic standards and by the different standards of reporting some results being based on totals of treated cases and others only on cases which have been followed. I shall give figures from the literature, attempt to interpret them and present our experience at the Sloane Hospital.

Hysterectomy alone for carcinoma of the corpus promises at the present time a five year survival of somewhere near 60 per cent. The term "hysterectomy" practically always signifies a bilateral salpingo-oophorectomy and complete abdominal hysterectomy without dissection of the paracervical tissues or the pelvic lymph nodes. The results given in table 1 represent those obtained during the past forty years. They may be bettered somewhat by the lowering of the operative mortality and possibly by some improvement in the general level of operative efficiency, but they represent the work of master surgeons employing the same general technics as are practiced today. Other series have been reported such as those collected by Morton<sup>1</sup> and Arneson,<sup>2</sup> and give favorable results as high as 78 per cent, but in small groups of cases. Averaging these results and making allowances for statistical variability, it seems probable that a patient operated on today may be given a safe prognosis of about 60 per cent. Vaginal hysterectomy has given a somewhat lower figure.<sup>3</sup>

Hysterectomy aside from the operative mortality, which is gradually being reduced, and cases in which distant metastases were present at the time of operation about which nothing at present can be done, fails in some cases because of recurrences in the vaginal or abdominal wound, evidently, especially those in the abdominal wound, from implantation of live cancer cells spilled during the operation. It also fails almost completely to eradicate growths of the anaplastic type. Mahle<sup>4</sup> stated that he had seen none of this type cured by hysterectomy, and all authors report a very low survival rate.

Radium without operation, when employed in operable cases, promises a five year salvage of better than 50 per cent. Table 2 represents the results of this type of treatment from the beginning to the present. Other series reported by various authors, Norris and Dunne,<sup>5</sup> Ward,<sup>6</sup> Miller,<sup>7</sup> Brindley,<sup>8</sup> Masson<sup>3</sup> and Arneson,<sup>2</sup> combine the results obtained in both operable and inoperable cases and indicate an over all average five year salvage of 39 per cent. Since I am considering the care of the operable case, these figures will be considered no further. Operable cases in which radium

has been administered have been mostly of the "technically" operable class suffering from general conditions which contraindicate any severe operation. Only Heyman<sup>9</sup> has treated any considerable number of "clinically" operable cases.

To obtain a figure on which to base a prognosis for a patient to be treated today, we must scrutinize sharply the figures in table 2. These results have followed the use of radium from the earliest halting and experimental attempts down through to the present. And even now the technic of radium installation is far from standardized. Despite the warnings of Sampson<sup>10</sup> in 1934 of the inaccuracy of the tandem and the apparently demonstrated superiority of the packing technic, many physicians continue to employ the simple tandem and to give doses too small to be effective. To illustrate the difference between the old and the new, Heyman<sup>9</sup> compares his results obtained from 1914 to 1931 with those from 1932 to 1935. In clinically operable cases results climbed from 42.9 per cent (in 84 cases) to 62.8 per cent (in 94 cases), in technically operable

TABLE 1—Carcinoma of the Corpus Uteri: Five Year Survival Rates Following Hysterectomy without Irradiation

|  | Treated | Survived |
|--|---------|----------|
| Pfeifferer: Strahlentherapie 40 13 1931                  | 100     | 51.5%    |
| von Mikulicz and Volbracht: Zentralbl f Gynak 50 84 1932 | 13      | 41.1%    |
| Norris and Dunne   | 115     | 47.5%    |
| Masson <sup>3</sup>                                      | 306     | 66.0%    |

TABLE 2—Results Following the Intrauterine Application of Radium to Operable Carcinoma of the Corpus. In many of the cases x ray therapy was also administered

|   | Treated | Survived |
|---|---------|----------|
| Heyman <sup>9</sup> (1914-1931 4 years)                 | 180     | 30.5%    |
| (1932-1935 4 years)                                     | 158     | 37.0%    |
| Fricke and Bowling <sup>14</sup> (1915-1928) Am J Roent |         |          |
| genol 46 683 1941                                       | 16      | 50.0%    |
| Fricke and Heilman <sup>15</sup> (1920-1935)            | 76      | 52.6%    |
| Healy and Brown <sup>11</sup>                           | 64      | 68.0%    |
| Hurdon Am J Roentgenol 45 250 1941                      | 40      | 62.0%    |
| Brindley <sup>8</sup>                                   | 31      | 41.9%    |
| Sloane Hospital (this study)                            | 27      | 48.0%    |

cases from 33.3 per cent (in 102 cases) to 50 per cent (in 64 cases) and in inoperable cases from 16.7 per cent (in 42 cases) to 40 per cent (in 20 cases).

In the opinion of all authors there is found a correlation between the clinical extent of the disease and the salvage rate. Our cases, when the uterus was smaller than that of an eight weeks pregnancy 6 of 8 patients (75 per cent) survived five years, when the uterus was larger than this but operable, 7 of 19 (37 per cent), when the carcinoma had spread beyond the uterus, of 21 only 1 survived (5 per cent).

Concerning tissue grading there is a divergence of opinion. Healy<sup>11</sup> found typing in their irradiated cases of less significance than in those treated by hysterectomy. Reuterwall<sup>12</sup> in 680 cases found no relationship between the microscopic picture and the clinical results of radium therapy and Miller<sup>7</sup> observes that tissue grading does not affect the treatment. On the other

9 Heyman J. The Radiumhemmet Experience with Radiotherapy in Cancer of the Corpus of the Uterus. Acta radiol 22 11 1941.

10 Sampson J A. The Limitations and Dangers of the Intrauterine Application of Radium in the Treatment of Carcinoma of the Body of the Uterus. Am J Obst & Gynec 28 783 1934.

11 Healy W R and Brown R L. Experience with Surgical and Radiation Therapy in Carcinoma of the Corpus Uteri. Am J Obst & Gynec 35 1 1939.

12 Reuterwall O. Radiumhemmet Experience with Radiotherapy in Cancer of the Corpus of the Uterus. Acta radiol 22 62 1941.

1 Morton D. Adenocarcinoma of the Uterine Fundus, Am J Roent genol 41 789 1939.

2 Arneson A. Clinical Results and Histologic Changes Following the Radiation Treatment of Cancer of the Corpus Uteri, Am J Roent genol 36 461 1936.

3 Masson J C. Carcinoma of the Uterus. New Orleans M & S J 92 235 1939.

4 Mahle A F. The Morphological Histology of Adenocarcinoma of the Body of the Uterus in Relation to Longevity, Surg, Gynec & Obst 36 385 1923.

5 Norris C C and Dunne F S. Carcinoma of the Body of the Uterus. Am J Obst & Gynec 32 982 1936.

6 Ward G G. The Diagnosis and Treatment of Carcinoma of the Corpus Uteri Based on Experiences at the Woman's Hospital, Am J Obst & Gynec 44 303 1942.

7 Miller N F. Carcinoma of the Body of the Uterus, Am J Obst & Gynec 40 791 1940.

8 Brindley G V. Carcinoma of the Fundus of the Uterus. Ann Surg 114 90 1941.

hand Fricke and Heilman,<sup>13</sup> Arneson<sup>2</sup> and Bowing and Fricke<sup>14</sup> found a distinct difference between the clinical results in differentiated growths and those of the anaplastic type. The prevailing opinion is that tissue grading is of less importance in cases treated by radium than in those treated by hysterectomy.

In summary there has been in the past, following radium application to operable carcinoma of the corpus, a salvage of an average of 49 per cent. In the future, with the technics of today, we may promise a five year salvage of 55 per cent.

X-rays alone have seldom been employed for cancer of the corpus. Wintz<sup>15</sup> reports a five year salvage of 69.1 per cent of 127 operable cases and 17.9 per cent of 134 inoperable cases, a result achieved by no one else. Gibert and Solomon<sup>16</sup> have never seen a case so cured, and Merritt<sup>17</sup> states that "it has been our experience over a period of twenty years that radiation alone cannot be relied on for the treatment of corpus cancer." Direct evidence of the effects of x-rays in our clinic is scattered. In 1 case a massive pelvic extension from a corpus carcinoma was treated by

done. Of 7 not receiving postoperative x-rays only 1 patient survived five years, while in 14 receiving the treatment 6 survived. Masson,<sup>3</sup> who "only advised postoperative irradiation when the growth was found to be of a high degree of malignancy or when it had extended well into the myometrium," in 194 such cases had a five year survival of 67.5 per cent and a ten year survival of 61.2 per cent, while in 306 cases presumably with a less serious condition, because they were treated by hysterectomy alone, he had a five year survival of 66.6 per cent and a ten year survival of 54.5 per cent.

Preoperative x-rays without radium, employed by Miller,<sup>7</sup> gave a five year salvage of 70.5 per cent, corrected for noncarcinomatous deaths, 82.3 per cent. In conjunction with preoperative radium, Schmitz,<sup>18</sup> employing 800 kilovolts, reports apparent improvement in results, as does Healy,<sup>11</sup> employing 200 kilovolts.

My general conclusion is that x-rays have a definite cancericidal effect and, while at present incompletely effective when used alone, should be considered as essential in the treatment of corpus carcinoma.

Combined preoperative radium and hysterectomy have in the past given a five year survival of 70 per cent (table 3). In our own 25 cases there was an operative mortality of 80 per cent (pulmonary embolism 1 case and a case of hyperthyroidism with cardiac failure which at the present time would be treated entirely with radiation). There was one noncarcinoma death peculiarly caused by an "inflammatory" carcinoma of the breast definitely unrelated to the uterine growth. There were four deaths from generalized metastases. In all of these patients the growth at the time of the operation had extended into the parametrium or adnexa, in 2 cases to such an extent that they should be classified possibly as inoperable. There was no recurrence in either the abdominal or the vaginal wound. Interestingly, in none of those who survived five years was there any extension beyond the uterus.

The five year prognosis from the combined therapy applied according to present day standards should approach 80 per cent. Operative mortality should be reduced by the improvements in the management of shock and infection and by elevation of the general level of operative efficiency. Radium technic in the older cases was helter skelter. Dosages varied from 1,200 to 6,000 milligram hours. Healy<sup>11</sup> in 93 cases treated by all doses had a five year survival of 55 per cent and with doses of 3,000-4,000 milligram hours, one of 75 per cent. The improved results following the packing technics should be apparent here as in the cases treated by radium alone. The x-rays employed in the treatment of the older cases were less varied, but even here, following the employment of higher voltages, an improvement in results is expected.

The superior results of the combined preoperative irradiation and hysterectomy may be explained by the fact that the deficiencies of each method are met to some extent by the other. The metastases in the abdominal and vaginal wounds are eliminated by the caustic action of the radium. The high fatality rate following hysterectomy for anaplastic carcinoma will be lowered by the specific cancericidal effect of radium and x-rays. On the other hand the carcinoma remaining in the uterus and adnexa after radium treatment will be

TABLE 3—Carcinoma of the Corpus Uteri Five Year Survival Rates Following Radium Followed by Hysterectomy

|  | Treated | Survived |
|--|---------|----------|
| Healy and Brown <sup>11</sup> all doses                      | 93      | 55.0%    |
| Healy and Brown <sup>11</sup> doses of 3,000-4,000 mg radium | 28      | 70.0%    |
| Heyman <sup>9</sup>  | 60      | 78.0%    |
| Ward and Sackett J. A. M. A. 110 323 1938                    | 21      | 57.1%    |
| Newell and Croson Am J Obst & Gynec 29 326 1938              | 19      | 63.2%    |
| Morton <sup>1</sup>  | 18      | 61.1%    |
| Arneson <sup>2</sup>   | 10      | 90.0%    |
| Brindley <sup>8</sup>  | 24      | 19.1%    |
| Sloane Hospital (this study)                                 | 25      | 72.0%    |

x-rays (700 kilovolts, total of 10,200 roentgens through three ports) after an attempt to insert radium was abandoned because the ulceration within the uterus had extended to the rectal wall. The parametrial involvement disappeared. Twenty-one months later radium was inserted into a grossly normal uterus and fifteen months later applied to a recurrence in the vaginal wall. The patient is symptom free, with no sign of carcinoma five years after the first treatment and one year after the last radium application. In another case a mass 2 cm in diameter appearing in the abdominal wound two months after hysterectomy for a vicious anaplastic carcinoma of the corpus, was treated with 200 kilovolts along with routine postoperative therapy. The patient has remained well five years. In a third case in which operation was performed for a large ovarian mass which turned out to be secondary to a small carcinoma of the corpus, a recurrence in the pelvis appeared six months after operation, reached the size of a four months pregnancy, was treated by x-rays and shrank to a diameter of 4 cm in four months. These cases are not presented as "cures" but as evidence of a definite cancericidal effect of x-rays.

Indirect evidence of the effect of x-rays on carcinoma of the corpus is offered by 21 cases of carcinoma of the corpus in which supravaginal hysterectomy was

13 Fricke R and Heilman C O. Results of Radium Treatment of Cancer of the Uterine Fundus. J. A. M. A. 117 980 (Sept. 20) 1941.  
14 Bowing H H and Fricke R E. Cancer of the Uterus: Results of the Present Method of Radium Therapy as Influenced by Stage and Grade of the Lesion. Am J Roentgenol 49 48 1943.  
15 Wintz H. Ergebnisse der Behandlung von Uteruskarzinomen mit Röntgenstrahlen. Strahlentherapie 69 3 1941.  
16 Gibert P and Solomon L. Die Röntgentherapie beim Krebs des Gebärmutterkörpers und den postmenopausalen Metrorrhagien. Strahlentherapie 52 31 1935.  
17 Merritt E A. Personal communication to the author.

18 Schmitz H E, Sheehan J and Towne J. The Effect of Preoperative Irradiation on Adenocarcinoma of the Uterus. Am J Obs & Gynec 45 377 1943.



removed by the operation. Unfortunately in our cases, if it had extended outside the uterus, it had already become generalized.

From the pathologic standpoint there is ample evidence of the effect of radium on carcinoma of the corpus. An opportunity to study these effects is afforded by specimens removed by hysterectomy after intrauterine application of radium. The 70 specimens indicated in table 4 (64 from Sloane Hospital and 6 from the Englewood, N. J., Tumor Clinic) were removed from one to twenty weeks after treatment. The radium had been applied in a tandem or by a device which holds five to seven 10 mg. tubes of radium on the ends of spring wires in such a fashion as to spread them out fanwise in the uterine cavity. The filtration was 1 mm. platinum and 1 mm. rubber. The dosage varied from 1,200 to 5,000 milligram hours.

The carcinoma had completely disappeared in 24.3 per cent of the cases. In 35.4 per cent there was a severe but incomplete destruction of the cancer. Small areas a centimeter or less in diameter contained glandular structures, some obviously malignant, others showing no morphologic evidence of carcinoma but cytologically malignant, and still others so nearly normal that they may have been residual endometrium but because of the original condition were called carcinoma. In 30 per cent there was deep infiltration of the uterine muscle. In these areas there was much less evidence of radiation effect. The architecture of the carcinoma was preserved and the nuclei and cytoplasm of the cells showed little evidence of degeneration.

Among the 70 specimens there were 10 in which there were gross or microscopic metastases, in the ovary (8), tube (6), mesosalpinx (1), broad ligament (1) and parametrium (2). The microscopic sections of these metastases showed no radiation effects.

Examination by others of similar specimens shows a similar destructive effect. Healy and Brown<sup>19</sup> found complete regression of the tumor in 28 of 69 specimens and a definite correlation between dosage and effectiveness. Farrar<sup>19</sup> found the cancer destroyed in 6 of 27 specimens following doses of 2,000 to 3,000 milligram hours. Donovan<sup>20</sup> 5 of 46, Martin<sup>21</sup> in 3 of 4 cases treated by 3,000 to 4,500 milligram hours and Schmitz<sup>22</sup> in 4 of 5 cases treated by 6,000 milligram hours of radium and x-rays (800 kilovolts).

In summary, one is struck by the apparently localized effect of the radium. The areas of slough and cellular degeneration were limited in area and depth, giving the impression that they corresponded to the location of the applicators. The superficial structures were profoundly affected, areas in the muscle less so and the metastases in the ovaries not at all.

There was no significant correlation between the degree of destruction and dosage or cell type except that carcinoma persisted in all cases in which less than 2,000 milligram hours was given.

From the technical standpoint the gynecologist will be surgically equipped and will refer patients to the proper experts for x-ray therapy but will in most instances be called on to insert the radium unless he

is a member of a highly organized clinic. It therefore behooves him to perfect himself in this technique. This is still in a state of development, which however has yielded two principles. Dosage must be adequate and the uterine cavity must be uniformly irradiated. The dose prior to operation must be from 3,000 to 4,500 milligram hours if given in one massive dose. If small amounts such as 50 mg. are inserted, they may remain for a maximum of one hundred hours. This will cause a sharp reaction, resulting in congestion sufficient to cause considerable oozing at an operation performed six weeks later. With the applications further prolonged by repeated insertions spread over two weeks, doses as high as 6,000 milligram hours have been given.<sup>18</sup>

The method of applying radium should be such as to cover the whole endometrial cavity. By packing the uterus with 8 mg. radium units in applicators of different sizes Heyman<sup>9</sup> improved greatly his results, as already indicated. Arneson,<sup>22</sup> by the use of gauze strips, Crossen,<sup>23</sup> by placing small units in a continuous thin walled tube, and Martin,<sup>21</sup> by the use of hinged applicators, accomplish the same thing. Mechanical devices for spreading out the radium are employed by Schmitz,<sup>24</sup>

TABLE 4—Residual Corpus Carcinoma Following Intrauterine Radium Treatment

| Extent    |    | Depth       |      | Extra uterine Metastases |
|-----------|----|-------------|------|--------------------------|
|           |    | Superficial | Deep |                          |
| None      | 19 |             |      | 1                        |
| Small     | 20 | 25          | 10   | 2                        |
| Large     | 18 | 5           | 8    | 3                        |
| Extensive | 3  | 0           | 3    | 1                        |
| Total     | 70 | 30          | 21   | 10                       |

Friedman<sup>25</sup> and Strauss<sup>26</sup>. The elasticity afforded by packing with individual units seems to assure a more thorough and even distribution of the radium.

#### SUMMARY AND CONCLUSIONS

In the treatment of operable carcinoma of the corpus, hysterectomy, radium and x-rays all are essential. Hysterectomy, which alone promises a five year survival of 60 per cent, fails in a certain number of cases because of recurrences in the abdominal and vaginal wounds and is almost completely ineffectual for anaplastic carcinoma. The first of these is corrected by the caustic action of radium, which, when complete, prevents the spilling of live cancer cells and the second to some extent by the specific action of radium and x-rays.

Radium alone promises a five year survival of 55 per cent but, because of its distinctly local effect, fails to destroy cells lying deep in the myometrium and in metastases in the adnexa. Hysterectomy, by removing such residual tumor tissue as is limited to the pelvic organs, overcomes this deficiency.

It seems therefore logical to employ all these methods. When this has been done there has been a five year

19 Farrar L. K. P. The Condition of the Cervix in 510 Consecutive Total Abdominal Hysterectomies. *Tr. Am. Gynec. Soc.* (1939) 64: 248 1940.

20 Donovan M. S. and Warren S. Persistence of Tumor After Preoperative Radium Treatment for Cancer of the Corpus. *Surg. Gynec. & Obst.* 74: 1106 1942.

21 Martin C. L. Radiation Therapy in Carcinoma of the Fundus of the Uterus. *South. M. J.* 33: 135 1940.

22 Arneson A. N. and Hauptman H. Radiation in the Treatment of Carcinoma of the Body of the Uterus. *J. A. M. A.* 116 (Jan 4) 1941.

23 Crossen H. S. Advances in the Treatment of Cancer of the Corpus. *J. Missouri M. A.* 37: 376 1940.

24 Schmitz H. E. An Improved Technique for Radium Treatment of Carcinoma of the Uterine Body. *Am. J. Roentgenol.* 34: 759 1935.

25 Friedman M. The Treatment of Carcinoma of the Corpus Uteri. Description of a New Hysterostat. *Radiology* 35: 28 1940.

26 Strauss H. Treatment of Corporal Carcinoma with Radium. *New York State J. Med.* 40: 529 1940.

survival rate of 70 per cent by all sorts of technics. The employment of present day technics promises a five year survival of 80 per cent.

In technically operable cases irradiation promises a five year survival of 50 per cent.

180 Fort Washington Avenue

### ABSTRACT OF DISCUSSION

DR LEWIS C SCHEFFEY, Philadelphia. During the last decade much has been added by the preliminary irradiation of the patient with fundal carcinoma. We had been disappointed by the low survival rate of patients who had been treated primarily by total hysterectomy and the removal of the tubes and ovaries for carcinoma of the fundus so during the past ten years we have employed a routine technic of diagnostic curettage in a suspected case, at which time an adequate amount of radium is available for intrauterine application. The curettings are examined by a rapid four hour method and if we find adenocarcinoma, irrespective of the grade of the tumor, an adequate dose can then be administered, arranged with regard to the contour of the fundus. Enough irradiation is thus provided for a dosage anywhere between 3,000 and 5,000 milligram hours. If, on the other hand, the lesion is benign, we can depend on a suitable dosage of radium for the treatment of that particular patient. Following the adoption of this plan of therapy, our survival rate rose from 43 per cent a few years ago to 53 per cent. Therefore I believe that this method is superior to that of immediate hysterectomy for carcinoma of the fundus. Some gynecologists, notably Normal Miller, favor the use of external irradiation primarily. If, when hysterectomy is performed six to eight weeks later, one finds evidence of extension of the disease beyond the uterus, postoperative external irradiation should follow. In all the uteri that we have removed we have found residual carcinoma in 50 per cent of the cases. That teaches us two lessons. First never depend on the radium solely if the patient is at all operable, secondly, in the inoperable or poor risk patient at least a 50 per cent recovery may be offered with irradiation alone. In women of the premenopausal and menopausal groups who are bleeding (patients of the type discussed by Dr Randall), supravaginal hysterectomy is too often performed, based on the assumption that the pathologic condition present is due to fibroids. Actually a total hysterectomy should be carried out because of the possibility that carcinoma may be present in the endometrium as an accompanying lesion.

DR H E SCHMITZ, Chicago. I have recently published a study of carcinoma of the uterine fundus treated with radium and x-rays. These cases were treated much according to the technic as described by Dr Scheffey. At the time of the original curettage, an adequate dose of radium was inserted into the uterine cavity. After the diagnosis had been microscopically confirmed, the treatment was continued until the patient was given, in divided dosage, 6,000 milligram hours of radium and a total of 4,000 roentgens of x-rays into the tumor. At intervals of from six weeks to three months I removed these uteri, cut them into blocks and took multiple sections of each block. I would cut a section, cut down ten or fifteen, and take the second section. From each block there were from seventy-five to one hundred and fifty slides. It was concluded that no matter what the grade of the adenocarcinoma, if it was superficial, limited to the endometrium or just beginning extension into the myometrium, it was destroyed by this treatment. However, if there had been extension into the myometrium the findings were like those of Dr Corscaden, namely that the carcinoma within the myometrium or the deeper tissues showed little radiation effect. I feel therefore, that preoperative irradiation adds something to surgery but the question is as to whether or not this period of delay is in some way a contraindication to the employment of preoperative irradiation. If we have a superficial adenocarcinoma then, of course the treatment has been adequate and surgery can be done at any time without any difficulty. However, if this carcinoma had extended into the myometrium

and there was little radiation effect then possibly this two or three month delay, which is necessitated by the extreme reaction to that amount of irradiation may contraindicate this method of treatment.

DR CLYDE L RANDALL, Buffalo. All of us who have given radium treatment for menopausal bleeding in what we thought to be adequate dosage to stop all ovarian activity have been sometimes surprised that we apparently failed to stop all ovarian activity, because the woman later develops functional bleeding. That is particularly true if an intrauterine dosage of 1,000 to 1,200 milligram hours is used. I do not believe that is adequate to castrate the woman effectively, certainly it is not sufficient in all cases. Urologists have found, in attempting to stop the androgenic stimulation to metastatic foci of prostatic carcinoma that it is necessary to do an orchiectomy, since no amount of irradiation to the testis proves capable of stopping all androgenic activity. It seems possible, therefore, that at least some women who have had radium for menopausal bleeding could have some follicular activity several years later. Clinical evidences of deprivation of estrogenic hormone and not the history of irradiation alone should be regarded as evidence of preexisting castration. With such evidences of castration present I do not believe that adenocarcinoma in the uterus will be found.

DR JAMES A CORSCADEN, New York. One of the most important points presented was that of Dr Schmitz—the penalty of delay. Two or three months is a long time for a cancer to remain free to metastasize. The only answer I have is that a woman treated by hysterectomy has a 60 per cent chance of surviving five years. A woman treated by a combination of radiation and hysterectomy has somewhere between 70 and 80 per cent and that is not too high. The words “efficient technic” have been mentioned several times. There are two phases, one is dosage and the other the manner of application. In our specimens there was no carcinoma treated by 2,000 milligram hours of radium or less in which the cancer did not persist. In any form of treatment, rapid or slow, it is perfectly safe to give from 3,000 to 4,000 milligram hours of radium that is to say 200 mg for twenty hours or 100 mg for forty hours. That I would call massive treatment. I use 50 milligram hours of radium for a maximum of one hundred hours, making 5,000 milligram hours. With this dose there will be a good deal of congestion at the operation performed six weeks later, making it somewhat easier except for increased oozing. Dr Schmitz carries his procedure still further, up to two weeks by multiple application, giving as much as 6,000 milligram hours. About the manner in which the radium is applied, the technic should be such as to spread the radium evenly throughout the uterus. In the technic here employed, the applicators on the ends of wires were placed about a centimeter apart. The specimens show slough beneath the applicators and viable carcinoma in the areas between. A better technic is the packing of the uterus as employed by Heyman, Bronson and Morton. Mechanical devices of Schmitz, Strauss and Friedman are excellent but do not have the elasticity of the packing technic. Referring to the paper of Dr Randall to guarantee amenorrhea in a woman in her forties 2,000 milligram hours of radium is necessary. Even then irradiation will be necessary in some 2 per cent of the cases. With doses of 1,200 milligram hours there will be a return of menstruation in something like 8 per cent.

---

**Syphilis as an Infectious Malady**—Jean Astruc (1684 1766), physician to Louis XIV of France, was first to recognize syphilis as an infectious malady. Among other things he said “and therefore it is by no means strange that many of the Neapolitans should be infected with the same distemper, since they served under the same colors and had to do with the same women who followed the camp the same towns were taken and reconquered by both parties, ‘tis plain that the French must also have had communication with the same women who had lain with the Spaniards and the Neapolitans, and thus the siege of the venereal disease must have naturally passed from one to another”—Gordon, Benjamin Lee. *The Romance of Medicine*. Philadelphia: F. A. Davis Company, 1944.

AORTECTOMY FOR THORACIC  
ANEURYSM

JOHN ALEXANDER, MD

AND

FRANCIS X. BYRON, MD

ANN ARBOR, MICH

On Oct 20, 1943 we successfully removed an aneurysm of the thoracic aorta measuring 11 by 8 cm, together with a 75 cm length of the aorta. We are reporting this case because of its historical interest from the physiologic, medical and surgical points of view, since we can find no record in which an aneurysm of the thoracic or abdominal aorta has been successfully removed or in which the thoracic aorta has been successfully ligated.

Kummel<sup>1</sup> reported in 1914 that he had resected a fist sized aneurysm of the lower thoracic aorta and closed the 10 centimeter long defect in the aorta with two rows of continuous sutures, hemorrhage having been controlled during this phase of the operation by a twelve minute digital compression of the aorta both above and below the aneurysm. After the operation pulsation was good in the lower extremities but the patient soon died "in collapse."

Both Kummel<sup>2</sup> and Sauerbruch<sup>3</sup> state that Tuffier resected, or attempted to resect, aneurysms of the thoracic aorta in 4 patients by clamping and dividing the neck of the aneurysm and oversewing the stump. Sauerbruch states that 1 patient died of secondary hemorrhage, 1 died from surgical hemorrhage after the stump slipped out of the clamp, 1 died seventeen days after operation during which the aneurysm ruptured and was tamponaded with India rubber, and 1 died after failure to isolate the neck of the aneurysm. In Tuffier's writings we have been able to find reference to only 1 case,<sup>4</sup> in which the neck of a saccular aneurysm of the ascending portion of the aortic arch was doubly ligated with catgut, the aneurysm itself could not be dissected free and removed, the patient died from hemorrhage thirteen days after operation and the aneurysm was found to have become necrotic.

We have been able to find only 3 records of complete ligation of the thoracic aorta and two records of partial ligation, all 5 having resulted in death. In 1904 Guinard<sup>5</sup> completely ligated the lower thoracic aorta for an aneurysm of the aortic arch, the patient died three days later from renal insufficiency. Reid<sup>6</sup> completely occluded the lower thoracic aorta for an aneurysm of the upper abdominal aorta, the patient died twelve hours later from hemorrhage from a divided intercostal artery. Andrus<sup>7</sup> doubly ligated and divided the lower thoracic aorta for an aneurysm of the abdominal aorta, the patient died an hour and a half later from

shock. Halsted<sup>8</sup> partially ligated the lower thoracic aorta with an aluminum band for an aneurysm of the upper abdominal aorta and twenty-three days later partially occluded the abdominal aorta distal to the aneurysm; the patient died eighteen days after the second operation from rupture of the aneurysm. Heuer<sup>9a</sup> partially occluded the lower thoracic aorta with an aluminum band for an aneurysm of the upper abdominal aorta, the patient died one month and nine days later from rupture of the aorta where the aluminum band had been placed.

There are 30 published records of ligation of the abdominal aorta, mostly for syphilitic and nonsyphilitic aneurysms and gunshot wounds. Eight of these ligations may be considered as successful but only in the sense that the ligations were apparently neither directly nor indirectly the cause of death of the 5 patients who had died at the time of the last reports, the word "successful" as used here does not necessarily refer to the effect of the aortic ligation on the lesion for which the operation was performed. It is an important fact that in all these 8 cases the aorta was ligated below the level of the renal arteries. Reid<sup>6</sup> however (in a case we do not include among the successful ones), completely ligated the aorta above the celiac axis three months after he had partially ligated the aorta below the renal arteries, the patient lived for a month and a half, when a newly formed aneurysm ruptured, during life the circulation in the legs remained good but the autopsy report does not mention whether or not reestablishment of the aortic circulation had occurred at the site of ligation.

Four of the 8 successful ligations of the abdominal aorta (Hamann,<sup>10</sup> Matas,<sup>11</sup> Brooks<sup>12</sup> and Bigger<sup>13</sup>) were complete but there was subsequent partial or complete reestablishment of the aortic lumen in all but Brooks's case. In Bigger's case, following ligation of the aorta a second operation was carried out in which both iliac arteries were ligated and an endoaneurysmorrhaphy was performed. In the remaining 4 successful cases of ligation of the abdominal aorta the lumen was deliberately not completely occluded by the ligature (Vaughan,<sup>14</sup> Watts,<sup>15</sup> LaRoque<sup>16</sup> and Elkin<sup>17</sup>). Articles by Bigger<sup>13</sup> and Elkin<sup>17</sup> consider the problems of aortic ligation in considerable detail.

REPORT OF CASE<sup>18</sup>

H. V., a white youth aged 19, a college student, was referred by Dr. William Northrup of Grand Rapids to Dr. Frank Wilson at the University of Michigan Hospital on Dec 31, 1941. He

8 Halsted, W. S. Clinical and Experimental Contributions to the Surgery of the Thorax in Surgical Papers Baltimore: Johns Hopkins Press, 1924, vol. 1, p. 321.

9a Cited by Reid<sup>6</sup>.

9 Reid, M. R. Aneurysms in the Johns Hopkins Hospital. Arch Surg 12: 5 (Jan.) 1926.

10 Hamann, C. A. Ligation of the Abdominal Aorta. Ann Surg 68: 217 (Aug.) 1918.

11 Matas, R. Aneurysm of the Abdominal Aorta at Its Bifurcation into the Common Iliac Arteries. Ann Surg 112: 909 (Nov.) 1940.

12 Brooks, B. Ligation of the Aorta. J. A. M. A. 87: 722 (Sept. 4) 1926.

13 Bigger, I. A. The Surgical Treatment of Aneurysm of the Abdominal Aorta. Ann Surg 112: 879 (Nov.) 1940.

14 Vaughan, G. T. Ligation (Partial Occlusion) of the Abdominal Aorta for Aneurysm. Ann Surg 74: 308 (Sept.) 1921. Ligation of the Aorta. Necropsy Two Years and One Month After Operation. Ann Surg 76: 519 (Oct.) 1922.

15 Watts, S. H. Cited by Bigger<sup>13</sup>.

16 LaRoque, C. P. Ligation of the Abdominal Aorta for Aneurysm of the Common Iliac Artery. Tr. South. S. A. 43: 245 1931.

17 Elkin, D. C. Aneurysm of the Abdominal Aorta. Treatment by Ligation. Ann Surg 112: 895 (Nov.) 1940.

18 A brief preliminary case report has been published in the University of Michigan Hospital Bulletin, Alexander, J. and Byron, F. X. Aortectomy for Thoracic Aneurysm. Univ. Hosp. Bull. Ann Arbor 9: 101 (Dec.) 1943. Valuable advice and aid in the management of the patient have been given by Drs. Frank N. Wilson, Paul S. Barker, Franklin D. Johnston, Henry Field Jr. and Francis F. Rosenbaum of the Department of Internal Medicine and by Dr. Fred J. Hodges of the Department of Roentgenology.

From the Department of Surgery, University of Michigan Medical School.

1 Kummel, H. Chirurgie des Aortenaneurysmas. Deutsche med. Wchn. chr. 40: 731 (April 2) 1914. Operative Treatment of Aneurysm of the Aorta. Surg. Gynec. & Obst. 19: 163 (Aug.) 1914. Operative Behandlung des Aortenaneurysmas.

2 Kummel, H. Operative Behandlung des Aortenaneurysmas. Beitr. Klin. Chir. 92: 166 1914.

3 Sauerbruch, F. Die operative Behandlung des Aortenaneurysmas. ed. 2. Berlin: Julius Springer, 1925, vol. 2, p. 333.

4 Tuffier, P. Intervention chirurgicale directe pour un aneurysme de la crosse de l'aorte. ligature du sac. Presse med. 23: 267 (March 19) 1902.

5 Guinard, A. Traitement des aneurysmes de la base du cou par la ligature simultanée de la carotide primitive et de la sous-clavière droite—ligature de l'aorte thoracique. Rev. de chir. Paris 39: 229 (Feb.) 1909.

6 Reid, M. R. Ligation of the Thoracic Aorta. Am. J. Surg. 14: 75 (Oct.) 1931.

7a Cited by Reid<sup>6</sup>.

had been x-rayed on December 10 by Dr Vernor Moore of Grand Rapids, who had made a diagnosis of mediastinal mass and probable coarctation of the aorta.

When seen at the University Hospital the patient's chief complaint was fatigue, which had been present since the onset of flu, contracted three weeks previously and characterized by chills, slight fever and generalized aching. His physician noted a persistently rapid pulse and elevated blood pressure and for this reason an electrocardiogram and chest x-ray film were obtained. The patient had always been normally active, his only serious illness having been scarlet fever at the age of 10 years. He was well developed and nourished. A loud blowing systolic murmur, audible throughout the chest, was best heard over the pulmonic valve area. Blood pressure in the right arm was 160/72. It was not obtainable in the legs. Pulsations of the intercostal and internal mammary arteries were palpable. The femoral pulsations were weak and those of the dorsalis pedis arteries were only questionably palpable. X-ray examination of the chest showed an ovoid mass, 6 by 8 cm, which was situated at the left border of the mediastinum at the level of the 5th, 6th and 7th vertebrae and which did not pulsate. There was erosion of the inferior borders of the 4th to 9th ribs bilaterally. The blood Kahn reaction was negative.

those in the aorta below it were only questionably palpable. The aorta at its junction with the upper end of the aneurysm appeared to be slightly constricted. The subclavian, internal mammary and upper intercostal arteries were greatly enlarged.

Since the aneurysm and the aorta at the corresponding level constituted a single chamber (there being no true pedicle of the aneurysm) and since the wall of the aneurysm was very thin, resection of the aneurysm and reconstruction of the aorta did not seem advisable. Cotton tapes, 13 cm in width, were placed around the aorta above and below the aneurysm. When these tapes were temporarily tightened there was no definite change in the dorsalis pedis artery pulse, which, as before operation, was inconstantly palpable.

As the thin walled aneurysm was in danger of rupture at any time and as the collateral circulation appeared to be adequate, resection of the aneurysm was decided on. The aorta just below the origin of the left subclavian artery was ligated with a 13 cm wide cotton tape, and a silk ligature was placed between the tape and the place where the aorta was to be divided, the aorta approximately 4 cm below the aneurysm was similarly ligated. Three pairs of greatly enlarged intercostal arteries which emerged from the aneurysmal sac were ligated and then the entire aneurysm bearing segment of the



Fig 1—A anteroposterior view on Dec 10 1941 the tumor did not pulsate on fluoroscopic examination. B, appearance on Oct 19, 1943 the tumor had increased considerably in size during the twenty two months since A and still had no pulsation. C lateral view Oct 19 1943 the position and circumscription of this nonpulsating tumor suggest a neurofibroma.

The patient was next seen on Oct 17, 1943 at the request of Dr William Brace of the University Health Service. Since the examination of 1941 he had led a normal life but had noted mild dyspnea and palpitation on exertion. X-ray examination showed that the tumor had increased to the dimensions of 10 by 8 cm. The blood pressure was 155/100-105. There were no abnormal urinary findings. Three blood Kahn tests were negative, the hemoglobin was 95 per cent and the leukocyte count was 4,050. A provisional diagnosis of aortic coarctation on the basis of extrinsic pressure by a neoplasm (probably a neurofibroma) was made. Thoracotomy was advised and performed on October 20.

The operation<sup>19</sup> was carried out under intratracheal ether vapor anesthesia. Through a posterolateral incision the fifth rib was resected and the sixth rib divided posteriorly. Greatly enlarged blood vessels were encountered during the incision of the extracostal muscles. There were no pleural adhesions. A saccular aneurysm of the upper descending aorta, 11 cm long and 8 cm wide, and having a thin wall was exposed in the costovertebral gutter. Its upper pole was 5 cm inferior to the left subclavian artery and its attachment to the aorta was about 7.5 cm long. A second, or daughter, aneurysm, measuring 2 by 2 cm, arose from the anterosuperior wall of the large aneurysm. A forceful thrill was present in the aneurysm. The pulsations in the aorta above it were strong but

aorta (7.5 cm in length) was removed. The divided ends of the aorta were oversewed with silk, in addition, a pedicled flap of the posterior aneurysm wall was turned over the open end of the superior segment of the divided aorta and tacked to the aortic wall. At the time the aneurysm was removed the blood pressure rose to 250/130 but after closure of the thoracic wall it fell to 150/100.

Pathologic examination by Dr R J Parsons revealed that the narrow margin of normal appearing aorta attached to the specimen showed microscopically more muscular tissue and fewer elastic fibers than would a normal aorta. The wall of the aneurysm consisted of dense hyaline connective tissue. At the margin of the aneurysm where it joined the aorta the media of the aorta showed fraying of the muscle with interdigitation of fibrous connective tissue with its musculoelastic coat. There were atheromatous plaques on the inner surface of the aneurysm.

The feet remained warm throughout the operation and afterward. Immediately after operation the posterior tibial pulses could be felt and the following day the dorsalis pedis pulses were easily palpable. By the tenth postoperative day the brachial blood pressure had risen to 220/130, this pressure was maintained, except for a 15 to 20 point drop in the diastolic pressure, until the patient was discharged from the hospital. The nonprotein nitrogen was 38.5 mg per hundred cubic centimeters on the first postoperative day and remained within normal limits (ranging from 39.2 to 18.1 mg per hundred cubic centimeters). The urinary output was normal. On the fifth

19 Performed by John Alexander assisted by Francis A. Byron, Carlos A. Peschiera and William Takahashi, anesthetist Mrs. Anne M. Collier.

postoperative day the glomerular filtration rate was 124 cc per minute (normal, 125 cc per minute), the effective renal blood flow was 800 cc per minute (normal, 700 cc per minute), and the urea clearance was 125 per cent for the first hour and 90 per cent for the second hour. On the first day after operation the urine contained 2 to 5 white blood cells and 25 coarsely granular casts per high power field, which we attributed to urinary concentration, as there were no albumin or red cells. Subsequent examination showed complete disappearance of the cells and casts by the tenth postoperative day. Examination of the eyegrounds on the eleventh day revealed no localized angiospasm.

The convalescence was uneventful until seventeen days after operation, when acute cardiac decompensation occurred, being evidenced by the rapid onset of dyspnea, mild cyanosis, blood streaked sputum, congestive rales and liver engorgement. The symptoms began to recede rapidly on the third day under treatment by oxygen inhalation, morphine, a 350 cc venesection, rapid digitalization, mercupurin and ammonium chloride. Thereafter, until discharge, on November 26, the clinical course was uneventful except for headaches, of which he had two or three a day. At the time of discharge the blood pressure was 215/105, the urea clearance was 51 per cent and the non-protein nitrogen was 181 mg per hundred cubic centimeters.

On Jan 13, 1944 the patient was readmitted to the hospital for study and was discharged ten days later. Since the time of his first discharge his physical activities had been considerably restricted. On fine days he took a half hour's leisurely walk in the afternoon during which he experienced no dyspnea.

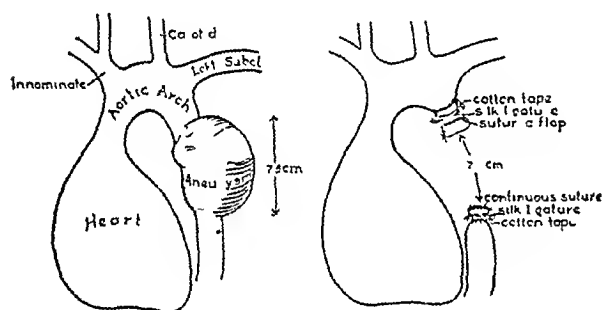


Fig. 2—Before and after resection of the aneurysm. Actually, the aneurysm was 11 cm long; its attachment to the aorta was 7.5 cm long.

or palpitation. The rest of the time he spent in bed except for short periods at mealtimes. He experienced no fatigue and felt that he could have done much more if his activities had not been restricted. Headaches occurred rather frequently and tended to last all day. They consisted of a dull ache over the eyes and were sometimes accompanied by mild nausea. On two occasions he had attacks of pain radiating down the spine from the occiput to the hips with a feeling of stiffness in this region. Both attacks were relieved by heat and massage. Some blurring of vision occurred after reading, both with and without glasses. No symptoms of cardiac decompensation had occurred. The urinary output was apparently normal and there was no nocturia. His feet remained warm, somewhat warmer, he believed, than before operation. He recalled that, prior to operation, localized areas of blushing would occur over the arms and upper part of the thorax. These still occurred but were less pronounced than previously. His weight remained constant.

On examination he appeared to be in good general health. A few small irregular hyperemic areas, which blanched on pressure, were present over the upper anterior part of the chest. The descending branch of the transverse cervical artery was readily palpable, as were the intercostal, the lateral thoracic, the internal mammary and the inferior epigastric arteries. The femoral, popliteal and dorsalis pedis pulses were faintly palpable and the lower extremities were warm. A systolic murmur was audible over most of the thorax, being loudest over the precordium and in the axillae. Murmurs were also heard over the inferior epigastric arteries.

The blood pressure readings of the right arm were 200/118 in the prone position, 190/115 sitting and 198/118 standing. Those of the left arm were 198/114, 200/120 and 205/125 respectively. After he had walked several hundred feet the blood pressure in the sitting position fell to 178/105.



Fig. 3—Appearance of aneurysm and adjacent portions of aorta during operation. The aspirator points at the daughter aneurysm. The lung is seen anteriorly.

Fundoscopic examination by members of the Department of Ophthalmology revealed angiospasm of the arterioles with small flame shaped hemorrhages and small irregular hard ex-



Fig. 4—Resected aneurysm (stuffed with gauze). The probe is in the resected portion of the aorta.

dates in the region of the macula. The visual fields were normal. Thoracic x-ray examination revealed no cardiac enlargement or significant alteration in the contour of the heart or great vessels. Apart from elevation and partial fixation



of the left diaphragm no abnormalities were present. The electrocardiogram showed no significant alteration.

Examination of the urine revealed 2 to 5 white blood cells and 5 to 10 red blood cells per high power field. The urine concentration test showed a maximum specific gravity of 1.032 (normal, 1.025 to 1.032). The phenolsulfonphthalein test (intravenous) revealed 30 per cent excretion of the dye in fifteen minutes, 42 per cent in thirty minutes and 82 per cent in one hour. In two hours 87 per cent had been excreted. The urea clearance was 115.5 per cent. The blood nonprotein nitrogen was 25.8 mg per hundred cubic centimeters. The blood hemoglobin was 86 per cent and the leukocyte count 8,050.

A check-up examination, Oct 17-18, 1944, revealed that during the first six months of this year the patient gradually increased his activities and on July 1 he reentered the law school. Since then his curricular and extracurricular activities have been the same as before operation. Now, one year after operation his health is subjectively good. There is no dyspnea.

test (intramuscular) shows 5 per cent excretion of the dye in fifteen minutes, 20 per cent in thirty minutes, 60 per cent in one hour and 90 per cent in an hour and a half.

#### COMMENT

The pathogenesis of the aneurysm in this case has not been definitely established. The external circumference of the aorta just above the aneurysm was only slightly narrower than normal. However, in the absence of an organized obstructive clot in the aneurysm it is necessary to assume the presence of a coarctation in order to explain the remarkably well developed collateral circulation, the bilateral rib notching and the absence of pulsation of the aneurysm and of the aorta below it.

Hamilton and Abbott,<sup>20</sup> in their comprehensive review of the subject, state that coarctation may occur

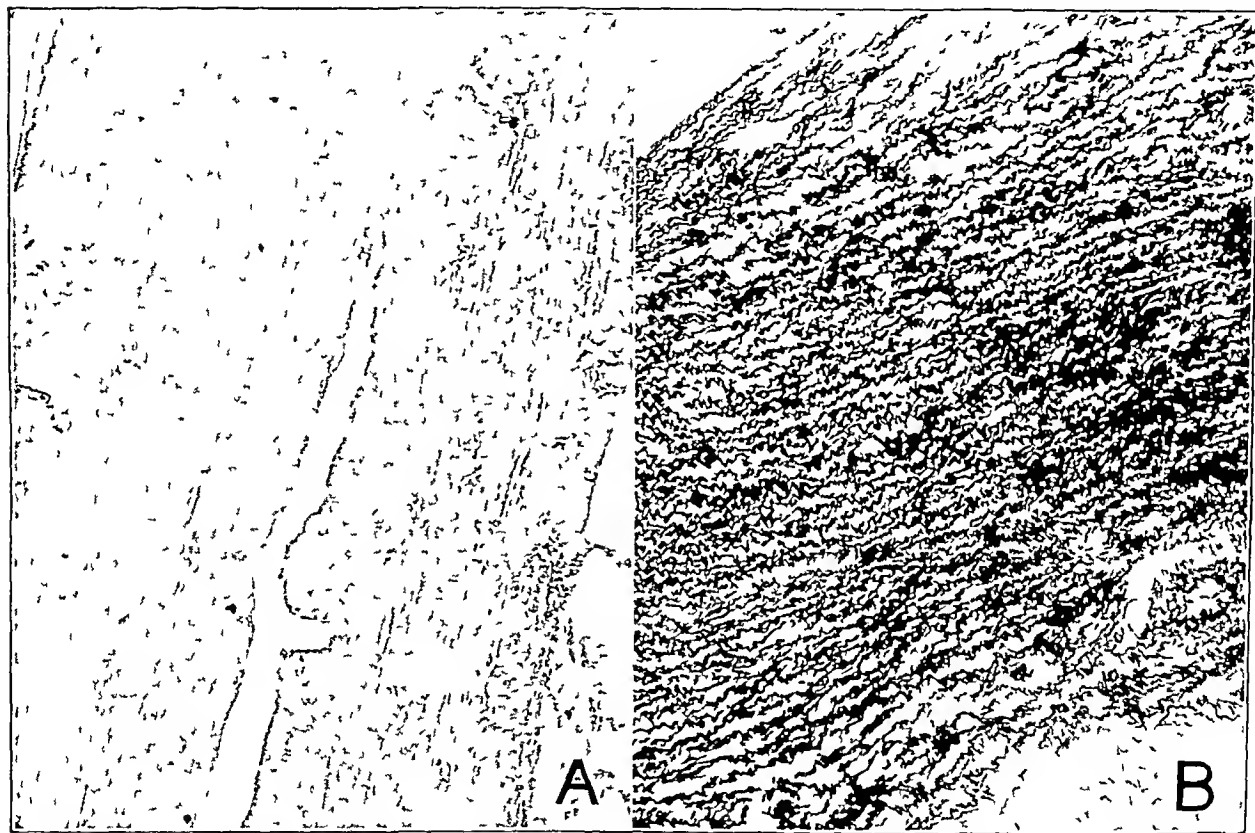


Fig 3—A section through the wall of the aneurysm showing hyalinization of the connective tissue and absence of elastic fibers. Verhoeff stain. B section through the normal aortic wall below the aneurysm showing the abundance of elastic fibers in the media. Verhoeff stain.

his feet are warm, and exercise causes no claudication of his legs. He can ride a bicycle and play four consecutive games of ping pong without difficulty. His headaches have disappeared and he describes his vision as "perfect."

There is now a palpable systolic blood pressure of 90 mm of mercury in the legs. The blood pressure in the right arm is sitting 190/115, standing 185/115, lying 195/110, lying after exercise 240/130. The corresponding figures for the left arm are 205/115, 195/120, 210/120, 220/120. Comparison of the electrocardiograms with the previous tracings shows no change. Chest x-ray films, compared with the January films, show a definite symmetrical cardiac enlargement and an increase of the notching of the ribs. Dr H. F. Falls of the Department of Ophthalmology reports that the acute process in the retinas is at a standstill; the fundi are better than at the previous examination, no fresh hemorrhages or exudates have occurred; localized angiospasm is still present. The urine examination reveals no abnormality, the specific gravity of the first morning specimen is 1.018. The blood nonprotein nitrogen is 26.3 mg per hundred cubic centimeters. The phenolsulfonphthalein

without external evidence of its presence. In these cases the obstruction is caused by a diaphragm composed of the intimal coat. In our case it was not possible, of course, to examine the aortic lumen for any appreciable distance above or below the aneurysm. The location of the aneurysm not far below the ligamentum arteriosum is significant, since in the great majority of cases the coarctation is at the level of the ligamentum.

Although in the usual case of coarctation at the ligamentum level the aortic dilatation is fusiform involving the ascending aorta just above the aortic valve ring and, to a lesser extent, the aortic arch, it is known that aneurysm may occur just below the point of coarctation and that such an aneurysm may reach saccular proportions occasionally progressing to rup-

20 Hamilton W. F. and Abbott M. E. Coarctation of the Aorta of the Adult Type. *Am Heart J* 3: 381-421 (April); 574-618 (June) 1928.



ture Hamilton and Abbott<sup>20</sup> cite 8 cases in which this occurred. These authors state that the aneurysm formation at this site is the "direct result of the return of the collateral circulation [to the aorta below the level of obstruction] through the aortic intercostals



Fig 6—The patient one month after operation

So great is the influx of blood at this point in such cases that the aorta immediately below the constriction where the upper aortic intercostals are given off is frequently dilated in a bulbous fashion." Zaslow and Krasnoff,<sup>21</sup> who recently reported a case of rupture of a thoracic aneurysm located just below a constriction, also offer this explanation for the formation of the aneurysm.

The explanation that the scant amount of elastic tissue in the media of the segment of aorta attached to the inferior end of the aneurysm in our case might have been the cause of the dilatation fails to account for the well developed collateral circulation and for the absence of pulsation of the aneurysm. The sac itself contained only fresh blood clot and its wall was composed of dense hyaline connective tissue 2 mm in thickness.

Although the degree of hypertension that is usually present in cases of aortic coarctation was present in our patient, the considerable rise in both systolic and diastolic pressure during and following operation presumably occurred as a direct result of increased resistance created by the aortic ligation. The brief period of cardiac decompensation that began seventeen days after operation and that responded rapidly to treatment was probably due to the greatly increased cardiac load.

The subsequent reduction in blood pressure suggests that the collateral circulation is becoming more efficient.

#### COLLATERAL CIRCULATION

The collateral circulation in our patient was remarkably good and it sustained circulation after ligation of the thoracic aorta. The improved pulsations in the

lower extremities and the subjective increase in warmth of the feet suggest an actual improvement in circulation after the ligation, but the postoperative rise in blood pressure of the upper extremities and the brief period of cardiac decompensation are stronger evidence that the circulation was impaired by the ligation. Physical examination of the patient readily demonstrates that both the cervical and the subscapular branches of the subclavian arteries and the anastomoses of the internal mammary system are bearing a considerable share of the collateral circulatory burden. It may be assumed that the spinal and esophageal arterial anastomoses are also involved. Figure 7 illustrates the available anastomotic channels.

In the case of complete coarctation reported by Gitlow and Sommer,<sup>22</sup> collateral circulation was chiefly by way of the internal mammary, superior intercostal and subscapular arteries. Hamilton and Abbott<sup>20</sup> stress the importance of the internal mammary and lateral thoracic channels. Bramwell and Jones<sup>23</sup> had the opportunity of studying the collateral circulation in a case of complete aortic coarctation just distal to the left subclavian. They injected the arterial system with barium paste and obtained roentgenograms which excellently outlined the anastomotic channels. In their case the main anastomoses were (a) by way of the musculophrenic branches of the internal mammary to the

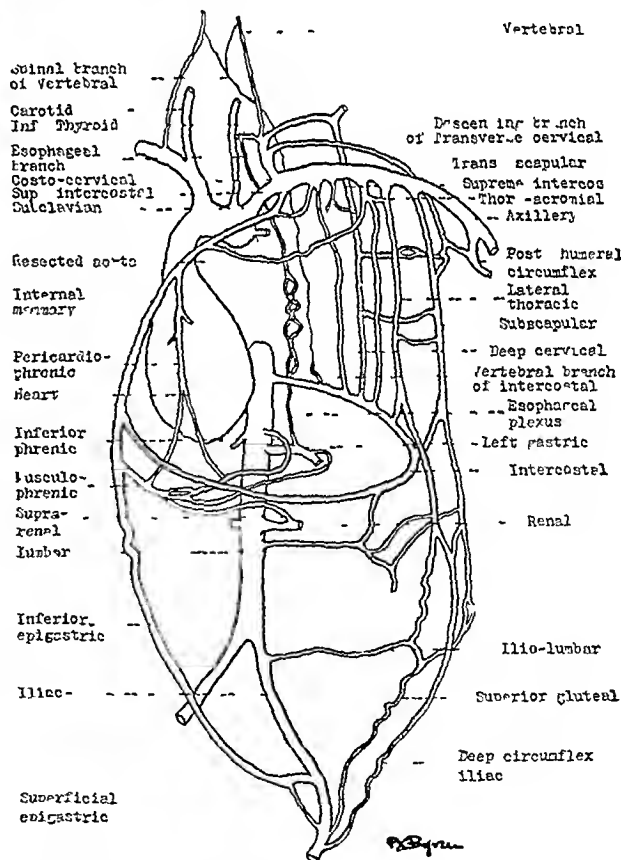


Fig 7—Schema of collateral circulation in cases of occlusion of the thoracic aorta just inferior to the left subclavian artery. Oblique projection after Bramwell and Jones<sup>23</sup>

inferior phrenic branches of the abdominal aorta and to the smaller superior phrenic branches of the thoracic aorta, forming a network above and below the

<sup>21</sup> Zaslow J and Krasnoff S O. Coarctation of the Thoracic Aorta with an Aneurysm Distal to the Obstruction. *Am Heart J* 26: 832 (Dec) 1943

<sup>22</sup> Gitlow S and Sommer R T. Complete Coarctation of the Aorta. *Ca e Am Heart J* 20: 106 (July) 1940  
<sup>23</sup> Bramwell C and Jones A M. Coarctation of the Aorta. The Collateral Circulation. *Brit Heart J* 3: 205 (Oct) 1941

diaphragm, (b) by the scapular and cervical branches of the subclavian and axillary arteries to the lateral and dorsal branches of the aortic intercostals, forming a network about the scapula and in the neck, and (c) by way of the superior intercostals through the upper two intercostals to the next lower intercostals. Their case, in contrast with ours, demonstrated little collateral circulation through the superior and inferior epigastric arteries.

In their experimental work on aortic ligation Owings and Hewitt<sup>24</sup> showed, by the injection-roentgenogram technic that the greater part of the blood in their surviving dogs passed through the internal mammary and phrenic arteries into the intercostals below the site of ligation and then back into the aorta and also through the inferior epigastrics into the iliac arteries.

#### EFFECTS OF AORTIC LIGATION ON RENAL FUNCTION AND BLOOD PRESSURE

Our patient affords an unusual opportunity to study the effects of aortic ligation on renal function. The only other patient whose thoracic or abdominal aorta was completely ligated above the level of the renal arteries and who lived longer than three days was Reid's<sup>9</sup> patient, who lived for one and a half months after complete ligation of the abdominal aorta above the celiac axis. No renal function studies were reported for the case. The only other studies of renal function in the presence of partial or complete occlusion of the aorta above the renal arteries that are known to us have been made in experimental animals and in human cases of aortic coarctation which may or may not have produced complete obstruction. Although a number of investigators, notably Halsted,<sup>25</sup> Pearse,<sup>26</sup> Reid,<sup>27</sup> and Matas and Allen,<sup>28</sup> have completely occluded the aorta proximal to the renal arteries in dogs, only the protocols of Owings and Hewitt<sup>24</sup> are sufficiently complete to show the late effects on blood pressure and renal function. They practiced a method of gradual aortic occlusion extending over a period of several months and finally were able to perform complete section of the thoracic aorta. One of these dogs survived for three years and six months before being killed. During this time the blood pressure remained consistently elevated, ranging from 182 to 190 systolic in the carotid and from 142 to 157 systolic in the femoral. The phenol-sulfonphthalein test varied from 45 to 65 per cent (total after one hour) and nonprotein nitrogen from 29 to 64 mg per hundred cubic centimeters. Two years and four months after aortic division retinal separation occurred. In another dog killed five months after division of the thoracic aorta the blood pressure varied from 207 to 220 systolic in the carotid and from 100 to 140 systolic in the femoral. After five months, although the vision seemed normal, the eyegrounds showed hemorrhage and exudates.

The effects of sudden aortic constriction above the renal arteries have long been recognized. Gurnard<sup>5</sup>

in 1909, as a result of clinical observation in his case of ligation of the thoracic aorta, stated that "ligation of the aorta in the thorax permits sufficient collateral circulation through intercostal anastomoses to nourish the inferior members, but the physiological functions of the kidneys require a notable arterial pressure in the renal arteries." Goldblatt and Kahn<sup>29</sup> and Goldblatt, Kahn and Hanzal<sup>30</sup> demonstrated that constriction of the aorta just above the renal arteries resulted in hypertension, both above and below the constriction, after twenty-four hours. Ryland<sup>31</sup> found that partial occlusion of the aorta above the renal arteries of rats produced hypertension, whereas partial ligation just below the renal arteries did not produce hypertension.

Even in human cases of long standing aortic constriction with an apparently adequate collateral circulation the hypertension is interpreted in the light of primary reduced renal blood flow by Friedman, Selzer and Rosenblum,<sup>32</sup> who measured the effective renal blood flow and the rate of glomerular filtration by means of the diodrast and inulin clearance tests in a group of 11 normal human subjects and in a group of 6 patients with coarctation of the aorta. Their studies indicate an appreciable decrease in the renal blood flow in the coarctation patients as compared with the normal controls. The glomerular filtration rate, however was normal, they interpret this finding as indicative of secondary glomerular efferent arteriolar spasm.

The consistently normal kidney function tests in our patient, together with the lack of retinal angiospasm during the early postoperative period, led us to hope that the hypertension was largely on the basis of increased resistance created by the aortic ligation and that, as the collateral circulation improved, the hypertension would decrease. The subsequent development, however, of arteriolar angiospasm seems to imply a graver prognosis.

#### PRINCIPLES OF OPERATIVE TECHNIC OF AORTIC LIGATION

With regard to the operative technic, we feel that the choice of ligating material is of considerable importance and that the chance of necrosis and rupture of the aorta at the site of the uppermost ligation was reduced by our having used a ligature of broad cotton tape. In 6 of the 9 patients who survived ligation of the abdominal aorta for a sufficient length of time to test the efficacy of the ligating material, cotton tape was used. In no case in which cotton tape was used was death due to the cutting of the ligature. Halsted<sup>33</sup> in his early aortic ligations, both clinical and experimental, used broad aluminum bands, but these consistently cut through the aortic wall, in 1 case rupture at the site of ligation occurring forty-seven days postoperatively. Fascia lata as a ligating material has been found both unreliable and dangerous by Halsted<sup>25</sup> and by Pearse,<sup>34</sup>

24 Owings J C and Hewitt J F. Successful Experimental Ligation and Division of the Thoracic Aorta. *Ann Surg* 115: 596 (April) 1942.

25 Halsted W S. Partial Occlusion of the Thoracic and Abdominal Aortas by Bands of Fresh Aorta and of Fascia Lata. *Tr Am S A* 31: 218, 1913.

26 Pearse H E Jr. A Method for Gradual Occlusion of the Aorta Surg Gynec & Obst 46: 411 (March) 1928. Fascia for the Gradual Occlusion of Large Arteries.<sup>31</sup>

27 Reid M R. Partial Occlusion of the Aorta with Silk Ligatures and Complete Occlusion with Fascial Plugs. *J Exper Med* 40: 293 1924.

28 Matas, R and Allen C W. Conclusions Drawn from an Experimental Investigation into the Practicability of Reducing the Caliber of the Thoracic Aorta by a Method of Plication or Infolding of Its Walls by Means of a Lateral Parietal Suture Applied in One or More Stages. *Tr Am S A* 31: 195 1913.

29 Goldblatt H. and Kahn J R. Experimental Hypertension. Constriction of the Aorta at Various Levels. *J A M A* 110: 686 (Feb 26) 1938.

30 Goldblatt H, Kahn J R and Hanzal R F. Effect on Blood Pressure of Constriction of the Abdominal Aorta Above and Below the Site of Origin of Both Main Renal Arteries. *J Exper Med* 69: 649 (May) 1939.

31 Ryland D A. Renal Factor in Arterial Hypertension with Coarctation of the Aorta. *J Clin Investigation* 17: 391 (July) 1938.

32 Friedman M, Selzer A and Rosenblum H. The Renal Blood Flow in Coarctation of the Aorta. *J Clin Investigation* 20: 107 (March) 1941.

33 Halsted W S. The Partial Occlusion of Blood Vessels Especially of Abdominal Aorta. *Bull Johns Hopkins Hosp* 16: 346 1905. Partial Progressive and Complete Occlusion of the Aorta and Other Large Arteries in the Dog by Means of the Metal Band. *J Exper Med* 11: 373 1909.

34 Pearse H E Jr. Fascia for the Gradual Occlusion of Large Arteries. *Am J Surg* 16: 242 (May) 1932.

who found that considerable relaxation of the ligature occurred and that the fascia absorbed in from three to four months without stimulating adequate scar tissue formation. As pointed out by Reid,<sup>35</sup> the width of the ligating material should increase in direct proportion to the size of the vessel. Pearse<sup>36</sup> in a more recent paper describes his experiments with cellophane ligatures, this material seems to hold considerable promise in the ligation of large arteries, since it causes violent tissue reaction with the subsequent formation of dense scar and gradual occlusion of the vessel.

The placing of the uppermost ligature just inferior to the left subclavian artery in our patient eliminated a blind pouch and tended to shunt the blood stream directly into the subclavian. We resected the aneurysm, together with a 7.5 cm length of the aorta, rather than merely ligating the aorta above and below the aneurysm, because it is known that an artery ligated in continuity tends to become recanalized, and because rupture at the site of ligation in continuity is more likely to occur. The thinness of the wall of the aneurysm and the enlargement of the sac during the twenty-two month period of observation were strong evidence that rupture would occur within a few months or, possibly, a few years, if the blood pressure within the sac continued

#### TREATMENT OF ANEURYSM OF THE AORTA

The treatment of aortic aneurysm is notoriously ineffective, chiefly because the walls of aneurysms are composed of degenerated tissues. Treatment of the syphilis that is the etiologic agent in a majority of cases is the standard practice but rarely prevents a fatal outcome. Various methods of surgical treatment have already been mentioned in this article. The only thoracic aortic aneurysm successfully treated by surgical means is that of our patient. Among the 8 cases of "successful" ligation of the abdominal aorta mentioned in the first part of this article, the lesion was an aneurysm of the abdominal aorta in 5, of the right common iliac artery in 1, of the terminal aorta and both common iliacs in 1 and a malignant neoplasm in the pelvis with transmitted pulsation in 1 (Hamann<sup>10</sup>). Success with regard to control of the aneurysm was attained in the cases of Matas,<sup>11</sup> Brooks,<sup>12</sup> LaRoque,<sup>10</sup> Bigger<sup>13</sup> and at least partial success in Elkin's<sup>17</sup> case.

Surgical measures that have not proved successful in the control of aneurysm include ligation of one common carotid and one subclavian artery (for aneurysm of the aortic arch), the wrapping of an aneurysm with fascia lata grafts or aluminum bands, plication of the wall of an aneurysm, periarterial sympathectomy, injection of gelatinous material into an aneurysm and the scratching of the wall of an aneurysm with a needle. The decompression of large aneurysms which are pressing against the thoracic wall by the resection of ribs, cartilages or the sternum has occasionally given great temporary relief of distressing symptoms.

By far the most encouraging work that has ever been done in connection with the treatment of aneurysm of the thoracic or abdominal aorta is, in our opinion, that of Blakemore and King<sup>37</sup> relating to wiring and elec-

trothermic coagulation. In the past the results of wiring have been uncertain and relatively unsatisfactory, although brilliant in occasional cases. By an original and somewhat complicated technic, Blakemore and King produce complete mass clotting of the blood within an aneurysm by the passage of an electric current through a great length (average, 118 feet) of very fine insulated wire that has been introduced into the aneurysm through a special needle. The great length of wire slows the velocity of the blood within the aneurysm. Measurement of the rate of cooling of a given segment of wire with a given electric current determines the velocity of the blood and therefore the amount of wire and of current needed to produce coagulation. This control is sufficiently accurate to permit the complete coagulation of the blood within a saccular aneurysm having a mouth of smaller diameter than the diameter of the aneurysm itself but not of the more rapidly moving blood within the aortic lumen proper. In saccular aneurysms having a larger mouth and in fusiform aneurysms sufficient coagulation can be produced in the high velocity blood flow to relieve the strain on the sac wall by strengthening the wall. Twenty-six patients with syphilitic aneurysm of the aorta were treated before Jan 1, 1940. Nine of these patients are living with inactive aneurysms an average of seven years after treatment. Seventeen of the 26 patients died from a few hours to eight years after wiring, some of them having had great symptomatic relief.

With regard to our patient we fully realize that his return to health is far from assured since the last check-up examinations were made only three months after the operation and since he has considerable hypertension and retinal angiospasm, exudates and hemorrhages. We particularly wish to emphasize that the early success in our case has no bearing on the management of aneurysm in general. In syphilitic aneurysms the aorta itself is degenerated and collateral circulation is usually not well developed. In typical cases of aortic coarctation the aortic dilatation is fusiform and involves the ascending aorta. Our patient is unique in that all the factors essential to the success of the operation we performed were present: his youth and good general health, the absence of syphilitic disease of the aorta, the presence of a well established collateral circulation and the location of the aneurysm, which permitted the placing of the proximal ligature on the aorta below the left subclavian artery.

#### SUMMARY

1 In our case an aneurysm of the thoracic aorta, together with a part of the aorta, was successfully resected for the first time.

2 Follow-up data relating to the circulation and renal function, among other things, were obtained three months after operation.

3 The aneurysm probably arose in connection with an aortic coarctation, the presence of which is presumed because of hypertension, a well developed collateral circulation, notching of ribs and weak arterial pulsations in the lower extremities.

4 The operation used in our patient has no bearing on the management of aortic aneurysm in general because in him there was an exceptional combination of circumstances that made the operation feasible.

<sup>35</sup> Reid, M. R. The Ligation of Large Arteries. *Surg. Gynec. & Obst.* 58: 287 (Feb.) 1934.

<sup>36</sup> Pearse, H. E. Experimental Studies on the Occlusion of Large Arteries. *Ann. Surg.* 112: 923 (Nov.) 1940.

<sup>37</sup> Blakemore, A. H. and King, B. G. Electrothermic Coagulation of Aortic Aneurysms. *J. A. M. A.* 111: 1821 (Nov. 12) 1938. Blakemore, A. H. Personal communication to the authors. April 1944.

## GROWTH ARREST FOR EQUALIZING LEG LENGTHS

J WARREN WHITE, MD  
AND  
SAM G STUBBINS JR, MD  
GREENVILLE, S C

Our purpose in this paper is to popularize a simple surgical procedure which we have found to be of great value in solving the problem when in children one leg is enough shorter than the other to produce immediate or probable future disability. Since Phemister's<sup>1</sup> important article reporting the original conception was published eleven years ago and as other articles discussing the complicated bone growth problem and still others reporting uncertain end results from his operation have appeared, it is felt that a discussion of the procedure would be justified after doing over two hundred and fifty epiphysiodiaphysal fusions in which few difficulties or complications have been encountered.

We wish to call attention to three important points which we feel should be emphasized in order to dispel some of the apprehension existing relative to the performance of this so-called ir retrievable operation.

First of all we will describe briefly a surgical technic which we have felt to be reliable as an alternative procedure to the one originally described by Phemister<sup>1</sup> over eleven years ago, which former in our hands at least is more easily accomplished and has resulted to

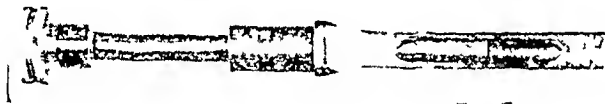


Fig 1—One half inch square mortising chisel with obturator

date in the development of no deformities attributable to the operation.

Second, we would emphasize the necessity of a suitable method of recording leg length discrepancies more accurately than the conventional tape line measurement from the anterior superior spine to the internal malleolus.

Third, we suggest a simple method of calculation sufficiently accurate, in the face of so many variable factors associated with bone growth, to make it of practical use.

It is not within the province of this short paper to discuss the merits of the various methods employed to solve this leg length discrepancy problem, but femoral shortenings will be mentioned as adjuncts to Phemister's<sup>1</sup> epiphysiodiaphysal fusions or growth arrests, as we prefer to call them. A preliminary report on a growth arrest technic after using it for four years was published by one of us six years ago, in which work Dr W P Warner Jr collaborated.<sup>2</sup> As the same technic has continued to prove satisfactory after six more years' trial a ten year report was felt justified, particularly as few end result accounts have appeared in the literature and as several papers have been published which in our estimation have tended to con-

fuse the subject and to detract from the value of the operation.

The fact that one of us after having performed over ninety femoral shortenings before has done only two in the last two years, and those in adults, shows how that procedure has been outmoded and accentuates the utility of this relatively simple growth arrest operation in

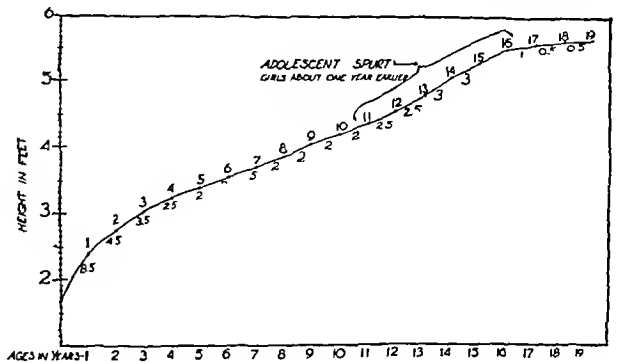


Fig 2—Curve showing growth rate at various ages. Figures above curve represent ages; figures below curve indicate growth in inches between ages shown above. Metropolitan Life Insurance actuarial figures.

correcting leg length discrepancies in children before growth maturity has been attained.

The deformities that have developed following a growth arrest operation we believe can be laid directly to an inadequate treatment of the actively growing zone of metamorphosing cartilage on the diaphysal side of the epiphysal cartilaginous plate. Our personal feeling is that the technic originally devised by Phemister may not include sufficient depth of bone, particularly on the epiphysal side of the graft, where one tends to include too little bone for the establishment of an adequate "beach head" across the layer of cartilage, to use a timely military term. For the success of this operation solid bony union must develop between the epiphysis and the diaphysis at the site of the surgical attacks, and therefore we feel that the more extensive the bone surface opposed, the more certain is bony union. A real nonunion at this point explains the development of most of these distressing deformities.

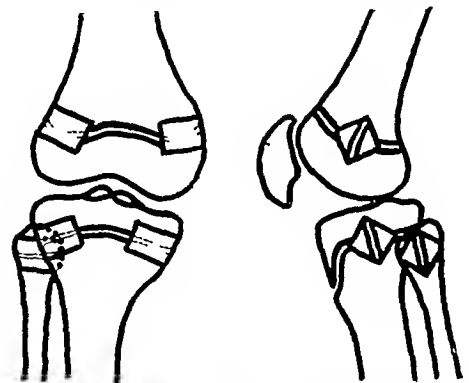


Fig 3—Tracing of anteroposterior and lateral x-ray films to show direction approximate depth and relative size of square plugs of cancellous bone (including small portion of metaphysal plate) removed with the square mortising chisel and reintroduced with the obturator (fig 1) rotating at 90 degrees to interrupt the continuity of the plate. Curing of the adjacent portion of the plate not shown.

Unfortunately Phemister in his original article does not mention the depth of his epiphysiodiaphysal graft which we feel to be so important. He does, however, advocate the chiseling out of the epiphysal plate to a depth of 1 centimeter anterior and posterior to the

From the Shriners Hospital for Crippled Children.  
Read before the Section on Orthopedic Surgery at the Ninety Fourth Annual Session of the American Medical Association Chicago June 15 1944.

<sup>1</sup> Phemister D B. Operative Arrestment of Longitudinal Growth of Bones in Treatment of Deformities. *J Bone & Joint Surg* 15 113 (Jan) 1933.

<sup>2</sup> White J W and Warner W P Jr. Experiences with Metaphysal Growth Arrest. *South M J* 31 411-414 (April) 1933.

graft, implying possibly that the graft itself should be that thick too. The distance anterior and posterior to the graft is indicated in the illustration to be about 2 or 3 centimeters but is not mentioned in the text.

The operation employed in this series consists briefly in the removal of a square core of bone and epiphyseal cartilage from the lateral and medial aspects of the distal end or proximal end of the bone attacked with a slightly modified one-half inch square mortising chisel, a standard wood workers' tool obtainable even in wartime in most hardware stores. This chisel is driven into the cancellous bone diagonally over the epiphyseal plate following carefully this structure into the bone almost transversely. To be more certain of its direction, particularly in the tibia where the plate tends to be somewhat dome shaped, a skin needle is used as a direction finder.

The epiphyseal plate, if the operation is done correctly, should divide this excised square plug of bone diagonally in halves and should penetrate to the depth of half an inch to an inch depending on the size of the child. The same dimension chisel has been found satisfactory for children of all sizes, the only difference size makes being in the depth to which it is driven. Occasionally in small children this half inch chisel is found to be too large for the fibula in which instance the complete

or tibia, whichever one is being operated on, but the fibula needs to be attacked only from the lateral aspect.

The wounds are closed in layers and the joint is immobilized for three weeks in a plaster from groin to ankle with the knee in enough flexion to prevent the cast from slipping down. For the first few post-

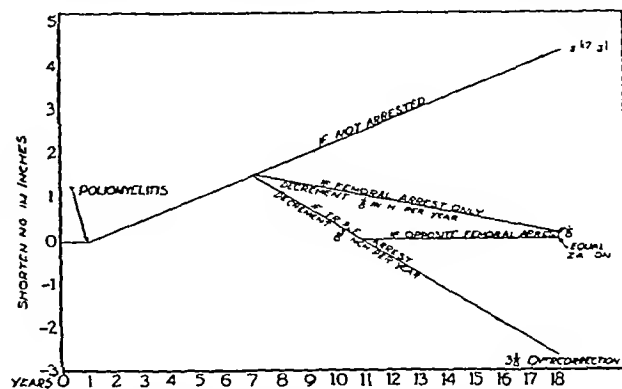


Fig 5—Various arrest procedures in poliomyelitis problems

operative days a woven bandage is used on the foot for protection and circulatory support to avoid the possible tendency of the foot to swell.

In order to keep more accurate data as regards the discrepancy in length a more exact method of measurement has been devised than the usual tape line measurement. This method employs flat X-ray films taken on a regular Bucky table using a standard tube distance. X-ray films are taken of the patient's pelvis when lying on the Bucky table with his feet forced down firmly against the transverse shelf at its foot a piece of apparatus available with any tilt top table. While it is not absolutely necessary it is desirable to have a central horizontal wire incorporated in the cassette used for this work as a datum line from which the distances to the tops of the femoral heads are measured. The difference in heights of the femoral heads from the transverse foot boards is thus obtained, which is recorded as the difference in the length of the legs. A detailed description of this technic was published by one of us<sup>2</sup> four years ago. While there is some distortion of the actual measurements, the same error is present in all the

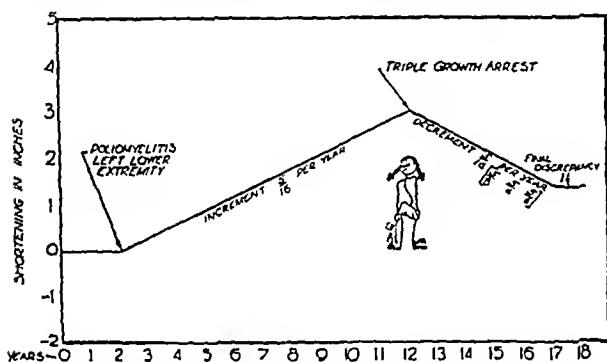


Fig 4—This chart and figures 5, 6 and 7 illustrate approximate behavior of discrepancies after arrests in typical cases in this chart a typical poliomyelitis problem

removal of the plate is a relatively simple procedure. The proximity of the peroneal nerve must be borne in mind in working in this region.

After being driven sufficiently deep, the instrument should be loosened as one would loosen a post or a stake driven into the ground and pulled out. The square plug of cancellous bone breaks off in the depth of the hole and is removed with the chisel when the latter is extracted. After the parts of the plate adjacent to this hole from which this square plug of bone has been removed have been thoroughly curetted, the chisel, still containing the square bone plug, is reintroduced, having been rotated through an angle of 90 degrees from its original position. This changes the position of the fragment of epiphyseal plate in the square plug from a horizontal position in relation to the long axis of the leg to a vertical one, really producing two deep grafts bridging the cartilaginous gap between the lateral and the medial aspects of the epiphysis and diaphysis.

With an obturator made for the purpose, just large enough to fit loosely the inside of the square chisel, the plug of bone is driven out as the latter is removed and is then gently tapped snugly further into place with this flat ended obturator (about  $\frac{3}{8}$  inch in diameter). This procedure is followed on either side of the femur

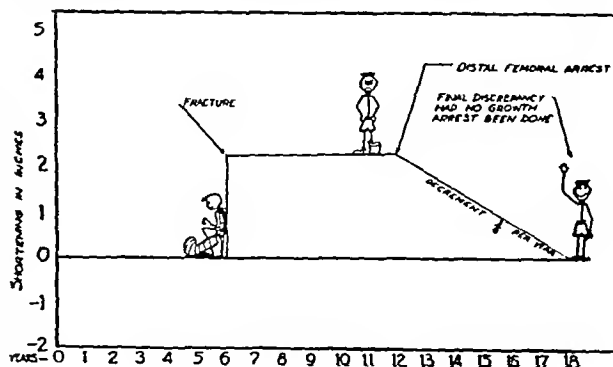


Fig 6—Shortening from overriding fracture

films and, as all calculations are based on these film measurements, the error cancels itself. We have taken over fifteen hundred of these films and have found them to be invaluable for the keeping of accurate records.

Practically at the start of this series a simple method of calculation was devised which has stood the test of

time, and we feel that it is accurate enough to be depended on in the face of so many other variables.

Regardless of the age and size of the child, we have figured that a growth arrest procedure at the distal femoral epiphysis would retard growth at the rate of  $\frac{3}{8}$  inch a year, while at the proximal end of the tibia and fibula it is retarded  $\frac{1}{4}$  inch. This figuring appears absurdly simple, but its use has not led us astray in our series dating back at least ten years, and we feel justified in recommending it for practical use. These figures were published in the preliminary report.<sup>2</sup> We figure that growth ceases in boys at 17 and in girls one year earlier.

This operation should be performed largely on those in whom at the age of 10 or 12 there exists upward of 2 inches shortening, usually a result either of an early attack of poliomyelitis or of some destruction of an epiphyseal plate which will, if nothing is done, go on to the development of a serious discrepancy, producing, in addition to other handicaps, further disability. If, for instance, at the age of 12 there exists 2 inches shortening following an attack of poliomyelitis eight years before, and growth arrests are done above and below the knee, approximate equalization can be expected in leg length at maturity, i. e. at about 16

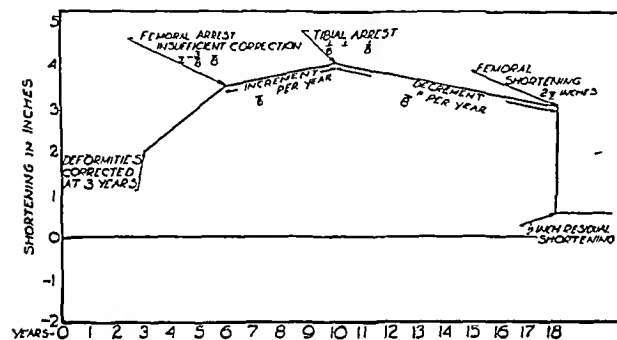


Fig 7—Congenital deformity of right leg including flexion of knee and absent tibia

Our series of 149 Shrine Hospital cases arrested before January 1943 comprises 202 separate growth arrests, the arresting of both bones below the knee being called 1 arrest procedure. Twenty-seven more cases or 37 more arrests have been done since that time, indicating that almost half the cases were arrested above and below the knee, only 16 of which were done at the same time. It is significant that, as we gained experience, more double (i. e. above and below the knee) arrests were done. In the last year and a half we have done half as many again, i. e. 8.

In the cases done before 1943 the shortening was caused by poliomyelitis in 85, or 57 per cent, while osteomyelitis destroyed the growth function of an epiphyseal plate and resulted in shortening in 11.5 per cent. These were the cases in which an annual increment had to be figured in, which was not so definitely a factor in many of the other cases. There were 19, or almost 13 per cent, hip problems in which extra accuracy had to be employed because of the impossibility of pelvis tilting compensation.

In 18, or 12 per cent, of the entire series femoral shortenings were employed, but most of these being done early in the game in all 4 of them for instance in 1934, when this series started. Only 1 has been done since 1939, during which year 2 were performed.

In conclusion, therefore, we feel justified in recommending this simple surgical procedure and have sug-

gested first a technic which in our hands has been relatively free of complications, second, a practical plan of recording leg length discrepancies and, third, a simple almost empirical scheme of calculation of sufficiently proved accuracy in a large number of cases to be relied on.

We have found that the following through to maturity of these problems has been of absorbing interest and hope that this paper will stimulate surgeons to perform this most valuable operation more frequently. The watching of these long legs grow shorter as the years go by has added immeasurably to the interest of our follow-up clinics.

206 East North Street

## ABSTRACT OF DISCUSSION

DR S L HAAS, San Francisco Drs White and Stubbins have presented an ingenious method for arresting epiphyseal growth. I have been performing a more complicated operation, either removing the entire epiphyseal plate or at least destroying the complete circumference. This was necessary because in some of the earlier cases in which a part of the plate remained we got a genu valgum or varum. I should like to ask Dr White if he gets any deformities. Epiphyseal arrest has its limitations, as it can be done only during a certain period of growth. It is also necessary to anticipate the amount of subsequent growth which in spite of the tables of Hutter and those of Abbot and Gill are only an average. Dr White's method of anticipating growth is simple and seems to be fairly accurate on the average patient. The alternative method, as brought out in the paper, is to shorten the good leg. This is more accurate and if done late in the growing period one can remove the desired amount of bone to equalize the length discrepancy. The objection to both epiphyseal arrest and bone shortening operations is the necessity of subjecting the usual good leg to the risk of operation. Sufficient time has elapsed to show that complications following such operation under good conditions and by competent surgeons are few. We performed lengthening operations almost exclusively up to four or five years ago. On checking our operations at the Shriners Hospital in San Francisco my associates and I found we were performing about ten lengthening operations a year previously, while now we do about one a year. Lengthening operations have a greater hazard. It is because of special indications such as when there is a great inequality in length and a shortening operation would present a grotesque stature, also when the patient or the parents refuse to have an operation performed on the good leg.

DR C HOWARD HATCHER, Chicago We are seeking not mathematical accuracy in leg equalization but an approximation which will improve the gait when the effect of the operation has been obtained. There is only one definite thing about growth from the lower extremities, which is the percentage of growth at the various epiphyses. That does not vary with individuals nor does it change at any time during the period of growth from that epiphysis except in dyschondroplasia. Dr White estimates that girls continue to grow from the lower extremities until they are 16 or 17 years old. That has not been my impression nor is it indicated by studies such as those of Lowry and Flores. Girls do not mature as regularly as boys do, and they mature earlier. In general, epiphyseal arrests have no value in the female if menstruation has started, because after that time the girl will grow no longer from the lower extremities, she will increase slightly in height from growth of the spine. The records of lengths by long x-ray films, which are extremely expensive and time consuming are useful in evaluating a series of cases. However, clinical methods are perfectly adequate for ordinary use. The type of operation done does not make much difference. If the periphery of the epiphysis is stripped, growth arrest will usually result. It can be assured by producing a firm bony bridge. It is unnecessary to attempt to destroy the central portions of the cartilage. Disease or injury of the central portions of the cartilage may not interfere with growth at all. To destroy the central portion at operation weakens the bone and predisposes to fracture. I prefer to get



a good wide portion of the peripheral bone, not deeper than 5 to 10 mm, and see that there is firm bony contact. In this way there is no danger of fracture, so I have not hesitated to let patients up in from seven to ten days and to permit them normal activity. The closure of the epiphysis can be checked by roentgenograms three to six months postoperatively. If there is any failure of arrest on one side, a second operation will prevent the development of deformity, which I have had in 1 case. In an injury of the epiphysis in which shortening has already occurred on one side the opposite epiphysis may be closed and the operation combined with metaphyseal shortening to secure an immediate and permanent result. The use of the operation in prevention of deformities is one of its most important applications. When fracture or disease has produced unequal growth arrest of the epiphysis, early epiphyseal arrest on the side opposite to the injury may prevent deformity and irreparable damage to the joint.

DR J WARREN WHITE, Greenville, S. C. As regards Dr Haas's inquiry about deformities, we have not had any that were bad enough to require operation. There was one deformity that developed following the packing of my square hole with bone chips rather than putting in a solid piece of bone, but that happened so near the end of the growth period that correction was not necessary. The next one was in a case of congenital deformities (arthrogryposis) in which I do not know whether my operation produced the bowleg or whether it was happening anyhow, since it happened on the severely deformed other side as well, so I am not taking all the blame for that. By and large we have not had any deformities owing largely, I am confident, to the large exposure of bone on either side of the metaphyseal plate, insuring the solid bony union that Dr Hatcher referred to. I think that I am in error (and I appreciate Dr Hatcher's bringing it to my attention) relative to bone maturation age and shall correct my calculations accordingly, calling it one year earlier. In girls the point of the beginning of the menses as regards bone age is an important one to bear in mind. However, in spite of not making use of that, these figures of mine have allowed me to come out correctly in applying my simple arithmetical calculations to the various problems. I do not think we need to fear the development of deformities if we do an adequate operation. If we are not sure of the adequacy of our operation of course we should not do it.

## Clinical Notes, Suggestions and New Instruments

### LUMBAR SYMPATHETIC BLOCK IN A PREMATURE INFANT

CAPTAIN ROBERT D. DICKINS  
Chief of Surgical Service, Station Hospital AAF Pilot School  
Advanced Two Engine, Altus Army Air Field, Altus, Okla.

AND

CAPTAIN JULIUS B. RICHMOND  
MEDICAL CORPS, ARMY OF THE UNITED STATES

In view of the recent advances in the treatment of peripheral vascular disorders, we believe it is of value to record our observations of effective lumbar sympathetic block in a premature infant.

After a gestation of approximately seven months a 21 year old white woman delivered a premature infant weighing 3 pounds 2 ounces (1,418 Gm). There had been no antepartum care, the mother had not been seen by a physician until thirty minutes prior to admission to the hospital. It was believed that a mild attack of influenza had brought about premature labor, particularly because of rather severe paroxysms of coughing associated with the illness.

Considerable difficulty was encountered in initiating respiration in the infant. However, after the subcutaneous administration of 0.5 cc of nukethamide and continuous oxygen administration, respiration was established approximately ten minutes after birth. The color soon became good and the infant was placed in a heated crib. An ampule (1 cc) of Hykinone Abbott

(3.2 mg of 2-methyl-1, 4-naphthohydroquinone-3-sodium sulfonate) was administered subcutaneously in the outer aspect of the right thigh.

The infant was given subcutaneous injections of dextrose and saline solution in the scapular regions and progressed satisfactorily for the next two days. On the second day of life another cubic centimeter of 'Hykinone' was administered by means of a 25 gage hypodermic needle into the lateral aspect



Sloughing of toes leaving heads of the metatarsals exposed

of the left thigh. Approximately twelve hours later the nurse reported an unusual bluish white discoloration of the left lower extremity from the junction of the middle and lower thirds of the thigh to the toes. When a medical officer viewed the extremity a few minutes later this area was completely blanched except for the toes, which showed intense purplish discoloration and two purpuric areas, each about 1 inch in diameter, on the anterior tibial surface. The infant made no attempt to move this extremity. In view of the findings, a diagnosis of left femoral thrombophlebitis with concomitant vasospasm was made, with no attempt to specify a definite cause for this vascular disturbance. Although 'Hykinone' was the only material injected into the extremity there was no positive evidence to indicate that it was a factor in this instance.

In view of the weight and poor general condition of the infant, therapy was debatable. However, since it was felt that death would ensue if no relief of the vasospasm was obtained, it was decided to attempt a lumbar sympathetic block. This was done approximately six hours after the onset of blocking of the left lumbar sympathetic segments being accomplished by injecting a total of about 10 cc of 1 per cent procaine hydrochloride in the appropriate left paravertebral areas with a 25 gage hypodermic needle.

Approximately three to four minutes after the completion of the injections the left leg became warm and pink except for the previously described purpuric areas. The pink color soon faded to a cyanotic color indicative of venous obstruction. It was then decided to repeat the lumbar sympathetic block as frequently as the appearance of the extremity warranted. Seven hours after the first injection the extremity was again blanched sufficiently to justify repetition of the procedure, with the same gratifying results. The color of the extremity remained good until the following day (about thirty-four hours after the onset) when blanching was again prominent and left lumbar sympathetic block was again repeated. The color again became pink and gradually faded into a cyanotic hue. During the acute

illness the general condition of the infant was precarious, the rectal temperature ranged between 99 and 102 F. Because of the ever present hazard of hemorrhage in the premature, no anticoagulants were administered. No laboratory studies were attempted. Glucose in saline solution was given subcutaneously regularly to maintain the hydration and nutrition of the infant. Small quantities of breast milk were taken by mouth.

The left leg maintained good color except for the toes, which continued to be discolored. One week after the onset it seemed obvious that the toes were gangrenous and would slough. No intervention was undertaken and on Jan 28, 1944, one month after the onset, all the toes sloughed, leaving the heads of the metatarsals exposed, as shown in the illustration. The infant's general condition improved considerably during this time, feedings were well taken and the weight was 4½ pounds (2,041 Gm).

Because of retraction of the soft tissue with resultant lack of nutrition to the metatarsals, disarticulation of all the left metatarsals was effected on February 28, two months after the onset. The wound promptly healed and the infant was discharged from the hospital on March 7, 1944 weighing 6 pounds 13 ounces (3,096 Gm). The infant moved the left lower extremity freely, although the musculature seemed slightly atrophic as contrasted to that of the right lower extremity. The superficial veins of the left lower extremity were more prominent than those of the right.

#### SUMMARY

1 Left femoral thrombophlebitis in a 3 pound 2 ounce premature infant was observed. The etiology is in doubt.

2 Treatment by lumbar sympathetic block was effective except for the toes, where the vascular changes apparently had become irreversible by the time the block was performed.

### HUMAN ORNITHOSIS TREATED WITH PENICILLIN

F. E. TURGA SEN, M.D., MANITOWOC, WIS.

Human ornithosis is probably more prevalent than is commonly recognized and may be present in a fairly high percentage of the recently increasing number of cases diagnosed as virus pneumonia. The literature on the subject has been recently summarized by Heilman and Herrell.<sup>1</sup> The chief difficulty in establishing the diagnosis is the lack of convenient laboratory facilities in America for making complement fixation tests on the patient's blood serum. As far as I could ascertain, the

features resembles the onset of typhoid except that diarrhea is not present and an atypical pneumonia with a dry, irritating, unproductive cough soon becomes a prominent feature. The mortality rate, particularly in the older age groups, has been consistently high. Therapy with the various sulfonamides has been largely without effect. As reported by Heilman and Herrell,<sup>1</sup> penicillin was definitely curative in a series of experimentally produced ornithosis infections in mice. Penicillin was used in the treatment of the patient who was the subject of the present report with favorable results.

#### REPORT OF CASE

**History.**—W. V., a man aged 43, has been a pigeon fancier and has had a loft of homing pigeons in his back yard for a number of years. During the past few months, several of the pigeons have died after a short illness with cough, wheezing, ruffled feathers and in some cases diarrhea. He had been caring for the pigeons himself and had used no precautions in handling the dead or ill birds. Seven days before the onset of his illness he cleaned the loft and inhaled a considerable amount of the stirred up dust. He felt well until Aug 18, 1944, when he became ill with generalized aching, headache and fever. There soon followed a considerable degree of abdominal discomfort with indigestion and gaseous distention, but diarrhea was not present. The temperature became elevated rapidly and the pulse rate was disproportionately slow. He was rather forcibly persuaded to go to the hospital where he might have adequate care and was admitted on August 23.

**Physical and Laboratory Findings.**—The significant physical findings were a considerable degree of irritability and a slight impairment of mental coordination and judgment attributed to the fever and severe illness. There was a slight degree of photophobia, an atypical consolidation of the left lower lobe posteriorly with the absence of rales, a rather soft enlargement of the spleen so that it was definitely palpable beneath the costal margin on deep inspiration, and rather uniform moderate gaseous distention of the abdomen. The laboratory examination revealed urine normal, red blood cell count 4,260,000 and white blood cell count 9,200 on the day of admission and 11,100 two days later. The differential count was neutrophils 78 per cent, lymphocytes 8 per cent, monocytes 9 per cent, eosinophils 4 per cent and 1 unidentified mononuclear cell. Blood culture was sterile and agglutination tests for typhoid, paratyphoid, undulant fever and tularemia were all negative. A telegraphic report from Dr. K. F. Meyer stated that the patient's serum which was obtained on the fifth day of his illness, fixed psittacosis antigen in a dilution of 1:256.

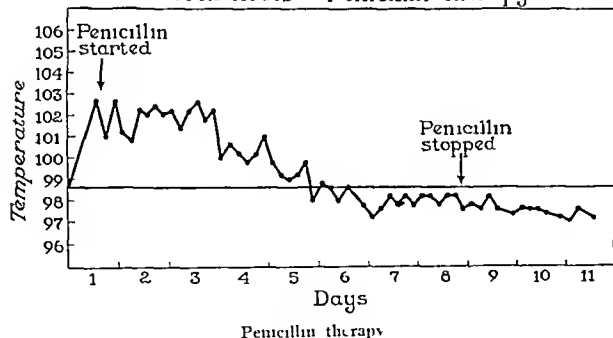
Four pigeons were taken from the patient's pigeon loft and sent to the Mayo Clinic laboratories, where they were examined by Dr. F. R. Heilman. Of the 4 pigeons examined, 2 were found to have enlarged spleens. From 1 of the pigeons with the enlarged spleen the virus of ornithosis was recovered and identified.

X-ray examination on admission to the hospital revealed a pneumonic type of infiltration centrally in the left lower lung. Subsequent films revealed no spread of the process and by September 15 almost complete resolution had taken place.

**Treatment.**—As soon as blood samples had been taken (five days after the onset of illness) penicillin was started and was given throughout for a period of seven and one half days by the intramuscular route in divided doses using a solution in isotonic solution of sodium chloride, 10,000 units to the cubic centimeter and a daily amount of 100,000 units being given. No other medication was administered throughout the illness except ammonium chloride, which was given in expectorant doses on the fourth and fifth hospital days for the purpose of obtaining sputum for examination. The penicillin was stopped when the temperature had been normal for three days.

**Clinical Course.**—The patient's general condition fairly well paralleled the temperature chart and he was discharged from the hospital on September 2 to his home where he convalesced. He returned to light work in two weeks and was apparently fully recovered one month after the onset of his illness.

Ornithosis—Penicillin therapy



laboratory of Dr. K. F. Meyer at the University of California is the only one on this continent that does this work.

Ornithosis and psittacosis are strikingly similar in their clinical manifestations and probably differ only in the source and causative virus. The onset is rather gradual and in many

Assistance and advice in the management of this case were given by Dr. Herrell. Laboratory aid was extended by Dr. K. F. Meyer of the University of California and Dr. F. R. Heilman of the Mayo Clinic.  
1. Heilman, F. R. and Herrell, W. E. Penicillin in the Treatment of Experimental Ornithosis. Proc. Staff Meet., Mayo Clin. 19: 57-65 (Feb. 9) 1944.

## CONCLUSION

This case is reported as an example in which penicillin appeared to influence favorably the course of illness in a case of ornithosis in which the diagnosis was confirmed by complement fixation tests on the blood performed by Dr Meyer. The probability of the disease having been contracted from the pigeons seems further likely because of the identification of the virus by Dr Heilman in pigeons obtained from the loft and examined in his laboratory at the Mayo Clinic. This case is also reported to point out the fact that the disease may occur in this area and probably is more prevalent than is recognized. The chief difficulty in establishing the diagnosis is the lack of convenient laboratory facilities.

926 South Eighth Street

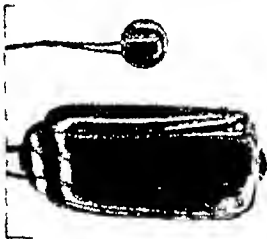
## Council on Physical Medicine

The Council on Physical Medicine has authorized publication of the following reports HOWARD A. CARTER Secretary

### RADIOEAR, MODEL 45-CM, ACCEPTABLE

Manufacturer E. A. Myers & Sons, 306 Beverly Road, Mount Lebanon, Pittsburgh 16

Model 45 CM Radioear with crystal receiver is a three vacuum tube instrument consisting of a transmitter, a special crystal receiver and a battery unit. A midget magnetic receiver may also be used with this instrument. It was not tested with the magnetic receiver, however.



Model 45 CM Radioear

**Dimensions**—Transmitter 4 inches by 2 inches by  $\frac{1}{4}$  inch. Receiver crystal,  $\frac{3}{4}$  inch in diameter. Transmitter, receiver and cords weigh 5 ounces. Batteries weigh  $12\frac{1}{2}$  ounces.

**Batteries**—Voltages and current drains are as follows: A battery, 15 volts, current drain at full volume, 60 milliamperes. B battery, 33 volts, current drain at full volume, 0.22 milliampere.

**Acoustical Gain**—Observations were made by trained observers using fitted ear molds in a tone field, within a sound proof room, seated 5 feet from a loud speaker delivering frequencies of pure sine wave characteristics. The readings are in decibel gain.

| Volume Control | Position of Tone Control | Frequencies |     |       |       |       |       |       |       |
|----------------|--------------------------|-------------|-----|-------|-------|-------|-------|-------|-------|
| Set at         | Control                  | 256         | 512 | 1,024 | 1,448 | 2,048 | 2,896 | 4,096 | 5,792 |
| $\frac{1}{4}$  | Center                   | 9           | 9   | 6     | 11    | 15    | 7     | 5     | 0     |
| $\frac{3}{4}$  | Center                   | 10          | 10  | 16    | 18    | 22    | 8     | 8     | 1     |
| Full           | Center                   | 11          | 13  | 19    | 18    | 21    | 2     | 10    | 3     |

Overall gain for speech 45 decibels

**Physical and Mechanical Features**—The instrument consists of a black plastic case of pleasing appearance. The front surface design is indented. The on and off switch, which is also the volume control, is a knurled disk placed at the top of the transmitter. A tone control at the upper right hand corner gives three distinct frequency emphases. The aid is divided into discrete sections, each of which can be replaced by a service part when servicing is needed. This can be done at the dealer's office without using a soldering iron to make the connections.

**Performance**—The instrument operates in a very satisfactory manner. However, in the descriptive material it was represented as having a frequency range of 250 to 6000 cycles. This may be true, but at this high frequency no significant gain is apparent by the method of testing employed by the Council. The three position tone control operated entirely as represented. There is an absolute minimum of case noise, little if any distortion at maximum intensity. Cord noise and feedback squeal are negligible.

**Recommendations**—The Council on Physical Medicine voted to accept the Radiocar, Model 45 CM, for inclusion in its list of accepted devices.

### KREISELMAN RESUSCITATOR, MODEL 74-B, ACCEPTABLE

Manufacturer The Ohio Chemical & Mfg Co. Heidbrink Division Cleveland

Model 74-B apparatus consists of three separate independent elements arranged for convenient portability in a carrying case of size sufficient to contain two D cylinders of oxygen, and with provision by means of holes in the bottom of the case for the use of large E cylinders. It is used for administration of artificial respiration.

The elements constituting the outfit aside from the carrying case, are described as follows:

**Resuscitator**—This consists of the Kreiselman Bellows type Resuscitator, Model 110, recently accepted by the Council (THE JOURNAL, Sept 9 1944).

**Oxygen Inhalation Facilities**—Inhalation of oxygen by the breathing patient is provided through an automatic adjustable reducing valve to which is attached the manifold having two yokes for the attachment of two oxygen cylinders. The contents of either or both tanks pass through the reducing valve, which is regulated by a handwheel screw. The gas is delivered to two mask-bag assemblies which are attached to a manifold. A 3,000 pound Bourdon type gage is in direct communication with the gases in the tanks and indicates contents at all times.

A gage in direct communication with the low pressure chamber of the automatic reducing valve indicated the amount of oxygen delivered in liters per minute to the attached masks whether one mask is attached or two.

When a mask is detached through removal of the bayonet plug-in of the quick disconnect valve the valve automatically shuts off the flow of oxygen at that point. The automatic reducing valve delivers ample oxygen for breathing purposes for 2 patients.

**Aspirator**—This apparatus is simple, consisting of a catch jar for fluids, an aspirator connected by flexible rubber tubing and an attached tubing leading to a rubber bulb which is squeezed and released to create vacuum for aspiration.

**Accessories**—Two sizes of face masks for use with the bellows resuscitator and two sizes of the open type wire airways are supplied. A substantial wrench for opening cylinders is included.

Gas cylinders are held firmly in place by a removable bracket.

The carrying case is of three ply construction covered with a heavy grade of hard fiber. All edges of the case around openings are metal bound and riveted. Substantial draw bolts hold the case cover on firmly. An end handle and a top handle are provided on the case.

Separate compartments in the case provide easy access to masks and aspirator.

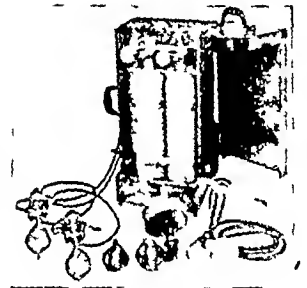
**Council Investigation**—This apparatus was investigated in a clinic acceptable to the Council on Physical Medicine.

The aspirator consists of a large bulb of heavy rubber attached to a small glass jar on the bulb. A rubber tube and metal tip to enter the mouth and throat is attached to this bottle. The Kreiselman inflator performs safe and adequate inflation. Two metal artificial pharyngeal airways are provided. The operator must assure himself that the airway to the lungs is open when using the inflator.

The mask to which oxygen is delivered for inhalation is safe since, if no oxygen flows, the patient can breathe air normally.

Hence, without an oxygen supply and without electric current, this apparatus still permits adequate suction and adequate inflation of the lungs. Also oxygen can be administered to a patient while he is breathing normally.

The Council on Physical Medicine voted to accept the Kreiselman Resuscitator, Model 74-B, for inclusion in its list of accepted devices with the same limitation on the Bellow Resuscitator mentioned in THE JOURNAL, Sept 9, 1944.



Kreiselman Resuscitator  
Model 74 B

# THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

535 NORTH DEARBORN STREET CHICAGO 10, ILL.

Cable Address

Medic Chicago

Subscription price

Eight dollars per annum in advance

*Please send in promptly notice of change of address giving both old and new always state whether the change is temporary or permanent. Such notice should mention all journals received from this office. Important information regarding contributions will be found on second advertising page following reading matter.*

SATURDAY, DECEMBER 30, 1944

## PRIMARY ATYPICAL PNEUMONIA

In the past decade, outbreaks of acute pneumonitis have been described in civilian populations,<sup>1</sup> schools and more recently in U S Army camps - which have differed from the lobar and lobular (bacterial) pneumonias in their clinical course, signs, symptoms, x-ray appearances and laboratory findings, these have been designated therefore as "atypical pneumonia" or "primary atypical pneumonia, etiology undetermined." As a rule the clinical onset of the disease is gradual, with constitutional symptoms, fever and a dry, nonproductive cough and with minimal physical signs in the chest. The changes in the chest contrast significantly with the well developed spotty lesions that can be demonstrated by x-ray films of the lungs. In short the clinical aspects of the disease are not unlike those of a severe upper respiratory infection.

The etiology of atypical pneumonia is still obscure. Weir and Horsfall<sup>2</sup> isolated from a human case a virus pathogenic for the mongoose, while Eaton and his associates<sup>3</sup> obtained a virus that was pathogenic for the cotton rat, the hamster and the chick embryo. The first investigation was made on the Central Eastern seaboard and the second in the Far West. Up to now others have not confirmed these results, but the attempts have been made usually in other geographic areas.

Of great interest is the recent report of Golden<sup>4</sup> on the pathologic aspects of the disease. From the examination of many cases Golden found that the fundamental pulmonic lesion is an acute interstitial pneumonitis essentially similar to influenzal pneumonitis uncomplicated by secondary bacterial invaders and to measles pneumonitis. His cases came in the

main from army hospitals, but there were also civilian cases both from this country and from abroad. The pathologic process centers about the bronchioles, which are filled with pus and desquamated cells from the lining, which is partially or completely destroyed. The bronchiolar walls are edematous and heavily infiltrated with round cells, in association with lymphocytic accumulation in the regional alveolar walls. In contrast to bacterial pneumonia, the alveolar spaces frequently contain air, although there is considerable variation of alveolar content. Others may contain edematous fluid and hyaline material as well as blood but not frankly purulent exudate. Such lung sections do not as a rule reveal micro-organisms on appropriate staining. In some bronchiolar lumens a mixed bacterial flora suggests contamination from the upper respiratory passages. Secondary bacterial invasion may produce typical bronchopneumonia, lobar pneumonia even lung abscess, much as occurred in the last influenza pandemic. Grossly the lungs of "atypical pneumonia" resemble an acute milary granulomatous process. The whitish "milia" in reality are bronchiolar swellings from which pus is easily expressed. The paucity of the physical signs and the spotty x-ray appearance are explained by the character of the pulmonary involvement. Unless x-ray views of the lungs are taken routinely and interpreted correctly, cases of atypical pneumonia may fail of recognition. Hemorrhagic encephalitis has been observed by Perrone and Wright<sup>5</sup> and also by Golden.<sup>6</sup>

So far treatment has been symptomatic only. Neither sulfonamides nor penicillin has influenced the course. As yet there is no information available about the sequelae or complications, although bronchiectasis has been mentioned as a possible sequel.<sup>7</sup>

The death rate in uncomplicated primary atypical pneumonia has remained low, at a fraction of 1 per cent.

## MEDICINAL USE OF DETERGENTS

Some of the detergents recently developed by industry and incorporated into soaps, shampoos, dentifrices, creams and foodstuffs are being used more and more as germicides, as cleansing agents of intact and ulcerated skin and as penetrants aiding in the resorption of therapeutically active substances through the skin and mucous membranes. They have been tried also as inactivators of pepsin in the treatment of gastroduodenal ulcer<sup>1</sup> and of trypsin in the management of chronic ulcerative colitis,<sup>2</sup> as inhibitors of peritoneal adhesions and as thrombotic and sclerotic agents in

1 Longcope W T. Bronchopneumonia of Unknown Etiology (Variety X). Bull Johns Hopkins Hosp 67:268 1940.

2 Dingle John H. Abernathy Theodore J. Badger George F. Buddingh G. John. Feller A. E. Langmuir Alexander D. Rueggesser James M. and Wood Barry W. Primary Atypical Pneumonia Etiology Unknown. Am J Hyg 39:69 1944.

3 Weir J M. and Horsfall F L Jr. Recovery from Patients with Acute Pneumonitis of Virus Causing Pneumonia in Mongoose. J Exper Med 72:595 1940.

4 Eaton M D. Meiklejohn G. and Van Herrick W. Studies on the Etiology of Primary Atypical Pneumonia. J Exper Med 79:649 1944.

5 Golden Alfred. Pathology of Primary Atypical Pneumonia Etiology Undetermined. Arch Path to be published.

6 Perrone H. and Wright M. Fatal Case of Atypical Pneumonia with Encephalitis. Brit M J 2:63 1943.

7 Blades B. Brian and Duggan D J. Pseudobronchiectasis Following Atypical Pneumonia. Bull U S Army M Dept November 1943 p 60. December 1943 p 8.

1 Fogelson S J. and Shoch D E. Treatment of Gastroduodenal Ulcerative Disease with Sodium Alkyl Sulfate. Arch Int Med 73:212 (March) 1944.

2 Portis S H. Block C L. and Necheles Heinrich. Studies on Ulcerative Colitis and Some Biologic Effects of Detergents. Gastroenterology 3:106 1944.

varicose veins<sup>3</sup> But few investigations have dealt with the mechanism of their biologic action and with their local and systemic toxicity

There are anionic, cationic and nonionic detergents and, apart from the chemical composition, the predominant electric charge of these agents determines their biologic action, especially on the physicochemical status and colloidal equilibrium of the cells and tissue fluids The high germicidal properties of the cationic detergents prove that biologically they are highly active Some of the detergents when given orally display a cumulative effect Their biologic and toxic effects are attributed to interference with cellular respiration denaturation of proteins and derangement of the lipoidal cellular structures<sup>4</sup> Toxicity studies show that some cause local necrosis when given subcutaneously or intramuscularly Intravenous injection is followed by a drop in blood pressure and hemolysis, such as occur after the introduction of lecithin and salts of bile acids In animals prolonged oral medication with these agents resulted in degenerations of the kidney, diarrhea and hyperemia and hemorrhages in the intestinal mucosa<sup>5</sup> Similar intestinal effects were observed in man The inhibition of the gastrointestinal proteolytic enzymes as well as an increased permeability of the gastrointestinal wall seems to be involved in the production of these symptoms

The medicinal and particularly the internal use of detergents appears to be still in the experimental stage Much more intensive study is needed before they can be included in the list of useful medical substances for application internally

#### A COMMON FACTOR IN INFECTION AND FERTILIZATION

The steady advances of biochemistry and immunology have been disclosing the presence of the same complex compounds, some of them being known as possessing remarkable physiologic effects, in apparently unrelated living entities Omitting vitamins and the common enzymes, the cases of some sex hormones, cardiac glucosides and the Forsman antigen may be suggested as representative examples

Recently another interesting example involving a system of a powerful enzyme and its specific substrate has been added to the list Hyaluronidase, best known and most important of the "spreading factors,"<sup>1</sup> is present abundantly in invasive bacteria such as staphylococci pneumococci and some anaerobic gas gangrene

bacteria, in the poisonous secretions of snakes and insects, in leeches and in the testes and sperms of mammals By hydrolyzing hyaluronic acid present in the cement between the cells of the connective tissues, the gelatinous fundamental substance of the mesenchyme, the enzyme brings about a spreading throughout the tissues of any particulate matter inoculated along with it and hence of the bacteria themselves that secrete the enzyme

It has been known for several years<sup>2</sup> that the arrival of spermatozoa in the area surrounding the mammalian tubal ova is followed by a disaggregation of the cumulus cells and corona radiata surrounding the ovum this phenomenon being a practically indispensable preliminary step for fertilization It was also known that the cumulus cells are embedded in a transparent viscous material, as Long<sup>3</sup> showed in 1912 Manipulation of these cells reveals the sticky nature of the intercellular cement The freeing of ova from the protective cells is accomplished by extracts of sperm not only from homologous but also from heterologous species

In 1942 two independent teams of workers, McClean and Rowlands<sup>4</sup> in England and Fekete and Duran-Reynals<sup>5</sup> in this country, discovered in rats and mice respectively that the addition to ova kept in vitro of a variety of materials known to be rich in hyaluronidase resulted in the prompt disaggregation of the cumulus oophorus cells Highly purified preparations of testis hyaluronidase, if used in high concentrations, leave the ovum free from surrounding cells in sixty seconds

Recently Rowlands<sup>6</sup> has found that in female rabbits previously treated with chorionic gonadotropin and inseminated with titrated suspensions of homologous spermatozoa to which hyaluronidase has been added the amount of spermatozoa needed to ensure fertilization is one sixth less than in controls inseminated without addition of the enzyme These experiments throw light on the amount of sperm required to be inseminated in order that one or a few spermatozoa may reach the ova in the fallopian tube and suggests an explanation for infertility associated with oligospermia

For many years embryologists have been eagerly looking for chemical components in sperm capable of bringing about individually a few at least of the marvelous effects that the intact spermatozoon does after entering the ovum All these efforts have failed Although not concerned with fertilization in the strict sense of the term the hyaluronidase effect can be considered as a step in this direction Other interesting contributions in this regard are those of Tyler<sup>7</sup> on the specific interacting substances of eggs and sperm in lower marine animals and the unexpected analogies

3 Whigham J R M Hazards in the Treatment of Varicose Veins *Lancet* **I** 646 1944

4 Baker Z Harrison R W and Miller B F Inhibition by Phospholipids of the Action of Synthetic Detergents on Bacteria *J Exper Med* **74** 621 1941

5 Smith H I Scaton J and Fischer L Some Pharmacologic Properties of the Tergitol Penetrans *J Indust Hyg & Toxicol* **23** 478 1941 Banaghia A E Robinson E J Utley E and Cleveland M A The Chronic Toxicity of Aerosol OT *ibid* **25** 175 1943

1 Duran-Reynals F *Bact Rev* **6** 197 1942

2 Pincus G *The Eggs of Mammals* New York Macmillan Company 1932

3 Long J A *Univ California Pub Zool* **9** 103 1912

4 McClean D and Rowlands I W *Nature* **150** 627 1942

5 Fekete Elizabeth and Duran-Reynals F *Proc Soc Exper Biol & Med* **52** 119 1943

6 Rowlands I W *Nature* **154** 332 1944

7 Tyler A *Western J Surg Obst & Gynec* **50** 126 1942

between these effects and the antigen-antibody reactions of orthodox immunology

That the cement between the cumulus cells, like the fundamental substance of the connective tissue, has hyaluronic acid as its main or only component may not be surprising. However, the same enzyme in the poison of rattlesnake venom or the secretion of *Clostridium welchii* is responsible for the brutal effects of these materials. In other words, the same enzyme substrate system is of a basic importance in two biologic processes as different from each other as infection and reproduction.

#### REDUCTION IN SIZE OF ARMY MEDICAL CORPS

The Medical Corps of the Army will be slightly reduced in size in the near future. The statement by Surgeon General Kirk elsewhere in this issue explains that a moderate reduction in the number of Medical Corps officers is necessary if the Medical Department is to remain within the currently allotted ceiling for personnel. At present the need for senior administrative officers is less than it was earlier in the war. Many factors are considered in the release of medical officers, such as physical fitness, age, professional competence and available positions. To provide proper consideration of the qualifications of a man in relation to his essentiality in the war effort, a board of officers was recently appointed by the Office of the Surgeon General to review each case. The board after suitable study will no doubt recommend a number of separations from the service.

Regular Medical Corps officers will be accorded retirement privileges under Army Regulations, and Reserve National Guard and Army of the United States Medical Corps officers will be given the opportunity of returning to the civilian practice of medicine by relief from active duty or discharge. If the men chosen to be released from service are carefully selected, much information may be gained useful for later demobilization.

Some have mistakenly thought that physicians are no longer being commissioned by the Army following the ceiling registration of Medical Corps officers. The Current Comment of the November 4 issue of *THE JOURNAL* called attention expressly to

the announcement by the War Department and by the War Manpower Commission that recruitment of civilian physicians for the Army has been discontinued. The Navy requires 3,000 additional officers at once. The Army is to fill its future requirements from the young men who complete their medical education and internships.

The Army will continue to appoint all physically qualified recent graduates from medical schools. There is no indication that it will deviate from that policy. Men trained under the Army Specialized Training Program will be required to enter active duty with the Army immediately on the completion of their hospital training. Civilian physicians who are declared available by the Procurement and Assignment Service will however, be urged to seek commissions in the Navy. The need for young physicians as medical officers is still great.

### Current Comment

#### THE CHILDREN'S BUREAU MAKES NEW REGULATIONS REGARDING SERVICES TO THE CRIPPLED

The Children's Bureau in November 1944 amended its regulations relating to services for crippled children by adding the following provisions: "Effective July 1, 1945 it shall be a condition of approval of a plan that it provide that diagnostic services will be made available thereunder to crippled children without restrictions as to race, color, creed, economic status, legal residence, age (except as to persons above the maximum age for which such services are legally available within the state), the necessity of referral by any person other than the child's parents or legal guardian, or similar restrictions inconsistent with the free availability of such services."<sup>1</sup> In December the Medical Advisory Council of the Indiana University School of Medicine pointed out that the acceptance of any child for diagnosis without restriction as to economic status and the referral of children by the parents or legal guardian only are in conflict with the established policy of the Indiana University Medical Center. The Advisory Council therefore requested the Board of Trustees of Indiana University to authorize the Indiana University Medical Center to withdraw from participation in the Crippled Children's Program of the Indiana State Department of Public Welfare whenever this new regulation is put into effect. At the same time it resolved that the Indiana University Medical Center continue to receive crippled children for diagnosis and treatment under the welfare hospital commitment program, so that no eligible and needy child would be denied clinic or hospital examination and treatment. The ruling of the Children's Bureau in eliminating any means test in the giving of governmental services for the care of the sick would seem to be in accord with repeatedly expressed policies of that agency in regard to most of the other services that it renders. More than ever the desirability that the health and medical activities of the government be coordinated under a single agency is apparent.

#### COLLOIDAL PLASMA SUBSTITUTES

The wide acceptance of human plasma as the most effective colloidal agent in the treatment of traumatic shock has exerted a restraining influence on the clinical use of the various colloidal plasma substitutes (gelatin, isinglass, pectin, methylcellulose, polyvinyl alcohol, vinyl pyrrolidone polymer), recently developed. Properly prepared solutions of these hydrophilic colloids have certain advantages over plasma. They are relatively inexpensive, readily available in large quantities and in sufficiently pure form, and nonantigenic. Several of these agents (methylcellulose, polyvinyl alcohol) are not easily contaminated with micro-organisms, pathogenic or nonpathogenic, and do not undergo any appreciable physicochemical changes on autoclaving. The

<sup>1</sup> The amendment is made to section 1102, 49 Stat. 647, 42 USC 1302, Sec. 513, 49 Stat. 632, as amended by Sec. 506, 53 Stat. 1381, 42 USC 713.



neutral solutions of gelatin, isinglass and pectin, on the other hand, suffer molecular degradation when subjected to heating and therefore alter the degree of dispersion, viscosity and colloid osmotic pressure. As the colloid plasma substitutes have filamentary molecules and not globular ones, like the plasma albumins and globulins, they differ from these in osmotic and viscous properties. Extensive clinical use of these agents has been hindered by certain undesirable effects on the recipient. They cause a conglomeration and increased sedimentation of erythrocytes. They do not furnish any material for the restoration of lost plasma proteins and may, when introduced in excessive amounts, interfere with the production of plasma proteins in addition to causing anemia. These untoward sequelae result in part from the retention of some of the injected colloidal matter in the internal organs, particularly the liver, as observed after the administration of methylcellulose with an average molecular weight as low as 33,000. Although the therapeutic effect of these agents is attributed to the same mechanism as is the effect of plasma, the therapeutic results after the experimental and clinical administration of the substitutes vary greatly in different investigations and in the type and stage of shock treated. For these reasons the recent work by Locke<sup>1</sup> and by Roome and his associates<sup>2</sup> is noteworthy. After the injection of a solution of a polyvinyl alcohol of a low molecular weight (14,000) into animals in experimental shock they obtained survival rates considerably better than after the administration of plasma. The additional claim is advanced that this material is not retained in the internal organs because of its relatively small molecular size, permitting its escape through the vascular membranes. These observations revive the hope that the search for the ideal plasma substitute is still a promising field of scientific endeavor.

#### ESCAPE OF EASILY DETACHABLE BLOOD IRON

An increase in the iron content occurs in certain tissues and yet iron is not demonstrable in them by the conventional methods of study. Sheldon's<sup>1</sup> suggestion that this might be due to an increase in "physiologic" iron not stainable by the usual methods is supported by the recent work of the Popoffs<sup>2</sup> of the Genesee Hospital, Rochester, N. Y. With a new technic they found that iron invisible with ordinary methods was easily demonstrated. The technic is based on the fixation of thin pieces of tissues in a solution of toluidine blue, formaldehyde and acetone, and on subsequent treatment with acetic acid-zinc sulfate mixture. This iron, which may be of importance in a number of conditions, represents apparently a labile form of blood iron. It detaches itself from the erythrocytes rapidly and is taken up immediately by mesenchymal and epi-

thelial cells. For example, iron can be demonstrated in the epithelial cells of thyroid follicles one hour after the start of thyroidectomy. While the uninjured parts of the gland do not show even traces of iron, the traumatized areas show massive accumulation of iron granules in endothelial cells, epithelial cells and local histiocytes. Studies of other human material indicate that detachment of iron with consequent deposition occurs in many conditions such as postoperative shock, death due to ether anesthesia, thrombosis, myocardial infarction, pulmonary infarction and pneumonia. Most striking is the siderosis found in congestive heart failure. With the usual methods of staining, hemosiderin is found in alveolar phagocytes here and there but the histologic preparations give no idea of the actual amount of abnormal iron in the lungs. With the new technic practically all septal cells of the lungs are found to be loaded to capacity with iron granules. One sees even mucus secreting cells of the bronchi blocked with iron. In hemochromatosis repeated discrepancies have been observed between the amount of iron found chemically and that demonstrated histologically. The new technic shows that this is due to the failure of old methods to demonstrate all the iron in the tissues. In hemolytic anemia of the newborn in addition to other tissues a particularly extensive siderosis was found in the hypophysis, both chief and alpha cells being loaded with iron. From these studies a siderosis of this kind appears to be an intravital phenomenon due probably to anoxia from interference with local circulation. Experimental investigations support this concept. When venous stasis of the extremities is produced in animals local siderosis develops promptly, iron being found in the endothelial, muscular and perithelial cells within three hours after interference with circulation. Three forms of blood iron are now recognized, namely hemoglobin iron, plasma iron and an easily detachable form of iron which, according to the pioneer work in this field by Barkan<sup>3</sup> and by Lintzel<sup>4</sup> constitutes about 10 per cent of the total blood iron. An organic compound, this iron differs from the ordinary iron in being ionized and dialyzable. The research reviewed indicates that this iron may play an important part in pathologic processes which merits further investigation.

#### EDITOR OF THE LANCET

Dr Egbert Morland, who joined the staff of the London *Lancet* in 1915 and who became its editor in 1937, has just retired as editor. He is succeeded by Dr T. F. Fox. Under Dr Morland the *Lancet* maintained its standard of editorial content. He did much to aid the advancement of medical science and practice in Great Britain. His achievements as editor of the *Lancet* were recognized by both the Royal College of Physicians and the Royal College of Surgeons, who admitted him to fellowship. *THE JOURNAL* felicitates Dr Morland on his career.

<sup>1</sup> Locke, William. An Experimental Method for Evaluating Blood Substitutes. *Science* 99: 475, 1944.

<sup>2</sup> Roome, N. W., Ruttile, L., Williams, L. and Smith, W. The Polyvinyl Alcohols as Blood Substitutes. *Canad. M. A. J.* 51: 293, 1944.

<sup>3</sup> Sheldon, J. H. *Hemochromatosis*. London: Oxford University Press, 1935.

<sup>2</sup> Popoff, N. W. and Popoff, Anna. On the Significance of Easily Detachable Iron in Trauma and Other Conditions. *Yale J. Biol. & Med.* 16: 197 (Dec.) 1943.

<sup>3</sup> Barkan, G. Zur Frage der Einwirkung von Verdauungsfermenten auf das Hämoglobineisen. *Ztschr. f. physiol. Chem.* 148: 124, 1925.

<sup>4</sup> Lintzel, W. Das Verhalten des Blutfarbstoffes bei künstlicher Verdauung. *Ztschr. f. Biol.* 83: 289, 1925.

# MEDICINE AND THE WAR

## ARMY

### PROGRESS IN PROGRAM FOR MEDICAL HISTORY

According to a report from Col Albert G Love, historian of the Army Medical Department, plans have been made to complete the writing of the medical history of the present war six months after victory in the Pacific. Several officers are now assigned to the historical program, approximately half of them serving in overseas theaters. Most of these officers hold graduate degrees in history from leading universities throughout the country. They were commissioned in the Medical Administrative Corps following completion of training in officer candidate schools. These officers are working on the administrative aspects of the medical service, including supply, personnel, training and hospital construction. The professional medical experience of the Army will be recorded by medical officers especially qualified in various specialties.

Previous histories published by the Medical Department appeared several years after the cessation of hostilities. Twenty-three years was required to complete the medical history of the Civil War, ten years to complete that of the first world war. At a meeting of historical officers held in the office of the Surgeon General on December 6, announcement was made that sufficient volumes would be published to cover the entire scope of the Medical Department's professional and administrative work.

### REDUCTION IN THE MEDICAL CORPS OF THE ARMY

The Office of the Surgeon General recently announced that a moderate reduction in numbers of Army Medical Corps officers is necessary in order to remain within the present allotted ceilings. The need for medical corps officers in senior grades who are assigned principally to administrative duties is less acute than formerly. A board of officers recently appointed in the Office of the Surgeon General is carefully considering the physical and other qualifications of all medical corps officers of the various components of the Army and their essentiality to the war effort. As a result of this board's study, it is anticipated that a number of separations of the aforementioned group will occur in the near future. Regular medical corps officers will be accorded retirement privileges under the provisions of section II, Ar 605-245 June 17, 1941 and Reserve, National Guard, and A U S Medical Corps officers will be given the opportunity of returning to the practice of medicine in a civilian status by relief from active duty or discharge.

### COL ALBERT E McEVERS COMMANDING OFFICER AT BILLINGS GENERAL HOSPITAL

Col Albert E McEvers, formerly commanding officer of the ASF Oakland Regional hospital, was recently appointed commanding officer of Billings General Hospital, Fort Benjamin Harrison, Indiana. An army surgeon veteran of three wars, Dr McEvers first saw action on the Mexican border in 1916 and served as a surgeon during the major offensive at Aisne-Marne, St Mihiel, the Neuse-Argonne, Champagne and Meuse-Champagne during the first world war. After returning to the United States he was appointed major in the Officers Reserve Corps and practiced in Chicago and Los Angeles until the outbreak of the present war. He received his full rank of colonel in the medical reserve in 1934. In September 1939 he accepted reappointment to this rank.

### PROMOTED TO BRIGADIER GENERAL

The War Department recently announced the temporary promotion of Col John A Rogers, formerly of Nashua, N H, to the rank of brigadier general.

### ARMY AWARDS AND COMMENDATIONS

#### Captain Robert J Sating

The Silver Star for "Distinguished Gallantry in Action" in an undisclosed campaign in the Mediterranean theater was awarded to Capt Robert J Sating, formerly of Cleveland Heights, Ohio. Previous to his award Dr Sating received a Certificate of Commendation from the commanding general of the 9th Division, dated May 13, 1944, which read: "Certificate of Commendation. For outstanding and especially meritorious service, this Certificate of Commendation is awarded to Capt Robert J Sating, M C, 84th Field Artillery, 9th Division. Capt Sating for two days and nights attended the wounded of two American artillery battalions and a British brigade. Working tirelessly, he was conspicuous by his courage and self sacrifice. His work materially reduced the fatalities among both American and British wounded. His actions were clearly indicative of high military standards." Dr Sating graduated from St Louis University School of Medicine in 1937 and entered the service July 31, 1941.

#### Captain Roscoe I McFadden

The Bronze Star Medal was recently awarded to Capt Roscoe I McFadden, formerly of Madison College, Tenn. The citation read: "During an intense enemy artillery barrage on April 6, 1944 near Anzio, Italy, a detachment tent of a hospital was struck by an enemy shell. With other medical officers who were on duty with him at an adjacent hospital he immediately rushed to the scene of the shelling and administered treatment to a number of seriously wounded soldiers. Although the area was under continuous bombardment they remained at the perilous task of rendering medical aid and expediting the quick removal of casualties for additional treatment. Their heroic performance reflects the finest traditions of the Medical Corps. Dr McFadden graduated from the College of Medical Evangelists, Loma-Linda, Calif, in 1940 and entered the service March 20, 1941.

#### Captain Ralph L Phillips

The Bronze Star Medal was recently awarded to Capt Ralph Phillips, formerly of Columbus, whose citation states that "on March 14, 1944 at Bougainville, Solomon Islands, he unhesitatingly crawled through an open area under intense machine gun fire to give medical aid to several soldiers and a wounded officer. His courage and alert action inspired other members of the patrol, who dispersed the enemy killing four and taking one prisoner." Dr Phillips graduated from Ohio State University College of Medicine, Columbus, in 1942 and entered the service Aug 1, 1943.

#### Major Saul Greizman

The Legion of Merit was recently awarded to Major Saul Greizman, formerly of Pittsburgh, for "exceptionally meritorious conduct in the performance of outstanding service in the Solomon Islands from July 22, 1943 to April 7, 1944." Dr Greizman who was born in Romanov, Russia, graduated from Vanderbilt University School of Medicine, Nashville, Tenn, in 1935 and entered the service in 1942.

#### Captain Eugene Haverty

Posthumous awards were recently bestowed on Capt Eugene Haverty, formerly of Pittsburgh. The Silver Star was awarded for exceptional gallantry in action and the Legion of Merit, which is rated as one of the highest medals of honor, was awarded for exceptionally meritorious service on the Italian front. Dr Haverty graduated from Georgetown University School of Medicine, Washington, in 1938 and entered the service July 7, 1941.

## NAVY

TRANSFER TO REGULAR NAVY OF  
RESERVE OFFICERS

Secretary of the Navy James Forrestal recently appointed nineteen members and a recorder to consider and made recommendations for the transfer to permanent commissioned rank in the U S Navy of Naval Reserve and temporary officers. The Secretary of the Navy also asked the board to "make a comprehensive study of the employment, assignment and relationship of Reserve and temporary officers with officers of the Regular Navy." The board will submit a report to the chief of naval personnel, Vice Admiral Randall Jacobs, who in turn will forward the findings to the Secretary of the Navy. All members are now on duty in Washington. The Medical Corps members of the board are Capt. Thomas B Magath, Rochester, Minn., and Comdr Louis M Harris, San Antonio, Texas.

## FLEET HOSPITAL NO 113 COMMISSIONED

Fleet Hospital No 113, a 2,000 bed enlarged copy of mobile units now in operation at advanced Pacific bases, was recently commissioned by the Navy in San Francisco. The new installation, the first of its type to be established in the United States, was erected in less than four months. It consists of 255 fifty foot steel buildings including surgical, medical and neuropsychiatric wards, administration buildings, postoffice, laundry, galley and mess halls, operating rooms, laboratories, x-ray and dental departments, corpsmen's and nurses' quarters, garage and maintenance buildings. Among recreational facilities are basketball and tennis courts, horseshoe pits and a hall for indoor sports.

Rear Admiral Carleton H Wright, commandant of the 12th Naval District, was principal speaker at the commissioning ceremonies. Rear Admiral Edgar L Woods, Pacific Coast inspector of medical department activities and Rear Admiral Daniel Hunt, district medical officer, also participated in the

ceremonies. Capt Gerald W Smith, Navy Medical Corps, is commandant.

Virtually all Navy and Marine Corps casualties returning from the Pacific will be received at the new hospital. Ambulances will meet hospital ships and transports. Treatment will supplement that given at the front aboard hospital ships and at base and fleet hospitals. The new installation will also serve to train medical officers, hospital corpsmen and nurses.

## NAVY AWARDS AND COMMENDATIONS

## Captain Frederick C Greaves

Capt Frederick C Greaves, formerly of Villesea, Iowa has been awarded a Gold Star in lieu of a second Bronze Star Medal. The citation accompanying the award read "For distinguishing himself by meritorious services as medical officer on the staff of a major naval task force commander prior to and during the amphibious invasion of southern France in August 1944. Captain Greaves, exercising professional skill to a high degree, developed sound and workable casualty evacuation plans setting up procedures by which casualties were expeditiously cleared from the assault beaches and evacuated to base hospitals. His able and thorough efforts in supervising the work of fitting out landing craft as hospital carriers, in improving medical facilities in combat loaders and in coordinating the scheduling of hospital ships to and from the assault area contributed materially to the effective and prompt manner in which all army and naval casualties were handled during the Allied invasion of southern France. The extraordinary skill, sound judgment and outstanding devotion to duty displayed by Captain Greaves reflected credit on himself and the naval service." Dr Greaves graduated from the State University of Iowa College of Medicine, Iowa City, in 1920 and entered the service May 26, 1923.

## MISCELLANEOUS

HOSPITALS NEEDING INTERNS  
AND RESIDENTS

The following hospitals have indicated to the Council on Medical Education and Hospitals that they have not completed their house staff quota allotted by the Procurement and Assignment Service.

(Continuation of list in THE JOURNAL December 16, page 1035)

## CALIFORNIA

Permanente Foundation Hospital, Oakland. Capacity 136 admissions, 3,693. Dr Sidney R Garfield, Superintendent (interns July 1945).

## NEW YORK

Crouse-Ingling Hospital, Syracuse. Capacity 245 admissions, 7,035. Miss Dorothy Pellenz, Assistant Superintendent (interns).

## OKLAHOMA

St. Anthony's Hospital, Oklahoma City. Capacity, 450 admissions, 13,017. Sister M. Nechtildis, R.N., Superintendent (2 interns, 1 resident—orthopedics).

## VIRGINIA

Grace Hospital, Richmond. Capacity 100 admissions, 4,135. Mr R. H. Thomas, Managing Director (2 residents—mixed).

## WASHINGTON

Pierce County Hospital, Tacoma. Capacity 239 admissions, 3,032. Dr Burton A. Brown, Administrator (3 interns, July 1, 1945).

WARTIME GRADUATE MEDICAL  
MEETINGS

The following subjects and speakers for Wartime Graduate Medical Meetings have just been announced.

Mayo General Hospital, Galesburg, Ill. Plexus and Peripheral Nerve Injuries. Major Frank A. Mayfield, January 3.

Camp Ellis, Illinois. Endocrinology, Dr Willard O. Thompson, January 3.

Chanute Field, Rantoul, Ill. Heart Disease and Allied Conditions, Drs. Newell C. Gilbert and George Karl Fenn, January 3.

Vaughan General Hospital, Maywood, Ill. Malignancies in the Army Age Group. Medical X-Ray and Surgical Diagnosis and Treatment, Drs. Max Cutler and George J. Rukstien, January 3.

Gardner General Hospital, Chicago. Laboratory Diagnosis and Its Relationship to Medical and Surgical Treatment, Drs. William S. Hoffman and Steven O. Schwartz, January 3.

Fort Sheridan, Ill. Brain and Spinal Cord Injuries, Drs. Adrien H. P. E. Verbruggen and Paul C. Bucy, January 3.

## Society Proceedings

## COMING MEETINGS

Annual Congress on Industrial Health, Chicago, Feb. 13-15. Dr. Carl M. Peterson, 535 N. Dearborn St., Chicago, Secretary.

Annual Congress on Medical Education and Licensure, Chicago, Feb. 12-13. Dr. Victor Johnson, 535 N. Dearborn St., Chicago, Secretary.

Annual Forum on Allergy, Pittsburgh, January 20-21. Dr. Jonathan Forman, 926 Bryden Road, Columbus, Ohio, Director.

Eastern Section, American Laryngological, Rhinological and Otolological Society, Philadelphia, January 12. Dr. Oram R. Kline, 414 Cooper St., Camden, N. J., Chairman.

Middle Section, American Laryngological, Rhinological and Otolological Society, Indianapolis, January 17. Dr. Carl H. McCaskey, 608 Guaranty Bldg., Indianapolis, Chairman.

Society of Surgeons of New Jersey, Jersey City, January 31. Dr. Walter B. Mount, 21 Plymouth St., Montclair, N. J., Secretary.

Southern Section, American Laryngological, Rhinological and Otolological Society, Charlotte, N. C., January 15. Dr. Verling K. Hart, 106 W. 7th St., Charlotte, N. C., Chairman.

Western Section, American Laryngological, Rhinological and Otolological Society, Los Angeles, January 27-28. Dr. Aubrey G. Rawlins, 384 Post St., San Francisco, Chairman.

## Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS EDUCATION AND PUBLIC HEALTH)

### CALIFORNIA

**Edward Kupka Named to New Position**—Dr Edward Kupka, Los Angeles, recently chief of the bureau of tuberculosis of the California State Department of Public Health has been elected medical director of the La Vina Sanatorium, La Vina, and the Hastings Foundation for Tuberculosis Research, Pasadena, to succeed Dr Carl R Howson, who resigned, effective January 1, to devote his full time to private practice. The foundation is currently erecting the Charles Cook Hastings Home, which will house its sanatorium and research functions on ground adjacent to the La Vina Sanatorium in the foothills north of Pasadena (THE JOURNAL, March 25, p 937 and May 23, 1942, p 356).

**Auxiliary Holds Fair for Physicians' Aid**—On December 8 the Woman's Auxiliary to the Los Angeles County Medical Association sponsored a fair in the ballroom of the Elks' Club, Los Angeles, for the benefit of the Los Angeles County Physicians' Aid Association. Edmund Lowe acted as master of ceremonies, and featured guests included Edgar Bergen. Members of the Los Angeles County Medical Association volunteered their services, and the entertainers included Dr Rudi Lederer as a pantomimist. A "Century Dinner" preceded the fair, which marked the opening of the aid association's list to contributions from lay persons in its campaign to raise \$100,000, one fifth of the amount ultimately planned.

**Postgraduate Symposium**—The Los Angeles Heart Association presented its fourteenth annual postgraduate symposium on heart disease December 6-7, at the Los Angeles County Medical Association. The guest speakers included:

- Dr Arthur C DeGraff, New York: Uses and Abuses of Mercurial Diuretics
- Capt William H Leake (MC): Rheumatic Fever Problem in the Navy
- Lieut Comdr George C Griffith (MC): Clinical Aspects and Treatment of Rheumatic Fever
- Lieut Comdr Robert W Huntington (MC): Current Concepts of Pathogenesis as Illustrated by Pathologic Changes in Rheumatic Fever
- Lieut Hugh R Butt (MC): Physiologic Effect of Sodium Salicylate in the Human with Particular Reference to the Prothrombin Level in the Blood and the Hepatic Parenchyma

The annual dinner was addressed by Dr DeGraff on "Present Status of Digitalis and the Cardiac Glucosides in the Treatment of Congestive Heart Failure."

### CONNECTICUT

**Industrial Health Conference**—On December 14 an industrial health conference was held at the Hotel Taft, New Haven, under the auspices of the committee on industrial health and safety of the Manufacturers' Association of Connecticut and the committee on industrial health of the Connecticut State Medical Society. Among the speakers were Dr Martin I Hall Bristol, Dr Philip J Moorad, New Britain and Carl Schedler, director of industrial relations, Torrington Company Torrington, who participated in a panel discussion on "The Physically and Mentally Handicapped Worker." Edward Chester, supervisor, Vocational Rehabilitation, Connecticut State Department of Education, Hartford and Stanwood L Hanson, assistant vice president, Liberty Mutual Insurance Company Boston presented a panel discussion on rehabilitation services and William H Henrick, Travelers Insurance Company, Hartford, and Allen L Coleman, chief industrial hygienist, Bureau of Industrial Hygiene, Connecticut Department of Health Hartford, one on "Safeguarding the Industrial Worker." Dr Creighton Barker, New Haven, secretary Connecticut State Medical Society, was toastmaster at a dinner at which Governor Raymond E Baldwin and Alfred C Fuller Hartford, president, Manufacturers' Association of Connecticut spoke and Col Anthony J Lanza, M C, discussed "Postwar Development of Industrial Health Services."

### DELAWARE

**Society News**—Dr Emory Burnett, professor of clinical surgery, Temple University School of Medicine, Philadelphia, addressed the New Castle County Medical Society in Wilmington November 21, on "Modern Thoracic Surgery in Civilian Practice."

### FLORIDA

**Joint Meeting on the Heart**—On November 7 the Miami Heart Association and the Dade County Medical Association held a joint meeting at the James M Jackson Memorial Hospital, Miami, to hear the following speakers:

- Dr Maurice A Kugel, Miami Beach: Acute Coronary Occlusion and Myocardial Infarction Without Pain
- Lieut Col Gilbert H Marquardt and Capt Julian S Butterworth, M C: Coronary Disease in Young Adults
- Drs Edward Sterling Nichol and Samuel W Page, Miami: Use of Dicumaryl in Acute Coronary Occlusion

### GEORGIA

**University News**—Frederick Stearns and Company has made a grant of \$1,800 to establish for the coming year at the University of Georgia School of Medicine, Augusta, a fellowship in pharmacology for the investigation of uterine antispasmodics. The chancellor and board of regents of the university have provided funds for creating additional clinical departments for the eye, ear, nose and throat and plastic surgery.

### ILLINOIS

**Hospital News**—Ground was broken for a new hospital building to be erected as an addition to the Presbyterian Home, Evanston. The new wing will cost around \$400,000, and the WPB has granted all necessary priorities for the work.

### CHICAGO

**University News**—Dr Rafael Mendez, formerly instructor in pharmacotherapy, Harvard Medical School, Boston, has been promoted to associate professor and appointed acting chairman of the department of pharmacology at Loyola University School of Medicine, effective January 1. He fills the vacancy that occurred when Dr Amedeo S Marrazzi went to Wayne University College of Medicine, Detroit (THE JOURNAL, October 7, p 376).

### LOUISIANA

**Personal**—Henry Laurens, Ph D, has resigned as professor of physiology at Tulane University of Louisiana School of Medicine, New Orleans.

**Medical Society Plans Business Meeting in 1945**—At a meeting of the executive committee of the Louisiana State Medical Society on November 11 it was decided that a one day business session of the house of delegates will be held in New Orleans April 13. A scientific session is not planned.

### MARYLAND

**Personal**—Mrs Florence J Neely, B A, has been appointed chief of the newly organized division of nutrition in the bureau of food control of the Baltimore City Health Department effective October 30.

**Society News**—Dr James Howard Means, Jackson professor of clinical medicine, Harvard Medical School, Boston, addressed the annual meeting of the Baltimore City Medical Society, December 8, on "Hyperophthalmopathic Graves Disease."

### MICHIGAN

**Fellowships in Pharmacology**—The department of pharmacology of Wayne University College of Medicine, Detroit, announces that two teaching fellowships are immediately available for students who wish to obtain the master of science degree in pharmacology. The fellowships carry a yearly stipend of \$1,424 apiece. Address application and inquiries to Dr Amedeo S Marrazzi, professor and chairman of the department of pharmacology, 1512 St Antoine, Detroit 26.

**Personal**—Merrill C Hart, Sc D, has been appointed a member of the board of directors vice president and director of research of the Upjohn Company, Kalamazoo, to succeed Frederick W Hcyl, Sc D, effective December 1.—Dr George D Woodward, Jackson, psychiatrist at the Southern Michigan Prison Hospital has been appointed superintendent of the new branch mental hospital at Sault Ste Marie, where the first patients will be installed soon. The new appointment will be effective January 1.—Dr George M Livingston, Detroit has been given honorary membership in the Wayne County Medical Society.

**Special Society Elections**—Dr David Littlejohn, director of the Wayne County Health Department, was chosen president-elect of the Michigan Public Health Association during its meeting in Grand Rapids, November 8-10. Nathan Sinai, DPH, Ann Arbor, was installed as president. Other officers include Pearl L Kendrick, Sc D, director of the western Michigan Division Laboratory state department of

health, Grand Rapids vice president and Marjorie Delavan, Lansing, director of the bureau of education of the state department of health, secretary-treasurer—Dr John J. Pollack was recently chosen president of the Detroit Pediatric Society, Dr Philip J. Howard is secretary.

**New Community Hospital Opened**—On December 15 the People's Community Hospital, Western Wayne County, was scheduled to be formally opened. The project is a realization of a plan to make available beds at the Eloise Hospital and Infirmary, Eloise, for patients of private physicians. The three story building has been leased from the county for the duration of the war and six months thereafter. Of the 71 beds, which double the previous capacity, 25 are for obstetric and 46 for general purposes. There are 33 bassinets, 2 delivery rooms, 2 nurseries, 1 isolation nursery and 1 isolation bed for mothers. The project is one sponsored by the Wayne County Medical Society. The cost was about \$125,000 for construction and \$36,000 for equipment. \$15,000 was contributed by the People's Community Hospital in voluntary contributions and the remainder was borne by the federal government on approval of the federal works agency. The People's Community Hospital is a nonprofit Michigan corporation incorporated Jan. 6, 1943 to "construct, maintain and conduct a hospital." The project originated among the medical profession of western Wayne County when conditions became acute two to three years ago. The corporation plans after the war to construct a major hospital near the vicinity of Wayne, which is the center of the district to be served, and to construct smaller hospitals for minor procedures and convalescence in the various thickly populated communities of the general area (THE JOURNAL, May 27, p. 295).

### NEW YORK

**Changes in Health Officers**—Dr Joseph H. Kinnaman, Ponca City, Okla., director of the Kay County Health Department of Oklahoma, has been appointed deputy commissioner of health of Nassau County, succeeding Dr William H. Runcie, Freeport who retired last April.

**Human Death from Rabies**—The first case of human rabies to occur in upstate New York since 1930 was reported recently in Sheridan, Chautauque County, where canine rabies has existed for the past year, according to *Health News*. The victim, a 60 year old farmer, contracted the illness as the result of having been bitten on August 13 by a rabid dog owned by his family. He died in a Dunkirk hospital, November 9.

### New York City

**Physicians' Home**—A sum of \$5,919.25 was expended for the maintenance of beneficiaries of the Physicians' Home according to the annual financial report of the home which has recently been published for the year Oct. 1, 1943-Sept. 30, 1944.

**Vincent du Vigneaud Awarded Nichols Medal**—Vincent du Vigneaud, Ph.D., professor and head of the department of biochemistry, Cornell University Medical College has been chosen to receive the William H. Nichols Medal of the New York section of the American Chemical Society for his work on biotin. Dr. du Vigneaud received his Ph.D. at the University of Rochester in 1927 and has been identified with Cornell since 1938. His discovery of the chemical properties of biotin was announced at a meeting of the New York section Oct. 9, 1942, and in 1943 the synthesis of biotin was achieved in the laboratories of Merck and Company, Rahway, N. J.

**Club for Patients Who Have Lost Larynx**—A club composed of 100 men and women who have had their larynx or speech organs removed has been organized at the National Hospital for Speech Disorders. The name of the club is Anamilo, Greek for "I speak again." A special committee of the club has been formed to call on the request of the attending surgeon, on patients in the metropolitan area who face removal of the larynx or have just had the operation. A patient who has had his larynx removed must learn to speak again, either by using a mechanical device comprising an artificial larynx or by substituting an esophageal voice.

**Bacteriologist Honored by Ophthalmologists**—Edgar B. Burchell, D.Sc., bacteriologist and attending serologist of the New York Eye and Ear Infirmary, was made an honorary fellow in the American Academy of Ophthalmology and Otolaryngology at special ceremonies December 14. According to the New York *Herald Tribune*, Mr. Burchell is the first person without an M.D. degree to be so honored by the academy. The *Herald Tribune* states that Mr. Burchell has never had more formal education than that supplied in the primary

grades of the New York City primary schools but has been called doctor since 1936, when he received the honorary degree of doctor of science from Roanoke College, Salem, Va. In 1931, when the king of Siam came to the United States to have a cataract removed by the late Dr. John M. Wheeler, Mr. Burchell was called in as consulting bacteriologist. Dr. William L. Benedict of the Mayo Clinic, Rochester, Minn., conferred the honorary membership on Mr. Burchell. Dr. Bernard Samuels, pathologist, presented the award and Dr. Clyde E. McDannald, senior surgeon in the eye department was toastmaster.

**Morrison Prizes Awarded**—The two annual A. Cressy Morrison Prizes of \$200 each were presented December 14 to Eleanor G. Alexander-Jackson, Ph.D., member, research department of public health and preventive medicine, Cornell University Medical College, and Alexander Sandow, Ph.D., assistant professor of biology, Washington Square College, New York University during the one hundred and twenty-seventh annual meeting of the New York Academy of Science at the American Museum of Natural History. The New York *Times* reported that this is the first time in the history of the prizes that one of them went to a woman scientist. Dr. Alexander-Jackson was chosen for her work in discovering a "hitherto unobserved form of the germ causing tuberculosis" revealing the existence of what is known as the "zooglyphic" form of tubercle bacillus. Dr. Sandow was selected for his paper reporting studies giving new light on the mechanism of muscular contraction. The Morrison Prizes are awarded "for the two most acceptable papers in any field of science, within the scope of the academy and its affiliated societies." Walter H. Bucher, Ph.D., was elected president of the academy of science. Dr. Florence R. Sabin, member emerita of the Rockefeller Institute for Medical Research, was elected an honorary life member, the first woman scientist to be thus honored by the academy.

### OHIO

**Physicians in Congress**—Dr. Frederick C. Smith, Marion, was reelected to the U. S. Congress by the voters of the Eighth Ohio Congressional District on November 7. Two physician-members of the Ohio House of Representatives, Dr. Errett LeFever, Gloucester, and Dr. Charles A. Craig, Cambridge, also were reelected. Dr. LeFever, unopposed this time, will be representing Athens County for the sixth time in the legislature. He has also served twelve years in the state senate. Dr. Howard V. Dutrow, Dayton, was unsuccessful in his campaign to become one of Montgomery County's representatives in the legislature. All four candidates are Republicans.

**Hospital Tuberculosis Program**—Eight hospitals in Cleveland will cooperate in a program to x-ray the chests of all employees and patients, beginning in January under the auspices of the Cleveland Hospital Council. According to *Ohio Public Health*, this is the first time for a group of hospitals to unite for such a purpose. The demonstration has been made possible through a gift of \$15,000 from the Cornelia W. Beardslee Fund of the Cleveland Clinic Foundation with the hospitals supplementing grants from this fund with money of their own to defray the cost. The participating hospitals are St. Vincent Charity City, University St. Alexis, Fairview Park, Huron Road, St. Luke's and Lutheran. Under the new program it is estimated that roentgenograms will be taken of about 100,000 persons.

**Cincinnati University and Jewish Hospital Cooperate in Psychiatric Program**—Dr. John Romano, professor of psychiatry at the University of Cincinnati College of Medicine, Cincinnati, will become director and chief of staff of a new department of psychiatry at the Jewish Hospital to be set up under the recent agreement with the medical school and the hospital. The agreement conforms with a four-point policy recently adopted by the university board to govern mutually advantageous affiliations between the college of medicine and local private hospitals, and the Jewish Hospital is the first to avail itself of the new policy. The hospital's agreement carries certain stipulations as to the management of the department, the choice of director and other members of the staff, emphasizing that the department shall be established and maintained by the hospital with not less than 25 per cent of free beds and adequate offices for the staff, interview rooms, laboratories and other facilities. The agreement also outlines the stipulations for the affiliation to the hospital and the university.

**Dittrick Museum of Cultural and Historical Medicine**—A special feature of the celebration of the fiftieth anniversary of the Cleveland Medical Library Association, November 26-27 (THE JOURNAL, November 4, p. 649) was the announcement that the Museum of Historical Medicine will in the future



be known as the Ditttrick Museum of Cultural and Historical Medicine in honor of Dr Howard Ditttrick, director of the museum and president of the library association, and Mrs Ditttrick, who have worked untiringly in developing the library's museum. At the jubilee dinner Dr Ditttrick was presented with an engrossed and illuminated scroll honoring him for his many years' service to the association, which has grown from its inception from a membership of about 80, an endowment fund of \$2,000 and a handful of books to one with a membership of about 1,300, endowments of more than \$600,000 a book collection of more than 62,000 and its own library building. Dr Ditttrick became curator of the museum in 1928 and in 1935 director. In 1943 he was presented with the Distinguished Service Award of the Academy of Medicine of Cleveland.

## PENNSYLVANIA

### Philadelphia

**Fifty Years of Medicine**—On January 9 the Medical Society of the State of Pennsylvania will honor the following members of the Philadelphia County Medical Society who have completed fifty years in the practice of medicine:

|                         |                          |
|-------------------------|--------------------------|
| Dr William N. Bradley   | Dr Frederic Hurst Maier  |
| Dr Charles A. E. Codman | Dr Archibald L. McKinley |
| Dr Winslow Drummond     | Dr John D. McLean        |
| Dr William B. Giggles   | Dr Gerald D. O'Farrell   |
| Dr William O. Hermance  | Dr George A. MacElree    |
| Dr William F. Horn      | (posthumously)           |

The guests will be entertained at a luncheon arranged by the first counselor district of the state society including the woman's auxiliary.

## TENNESSEE

**Frank Whitacre Joins Tennessee Faculty**—Dr Frank E. Whitacre, who was in Manila on Pearl Harbor Day and who finally returned to the United States on the *Gripsholm* has been appointed associate professor of obstetrics and gynecology at the University of Tennessee College of Medicine Memphis, effective January 1. He has been given a full time appointment. Dr Whitacre formerly was instructor in obstetrics of a postgraduate committee at Tennessee, later going back to Peiping Union Medical College Peking. He was on his way back to America when he was caught in Manila Dec. 7, 1941.

**Edward Turner Resigns at Meharry**—Dr Edward L. Turner, who joined Meharry Medical College Nashville in 1936 as professor of medicine and became president of the college in 1938, has resigned his connection with the college to specialize in internal medicine at Bradford, Pa. effective January 1. M. Don Clawson, D.D.S., director of dental education at the Meharry Medical College since May 1942, has been named president to succeed Dr Turner. Other changes at the college include the appointment of Dr Murray C. Brown, Nashville, director of the local venereal disease control program who has been appointed director of medical education and will hold a professorship in medicine. Dr Turner graduated at the University of Pennsylvania School of Medicine, Philadelphia, in 1928, at the University of Chicago where he had received his M.S. degree in 1923 and at the American University of Beirut School of Medicine, Syria. Dr Brown graduated at the University of Virginia Department of Medicine Charlottesville in 1938.

## VIRGINIA

**Hospital Association Changes Name**—The corporate name of the Richmond Hospital Association has been changed to the Virginia Hospital Service Association, according to the *Virginia Medical Monthly*. The change was made because the Blue Cross Plan for Hospital Care which started in 1935 for Richmond only is now serving seventy counties in central Virginia.

### WEST VIRGINIA

**Dr Hedrick Goes to Congress**—Dr Erland H. Hedrick, Beckley, has resigned as superintendent of the Pinecrest Sanatorium effective January 1 to take his seat in Congress, Washington, D. C., January 3. Dr Hedrick was elected by a majority exceeding 24,000 votes in the sixth district of West Virginia. He will retain his offices in Beckley, with a relief physician taking care of his practice during his absence.

## WISCONSIN

**Postgraduate Medical Courses**—The University of Wisconsin Medical School, Madison, announces plans for refresher courses and postgraduate training for physicians returning from service and for those in civilian practice. Four plans have been set up: a refresher course of twelve weeks' duration, a two to six months course for specialists, residencies and basic science

training. The refresher course for general practitioners covers medicine, neurology and psychiatry, pediatrics, general surgery and allied specialties and obstetrics and gynecology. The course for specialists is open only to those who have already had training in their specialty and is designed as a review and refresher course in the various specialties. The division for residencies is for those who wish to acquire specialty training for certification, three year residencies in all of the specialties will be available. It is the plan to increase the number of residencies from a prewar number of approximately forty to approximately sixty. As in the past, in basic science training the preclinical departments are open to properly qualified men and women who wish to work for one year or more on any project in which they are interested. Additional information may be obtained from the dean of the medical school, University of Wisconsin, Madison.

**Supreme Court Upholds Board of Health's Demurrer in Osteopath Case**—In a decision rendered on October 10, the Wisconsin Supreme Court upheld the Wisconsin State Board of Health's demurrer to a suit attacking validity of excluding osteopaths from participation in the Emergency Maternal and Infant Care program, administered under the general direction of the Children's Bureau in Washington. Three osteopaths, representing 130 of them in the state, started the action after the board of health had prepared a plan for distributing the funds which excluded osteopaths from participation. The plan submitted to the Children's Bureau by the board of health limited participation to those licensed to practice medicine and surgery, based on a decision of the attorney general of Wisconsin that the board could by regulation define the qualifications of those permitted in the operation of the plan. The osteopaths attacked the board of health on the basis that its regulation imposed an arbitrary discrimination against osteopaths and was an exercise of a power not placed in the board in either state or federal statutes. The osteopaths asked for a declaratory judgment determining the validity of the rule and state plan particularly as it affected participation by the plaintiffs and other osteopaths. The board of health demurred in the circuit court on the ground that the complaint did not state sufficient facts to constitute a cause of action against it. The demurrer was overruled by the lower court and as a result the board of health appealed the case to the supreme court. In a decision written by Justice Joseph Martin the court concluded that the allegations of the complaint as well as the relief demanded, were solely concerned with the proper distribution of federal funds by a federal administrative board, through the Wisconsin State Board of Health acting as its agent. The several appropriations made by Congress to carry out the E. M. I. C. program were all made to the United States Department of Labor, Children's Bureau, which bureau allots the funds to the several states to carry out the program according to plans approved by the federal bureau. "That puts this controversy out of our reach," declared Justice Martin. "No facts are alleged in the complaint to the effect that any osteopath has been deprived of the right to practice obstetrics or that any such action has been threatened. Neither is any declaration demanded along this direction. The pleadings, therefore, state no cause of action for declaratory relief on this point, and it hardly needs to be said that this determination neither forecloses nor predetermines the merits of such an action."

## GENERAL

**Eric Johnston Named to Cancer Society**—Eric A. Johnston, president of the U. S. Chamber of Commerce, has been elected chairman of the newly created executive council of the American Cancer Society and national chairman of the society's fund raising campaign next April.

**Mental Hygiene Officers**—Eugene Meyer, LL.D., editor and publisher of the *Washington Post* was elected president of the National Committee for Mental Hygiene at a meeting of its board of directors in New York, December 14. Mr. Meyer is the first layman to be chosen president of the National Committee in the thirty-four years since it was founded by the late Clifford W. Beers. Other officers include Dr. Frank Fremont-Smith, New York; Col. Leonard G. Rowntree, M. C., James R. Angell, LL.D., New York, and Dr. William L. Russell, New York, vice presidents; Dr. Adolf Meyer, Baltimore, honorary president; Mrs. Albert D. Lasker, New York, secretary; and Henry Pelham Robbins, New York, treasurer. G. Howland Shaw, LL.D., who retired recently as assistant secretary of state, was elected president of the American Foundation for Mental Hygiene at its sixteenth annual meeting, which took place during the luncheon session of the national committee. Mr. Shaw succeeds the late Dr. Bernard Sachs, New York.



**Federation for Clinical Research**—Dr Robert D Taylor, Indianapolis was chosen president of the midwestern section of the American Federation for Clinical Research during its annual meeting in Chicago, November 2, and Dr Frederick W Hoffbauer Minneapolis, secretary. Among the speakers at this meeting were

Dr Hoffbauer Serial Peritoneoscopic Examinations for the Study of Experimental Liver Damage in Dogs  
Drs Walter H Sheldon and Abner Golden Atlanta Lesions of the Tubular Epithelium in Rabbit Kidneys Induced by Excessive Doses of Calcium Gluconate.  
Drs Edward Massie and Anibal Roberto Valle, St. Louis Cardiac Arrhythmias Following Total Pneumectomy  
Drs John S LaDue and Sandy B Carter Jr New Orleans Preliminary Study of the Efficacy of Maintenance Doses of Digitalis in Preventing the Recurrence of Congestive Heart Failure  
Drs Charles Neumann Albert D Foster Jr and Emory A Rovenstine New York Peripheral Circulatory Response to Hemorrhage and Shock

**Special Society Elections**—Dr Mark F Boyd, Tallahassee, Fla., was chosen president of the American Academy of Tropical Medicine at its annual meeting in St. Louis, November 15. Other officers include Dr George W McCoy, New Orleans, vice president, Ernest Carroll Faust Ph.D. New Orleans, secretary and Col Thomas T Mackie M.C., treasurer—Dr Alvis E Greer, Houston, Texas, was chosen president of the southern chapter of the American College of Chest Physicians at its meeting in St. Louis, November 13-14. Vice presidents are Drs Carl C Aven, Atlanta, Ga., and Paul A Turner, Louisville, Ky. Dr Benjamin L Brock, Waverly Hills, Ky. was reelected secretary-treasurer—Major General Warren F Draper, on loan to the Army from the U.S. Public Health Service, was chosen president-elect of the Association of Military Surgeons of the United States during its annual meeting November 4 and Dr Iryn Abell, Louisville, Ky., was installed as president. Col James M Phalen, M.C., retired, Army Medical Museum Washington 25, D.C., is the secretary-treasurer. The 1945 session will be held in Detroit in October.

**Mead Johnson Awards**—Dr Fuller Albright Harvard Medical School, Boston received one of the Mead Johnson Awards presented through the American Academy of Pediatrics at its meeting in St. Louis in November in recognition of his studies on the skeletal and metabolic disturbances in hyperparathyroidism, hypoparathyroidism, rickets and other diseases affecting bone formation and the processes of calcification. The title of Dr Albright's address at the meeting was "Classification of the Causes of Osteomalacia in the United States." The second award in this group was presented to Dr Josef Warkany, Children's Hospital, Cincinnati, for his experiments on "animals in which he succeeded in producing congenital malformations in the offspring through the creation of specific vitamin deficiencies in the diet of the mother." The subject of Dr Warkany's address was "Congenital Malformations Induced by Maternal Nutritional Deficiency." At the annual meeting of the academy Dr Jay I Durand, Seattle was elected vice president (president-elect) and Dr Joseph S Wall Washington D.C., was inducted into the presidency. Dr Clifford G Grulee Evanston, Ill., was reelected secretary-treasurer.

**Postwar Anti-Leprosy Program**—At a luncheon sponsored by the American Mission to Lepers at the University Club New York, plans were announced concerning the postwar antileprosy program, involving the expenditure of \$500,000 over a five year period to launch a planned and concerted attack on the disease. According to an announcement from the American Mission to Lepers the educational and training aspects of the problem concern every religious denomination and health or social agency that comes into contact with any of the millions of leprosy victims throughout the world. Among the speakers at the luncheon were William Jay Schneefelch Ph.D., Emory Ross, D.D., Dr Eugene R Kellersberger M.D. of New York, and Dr Jean Alonzo Curran, Brooklyn. The program will include the establishment of training centers for native Christian personnel in India, China, Burma, Belgian Congo, Ethiopia, Korea, Thailand and Liberia. The centers will be located wherever possible near leprosariums already in existence or awaiting construction. The trainees will receive thorough instruction on the subject of leprosy and will then move out into the towns and villages to carry on a program of health education, personal and community hygiene, medical care and treatment among the population. These workers comprising a steadily growing army to fight the disease will be drawn from schools and colleges, from among patients in whom the disease is arrested and from among healthy children or infected parents. They will be given scholarships and salaries. The medical consultants for the program appointed to date are Dr Harold W Brown, professor of parasitology, Columbia University College of Physicians and Surgeons New

York, Dr Jean Alonzo Curran Brooklyn, Dr Howard Fox New York, Dr Victor G Heiser Bantam Conn medical consultant, National Association of Manufacturers formerly president, International Leprosy Association Dr George W McCoy, New Orleans professor of preventive medicine and public health, Louisiana State University School of Medicine Janet Welch Mackie of the Health and Sanitation Division Office of Coordinator of Inter-American Affairs, Dr Henry E Meleney, New York, and Col Richard P Strong M.C. adviser on tropical diseases Army Medical Center Washington D.C. The sum of \$450,000 is considered the minimum needed for the establishment and maintenance of the training centers for a period of five years. Increasing support from within the respective countries will be sought with the expectation that the work will eventually become self supporting and indigenous. The remaining \$50,000 will be used for a campaign of mass education through audiovisual materials adapted to the special needs of each area. Each project will be under the sponsorship of an established church agency. The denominations cooperating directly or indirectly include the Church of the Brethren, Congregational Christian Churches, Disciples of Christ Evangelical and Reformed Church Lutheran Church, Mennonites, Methodist Church, Northern Baptist Convention Presbyterian Church in the United States of America, Protestant Episcopal Church Reformed Church in America Society of Friends, United Church of Canada and United Presbyterian Church of North America.

**Annual Forum on Allergy**—The seventh annual forum on allergy will be held at the Hotel Wilham Penn, Pittsburgh January 20-21. Among the speakers will be

Dr Ethan Allan Brown Boston A Review of the Literature on Allergy for 1944  
Dr Samuel M Feinberg Chicago Factors Predisposing Toward Allergic Diseases  
Dr Oscar Swineford Jr University Va Immunology of Pollinosis  
Dr Louis Tuft Philadelphia Bronchial Asthma A Critical Review  
Dr William F Petersen Chicago Responses of the Patient  
Dr Lawrence G Reinhauser Pittsburgh Differential Diagnosis of Allergic Dermatoses  
Dr Frederick M Jacob Pittsburgh Topical Treatment of Dermatitis  
Dr Harvey E Thorpe Pittsburgh Allergy of the Eye  
Dr John H Mitchell and Rev Fr Charles Curren Ph.D. Columbus Ohio Nondirective Psychotherapy  
Dr Mortimer Cohen Pittsburgh Pathology of Asthma  
Dr Julius M Rogoff Pittsburgh Adrenal Function in Relation to Allergy  
Dr George L Waldbott Detroit How to Avoid Emergencies in the Office While Attending Allergic Patients

The fifth annual forum lecture will be delivered Sunday afternoon by Dr Milton J Rosenau Charles Wilder professor of preventive medicine and hygiene emeritus, Harvard Medical School Boston, and professor of epidemiology University of North Carolina School of Medicine Chapel Hill on 'Serenity in Terms of Mental Allergy'. The forum will present its fifth gold medal for outstanding contribution to the development of knowledge of clinical allergy to Dr Rosenau on this occasion. There will be a forum on 'What Do We Know About Allergy to Foods?' with Drs Brown, Herbert F Rinkel and Orval R Withers, Kansas City, Mo., Charles H Evermann, St. Louis Karl D Figley, Toledo Milton B Cohen Cleveland and Dr Tuft. A feature of the meeting will be the announcement of the recipients of the Marcelle Award (THE JOURNAL, October 28 p 580). On Friday evening January 19 the Association of Allergists for Microbiological Investigation will also hold a meeting to review research and clinical experience. Six study groups have been planned for the forum's sessions with the following participants

Dr L Dell Henry Ann Arbor Mich Atopic Eczema in Childhood  
Dr Robert Chobot New York Management of Asthma in Children  
Dr Hal M Davison Atlanta Ga Food Allergy  
Dr French K Hansel St Louis Management of Nonseasonal Allergic Coryza  
Dr Eyeremann Allergic Headaches  
Dr J Warrick Thomas Richmond Va Ocular Allergy  
Roger P Wodehouse Ph.D. Lerna N.J. Pollens  
Dr Karl D Way Akron Ohio and Harry Iker Chicago Some Common Allergens and Where to Look for Them  
Dr George E Rockwell Cincinnati Bacterial Allergy  
Dr Frank F A Rawling Ann Arbor Mich Psychogenic Factors in Relation to Allergic Manifestations  
Dr Theron G Randolph Chicago Food and Drug Allergy Diagnostic Changes in Total Leukocytes and Eosinophils Following Trial Injection  
Dr Figley Some Common Allergens and Where to Look for Them  
Dr Samuel J Levin Detroit Allergic Dermatoses  
Dr Cohen Psychosomatic Aspects of the Allergic Patient  
Dr Frederick W Wittich Minneapolis Immunologic Considerations in Allergy  
Dr Leo H Cripe Pittsburgh Bronchial Asthma—Diagnostic Pitfalls and Their Relation to Therapy  
Dr Harry L Rogers Philadelphia Iapamine Vitamin C Aminophyllin Penicillin and Ultraviolet Radiation in the Treatment of Allergic Diseases  
Dr Homer F Prince Houston Texas Medical Economics as Applied to the Allergic Patient

## Foreign Letters

### LONDON

(From Our Regular Correspondent)

Nov 25, 1944

#### New Unit for Plastic Surgery

A permanent practical memorial to the British War Relief Society of America is to take the form of a new wing of the Queen Victoria Hospital, East Grinstead, for plastic surgery treatment of the injuries of war. The work will continue in peacetime for those who suffer industrial injury. A year ago, to mark its fourth anniversary, the society expressed a desire to build and equip what will be both an instructional center and a modern operating clinic. Mr. Bertram Cruger, the chief representative of the society in this country, had seen for himself at the hospital what was literally the remaking—physical and mental—of British and Allied airmen disfigured by war injuries. Great work in plastic rehabilitation has been accomplished at this hospital. For three years a policy of expansion was pursued under the stress of a flood of patients. In 1942 it was decided to construct a thoroughly modern surgical unit at a cost of \$150,000. It was decided that four operating tables housed in separate rooms, with galleries for students, were the minimum required.

The establishment of this unit, the only one in England with promise of a permanent future, will make certain that the stagnant years which followed the last war will not be repeated. But plastic surgery is only part of the battle of restoring the physically disfigured and mentally shocked men to a competitive place in civil life. Occupational therapy is also practiced at the hospital. Badly burned airmen who form a large proportion of the patients are encouraged, often in the earliest stages of their recovery, to try their hand at fashioning small component parts of aircraft. Thus their interest is immediately aroused.

#### The Prevalence of Dental Disease Proposed National Dental Service

Concern at widespread dental disease is expressed in an interim report of the International Committee on Dentistry issued by the Ministry of Health. The committee was appointed by the government to consider how a satisfactory dental service can be provided for the public as part of the proposed National Health Service, how enough dentists can be secured and how research in dental disease can be promoted. The dental condition of the population is found to be bad and the effect on general health bad. On an average 90 per cent of the men and 86 per cent of the women entering the army and auxiliary services have needed dental treatment on enlisting, 13.4 per cent of the men had artificial dentures and a further 10 per cent needed them. At three large ordnance factories a representative number of workers were examined. Only about 1 per cent were dentally fit without dentures. In children the dental condition is also bad. In Cambridge only 9.1 per cent of 5 year old children examined had naturally sound teeth. Of 10,000 Scottish 5 year olds only 1,000 were found free from caries, and on the average seven out of each child's twenty teeth were decayed or missing, about five of these being molars. Among 8,700 Scottish children aged 6-13 examined, the percentage of sound first permanent molars dropped steadily from 82 at the age of 6 to 20 at 13.

The committee, which consisted mainly of leading dentists, unanimously recommended that a comprehensive dental service should form an integral part of the national health service. To preserve the health of the mouth there should be regular inspection and treatment of any incipient defects, which should

be paid for not by the people as patients but by the community as a whole and be promptly available with a minimum of formalities. There should be a general practitioner dental service broadly analogous to the proposed general practitioner medical service. A special effort should be made to improve the teeth of expectant and nursing mothers, children and adolescents. The greater part of the population have no such relation with a dentist as is conveyed by the term "family dentist" and are ill educated and apathetic with regard to the care of the teeth. One difficulty is that there are not enough dentists for the proposed service, and the war has caused a fall in the number of dental students entering the profession to below 300 a year, which is about 150 less than the quota permitted by the Ministry of Labor under the war restrictions.

As it is important that dentists working in the public dental services should have cause for satisfaction, there should be no compulsion to enter it. Any dentist should be free to engage in it either whole time or part time. The proposals are not intended to interfere with the free right of everybody to seek his dental care through private arrangement.

#### Developments at the Royal Society of Medicine

Proposed enlargement of the quarters of the Royal Society of Medicine, which has outgrown its present accommodations, was described in a previous letter. Not only is the society much larger but it is also rendering new services, involving new techniques of providing information. Access to the library is given to any worker in or related to medicine whose need is demonstrated. Cooperation with other libraries is planned under the Central Medical Library Bureau, in which some thirty medical organizations are already interested. An amplic service of information is made possible by the photostat, the book film and the precision enlarger. For the benefit of medical officers overseas, the society has sent out thirteen sets of film reading equipment, including two to the United States, so that microfilms of important articles may be read on the war front. The library's equipment already includes apparatus for the preparation of book films and the photostat service is being augmented by a special camera which can make book films and can also make prints from these in sizes suitable for dispatch to fellows who have no film reading equipment. Medical organizations in liberated countries are being approached with the object of helping them to replenish their libraries and also filling gaps in the society's library.

#### Barbarous Treatment of British Prisoners of War by the Japanese

Sixty British survivors from among 152 prisoners of war rescued by United States naval forces after a Japanese transport had been sunk on its journey from Singapore to Japan have reached this country. Our people are shocked by grim accounts of cruel and callous treatment of prisoners of war by the Japanese. This was described in Parliament by Sir James Grigg, secretary of state for war. He said that there was no longer any doubt about the policy pursued by the Japanese military authorities toward prisoners of war in Burma, Siam, Malaya and the East Indies. But this information does not relate to Hong Kong, Formosa, occupied China, Korea or Japan, where conditions appear to be relatively tolerable, nor does it refer to civilian internees. The great majority of prisoners in Singapore and Java appear to have been moved early in 1942 to Burma and Siam. The Australians were crowded into ships' holds which had been horizontally subdivided so that ceilings were no more than 4 feet high. The prisoners from Britain were sent by rail to Siam so crowded that they could not even lie down during the journey. They were then marched some 80 miles. Subsequent movement in Burma or Siam appears to have been on foot, regardless of distance, weather or the pris-

oners' state of health. The British prisoners were set to work constructing a railway through primitive disease infested jungle over the mountain range between Siam and Burma. The conditions were terrible even for natives of the country. Such accommodation as was provided gave little or no protection against tropical rains or blazing sun. Worn out clothing was not replaced. The only food was a pannikin of rice and half a pint or less of watery stew three times a day. But the work had to go on without respite, whatever the cost in suffering or life. The result was an appalling death rate, of which the lowest estimate was one in five. The one redeeming feature is the high morale maintained by the prisoners. Tribute is particularly paid to the medical officers who were captured, who achieved miracles in looking after the sick and injured despite lack of essential medicines and equipment. The British government has made a strong protest to the Japanese through the protecting power.

#### Use of Quinaquine in Malaria

The resolution of the Board for the Coordination of Malarial Studies that no advantage, and possibly some disadvantage, would accrue to the armed forces if quinine or totaquine was to replace quinaquine (mepacrine, atabrine) for the routine suppression and treatment of malaria has been published (*THE JOURNAL*, August 5, p. 977). This resolution has now been considered in England by the Drug-Prophylaxis and Therapy Subcommittees of the Medical Research Council Committee on Malaria. The various items were discussed, and it was agreed that British experience and the extensive investigations carried out in Australia under the direction of Brig Gen N. Hamilton Fairley led to the same conclusions as those reached in America. It is not possible during wartime to disclose all the extensive investigations on which these official American and British resolutions concerning the relative merits of quinaquine and quinine have been based, but with the return of peace this will probably be done.

#### BRAZIL

(From Our Regular Correspondent)

SÃO PAULO, Oct. 31, 1944

#### Penicillin in the Treatment of Yaws (Spirochetosis)

First results in the treatment of yaws—a spirochetosis like syphilis—are reported by Drs. A. M. da Cunha, Area Leão, Nery Guimarães and Humberto Cardoso of the Instituto Oswaldo Cruz, Mangumhos, Rio de Janeiro. The investigators used penicillin as a new therapeutic agent against the disease. In 7 cases complete disappearance of the external lesions was obtained between the twelfth and the forty-fourth day of treatment and serologic reactions were negative on the sixtieth day in all cases. Observation of the patients is being continued, under immunologic controls, each eight days. The treatment uses only a mean dose of 200 Oxford units each four or six hours. The total dosage has varied from 9,600 to 52,000 units.

#### Megacolon

Brazilian studies on megacolon are not yet well known, even after the publication of a great deal of work in medical magazines. Some authors in South America have pointed out important knowledge obtained by Brazilian researchers on the pathogenesis and etiology of this disease. Some aspects of megacolon were recently reviewed by Dr. Raymundo Britto of Rio de Janeiro, who observed good results in 2 cases treated by the vitamin B<sub>1</sub> therapy. The author presented the following conclusions:

Dolichocolon and megacolon are always associated and can not be separated for clinical therapeutics.

One cannot deny the possibility of maternal avitaminosis producing megacolon.

It is not possible to differentiate congenital megacolon from one that is acquired.

Delayed dolichocolon produces megacolon within time, this perhaps being the first step or the first phase of megacolon.

The Etzel theory of the etiology still stands; Hirschsprung's disease has the same etiopathology as acquired megacolon.

Early diagnosis is necessary, thus allowing treatment of the initial phase—that is, when symptoms are mild.

One case of dolichocolon and 1 of megacolon were cured by vitamin B<sub>1</sub> therapy in high doses and food rich in the B complex vitamins. These cases are clinically, physiologically and anatomically cured.

The cure of megacolon may be obtained by vitamin B<sub>1</sub> when Auerbach's and Meissner's lesion of the plexus has not yet been evident.

It is easier to achieve the cure of megacolon in children than in adults, for with them the lack of vitamins has not lasted sufficiently long for an irreversible lesion of the autonomic nervous system to have developed.

#### For Better Health and Education

*THE JOURNAL* recently published information from Moscow about provisions adopted in Russia to encourage large families. In Brazil there is also a legal measure to support healthy childhood and provide a good education. Some institutions are obliged to pay their workers additional wages, a so-called family salary. Each worker receives his own wage for his occupation, plus \$2.50 for each child. This represents nearly a tenth of the normal base minimum salary established by the government. Thus when a worker has 10 children he receives double wages. This measure has a tendency to be adopted by employers in all industries.

#### A New Leprosarium

A new leprosarium has been opened at Roça Grande, about 12 miles from Belo Horizonte, capital of the state of Minas Gerais. The Roça Grande Leprosarium, which cost about \$100,000, has been outfitted to receive 100 patients. The Brazilian government is cooperating with the states in the construction of a network of leprosariums and preventoriums, one of the main features of the campaign now being waged against leprosy. During the year 1943 thirteen new leprosariums and five new preventoriums for healthy children of leprosy patients were opened. Brazil has about 45,000 patients with this disease, or 100 per hundred thousand of population, a prevalence corresponding roughly to that in Russia.

---

## Marriages

---

HARRIS ALBERT WEISSE, Eagle River, Wis., to Miss Elmer Eells of Milwaukee in Coconut Grove, Fla., November 25.

SYDENHAM BENONI ALEXANDER, Charlotte, N. C., to Miss Frances Huger Allison of Columbia, S. C., October 28.

GUSTAF WALTER CRICKSON JR., Springfield, Mass., to Miss Martha Lake Adams of Norwalk, Conn., September 24.

ALAN CHURCHILL WOODS JR., Baltimore, to Miss Louise Huntington Cole of South Orange, N. J., October 21.

WILLIAM THEARLE STEELE, Augusta, Ga., to Miss Gertrude Roberta Urquhart of Waycross, September 14.

ROY OTTO SCHOLZ, Baltimore, to Miss Pearl Trogon Huffman at Morganton, N. C., October 7.

HENRY C. RICKS JR., Jackson, Miss., to Miss Bettye La Verne Jarvis of Sylacauga, Ala., October 5.

RICHARD ALBERT BAGBY, Richmond, Va., to Miss Frances Ottwell of Cumming, Ga., October 5.

THOMAS CARROLL IDEN, Berryville, Va., to Miss Mae Oglesby Trench of Pulaski, September 26.

SAMUEL CECIL STANTON, Hinsdale, Ill., to Miss Erna Evelyn Koellner of Chicago, December 16.

EDWIN C. SEWARD to Miss Patty Lechner, both of Billings, Mont., in Omaha, September 28.

## Deaths

**Maurice Lamm Blatt** \* Chicago, Rush Medical College, Chicago, 1903, professor of pediatrics at the University of Illinois College of Medicine, professor of diseases of children at the Cook County Post-Graduate School, specialist certified by the American Board of Pediatrics, member, and from 1935 to 1939 chairman for Illinois, American Academy of Pediatrics, in 1934 chairman of the section on diseases of children Illinois State Medical Society, president of the Chicago Pediatric Society, 1927-1928, veteran of the Spanish American War, Philippine Insurrection and World War I, served as lieutenant colonel and executive officer of the 108th medical regiment, Illinois National Guard, from 1926 to 1932, attending physician and director of pediatrics at the West Side Jewish Dispensary from 1902 to 1912, attending dispensary physician at the Chicago Municipal Tuberculosis Sanitarium from 1909 to 1912 and the Winfield Sanitarium for Tuberculosis from 1908 to 1915, attending physician, department of contagious diseases, from 1913 to 1918, later attending physician and head, since 1925, children's division, Cook County Hospital, consulting pediatrician, Illinois Eye and Ear Infirmary and Illinois Masonic Hospital chief of pediatric staff and for many years president of the medical staff, St Vincent's Infant and Maturity Hospital, attending pediatrician, St Joseph's Hospital, consulting pediatrician, Chicago Health Department, director of the Yankton (S. D.) College, died December 10, aged 65 of cerebral hemorrhage

**Condon Carleton McCornack** \* Brigadier General, M. C. U. S. Army, retired Eugene Ore., Jefferson Medical College of Philadelphia, 1904, graduated from the Army Medical School in 1910, General Staff School in 1921 and the Army War College in 1925, honorary graduate of the School of the Line in 1920, entered the medical corps of the U. S. Army as a first lieutenant on April 23, 1910, subsequently advancing through the ranks of lieutenant colonel, colonel and brigadier general, retired May 31 1944 veteran of the Spanish-American War and World War I, instructor at the General Staff School, Leavenworth, Kan. from 1921 to 1924 and at the Army War College, Washington, D. C., from 1925 to 1929, at one time assistant commandant at Carlisle Barracks, Pa., where he had earlier served as instructor at the Medical Field Service School, for four years attached to the general staff in Washington having charge of the budget and legislative planning branch, received the Legion of Merit for 'exceptionally meritorious conduct in the performance of outstanding service' during World War II as surgeon and later as deputy chief of staff of the Fourth Army and the Western Defense Command, died in the Letterman General Hospital, San Francisco, November 5, aged 64, of coronary occlusion

**Charles Langdon Gibson**, New York, Harvard Medical School, Boston, 1889 emeritus professor of surgery at Cornell University Medical College New York, member of the American Surgical Association, Society of Clinical Surgery, American Association of Genito-Urinary Surgeons, International Surgical Association, International Urological Association New York Surgical Society and the New York Clinical Society, corresponding member of the French Academy of Medicine fellow of the American College of Surgeons during World War I served in France as a major and as director of Base Hospital number 9 for the American Expeditionary Forces served as attending surgeon first Cornell surgical division, New York Hospital, New York consulting surgeon, St. Luke's New York City and Memorial hospitals New York, Vassar Brothers Hospital Poughkeepsie, South Side Hospital Babylon and New York State Hospital for Crippled and Deformed Children West Haverstraw formerly medical superintendent of the Winifred Masterson Burke Relief Foundation White Plains, N. Y., died in New York Hospital November 24, aged 80

**Reuben Martin Pederson** \* Minneapolis, University of Minnesota College of Medicine and Surgery, Minneapolis, 1906, fellow of the American College of Surgeons, in 1911 enlisted as a private in the medical detachment of the first infantry, Minnesota National Guard, and later was promoted to first lieutenant and major in the medical corps, during World War I served overseas with the 34th division as lieutenant colonel medical corps, U. S. Army, commanding the 109th sanitary train, on the staffs of the Swedish, Lutheran Deaconess and General hospitals died November 20 aged 64, of coronary thrombosis

**Edward Peter Halton** \* Passed Assistant Surgeon, Lieutenant Commander, U. S. Navy, retired, Holyoke, Mass., Yale University School of Medicine, New Haven Conn., 1905 he entered the U. S. Navy Oct 15 1910 and retired Nov 4

1914, specialist certified by the American Board of Otolaryngology, member of the American Academy of Ophthalmology and Otolaryngology and the New England Otolological and Laryngological Society, on the staffs of the Holyoke and Providence hospitals, died October 18, aged 62, of cerebral hemorrhage

**Leonard Apter**, New Orleans, Medical College of Virginia, Richmond, 1940, served an internship at the Touro Infirmary and a residency at the Charity Hospital, where he died October 21, aged 35

**Helen Book Babcock**, Quilcene, Wash., University of Oregon Medical School, Portland, 1908, died October 20, aged 65

**Charles M. Bradley**, Beckemeyer, Ill., Albany Medical College, Albany, N. Y., 1887, died November 25, aged 80, of aortic stenosis

**Herbert William Davis** \* St. Paul, Rush Medical College Chicago, 1880, an Affiliate Fellow of the American Medical Association general examiner for the Northwestern Mutual Life Insurance Company for forty-four years, at one time company physician for the Jackson Mining Company, Naugeonee Mich., had been connected with the Iron Ore companies at Fayette, Mich. and Two Harbors, Minn. served on the staffs of St. Luke's, St. Joseph's and City and County hospitals died November 16, aged 84, of coronary thrombosis

**Anna Christensen De La Motte**, Brooklyn, Cornell University Medical College, New York, 1900, member of the American Medical Association, on the staff of the Williamsburgh Hospital, died October 22, aged 82

**Charles Jacob Doneghy** \* East Chicago, Ind., Howard University College of Medicine, Washington, D. C., 1928, died October 2, aged 45, of coronary occlusion

**Henry Eugene Fifield**, Calais, Maine, Maryland Medical College, Baltimore, 1907, died October 17, aged 65

**Morris Friedman**, Brooklyn, Baltimore Medical College, 1896, examining physician for a local draft board during World War I, formerly a pharmacist, died October 3, aged 87, of cerebral thrombosis and bronchopneumonia

**William R. Garver**, Crawfordsville, Ind., Medical College of Ohio Cincinnati 1876 veteran of the Spanish American War, died September 3, aged 90, of mitral insufficiency

**Moses Goldberg**, New York Long Island College Hospital, Brooklyn, 1907, member of the American Medical Association died October 4, aged 61

**Warren Parker Grimes** \* Hillsboro N. H., Harvard Medical School, Boston, 1891, an Affiliate Fellow of the American Medical Association, died November 13, aged 76, of coronary thrombosis

**Harry H. Hagey** \* Chicago, Northwestern University Medical School, Chicago, 1898, veteran of the Spanish-American War on the staff of the Evangelical Hospital, died November 15, aged 72, of coronary thrombosis

**Crandmer Leland Hays**, Collierville, Tenn., College of Physicians and Surgeons, Memphis 1908, member of the draft board of Tipton County during World War I died in the Baptist Memorial Hospital, Memphis, October 22, aged 59

**Julius Goodwin Henry**, West Blocton Ala., University of Nashville (Tenn.) Medical Department, 1906, at one time on the staff of the New Britain General Hospital, New Britain Conn. died September 29 aged 64

**Daniel Noble Johnson**, Decatur Ga., Georgia Eclectic Medical College, Atlanta, 1881, died October 18 aged 93, of traumatic pneumothorax and generalized arteriosclerosis

**David Joseph Johnson** \* Boston, Harvard Medical School Boston 1897, veteran of the Spanish-American War formerly commissioner of institutions, died in the City Hospital October 7, aged 71 of cerebral hemorrhage

**John Payson Kennedy**, Atlanta, Ga., University of the City of New York Medical Department, New York, 1887, member of the American Medical Association, for many years city health officer, died October 24, aged 80

**Benjamin Kinsell** \* Dallas Texas, Rush Medical College Chicago, 1901 on the staff of St. Paul's Hospital, died October 16, aged 80 of uremia and pneumonia

**John Patrick Kuhl** \* Butler, N. J., Jefferson Medical College of Philadelphia, 1924, died in Pasadena, Calif. October 5, aged 44

**Elbert Alonzo Landman** \* Plaistow N. H., Dartmouth Medical School Hanover, 1899 bank president on the staff

of the Benson Hospital Haverhill Mass, where he died October 18, aged 76, of Parkinson's disease

Paul Hudson Mahany @ Albion, N Y, University of Buffalo School of Medicine, 1930, served an internship at the Children's Hospital of Buffalo and Our Lady of Victory Hospital, Lackawanna coroner of Orleans County, died in the Arnold Gregory Hospital November 11, aged 44, of angioneurotic edema

Rush McNair, Kalamazoo, Mich, Chicago Medical College 1887 during World War I medical examiner of draft board number 2 in Kalamazoo president of the Kalamazoo Academy of Medicine in 1925 at one time member of the U S Pension Examining Board, participated in the founding of the Borgess and Bronson hospitals, died October 13, aged 84 of chronic myocarditis

Gilbert F McNitt, Racine, Wis, College of Physicians and Surgeons, Baltimore 1879, surgeon for the Chicago and Northwestern Railroad, on the staffs of St Mary's and St Luke's hospitals, died October 23, aged 90 of cerebral thrombosis

Warren Wesley Murfin, Patoka Ill Rush Medical College, Chicago 1884, member of the American Medical Association past president and secretary of the Marion County Medical Society, local surgeon for the Illinois Central Railroad elected to the school board of directors in April 1903 and served continuously as clerk of the board until April 1933 died October 16, aged 82, of arteriosclerosis

William Joseph Narey, New York University of the City of New York Medical Department, New York 1895 died October 13 aged 76 of heart disease

Charles William Rain, Knoxville Tenn Northwestern University Medical School, Chicago 1904 served during World War I on the staff of the Knoxville General Hospital, died in October aged 64, of generalized arteriosclerosis

Leonard Gabriel Redding @ Scranton Pa, Medico-Chirurgical College of Philadelphia 1908 formerly first vice president of the Medical Society of the State of Pennsylvania past president of the Lackawanna County Medical Society member of the House of Delegates of the American Medical Association from 1940 to 1943 on the staffs of the Scranton



CAPT DOMINIC PETER CARAVONA  
M C, A U S, 1913-1944



LIEUT COMDR GEORGE LITTLE BUTLER  
(MC), USNR 1910-1944



CAPT MARVIN COOKE  
M C A U S 1915-1944

Charles William Merrell, Lubbock, Texas (licensed in Texas and Oklahoma by years of practice), died in O'Donnell September 24, aged 69, of acute dilatation of the heart

Stephen Douglas Moore, Van Alstyne Texas University of Louisville (Ky) Medical Department, 1884, member of the American Medical Association served on the school board for forty years died in the Baylor Hospital, Dallas, October 15, aged 84, of heart disease

State Hospital and the Mercy Hospital where he died October 5, aged 59 of carcinoma of the pancreas

Laura M Pratt Recher, Morocco Ind, Columbus Medical College Columbus Ohio 1884 died August 7 aged 87 of chronic interstitial nephritis

Allen Trousdale Reed, Loyal, Texas Kentucky School of Medicine Louisville 1890 died in a Pecos hospital October 17 aged 81 of cerebral embolism

## KILLED IN ACTION

Dominic Peter Caravona, Cleveland St Louis University School of Medicine 1938 served an internship at the St John's Hospital Cleveland, and a residency at St Charles Hospital in Aurora, Ill member of the American Medical Association commissioned a first lieutenant in the medical corps, Army of the United States on Aug 23, 1942 later promoted to captain killed in action in the European theater of operations, September 25 aged 30

George Little Butler, Beaumont Texas University of Texas School of Medicine Galveston 1934 member of the American Medical Association served an internship at the Jefferson Davis Hospital and the Houston Tuberculosis Hospital in Houston formerly resident in surgery at the New York Society for the Relief of the Ruptured and Crippled commissioned a lieutenant (jg) in the medi-

cal corps U S Naval Reserve on Aug 8 1940 began extended active duty on April 2, 1941, later promoted to lieutenant and lieutenant commander, died in the Pacific area July 21 aged 34 of a gunshot wound of the right chest received in enemy action

Marvin Cooke, Auburn, N Y, Yale University School of Medicine, New Haven Conn, 1941, diplomate of the National Board of Medical Examiners, served an internship and a residency in pediatrics at the Strong Memorial and Rochester Municipal hospitals, Rochester, N Y, commissioned a first lieutenant in the medical corps, Army of the United States on July 17, 1942, later promoted to captain, died in the European area July 18 aged 28 of wounds received in action



Marcellus Reeves, Boston Harvard Medical School, Boston 1890 member of the American Medical Association died October 15 aged 81, of heart disease

Joseph B Ruffin, Powellsville, N C, University of the South Medical Department Sewanee Tenn 1898 member of the House of Representatives for Bertie County 1931-1932 for ten years coroner of Bertie County died October 15, aged 66

Albert Edward Sabin @ Dana Ind Medical College of Indiana Indianapolis 1897, Rush Medical College Chicago 1899 served during World War I, past president and secretary of the Parke-Vernum Counties Medical Society on the staff of the Vermilion County Hospital, Clinton died October 26 aged 69 of angina pectoris and arteriosclerosis

George M F Scholz, Milwaukee Milwaukee Medical College 1903, member of the American Medical Association died November 1, aged 85 of coronary sclerosis and general arteriosclerosis

Oscar William Steinwand, Parlier Calif, Cooper Medical College San Francisco 1897 died October 14 aged 75 of chronic gastroenteritis

Steel Corporation, died in St Francis Hospital, Pittsburgh, November 23, aged 66 of lobar pneumonia and myocardial failure

Edward F Strohbehn @ Davenport, Iowa, State University of Iowa College of Medicine, Iowa City, 1891, president of the city school board from 1933 to 1941, on the staffs of the Mercy and St Luke's hospitals died November 11 aged 79 of cerebral hemorrhage

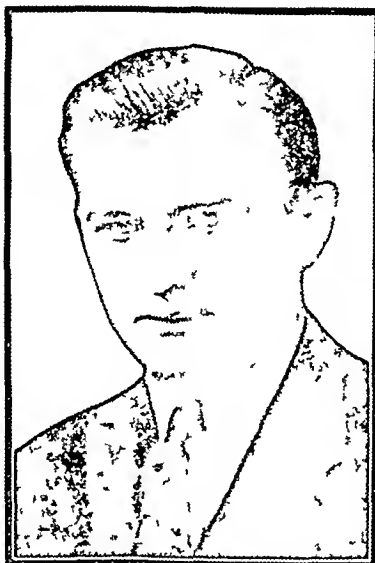
Samuel Sucherman, Chicago Chicago College of Medicine and Surgery, 1915, field health officer for the city health department from January 1916 until he resigned on Oct 21 1944 died November 8 aged 78 of coronary thrombosis

James Preston Temple, Shelbyville Tenn, Vanderbilt University School of Medicine Nashville 1878 died in a hospital at Nashville October 22 aged 88 of senility

John Adolf Vietor, Oyster Bay N Y, Columbia University College of Physicians and Surgeons New York 1911, formerly assistant professor of clinical surgery at the Cornell University Medical College New York, fellow of the American College of Surgeons associate attending surgeon at the New



LIEUT (jg) RAYMOND ANTHONY DUNN  
(MC) USNR 1910-1944



MAJOR JOSEPH E FUNK  
M C A U S 1911-1944



CAPT WILLIAM MELVIN KOBER  
M C A U S 1912-1944

Henry Wilson Stiles, White Plains N Y Ensworth Medical College St Joseph 1901 professor emeritus of anatomy at Syracuse University College of Medicine member of the American Association of Anatomists died in the White Plains Hospital September 4, aged 69

Walter Addison Strayer Glenshaw Pa Jefferson Medical College of Philadelphia 1903 member of the draft board of Steubenville Ohio during World War I for many years surgeon for the Mingo Junction Ohio plant of the United States

York Hospital New York where he died October 31, aged 60 of cerebral thrombosis and arteriosclerotic heart disease

Lyman W Wilson Collins Miss Memphis (Tenn) Hospital Medical College 1906 died in August aged 63

James Lewis Winemiller @ Great Neck, N Y, Cornell University Medical College New York 1926 a member of the board of censors of the Nassau County Medical Society on the staffs of the Nassau Hospital Mineola and the Meadowbrook Hospital Hempstead died October 1, aged 45

## KILLED IN ACTION

Raymond Anthony Dunn, Worcester Mass Tufts College Medical School Boston 1935 member of the American Medical Association formerly an intern and later obstetrician on the staff of St Vincent Hospital commissioned a lieutenant (jg) in the medical corps of the U S Naval Reserve on July 20 1942 awarded the Purple Heart surgeon of the U S destroyer *Udder* which sank off the town of Gala Sicily July 10 1943 aged 34 presumptive date of death July 11 1944 according to the Navy Department

Joseph Emil Funk, Laureton N Y Tufts College Medical School, Boston, 1936 member of the American Medical Association served an internship at St Peter's General Hospital in New Brunswick, N J and St Francis Hospital in Trenton, commissioned a first lieutenant in the medical reserve corps of the U S Army on Nov

19 1936 began active duty in the Army of the United States March 10 1941 later promoted to captain and major killed in action in France July 28 aged 32

William Melvin Kober, Little Rock Ark Yale University School of Medicine New Haven Conn 1938, member of the American Medical Association diplomate of the National Board of Medical Examiners served an internship at the Lenox Hill Hospital, New York, commissioned a first lieutenant in the medical corps of the U S Army on June 22 1938 began active duty in the Army of the United States on Aug 11 1941 later promoted to captain served with the Fourth Cavalry in this country and in England with the Twenty Fourth Cavalry Medical Detachment Reconnaissance Squadron killed in action in France August 29 aged 32



## Correspondence

### "PUNISHMENT FOR VENEREAL DISEASE IN THE ARMED FORCES"

*To the Editor*—In the editorial in THE JOURNAL October 28 entitled 'Punishment for Venereal Disease in the Armed Forces Ended by Congress,' the editor is under a misconception and leaves a wrong impression on his readers.

The law S 1250 provides two essential features:

1 Repeal of the law providing forfeiture of pay due to venereal disease due to misconduct, and

2 Amending the veterans regulations defining line of duty and misconduct for pension and compensation purposes.

The editorial purported to show that all punishment for the acquisition of venereal disease, except under special circumstances (without leave, desertion status, and so on), has been rescinded and that venereal disease is now 'in line of duty' and not 'misconduct.' This is incorrect. The new law does not change the misconduct status for members of the armed forces but does eliminate loss of pay due to misconduct due to venereal disease. In other words, a service man with a venereal disease still has a 'misconduct' status on his record and still has to make up for time lost in the sick bay for such disease but merely does not lose pay any more. On the other hand, for pension and compensation purposes the venereal diseases, except under special circumstances, no more represent a 'misconduct.'

Therefore, when the editor states that the service man infected with a venereal disease is now in the same status as one with any other acute infectious disease he is incorrect, since the service man still has a misconduct status on his record and must make up for time lost due to the venereal disease, which he does not have with other infectious diseases.

ISRAEL ZELIGMAN, Lieutenant (MC), USNR

### PENICILLIN FAILURES

*To the Editor*—We read with great interest the communication of Drs A L Bloomfield, M M Kirby and C D Armstrong in THE JOURNAL, November 11, on "A Study of 'Penicillin Failures'." Our own experience with subacute bacterial endocarditis supports their conclusion. We have had good results with a series of 10 successive unselected cases in which penicillin alone was given 200,000 to 400,000 units per day for three to nine weeks either continuous intravenously or intramuscularly every hour day and night throughout the entire course of therapy. (The penicillin was provided by the Office of Scientific Research and Development from supplies assigned by the Committee on Medical Research for clinical investigations recommended by the Committee on Chemotherapeutics and Other Agents of the National Research Council.) Seven of these patients have been discharged from the hospital and have been well up to seven months so far, the other 3 are still under treatment at this writing and are responding favorably. This was reported in preliminary fashion to the Central Society for Clinical Research on November 4. A detailed report of these cases will be published later. Emphasis on adequate dosage frequently administered to maintain continuously elevated penicillin blood levels and on the continuation of the period of medication for a sufficient length of time cannot be stressed too much. It is successful treatment is to be attained. We believe that the following of these rules will make penicillin an effective agent in subacute bacterial endocarditis.

REUBEN MOKOTOFF MD

L N KATZ MD

W A BRAMS MD

KATHARINE M HOWELL MD

Michael Reese Hospital Chicago

### SALICYLATES AND HEMORRHAGE

*To the Editor*—The paper 'Hemorrhagic Complications with Death Probably from Salicylate Therapy' by C T Ashworth and I E McKemie published in THE JOURNAL November 25 rightly emphasizes the danger of hemorrhage that may result from the administration of salicylates. The conclusion of the authors that hypoprothrombinemia was a causative factor of the hemorrhage observed in their 2 cases may be questioned especially since no prothrombin determinations were recorded. While it is known that salicylates may decrease the prothrombin of the blood, it is still problematic whether the reduction is of such a magnitude as to cause hemorrhage. I have emphasized in even my early publications that the prothrombin must be reduced below 20 per cent of normal before there is danger of hemorrhage and that view now supported by clinical observation has been widely accepted. No clinical reports have appeared to show that salicylates even when given in massive doses, cause the prothrombin to fall to the hemorrhagic level.

It is known that various types of idiosyncratic reactions, including thrombocytopenic purpura, can occur following the administration of salicylates as well as of other drugs. It may well be that the 2 cases described by Ashworth and McKemie fall into this category, since their patients had petechial hemorrhage which is a characteristic lesion of thrombocytopenia. A conclusive diagnosis, of course, cannot be made without knowing the platelet count. In regard to the authors' suggestion that vitamin K is strongly indicated in all cases in which large doses of salicylates are administered, it should be remembered that it is based on assumption and not on verified data. To be sure, vitamin K can be given with impunity provided one is not led into a false sense of security and does not ignore the possibility that salicylates can cause hemorrhage in ways other than through prothrombin.

ARMAND J QUICK MD Milwaukee

## Bureau of Legal Medicine and Legislation

### MEDICOLEGAL ABSTRACTS

**Hospitals Liability for Injury in Manipulating Bed**—While the plaintiff, a woman aged 65, was a patient in the defendant hospital, a hospital conducted for profit, a nurse employee of the hospital attempted to lower the bed in which the patient was reclining by means of a mechanical device attached to the frame of the bed. The patient extended her right arm and unwittingly placed her hand beneath the metal bar as it descended and her third finger was crushed. To the metal frame of the bed there was attached a mechanical device which was operated by hand for the purpose of lowering or raising the bed on which the patient reclined. The device was equipped with a steel bar which entered a groove along the side of the metal frame of the bed. That lever or bar was ordinarily concealed from the view of the occupant of the bed by the mattress and bedclothes. The patient was not familiar with that contrivance and the nurse who observed the patient extending her arm while she was operating the hand lever failed to warn the patient of the danger, as she thought the patient was reaching with that hand toward a bedside table. Following the accident the end of the patient's finger was amputated, infection followed and as a result there was 'considerable disuse of the finger on the end, and a definite loss of power in that hand.' Subsequently the patient brought suit against the hospital alleging that the injury she suffered was due to the negligence of the nurse. The trial court which heard the matter without a jury entered a judgment for the patient and the hospital appealed to the district court of appeal third district California.

The hospital contended that the judgment was not supported by the evidence adduced at the trial, that the record shows as a matter of law that neither the hospital nor the nurse was guilty of negligence and that the plaintiff's injury was due solely to her own contributory negligence. We believe, however, said the appellate court that the judgment of the trial court is adequately supported by the evidence. As a paying patient the plaintiff was an invitee toward whom the defendant hospital was required to exercise ordinary care in providing a bed and attaching devices reasonably safe and free from danger. While it is true that a hospital is not an insurer of the safety of its patients it nevertheless owes them the duty to exercise ordinary care to see that the premises and equipment are in safe condition. It is also true that there is ordinarily no liability for injuries received from defects or dangers which are obvious and known to the injured person and which may be avoided by the exercise of reasonable prudence on his part. As is said in a note in 22 American Law Reports 341

It is well settled that the owner or proprietor of a private hospital or sanatorium which is operated for profit and is not a charity is liable in damages for injuries to patients due to the negligence of nurses or other employees.

In the present case, continued the court the dangerous device attached to the bed, by means of which the patient was injured, was unknown to her. The testimony of the patient makes it clear that she did not know how that particular device operated or that it was dangerous for her to reach out over the bed while it was being lowered. The circumstances of this accident indicate that it was a dangerous device. The patient had no knowledge of the operation or danger of the device and she had paid no attention on one occasion when the bed was previously raised by the device. It seems reasonably clear from the evidence that the bar which fitted into the groove of the frame at the side of the bed was at least partially concealed by the mattress and bed clothing. The trial judge saw the operation of the device and the manner in which the accident occurred by a demonstration at the trial. Under the circumstances the question as to whether the patient was guilty of contributory negligence because the device was obviously dangerous was a question for the determination of the trial judge with whose conclusion in that respect we may not interfere on appeal. Further as is said in 38 American Jurisprudence 866

Contributory negligence is not imputable to a plaintiff for failing to look out for a danger which he had no reasonable cause to apprehend or to a plaintiff who was deceived by appearances calculated to deceive an ordinarily prudent person.

In the absence of knowledge to the contrary a patient in a private hospital has a right to assume that he or she will be provided with a bed and attached equipment for raising and lowering it which is reasonably safe and free from danger.

We believe continued the court that while the defendant hospital is not an insurer against any injury which may be received by a patient in the hospital there was sufficient evidence to support the finding of the trial court that the hospital nurse was guilty of negligence which proximately caused the accident by failing to warn the plaintiff of the danger of the descending bar when the nurse saw her reaching her arm in that direction. That negligence may be imputed to the hospital so as to create a liability on its part for the injury received on that account. The question under conflicting evidence as to whether or not the act or omission of the nurse employee constitutes negligence, whether or not the hospital or the nurse exercised the requisite degree of care for the safety of the patient under the particular circumstances here present and whether or not the hospital or the nurse should have foreseen the casualty and have protected the patient by adequate warning of a known danger, are ordinary problems for the jury or the trial judge. When there is substantial evidence to support the findings of the trial court on those issues, its conclusions may not be interfered with on appeal. In this case the trial judge determined those issues against the hospital, and this court is bound on appeal by the trial court's finding that the nurse was guilty of negligence.

Accordingly the judgment in favor of the patient was affirmed.—*H. Ash - Meritt Hospital 151 P (2d) 17 (Calif 1944)*

## Medical Examinations and Licensure

### COMING EXAMINATIONS AND MEETINGS

#### NATIONAL BOARD OF MEDICAL EXAMINERS EXAMINING BOARDS IN SPECIALTIES

Examinations of the National Board of Medical Examiners and Examining Boards in Specialties were published in THE JOURNAL December 23 page 1112

#### BOARDS OF MEDICAL EXAMINERS

ALABAMA Montgomery June 26 28 Sec Dr B T Austin 519 Dexter Ave Montgomery 4  
ALASKA Juneau March Sec, Dr W M Whitehead Box 561, Juneau  
ARIZONA Phoenix Jan 23 Sec, Dr J H Patterson 826 Security Bldg Phoenix  
ARKANSAS \* *Faketic* Little Rock June 7 Sec, Dr C H Young, 1415 Main St Little Rock  
CALIFORNIA Oryal Los Angeles, Jan 21 *Written* Los Angeles, March 58 Sec Dr Frederick N Scatena 1020 N St Sacramento 14  
COLORADO Denver Jan 25 Sec Dr J B Davis, 831 Republic Bldg Denver  
CONNECTICUT \* *Homeopathic* Derby March 12 13 Sec Dr J H Tynns 1488 Chapel St New Haven *Medical Examination* March 13 14 *Endorsement* March 27 Sec to the Board Dr Creighton Barker 258 Church St New Haven  
DELAWARE Examination Dover July 10 12 *Reciprocity* Dover July 17 Sec Medical Council of Delaware, Dr J S McDaniel, 229 S State St Dover  
DISTRICT OF COLUMBIA \* *Reciprocity* Washington March 12 Sec Commission on Licensure Dr G C Ruhland 6150 E Municipal Bldg Washington 1  
HAWAII Honolulu Jan 8 11 Sec Dr J A Morgan, 55 Young Bldg Honolulu  
IDAHO Boise Jan 8 11 Dir Bureau of Occupational Licenses Mrs Lela D Painter 355 State Capitol Bldg Boise  
ILLINOIS Chicago, Jan 24 Supt of Registration Department of Registration and Education Mr Philip Harman Springfield  
INDIANA Indianapolis Jan 35 Exec Sec, Board of Medical Registration and Examination Miss Ruth V Kirk 301 State House Indianapolis 4  
IOWA Portland March 13 14 Sec, Board of Registration of Medicine Dr A P Feighton 192 State St Portland  
MARYLAND Baltimore June 19 22 Sec Dr J T O Mara 1215 Cathedral St Baltimore  
MASSACHUSETTS Boston March 13 16 Sec Board of Registration in Medicine Dr E Q Gullupe 413 F State House Boston  
MINNESOTA Minneapolis Jan 16 18 Sec Dr J F DuBois 230 Lowry Medical Arts Bldg St Paul 2  
MISSISSIPPI Jackson Feb 9 Asst Sec, State Board of Health Dr R N Whitfield Jackson 115  
MONTANA Helena April 24 Sec, Dr O C Klein, First Natl Bank Bldg Helena  
NEVADA Endorsement Carson City Feb 5 Sec Dr G H Ross 215 N Carson St Carson City  
NEW HAMPSHIRE Concord March 8 9 Sec Board of Registration in Medicine Dr D G Smith 77 Main St Nashua  
NEW MEXICO Santa Fe April 9 10 Sec Dr LeGrand Ward 141 Palace Ave Santa Fe  
NEW YORK Albany, Buffalo New York and Syracuse Jan 29 Feb 1 Chief Mr H L Field Education Bldg Albany  
NORTH DAKOTA Grand Forks Jan 25 Sec Dr G M Williamson 47 S 3rd St, Grand Forks  
OHIO Endorsement Columbus Jan 9 Examination Columbus June Sec, Dr H M Platter 21 W Broad St Columbus  
OREGON Portland Jan 24 27 Exec Sec Miss L M Conlee, 608 Failing Bldg Portland 4  
PENNSYLVANIA April 10 13 Act Sec, Bureau of Professional Licensing Department of Public Instruction Mrs M G Steiner, 358 Education Bldg Harrisburg  
RHODE ISLAND Providence, Jan 45 Chief Division of Examiners Mr Thomas B Casey 366 State Office Bldg Providence  
SOUTH CAROLINA Columbia June 25 27 Sec, Dr A B Heyward 1329 Blandina St Columbia  
SOUTH DAKOTA Pierre Jan 16 17 Sec Medical Licensure State Board of Health Dr G Cottam Pierre  
VERMONT Burlington June Sec Dr F J Lawless Richford  
VIRGINIA Richmond June 20 23 Sec Dr J W Preston 30 1/2 Franklin Rd Roanoke  
WASHINGTON Seattle Jan 15 17 Dir Department of Licenses Mr Thomas A Swaze Olympia  
WEST VIRGINIA Charleston Feb 26 28 Commissioner Public Health Council Dr John E Offner State Capitol, Charleston 5  
WISCONSIN Madison Jan 9 11 Sec Dr C A Dawson Tremont Bldg River Falls  
WYOMING Cheyenne Feb 5 6 Sec Dr M C Keith Capitol Bldg Cheyenne

\* Basic Science Certificate required

#### BOARDS OF EXAMINERS IN THE BASIC SCIENCES

CONNECTICUT Feb 10 Address State Board of Healing Arts 250 Church St New Haven 10  
DISTRICT OF COLUMBIA Washington April 23 24 Sec, Commission on Licensure Dr G C Ruhland 6150 E Municipal Bldg Washington 1  
FLORIDA DeLand June 1 Sec Dr J T Conn John B Stetson University Deland  
IOWA Des Moines Jan 9 Dir Division of Licensure and Registration Mr H W Grefe Capitol Bldg Des Moines  
MICHIGAN Ann Arbor and Detroit Jan 12 13 Sec Miss Eloise Le Beau 101 N Walnut St Lansing  
MINNESOTA Minneapolis Jan 23 Sec Dr J C McKimley 126 Millard Hall University of Minnesota Minneapolis 14  
NEBRASKA Omaha Jan 9 10 Dir Bureau of Examining Boards 1009 State Capitol Bldg Lincoln  
NEW MEXICO Santa Fe Feb 12 Sec Miss Marion M Rhea State Capitol Santa Fe  
OREGON Portland March 3 Sec Board of Higher Education Mr C D Byrne University of Oregon Eugene  
RHODE ISLAND Providence Feb 14 Chief Division of Examiners Mr Thomas B Casey 366 State Office Bldg Providence

## Current Medical Literature

### AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1934 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (\*) are abstracted below.

#### American Heart Journal, St. Louis

28 411-548 (Oct.) 1944

- \*Thiocyanate Therapy of Hypertension. Studies on Constancy of Blood Concentration and Urinary Output. A. Koffler, A. W. Freireich and J. J. Silverman—p. 411
- Posterior Basal Cardiac Infarction Affecting a Young Man Followed a Year Later by Anterior Apical Infarction. C. C. Shullenberger and H. I. Smith—p. 429
- Association of Hypertension and Mitral Stenosis. H. L. Horns—p. 435
- \*Congenital Subaortic Stenosis. D. Young—p. 440
- \*Varices of Bronchial Veins as Source of Hemoptysis in Mitral Stenosis. F. C. Ferguson, R. E. Koblak and J. E. Dietrick—p. 445
- Association of Paroxysmal Atrial Tachycardia with Atrial Flutter or Fibrillation. G. M. Dechard and G. R. Herrmann—p. 457
- Measurements of Arterial Blood Pressure in Arm and Leg: Comparison of Sphygmomanometric and Direct Intra Arterial Pressures with Special Attention to Their Relationship in Aortic Regurgitation. J. H. Kotte, A. Iglauer and J. McGuire—p. 476
- Cardiac Child in Special School. Kate H. Kohn and Ruth P. McElowney—p. 491

**Thiocyanate Therapy of Hypertension**—Koffler, Freireich and Silverman present observations on 39 ambulatory patients with essential hypertension who had been treated for months or years with the usual therapeutic agents, so that the level of their blood pressures was known. After this period of observation potassium thiocyanate therapy was instituted. The authors used an aqueous solution of the drug in such concentration that 1 drachm contained 0.1 Gm. and commenced with a dose of 1 drachm three times daily. After one week the patient was examined, the blood pressure recorded and a blood specimen obtained. Although in most patients the average blood level with this dose (0.1 Gm. three times daily) was 5 mg. per hundred cubic centimeters, as high a level as 15 mg. per hundred cubic centimeters was obtained with this small amount. In cases in which there were signs of congestive heart failure, digitalis therapy and diuretics were continued. Such a regimen was not incompatible with the thiocyanate. About half of the 39 patients showed an appreciable lowering of the blood pressure, and a few others reported subjective improvement without lowering of the pressure. There was no correlation between the urinary output of thiocyanate and the daily intake or the blood concentration. No fatalities and no dangerous toxic effects were observed, because frequent blood thiocyanate determinations were made and in this way early toxic symptoms as well as the appearance of an abnormally high blood level could be detected and treated before dangerous symptoms supervened. Recent work of Caviness and his associates demonstrated that thiocyanates are naturally present in the body in a much higher concentration than any other known depressor substance. They suggest that the thiocyanates help to counterbalance the effects of the pressor substances in the body. A rapid rise in blood concentration is certain evidence of faulty excretion and cumulative action and indicates immediate cessation of the drug.

**Congenital Subaortic Stenosis**—Young reports 10 cases of subaortic stenosis which were discovered during the course of examining approximately 18,000 soldiers. This is an incidence of 0.05 per cent. The lesion appears as a firm, raised fibrous ring of tissue from 1 to 15 mm. below the base of the aortic valve usually from 2 to 4 mm. in height and extending 1 to 10 mm. into the ventricular cavity. On microscopic examination, it is seen that this raised band, or shelf, is laminized connective tissue covered by intact, flattened endothelium. With Weigert's stain, the fibrous tissue has been shown by Wiglesworth to consist principally of elastic fibers. The patient with congenital subaortic stenosis usually has no symptoms referable

to the heart but auscultation and palpation reveal the murmur and thrill of aortic stenosis, with a normal or nearly normal aortic second sound, the sound is not affected because the lesion does not involve the aortic cusps but is situated below them. The blood pressure and pulse pressure are normal and consequently the anacrotic pulse of aortic stenosis is not present. With these observations, in the absence of a history of rheumatic fever or suggestive rheumatic attacks in a young patient, the possibility of subaortic stenosis should be suspected. Since most such patients eventually acquire bacterial endocarditis or die suddenly, persons with this disease should be rejected for military service.

**Varices of Bronchial Veins as Source of Hemoptysis**—Ferguson and his associates injected into the pulmonary veins particulate matter too coarse to enter the capillaries. Lungs fresh from necropsies were injected. A cannula was inserted into the pulmonary vein from the lower lobe, through which 500 cc. of warm saline solution was forced to wash out the blood. The injection mass was then introduced through the cannula at a pressure of 80 mm. of mercury. The injection mass consisted of white lead, cinnabar, sucrose, gelatin and water. The injection pressure was maintained several minutes after the lung was immersed in ice water, and then the injected lung was returned to cold storage to allow the mass to harden. The mitral stenosis cases had histories suggestive of rheumatic heart disease and necropsy confirmed the diagnosis. Eleven such cases studied by the injection method indicated the presence of direct venous connections between the bronchial and pulmonary veins in men of all ages. Mitral stenosis causes dilatation of the bronchial veins in the submucosa of the larger bronchi as a result of the establishment of a collateral flow through them. In mitral stenosis when infarction and acute pulmonary edema are not present, hemoptysis is probably due to bleeding from these dilated veins. Age, hypertension and arteriosclerosis do not affect the bronchial venous bed but some dilatation occurs in chronic congestive heart failure of long standing although the only lesion of the mitral valve may be dilatation of the valve ring.

#### American Journal of Surgery, New York

66 1-142 (Oct.) 1944

- Delayed Rupture of Spleen. Case Report. H. A. Bailey and S. L. Schreiber—p. 4
- Surgery of Common Bile Duct. R. S. Fowler—p. 15
- Hip Motions. J. W. Ghormley—p. 24
- Bowel Surgery. Impressions After Five Years of Experience. L. Berger and E. Hirsch—p. 31
- Ambulatory Treatment of Fractures of Lower Extremities. C. Savini—p. 44
- Pilonidal Sinus. Clinical Experiences with Rogers Operation in 35 Consecutive Cases. S. A. Swenson Jr., H. N. Harkins and H. P. Groesbeck—p. 49
- Breast Tissue as New Source for Heterogenous Implants. Preliminary Report. Else K. LaRoe—p. 58
- Continuous Caudal Analgesia in Obstetrics. I. M. Buch, L. Newton and A. C. Posner—p. 68
- Self Inflicted Bite. F. Ronchese—p. 80
- Cajaloid. C. E. Burkland—p. 86
- Inguinal Hernia in Infants and Children. M. S. Rosenblatt—p. 88
- \*Acute Spinal Epidural Abscess. Case Report. W. P. Boger—p. 103
- \*Spontaneous Rupture of Rectus Abdominis Muscles. Result of Indirect Muscular Effort. I. J. Vidgoff—p. 132

**Acute Spinal Epidural Abscess**—Boger describes a case of acute spinal epidural abscess in a man aged 69. He was treated with a full course of sulfadiazine. The mild diabetes which appeared in this case is hard to explain. It is possible that the pancreas was involved by metastatic infection at the outset, when a septicemia must have existed which gave rise to the epidural abscess and the bilateral hilar kidney abscesses. A psoas abscess was visualized by x-ray nineteen days after the onset of pain. The abscess was drained. At necropsy there appeared to be no direct communication between this abscess and the pus exuding from the intervertebral foramen between the second and third lumbar vertebrae. Death seemed to be due to chronic debility secondary to the epidural abscess in the region of the cauda equina. Necropsy revealed a granulomatous inflammatory lesion which involved the epidural space throughout its circumference from the level of the second to that of the fourth lumbar vertebra. The abscess involved the anterior epidural space. Osteomyelitis may also have been

present. Spinal epidural abscess will be diagnosed more often if more practitioners become aware of epidural abscess as a cause of excruciating pain in the back, sudden in onset and accompanied by evidence of infection.

**Spontaneous Rupture of Rectus Abdominis Muscle**—Vidgoff presents 3 cases of spontaneous rupture of the right rectus abdominis muscle. All 3 concerned young men who had been in military service only one month. In all 3 the rupture occurred as the result of indirect violence due to sudden muscular contraction while scaling the wall on the obstacle course. All cases were treated conservatively with complete recovery. The question of surgery arises in cases of severe hemorrhage due to injury of the deep epigastric vessels.

## Archives of Dermatology and Syphilology, Chicago

50 231-288 (Oct.) 1944

- Cutaneous Leishmaniasis (Oriental Sore). II. Incubation Period. D. A. Berberian—p. 231.  
Id. III. Period of Infectivity of Saline Suspensions of *Leishmania tropica*. Cultures Kept at Room Temperature. D. A. Berberian—p. 233.  
Id. IV. Vaccination Against Oriental Sore with Suspensions of Killed *Leishmania tropica*. D. A. Berberian—p. 234.  
Cutaneous Leishmaniasis on Isthmus of Panama. B. H. Kean—p. 237.  
Vaccination Against Oriental Sore. Report of Results of Five Hundred and Fifty-Five Inoculations. I. Katzenellenbogen—p. 239.  
\*Treatment of Trichophytosis with Ethyl Chloride. J. H. Lewis and W. J. Morginson—p. 243.  
Dermatitis from Tyroglyphidae in Handlers of Straw. F. S. Saunders—p. 245.  
Penicillin in Treatment of Simultaneous Infections of Syphilis and Gonorrhea. O. Crumrine—p. 246.  
Cholinergic Urticaria and Cholinergic Itching. R. Nomland—p. 247.  
Local Treatment of Psoriasis by Choline Chloride. Report of 2 Cases. H. H. Fox—p. 250.  
Treatment of Eczematous Contact Dermatitis with Intravenous Injections of Sodium Thiosulfate. A. Strickler—p. 251.  
Scleropoikiloderma with Calcinosis Cutis. Raynaud like Syndrome and Atrophoderma. B. Kamee—p. 254.  
Effect of Iolliculoid Hormones on Abnormal Skin. Further Observations of Effect of Estradiol on Skin of Mice of Rhino Hurler and Naked Strains. H. Selye—p. 261.  
Preparation of Material for Laboratory Diagnosis of Some Tropical Diseases of Skin. L. Goldman—p. 264.  
Dystrophia Unguium Mediana Qualiformis. Report of Case. L. P. Fowle and R. H. Wiggall—p. 267.

**Vaccination Against Oriental Sore**—In 1942 Katzenellenbogen reported results of a systematic attempt to inoculate the inhabitants of a hyperendemic area against oriental sore. The region comprised settlements at the northern end of the Dead Sea. All settlers who had never been naturally infected with leishmanias and all newcomers remaining at the Dead Sea during the sandfly season were to be vaccinated. Thus a single sore would develop instead of the dozens of naturally occurring sores and the vaccination sore would be on an unexposed spot (10 cm. above the knee). The inoculations were made with suspensions of cultures on Locke serum agar of *Leishmania tropica* isolated from local patients and of leishmania bodies of the same strain from the spleens of infected Syrian hamsters. Five hundred and fifty-six persons were vaccinated against oriental sore, and 416 persons were followed up. A vaccination sore developed in 237 after an incubation period varying from less than a fortnight to eighteen months. This vaccination has considerably reduced the incidence in a hyperendemic region. Vaccination should be carried out four to five months before the sandfly season begins. As expected, there were cases of natural infection during the incubation period of a natural infection or natural infection during the incubation period of an artificial leishmania infection. Vaccination was found harmless even for infants, and practically painless. It gave the vaccinated persons a good chance of prophylaxis against numerous sores in exposed areas. Reactions after vaccination were due to a previous infection with *L. tropica*. Artificial reinfection was successful in 2 persons vaccinated immediately after the appearance of the first sore.

**Treatment of Trichophytosis with Ethyl Chloride**—Lewis and Morginson describe the exclusive use of ethyl chloride spray on 40 unselected consecutive patients with trichophytosis of the interdigital spaces, soles, palms or crural regions usually involving the toes and soles but occasionally also the hands and groins. Ethyl chloride produces immediate burning and stinging, particularly as the area defrosts. There was no

case in which treatment was discontinued because of this discomfort. Increased experience showed that proper technique of application is important. If liquid ethyl chloride runs onto the normal skin, particularly on the dorsa of the feet at the base of the toes, there results a dermatitis congelationis. These lesions were uncomfortable but healed uneventfully within three or four days. This complication from treatment is prevented by having the patient hold paper towels on the normal skin around the infected areas when the ethyl chloride is applied. The authors conclude that ethyl chloride spray, producing distinct frosting of the skin, may be used without harmful effects in the treatment of trichophytosis. It may be applied to all varieties of lesions, including those showing secondary bacterial involvement. Immediate clinical improvement, with subsidence of vesicles and pustules, healing of denuded areas, increased dryness of the skin and regression of hyperhidrosis, follows the applications of ethyl chloride. Ethyl chloride does not produce a cure or eradication of trichophytosis. Recurrences are experienced in practically all instances within ten days. Ethyl chloride may be used to advantage as an adjunct to the customary management of trichophytosis particularly in the vesicular stage. It apparently promotes dryness of the skin, producing an antagonistic environment for the fungi.

## Archives of Ophthalmology, Chicago

32 261-352 (Oct.) 1944

- Localization of Intracocular Foreign Bodies by Means of Contact Lens. R. L. Pfeiffer—p. 261.  
\*Classification of Arteriosclerotic Hypertensive Fundus Oculi in Patients Treated with Sympathectomy. J. A. Gans—p. 267.  
The Cornea. II. Permeability to Weak Electrolytes. D. G. Cogan and L. O. Hirsch—p. 276.  
Carbaminoylecholine Chloride in Treatment of Glaucoma. D. Kravitz—p. 283.  
Lipochondrodystrophy (Dysostosis Multiplex, Hurler's Disease). Pathologic Changes in the Cornea in 3 Cases. M. J. Hogan and F. C. Cordes—p. 287.  
Heat and Cold in Therapy of Eyes. I. H. Rodin—p. 296.  
Bilateral Metastatic Uveitis Ending in Phthisis Bulbi as Complication of Mersles. Report of Case. L. C. Rabin—p. 301.  
Binocular Orthoptic Training for Amblyopic Patients. K. C. Swan and Elsie Laughlin—p. 302.  
Topographic and Etiologic Study of 1176 Indigent Blind Persons in Massachusetts. Basis for Prevention of Blindness. H. B. C. Riemer—p. 304.  
Epidemic Keratoconjunctivitis and Virus Diseases of Eye. A. Rados—p. 308.

**Arteriosclerotic Hypertensive Fundus Oculi After Sympathectomy**—Gans reports 18 cases of all stages of hypertension in which total or subtotal paravertebral sympathectomy was performed. The retinal vessels were denervated by stellate ganglionectomy. In the 15 patients who survived operation varying degrees of lowering of blood pressure were obtained. Studies of the fundi tended to confirm the beneficial effects of sympathectomy, since hemorrhages, exudates and papilledema disappeared, but it was significant that acute signs, such as vessel spasm and neural edema, persisted in a large majority of patients despite sympathetic denervation of the vessels of the eye. The degree of arteriolar sclerosis appeared to be of greater prognostic value than other retinal signs in evaluating the decrease in blood pressure to be expected after operation. Patients with the least retinal arteriolar sclerosis showed the best results after sympathectomy.

## Bulletin of Johns Hopkins Hospital, Baltimore

75 149-198 (Sept.) 1944

- Rights, Honors and Privileges Thereof Appertaining. A. M. Chesney—p. 149.  
\*Studies on Fracture Convalescence. I. Nitrogen Metabolism After Fracture and Skeletal Operations in Healthy Males. J. E. Howard, W. Parson, Kay Eisenberg, Stein, H. Eisenberg and Virginia Reidt—p. 156.  
Infestation of Genitourinary Tract by *Strongyloides stercoralis*. Case Report. R. Whitehill and M. H. Miller—p. 169.  
Utilization of  $\alpha$ -Amino Acids by Man. I. Tryptophan, Methionine and Phenylalanine. A. A. Albanese with technical assistance of Jane E. Frankston, Virginia Irby and Dorothy L. Wagner—p. 175.  
\*Nephrectomy for Hypertension in 2½ Year Old Child with Apparent Cure for Three Years. J. H. Semans—p. 184.

**Nitrogen Metabolism After Fracture**—Howard and his associates report observations on the nitrogen metabolism of 6 patients following fractures of the large bones of the lower extremity and results of comparative studies on 3 patients after operative procedures on the femur and on 1 after herniorrhaphy.

The patients with fracture were otherwise healthy, and the fractures healed satisfactorily. Balance studies were begun as soon as the patients' general condition permitted accurate collections of urine and feces, which varied from one to seven days after the trauma had been sustained. In the osteotomy cases it was possible to collect metabolic base line data preoperatively as well as to make observations immediately after the operation. Chemical determinations on urinary constituents were made, for the most part from aliquots of collections covering three day periods. At weekly intervals blood was withdrawn from brachial veins for the following determinations: hematocrit, serum protein, calcium, inorganic phosphorus, chloride, bicarbonate, nonprotein nitrogen, alkaline phosphatase and in some instances sodium and potassium content. It was found that vigorous healthy male patients suffering skeletal fracture treated by ordinary methods sustain large losses of body nitrogen during the early phase of their convalescence. The catabolic nitrogen, which is excreted in the urine, does not reach its maximum until six days after the injury is sustained, and nitrogen equilibrium is not reestablished for approximately thirty-five days. Repletion of the lost nitrogen was slow. The patients without fracture who underwent osteotomy sustained comparatively much smaller and shorter nitrogen losses and repletion was more rapid and vigorous. The authors concluded that disuse atrophy, bed rest, anesthesia fever and infection do not account for the major part of the nitrogen losses. Sulfonamide compounds did not appear to influence the overall nitrogen metabolism in this group of patients.

**Nephrectomy for Hypertension in an Infant**—Semans reports the history of a boy of 2½ years. When he began to walk, at the age of 18 months, it was noticed that his abdomen was abnormally large. Eight months later he began to vomit. Examination revealed a palpable tumor in the left upper quadrant. At operation an ovoid tumor the size of a grapefruit was found on the left side of the abdomen in a retroperitoneal position. It was removed and was found to be a teratoma. Urinalysis one month later showed albumin for the first time. There was also some increase in urinary frequency. High blood pressure was discovered. Since on three occasions injections of diodrast outlined only the right upper urinary tract exploration of the left kidney was decided on. The removed kidney was the seat of a chronic pyelonephritis. The blood pressure changed from a maximum preoperative level of 200/134 to one of 98/62 three years after operation. The microscopic diagnosis of the lesion in the extirpated kidney was chronic pyelonephritis. Perirenal fibrosis seemed the most important etiologic factor in this case. This fibrosis resulted from the previous removal of the retroperitoneal teratoma.

#### Bull. of the U S Army Med Dept, Washington, D C

81 1-122 (Oct.) 1944

- Control of Bacillary Dysentery in Tropical Outpost. Report of 1000 Cases. W B Furman and I E Weiss—p 71  
Use of Traction Cast in Guillotine Amputations. H E Barnett and L Weinstein—p 83  
Primary Atypical Pneumonia. L G Idstrom and B Rosenberg—p 88  
Application and Processing of Acrylic Jackets. I Rosenfeld—p 93  
Suprapubic Cystostomy. G C Praher—p 96  
Enumeration of Malaria Parasites. K B Watson—p 99  
Jaundice in Infectious Mononucleosis. M Spring—p 102  
U S Army Veterinary Service in Australia. S M Lewis—p 113

#### Canadian Journal of Public Health, Toronto

35 377-418 (Oct.) 1944

- Guide for Penicillin Treatment. Prepared by Medical Advisory Committee on Penicillin—p 377  
Puerperal Infection Due to Hemolytic Streptococcus Group A (Type 14). W B McClure—p 380  
Statistical Estimation of Vitamin C Intake of Troops on Canadian Army Garrison Stations. J W Hopkins, J B Marshall and J C Creasey—p 384  
Adaptation of Mycobacterium Paratuberculosis to Artificial Culture Media Prepared Without Addition of Essential Substance. H Konik—p 392  
Bacteriostatic Activity of Citrinin in Vitro. M I Timonin and J W Kowalt—p 396

**Bacteriostatic Activity of Citrinin in Vitro**—Timonin and Kowalt report investigations which were planned with the object of obtaining information concerning the bacteriostatic activity of citrinin obtained from the metabolism solutions of

*Aspergillus* of the *Candida* group. It was found that citrinin exerts bacteriostatic activity on gram positive organisms only. Assay mediums containing 1 per cent dextrose demonstrated higher values of potency of citrinin than plain mediums. It was also demonstrated that citrinin obtained by different methods of purification differed in bacteriostatic potencies. Addition of fresh horse serum (5 per cent) to assay mediums resulted in reduction of the bacteriostatic potency of citrinin whereas para aminobenzoic acid did not interfere with it. Toxicity tests of citrinin in vivo revealed that 2 mg of citrinin proved to be lethal to 20 Gm mice whereas 50 mg per kilogram of body weight in rats resulted in no ill effect to the animals.

#### Florida Medical Association Journal, Jacksonville

31 129-180 (Oct.) 1944

- Refrigeration Anesthesia of Extremities. Its Application and Use with Report of Cases. D McEwan—p 153  
Sarcoma of Uterus. J K Turberville—p 158

31 181-232 (Nov.) 1944

- The Challenge of Tuberculosis to the Physician. H C Swann—p 199  
Medical Events in History of Key West II. African Depot. A W Diddle—p 207

#### Gastroenterology, Baltimore

3 141-250 (Sept.) 1944

- Intubation Studies of Human Small Intestine. XIV. Review of Ten Year Experience. T G Miller—p 141  
Constitutional Hepatic Dysfunction. Clinical Study of 35 Cases. M W Comfort and R M Hoyne—p 155  
Diseases in Tropical War Zones. V. Disease of Far East, Southwest and South Pacific. E C Faust—p 163  
Critical Evaluation of Neutral Fecal Excretion and Acid Secretion Tests of Gastric Function in Normal and in Subjects with Gastric Disorders. T Gillman—p 188  
Hepatitis of Liver with Metastasis to Bone Occurring in Patient Known to Have Had Advanced Cirrhosis Eight Years Previously. M Mensch and H A Hanno—p 206  
Lymphosarcoma of Stomach. Gastroscopic Report. W D Paul and G L Parkin—p 214  
Intralobular Pancreatic Circulation. M J Oppenheimer and I C Main—p 218

**Constitutional Hepatic Dysfunction**—Comfort and Hoyne think that constitutional hepatic dysfunction deserves further discussion, not because of its effect on the health of the individual, but because confusion with hemolytic disease, disease of the biliary tract and disease of the liver leads to unnecessary restrictions on activities of the patient and unnecessary surgical and medical procedures. The sole manifestation of the condition appears to be mild or latent jaundice. The essential pathologic finding is increased concentration of bilirubin in the serum, giving an indirect van den Bergh reaction. The jaundice may begin at any age and may be chronic or intermittent. It may be familial but is not always so. Constitutional hepatic dysfunction apparently does not produce symptoms other than the jaundice, nor does it affect the health of the individual. Hemolytic and hepatic diseases do not cause the jaundice and as the name implies, the jaundice is due to an inborn deficiency of the hepatic cells, chiefly with regard to their function of excreting bilirubin. It is a pure retention jaundice or an abnormally high threshold for excretion of bilirubin. It is an acholuric jaundice. The terms 'simple familial cholemia', 'simple chronic icterus', 'familial cholemia' and 'familial nonhemolytic jaundice' have been applied to the condition but the authors prefer the term constitutional hepatic dysfunction because the term indicates the constitutional nature of the condition as well as the organ now believed to be responsible. The authors comment on 35 additional cases, which they reviewed from the records of the Mayo Clinic.

#### Iowa State Medical Society Journal, Des Moines

34 425-456 (Oct.) 1944

- Treatment of Congestive Heart Failure. R N Larimer—p 425  
Acute Mastoiditis in Celiac Disease. H A Bender—p 429  
Impacted Foreign Body in Urethra. D C Conzett—p 432  
New and Simple Diagnostic Technique for Bacillus Tuberculosis. F O W Voigt—p 433

34 457-486 (Nov.) 1944

- Toxemia of Late Pregnancy. A F Miller—p 457  
Eye Findings in Diabetes. I N Crow—p 461  
Rupture of Uterus During Pregnancy. I R Powers and R S Gerard—p 46



## Journal of Clinical Investigation, Boston

23 607-858 (Sept.) 1944 Partial Index

- Immune Response of Human Beings to Brief Infections with *Pneumococcus* M. Heidelberger and D. G. Anderson—p. 607
- \*Thiouracil: Its Absorption, Distribution and Excretion R. H. Williams, Gloria A. Kay and B. J. Jandorf—p. 613
- Simultaneous Measurements of Blood Volume in Man and Dog by Means of Evans Blue Dye T1824 and by Means of Carbon Monoxide J. Hopper Jr., H. Tabor and A. W. Winkler—p. 628
- Effect of Blood Serum from Patients with Myasthenia Gravis on Synthesis of Acetylcholine in Vitro Clara Torda and H. G. Wolff—p. 649
- Changes in Plasma Volume and Cardiac Output Following Intravenous Injection of Gelatin Serum and Physiologic Saline Solution J. P. Holt and P. K. Knoefel—p. 657
- Depressant Effects of High Concentrations of Inspired Oxygen on Erythrocytogenesis: Observations on Patients with Sickle Cell Anemia with Description of Observed Toxic Manifestations of Oxygen E. H. Reinhard, C. V. Moore, Reubenia Dubach and L. J. Wade—p. 682
- Heberden's Nodes: Mechanism of Inheritance in Hypertrophic Arthritis of Fingers R. M. Stecher and A. H. Hersh—p. 699
- Electrophoretic Patterns of Normal Plasma V. P. Dole with technical assistance of Esther Braun—p. 708
- Fi and F<sub>2</sub> of Nijjar and Holt in Urine of Normal Young Men F. Sargent, P. Robinson and R. E. Johnson with technical assistance of M. Castiglione—p. 714
- Traumatic Shock: VII. Study of Problem of 'Lost Plasma' in Hemorrhagic Tourniquet and Burn Shock by Use of Radioactive Iodo-Plasma Protein J. Fine and A. M. Seligman—p. 720
- \*Effect of Pregnancy on Renal Function in Women with Preexisting Essential Hypertension and with Chronic Diffuse Glomerulonephritis I. Wellen, Catherine A. Welsh and H. C. Taylor Jr. with technical assistance of Anna Rosenthal—p. 742
- Changes in Renal Function Accompanying Hypertrophy of Remaining Kidney After Unilateral Nephrectomy Catherine A. Welsh, I. Wellen and H. C. Taylor Jr. with technical assistance of Anna Rosenthal—p. 750
- Renal Excretion of Chloride and Water in Diabetes Insipidus R. C. Hickey and K. Hare—p. 768
- Absorption and Excretion of Penicillin Following Continuous Intravenous and Subcutaneous Administration L. A. Rantz and W. M. M. Kirby with technical assistance of Elizabeth Randall—p. 789
- Principle From Liver Effective Against Shock Due to Burns M. Prinzmetal, O. Hechter, Clara Margoles and C. Feigen—p. 795
- Electrolyte and Fluid Studies During Water Deprivation and Starvation in Human Subjects and Effect of Ingestion of Fish of Carbohydrate and of Salt Solutions A. W. Winkler, T. S. Danowski, J. R. Elkin and J. P. Peters—p. 807
- Hepatitis Due to Injection of Homologous Blood Products in Human Volunteers J. R. Neefe, J. Stokes Jr., J. G. Reinhold and F. D. W. Lukens—p. 836
- Observations on Absorption: Apparent Volume of Distribution and Excretion of Thiourea L. C. Chesley—p. 856

**Absorption, Distribution and Excretion of Thiouracil**—Williams and his associates describe experiments on rats and man relating to the absorption and excretion of thiouracil. They found that thiouracil is rapidly absorbed from the gastrointestinal tract and is readily excreted in the urine. With dosages ranging from 0.2 to 1.2 Gm daily, the concentration of the drug in the blood varied from 0.8 to 6.4 mg per hundred cubic centimeters, while the daily excretion in the urine varied from 16 to 618 mg. Most of the thiouracil in the blood is in the cells, the red cells containing a larger total amount but smaller concentration than the white cells. Patients receiving the drug for several days preceding death were found at necropsy to have some of the substance in essentially all the tissues of the body. Thiouracil was sometimes found in very large quantities in the bone marrow, thyroid, ovaries and pituitary while striated muscle, testes and liver possessed relatively small concentrations. Adenomas of the thyroid possessed a much greater concentration of thiouracil than did relatively normal thyroid tissue. Cerebrospinal, edema and pericardial fluids were found to contain less thiouracil than did whole blood, the concentration in pleural and ascitic fluid was about equal to that of blood, whereas milk contained about three times as much. Thiouracil is rapidly destroyed by the contents of the stomach and the small intestine. It is also rapidly destroyed by many tissues of the body. No thiouracil is excreted in the stools. The colon bacillus does not account for its absence, since it does not destroy the drug.

**Effect of Pregnancy on Renal Function in Women with Hypertension and Glomerulonephritis**—Wellen and his associates report results of renal clearance tests during and after pregnancy on 6 women suffering from preexisting hypertension. On 3 of these who had been patients at the New York University Hypertension and Nephritis Clinic studies of renal function had been made before the advent of pregnancy. After

delivery, the patients were followed by further tests for periods of from one to four years. Two women with diffuse glomerulonephritis became pregnant while under observation. They exhibited edema, hypertension, proteinuria and hematuria for several months before their pregnancies began. The figures taken as normal were made up from averages obtained from 14 nonpregnant women and from 8 pregnant women. The authors observed an increase in renal blood flow when patients with hypertension became pregnant. This increase, as indicated by diodrast and phenol red clearance, appears to be real although slight in degree. In each of the 3 patients on whom observations of diodrast clearance were made before conception, the figures for blood flow were found to have risen during pregnancy. Similarly in all patients it could be shown that the blood flow fell after delivery. The glomerular filtration rate and the tubular excretory mass are unaffected by pregnancy in these women. Comparison of results obtained during pregnancy and after delivery indicate that pregnancy itself when uncomplicated by toxemia does not cause deterioration of renal function in women with essential hypertension or chronic glomerulonephritis. This failure to find signs of deterioration in renal function after pregnancy in women with essential hypertension or chronic glomerulonephritis is of practical importance in the handling of these patients. These observations run somewhat contrary to existing beliefs.

## Journal of Immunology, Baltimore

49 193-250 (Oct.) 1944

- Vaccinal Infection in Mouse L. H. Bronson and R. F. Parker—p. 193
- Opsonization Test in Brucellosis R. M. Toar—p. 203
- \*Immunologic Studies in Rheumatic Fever I. Cutaneous Response to Type Specific Proteins of Hemolytic Streptococcus: A Response to Combinations of M Proteins from Selected Types of Hemolytic Streptococci L. M. Taran, J. M. Jablon and Helen N. Weyr—p. 209
- Anticomplementary Activity of Serum Gamma Globulin B. D. Davis, E. A. Kabat, A. Harris and D. H. Moore—p. 223
- Progressive Hydrolysis of Pneumococcus Soluble Specific Substance as Measured by Complement Fixation and Specific Antibody Nitrogen Precipitation Rachel Brown and Lucena K. Robinson—p. 235

**Cutaneous Response to Proteins of Hemolytic Streptococci in Rheumatic Fever**—Taran and his associates show that the failure to establish a definite relationship between rheumatic disease and group A hemolytic streptococci has led most investigators to invoke a relationship to a specific type of hemolytic streptococci. Since one of the most sensitive responses to a specific antigen is the antibody of which is sought for in the cutaneous reaction, the authors studied the reaction to the M fraction of twenty-five known Griffith types of hemolytic streptococci in rheumatic children, their normal siblings and normal children. The incidence of positive cutaneous reaction in normal children was 65 per cent, as compared with 83 per cent in rheumatic children. The incidence of positive cutaneous reaction in the normal siblings of these rheumatic children was the same as in rheumatic children. The cutaneous reactions of normal children were of a significantly milder degree than those of rheumatic children and their siblings, the highest degree of reactivity was found in the normal siblings of rheumatic children. The incidence and the degree of cutaneous reaction to the M fraction of hemolytic streptococci was not influenced by the age of the child, between the ages of 6 and 16, or by the rheumatic status. Active cases did not show a higher incidence or degree of cutaneous reactivity. The authors conclude that cutaneous reactivity to specific M fraction in rheumatic children diminishes only slightly with the lapse of time following an acute rheumatic episode.

## Journal Industrial Hygiene &amp; Toxicology, Baltimore

26 255-280 (Oct.) 1944

- Methanol Poisoning: II. Exposure of Dogs for Brief Periods Eight Times Daily to High Concentrations of Methanol Vapor in Air R. R. Sayers, W. P. Vant, H. H. Schrenk, J. Chornyak, S. J. Pearce, F. A. Patty and J. G. Linn—p. 255
- Review of Effect of Trinitrotoluene (TNT) on Formed Elements of Blood T. E. Cone Jr.—p. 260
- Acute Effects of Cumene Vapors in Mice H. W. Werner, P. C. Dunn and W. F. von Oettingen—p. 264
- Place of Range Finding Test in Industrial Toxicology Laboratory II I. Smyth Jr. and C. P. Carpenter—p. 269
- Thrombocytopenic Purpura Due to Benzol Poisoning: Case Report W. T. Vaughan Jr.—p. 274
- Study of Fatal Case of Ethylene Chlorohydrin Poisoning II Dierker and P. G. Brown—p. 277



## Journal of Nervous and Mental Diseases, New York

100 343-448 (Oct.) 1944

- Unusual Reactions to Electroshock. C W Osgood—p 343  
Taste Aura Preceding Convulsions in Lesion of Parietal Operculum  
Case Report H A Shenkin and F H Lewey—p 352  
Role of Eidetic Imagery in Psychosis C C Kao and R S Lyman  
—p 355  
Test for Differential Diagnosis Between Retirement Neurosis and Acci-  
dent Neurosis E Bergler and Olga Knopf—p 366  
Graphology and Medicine W Ehasberg—p 381

## Journal of Pediatrics, St Louis

25 281-368 (Oct.) 1944

- Rubella Early in Pregnancy Causing Congenital Malformations of Eyes  
and Heart C A Erickson—p 281  
\*Diagnosis of Fibrocystic Disease of Pancreas Based on 26 Proved Cases  
H F Philipsborn Jr G Lawrence and K C Lewis—p 284  
Pertussis Bacteriologic and Agglutination Studies J G M Bullowa  
Lillian Buxbaum and I E Scheinblum—p 299  
Periarteritis Nodosa Report of 2 Cases 1 Complicated by Intraperi-  
cardial Hemorrhage E P Scott and C C Rotondo—p 306  
Erythema Nodosum in Children Edith M Lincoln Janet Alterman and  
H Bakst—p 311  
Clinical Observations in Treatment of Epidemic Diarrhea of Newborn  
Nina A Anderson and W E Nelson—p 319  
Neuromyelitis Optica Report of Case J I Siegel—p 328  
Congenital Hereditary Lymphedema (Milroy's Disease) K Glaser  
—p 337  
Abnormal Origin of Left Coronary Artery with Extensive Cardiac  
Changes in Female Child Thirteen Months Old F Proescher and  
F W Baumann—p 344

**Rubella Early in Pregnancy Causing Congenital Malformations**—Erickson reports observations on 11 infants whose mothers had rubella during the first three months of gestation. Most of the babies were small and had considerable feeding difficulties. All had congenital eye defects and all but 2 had congenital heart defects. Cataract, generally bilateral, was the most frequent eye defect. None of the babies were cyanotic, and their cardiac observations on physical examination made it seem likely that the defect was a patent interventricular septum. In no case was there a family history of congenital ocular or cardiac anomalies. Important developmental changes are taking place in the eyes and heart early in fetal life and thus coincide well with the occurrence of rubella in these mothers. Embryonic tissues are particularly susceptible to virus infections, this fact being made use of in the culture of viruses on chick embryos. It is conceivable that because of the smaller size of the filtrable virus it may pass the barrier of the chorionic villi more readily than larger infectious agents such as bacteria. Thus it seems plausible that a woman might have a mild systemic infection, such as rubella, might not be seriously ill herself and yet have serious injury occur to the developing fetus. The author thinks that girls should not be allowed to pass through childhood without having had rubella—a deliberate exposure at an opportune time would seem wise. He also discusses the justification for therapeutic abortion if rubella occurs during the first two months of pregnancy, because according to Swans figures and his own 100 per cent of such babies will have serious congenital malformations. He recommends animal experiments with various types of viruses extending throughout the entire period of gestation.

**Fibrocystic Disease of Pancreas**—The report by Philipsborn and his collaborators is concerned with the clinical and pathologic findings in 26 proved cases of fibrocystic disease seen at the Children's Memorial Hospital in Chicago since 1938. In the early cases the condition was frequently erroneously labeled, some of the patients were thought to have bronchopneumonia, others were considered to be feeding problems. The disease is not uncommon. Pathognomonic lesions have been seen in approximately 35 per cent of the patients on whom necropsy has been performed at the Children's Memorial Hospital since attention was drawn to the syndrome. Fibrocystic disease has its inception in infancy, unlike celiac disease, which first becomes apparent during childhood. Ordinarily it manifests itself in one of three forms: (a) primarily in respiratory difficulties, (b) primarily in gastrointestinal disturbances and (c) in a combination of respiratory and intestinal difficulties. The patient is usually under 1 year of age. The mother brings the child to the physician complaining either of chronic cough and colds or of failure to gain weight. One of every 4 or 5 of these patients will have had a sibling who died in childhood of diarrhea,

pneumonia and malnutrition. Physical examination often reveals a high degree of emaciation, which is more striking when one has seen the enthusiasm with which many of these children eat. Studies of vitamin A absorption on blood drawn before and after the administration of 0.1 cc of percomorph liver oil per pound of body weight have assisted in diagnosis. Patients in whom pancreatic cystic fibrosis existed have had blood vitamin A levels that were under 30 units. The duodenal enzymes have been decidedly reduced both before and after stimulation of the pancreas. Absence or existence of a reduced enzyme concentration in the duodenum following secretin stimulation is significant. Fibrocystic disease is the clinical manifestation of extensive pancreatic cystic fibrosis. The antemortem diagnosis can be facilitated by realizing the various forms in which the disease manifests itself and by the judicious use of selected laboratory procedures.

## Minnesota Medicine, St. Paul

27 777-872 (Oct.) 1944

- Responsibility of Physician in Problem of Maternal Mortality J H Moore—p 801  
Placenta Previa as Factor in Maternal Mortality R A Reis—p 805  
Discussion of Report of Minnesota Maternal Mortality Committee J C Litzenberg—p 806  
Conservative Treatment of Disk Syndrome M O Henry—p 809  
Injuries of Urinary Tract Complicating Fractures of Pelvis T H Sweetser—p 812  
Influenzal Meningitis A W Ide Jr—p 816  
Practical Points in Diagnosis of Pulmonary Tuberculosis S A Slater—p 819

## Oklahoma State Medical Assn Jour, Oklahoma City

37 435-480 (Oct.) 1944

- Clinical Diagnosis of Malnutrition H Jeter—p 435  
Physician Looks at Public Health Education C Gallagher—p 440  
Diabetes and Pregnancy P B Cameron—p 443

## Public Health Reports, Washington, D C

59 1299-1330 (Oct 6) 1944

- Epidemic of Severe Pneumonitis in Bayou Region of Louisiana B J Olson and W L Treuting—p 1299  
Studies on Duration of Disabling Sickness VI Time Lost from Short Term Absences and Its Relation to Total Time Lost W M Gafar and Rosedith Sitgreaves—p 1311

59 1331-1362 (Oct 13) 1944

- Epidemic of Severe Pneumonitis in Bayou Region of Louisiana II  
Clinical Features of Disease W L Treuting and B J Olson  
—p 1331  
Control of Aedes Aegypti in Savannah C A Henderson—p 1350

## South Carolina Medical Assn Journal, Florence

40 199-220 (Oct.) 1944

- Rheumatic Fever M W Beach and B O Kaxenel—p 199  
\*Development and Interpretation of Auscultatory Signs of Mitral Stenosis J A Boone and S A Levine—p 203  
Rheumatic Fever Program in South Carolina—G S T Peeples—p 205  
Medical Statistics of South Carolina IV Comparison of General Hospital Beds in Various Counties of State with Federal Standards of Adequacy A M Lassek—p 207

**Auscultatory Signs of Mitral Stenosis**—During a study of 225 cases of 'potential rheumatic heart disease' and 'rheumatic mitral insufficiency' followed closely over a period of five to twenty-three years the auscultatory signs leading up to a final diagnosis of mitral stenosis in 17 cases were observed and described by Boone and Levine. In 12 of these cases a rumbling apical middiastolic murmur preceded by months or years the appearance of the classic presystolic crescendo murmur of mitral stenosis. In 10 other cases of the 225 a similar middiastolic murmur was subsequently found to disappear. The appearance of accentuation of the apical first heart sound and of the pulmonary second sound in rheumatic patients should stimulate the clinician to search more diligently for signs of valvular disease, but of themselves they are of little help in forecasting the development of mitral stenosis. Apical systolic murmurs of slight intensity and apical third heart sounds seem to have no practical implications. In adolescent and young adult rheumatic patients a definite diagnosis of mitral stenosis should be made only on the finding of a long rumbling presystolic apical crescendo murmur ending in an accentuated first heart sound. The

diagnosis may be suspected on the finding of definite apical middiastolic murmurs, but with the expectation that approximately half of these murmurs will disappear with further observation

## Surgery, Gynecology and Obstetrics, Chicago

79 449 560 (Nov.) 1944

- Transurethral Resection and Open Prostatectomy. Consideration Based on Ten Years of Experience with Transurethral Resection J L Emmett —p 449
- Diffusion and Localization of Experimental Infections of Peritoneum B Steinberg and Ruth A Martin —p 457
- \*Therapy of Burns. Comparative Experimental Study Including Medicated Pliable Gelatin Film and Note on Effect of Firm Dressings on Rate of Healing R A Roback and A C Ivy —p 469
- Debridement When and How Much? Comparative Study of Battle Casualties C W Monroe —p 478
- Pilonidal Sinus. Sacrococcygeal Cyst Teratoma F V Theis and M W Rusler —p 482
- Physician Blood Transfusion. Rh Factor and Erythroblastosis Fetalis R J Pieri and R C Schwartz —p 490
- Use of Lycopodium as Agent to Create Collateral Circulation to Myocardium from Pericardium. Preliminary Report J V Scola and F G Stoesser —p 497
- \*Acute Pancreatitis with Special Reference to X-Ray Diagnosis D Metheny E W Roberts and A Stranahan —p 504
- Transmesenteric Hernia G D Cutler and H W Scott Jr —p 509
- \*Role of Nucleus Pulposus in Pathogenesis of So Called "Recoil" Injuries of Spinal Cord F Cramer and F J McGowan —p 516
- Observations on Displaced Fractures of Hand G M Saypol and L R Slattery —p 522
- Total and Partial Patellectomy. Experimental Study B N E Cohn —p 526
- New Stitch for Use in Partial Gastrectomy H H Shoulders —p 537
- Adenocarcinoma with Clear Cells (Hypernephroid) of Ovary O Syphur and J E Leckner —p 539
- Reconstruction of Wounds of Colon C H Keene —p 544
- Technic for Aseptic Intestinal Anastomosis D I Stevenson —p 552
- Effect of Spinal Anesthesia on Motility of Small Intestine J D Helm Jr and F J Ingelfinger —p 553

**Therapy of Burns**—Roback and Ivy review studies which were undertaken to determine (1) whether a medicated pliable gelatin film possesses advantages other than the ease of application, and (2) whether the film disturbs or promotes the healing of burns. A uniform size excision wound, an excision wound and a third degree burn were made on each side of the back of dogs. The effect of several medicated preparations was compared by placing one of the preparations over the wound on one side of the back and another over the wound on the other side of the back. A 25 per cent sulfathiazole ointment Pickrell's solution, which produces a film, and 10 per cent boric acid ointment were compared with a gelatin film containing 25 per cent sulfathiazole, some potassium iodide and enough glycerin and water to render the film pliable. A wound produced by removing the skin to the depth of the base of the hair follicles healed in the same time when treated with the gelatin film and the 25 per cent sulfathiazole ointment. With use of a loosely applied dressing the excision wounds healed in the same time when treated with the medicated gelatin film and the sulfonamide ointment, though the burn wounds healed somewhat more rapidly when treated with the medicated gelatin film. With use of a firmly applied dressing, the burn wounds treated with the medicated gelatin film healed more rapidly than those treated with Pickrell's solution. When the burn wounds were treated with the gelatin film and boric acid (10 per cent) ointment the healing time was the same. The incidence of infection was less with the medicated gelatin film than with the other medicated preparations used. But the extent of infection had no effect on the average healing time. Twenty-three noninfected wounds healed on the average in forty days and 29 wounds slightly infected for three or more days healed in thirty-nine days. A wound produced by burning heals less rapidly than a wound produced by excision. The evidence definitely shows that a firmly applied dressing decreases the time required for the complete epithelization of a burn wound. Medicated gelatin covered with a medicated pliable sheet of gelatin and a firmly applied gauze or cotton dressing can be used for the treatment of burns and may prove to be more desirable than other preparations now used in the management of burns and extensive skin wounds.

**X-Ray Diagnosis in Acute Pancreatitis**—Metheny says that between 1931 and 1943 27 patients for whom a diagnosis of acute pancreatitis was established were admitted to the King

County Hospital, Seattle. The diagnoses were proved either at operation or at necropsy. The authors include 5 other cases in which they consider the diagnosis to be proved by the blood amylase and other typical conditions and by the x-ray films. There are essentially three roentgenologic signs suggestive of acute pancreatitis: (1) tender tumefaction of the pancreas, (2) changes in the stomach and duodenum, (3) evidence of ileus. The roentgenologic changes are predicated on the fact that the pancreas in acute disease is swollen to two or three times its normal size. It presses against the greater curvature of the stomach. The duodenum has lost its tone, and the fluoroscopist will be able to push barium sulfate into it, where it seems to hang and fails to be moved forward by peristalsis. Occasionally there will be enough gas in the stomach to give the characteristic outline of the greater curvature near the pylorus. More frequently there will show a fair-sized blob of gas in the cardia and another smaller one in the duodenal bulb. Also localized ileus, especially of the transverse colon or upper loops of jejunum, is observed. These x-ray changes were present when the patients were first seen and persisted as long as the disease lasted—in 1 case, twenty-one days after onset—and long after the blood amylase had returned to normal. In every 1 of the 32 patients, the onset was acute with nausea and vomiting. They had epigastric pain, but tenderness was often so slight as not to be noticed. Every patient had albuminuria so that absence of albuminuria would make pancreatitis doubtful. The patients might suggest a ruptured peptic ulcer, but they lacked the board-like rigidity. They might suggest an acute disorder of the gallbladder except for the fact that they were too ill, or an acute coronary thrombosis but for the slow or normal pulse rate and blood pressure. Nine patients with pancreatic edema were operated on, and 9 survived. Eight patients with pancreatic necrosis were operated on. Five died and 3 survived.

**Role of Nucleus Pulposus in "Recoil" Injuries of Spinal Cord**—Cramer and McGowan report the case of a soldier, aged 20, who struck his head while diving in shallow water. He died fifty hours after the accident. Necropsy revealed that the spinal cord was almost severed. Aside from the prolapse of the intervertebral disk, no abnormal vertebral protrusion nor gross tearing of any posterior ligaments could be demonstrated. On the basis of this case the authors advance what they believe to be an essentially new concept of the so called recoil injuries of the spinal cord. They believe that it is not the rather incredible excursion of a vertebral body virtually across the width of the spinal canal and back again but the violent protrusion of the intervertebral disk by means of the hydraulic ramlike action of the nucleus pulposus, or the rupture of the latter when subjected to sudden intense compressive force, which causes the damage to the spinal cord.

## Western J. Surg., Obst. & Gynecology, Portland, Ore

52 407-454 (Oct.) 1944

- Cardiac Dyspnea T R Harrison —p 407
- Criteria of Ovulation W T Pommerehne —p 416
- Prevention and Cure of Retrodisplacements of Uterus Following Cesarean Section J L Bubis —p 432
- Organic Hyperinsulinism H D Colver —p 437
- \*Diagnostic and Therapeutic Use of Prostagmin. Its Effect on Pregnancy or Delayed Menstruation L L Grossmann —p 443

**Neostigmine in Diagnosis of Pregnancy and in Treatment of Delayed Menstruation**—The use of neostigmine as a diagnostic agent in determining pregnancy and in the treatment of amenorrhea was originated four years ago by Soskin, Wachtel and Hechter. Grossmann in 1942 reported 30 cases of either early pregnancy or delayed menstruation which were subsequently diagnosed or treated with neostigmine. Since then he has routinely administered the drug to an additional 100 patients complaining of menstrual delay. One cubic centimeter of neostigmine methylsulfate, 1 to 2,000 strength, was administered to each patient on three consecutive days. In some instances menstrual flow was precipitated after only one or two treatments thereby obviating the need for further injections. No untoward reactions from the drug were noted. The author stresses that the test is inexpensive, is simple to apply and does not require laboratory assistance for verification. Uterine bleeding will almost invariably result in cases of amenorrhea not due to pregnancy, of endocrine deficiencies or of gross pelvic disease.

# FOREIGN

An asterisk (\*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

## British Medical Journal, London

2 425-458 (Sept 30) 1944

- Infantile Diarrhea and Vomiting M B Alexander and L Eiser —p 425  
 \*Inhibition of Lactation by Hexestrol Dipropionate F Prescott and Margaret Basden —p 428  
 Factors Influencing Dermatitis in Coal Miners R B Knowles —p 430  
 Intravenous Anesthesia Continuous Positive Pressure Drip Saline with Intermittent Pentothal W M Maidlow —p 432  
 Sympathetic Block Proposed Therapy in Traumatic Shock D Engel —p 434

**Inhibition of Lactation by Hexestrol Dipropionate**—Prescott and Basden point out that esterification of the estrogens retards their rate of absorption and elimination and thus prolongs their action in the body. Brownlee converted hexestrol into the dipropionate salt and found that by injection hexestrol dipropionate was one and a half to three times as potent as hexestrol when tested on rats. By mouth, hexestrol dipropionate was not so potent as hexestrol weight for weight, but the duration of action was twice as long. Hexestrol dipropionate was given to separate groups of women orally in tablet form and intramuscularly in oil but it soon became apparent that it was not so effective orally as parenterally, and the oral route was abandoned. The patients treated were those in whom it was necessary to inhibit lactation because of stillbirth, abortion, neonatal death or cracked nipples. No other treatment was given the breasts were not bound up, no purgatives were used and fluids were not restricted. A single intramuscular injection of 12.5 mg of hexestrol dipropionate inhibited lactation in 29 of 44 mothers shortly after childbirth. When it was given within the first three days of delivery, lactation did not occur and there were no signs of breast engorgement or discomfort. Of the remaining women all but 1 ultimately responded to repeated injections. Only 8 required treatment for more than three days. A further course of injections to suppress secondary filling was necessary in only 3 (7 per cent) of the women. This compares well with the figure of 25 to 45 per cent for diethylstilbestrol. Hexestrol dipropionate, given intramuscularly in one or two doses, was effective also in suppressing lactation in 5 cases in which it had already been established.

## Lancet, London

2 395-426 (Sept 23) 1944

- Rapid Closure of Wounds P Clarkson —p 395  
 Inactivation of Penicillin by Serum J W Bigger —p 400  
 Oliguria in Blackwater Fever B G Macgrath and G M Findlay —p 403  
 Unusual Response to Dicumarol Therapy T Crawford and J R Nassim —p 404  
 Mesenteric Thrombosis in Lymphatic Leukemia Treated with Dicumarol —p 405  
 Significance of Blood Histaminase in Pregnancy A Ahlmark —p 406  
 Acute Diffuse Peritonitis Treated with Sulfathiazole Suspension J T Chesterman —p 407

**Inactivation of Penicillin by Serum**—Bigger presents results of experiments in which penicillin was titrated against *Staphylococcus pyogenes* in broth, in serum and in water. Both serum and blood inactivated penicillin, this inactivation varied greatly in degree with different samples of serum but was always much greater at 37 C than at lower temperatures. There can be no question that this inactivation is due to the presence in the serum or blood of penicillinase produced by penicillin resistant bacteria. Chain and Florey believed it to be a particularly fortunate property of penicillin that pus, tissue autolysates, blood and serum had no inhibitory effect on its activity. This statement has been repeated by other writers on penicillin. It originated in the paper by Florey and his collaborators in 1941 which records that incubation for three hours at 37 C of penicillin with blood and with slices of liver, kidney, spleen, brain muscle lymph gland, lung and intestine from the rabbit causes no detectable destruction. The author thinks that if human blood had been used and if the period of incubation had been extended inactivation of penicillin would have been detected. The author also cites observations by Rammelkamp,

Keefer, Fleming and others which give strong support to the belief that penicillin is inactivated in the body by contact with the blood. Penicillin administered intravenously, spreads from the blood vessels into the tissues. An investigation of the effect on penicillin of the tissue fluids might be valuable. The author concludes that penicillin is inactivated by contact with human serum or blood, the degree of inactivation varying greatly with different specimens of serum and being much greater at body temperature than at lower temperatures. This inactivation may lead to underestimation of the amount of penicillin in a patient's serum. Inactivation in vivo is probably important chiefly in cases in which excretion of penicillin by the kidneys is slow.

2 427-458 (Sept 30) 1944

- A Surgeon Looks at Two Wars C C Cutler —p 427  
 \*Constitutional Factor in Anesthetic Convulsions D Williams and W H Sweet —p 430  
 Hyaluronidases in Infected Wounds J D MacLennan —p 433  
 Detection of Bacterial Enzymes in Infected Tissues D McClean and H J Rogers —p 434  
 Neurologic Complications of Relapsing Fever R B Scott —p 436  
 Myxedema and Psychosis H Zondek and Gerda Wolfsohn —p 438  
 Hypertension Associated with Unilateral Renal Lesion E J R Leiper —p 439  
 Case of Cardiovascular Beriberi J W Pringle and G J Aitken —p 440

**Constitutional Factor in Anesthetic Convulsions**—Williams and Sweet report the results of electroencephalographic investigations on 22 patients of a series of 42 who had an anesthetic convulsion. The electroencephalographic investigation was carried out in all cases more than a month after the convulsion, and in most the interval ranged from one to two years. The patients were all in good health when examined and had had no further fits since the solitary anesthetic convulsion. Abnormal electroencephalographic records were obtained from about three fourths of these cases. Paroxysmal outbursts of abnormal waves were seen in over one half and larval epileptic attacks in a fourth. The incidence and nature of the different abnormal discharges seen were identical with those found in a large group of persons with idiopathic epilepsy and they did not result from the convulsion. There was no evidence from clinical observations in the 42 cases that the anesthetic convulsions differed in any respect from epileptic fits. All the evidence presented supports the view that anesthetic convulsions are primarily due to an inborn but latent epileptic liability. The factors which precipitate a convulsion in these predisposed persons vary among individuals, but many of the factors which have been incriminated are well recognized precipitants of epileptic fits in conscious subjects. It seems that the main difference between subjects of anesthetic convulsions and of idiopathic epileptic fits lies in the degree of predisposition to convulsions, factors which arise during anesthesia being merely precipitants of the convulsion.

## South African Medical Journal, Cape Town

18 255-268 (Aug 12) 1944

- Shadocol (T I P) in Treatment of Amebiasis Preliminary Report J S Alexander M Park Ross and M Stein —p 253  
 \*Relationship of Fluorine Content Hardness and pH Values of Drinking Water and the Incidence of Dental Caries T Ockerse —p 255  
 Public Health Aspects of an Outbreak of Tick Relapsing Fever in Non Europeans in Kimberley D Ordman —p 259  
 Diencephalic Three Armed Full Time European Child S J Cohen —p 262  
 Etiology of Onchocerciasis J H S Geer R M Leo and J C Bodenstein —p 265  
 Osteoarthritis in Bantu P Keen —p 267

**Fluorine Content, Hardness and pH Values of Drinking Water and Dental Caries**—During a survey of the incidence of dental caries in different parts of South Africa, 78,563 school children were examined. The number of children with caries in each city, town and district was expressed as a percentage. The fluorine content, hardness and pH values of drinking water of 109 cities and towns were determined. The mean fluorine content, hardness and pH values of 86 districts were calculated from the numerous analyses supplied by the South African Railways and Harbors, the Division of Chemical Services, and from analyses of samples submitted by the author. It was found that a highly significant relationship exists between

(a) the fluorine content of drinking water and the caries incidence rate (in the presence of fluorine in excess of 1 part per million the caries incidence rate is low, but in areas where there is much less than 1 part per million of fluorine the caries incidence is very high), (b) hardness of drinking water and the caries incidence rate. There is less caries where the water is hard and more caries where the water is soft. When the factors of the fluorine content and hardness act together, they influence the caries incidence rate in towns and in districts to the same extent. When the fluorine content and the hardness are each low, caries is far more prevalent both in towns and in districts. When the fluorine and the hardness are each high, caries is less prevalent. The higher  $p_n$  (i. e. more alkaline) values of drinking water from the districts as compared with the towns appear to be significantly associated with the lower caries incidence rate in these areas. A high  $p_n$  value, a high hardness and a fluorine content in excess of 1 part per million in drinking water together appear to be definitely associated with a low incidence of caries. On the other hand, when the  $p_n$  value tends to be low, i. e. more acid, there is usually a low hardness and a low fluorine content. This is associated with a significant increase in the incidence of caries.

### Helvetica Medica Acta, Basel

#### 11 337-612 (June) 1944 Partial Index

- Sulfonamides in Surgery P. Decker and W. Hessler—p. 337  
 \*Technic and Results of Extra Articular Tibial Graft Plastic in Habitual Dislocation of Shoulder H. Brun—p. 495  
 Question of Medullary Nailing in Fractures of Tubular Bones O. Schurch—p. 501  
 Value of Classic Clinical Signs in Diagnosis of Lesions of Menisci A. Nicolet Steinmann—p. 509  
 Primary Osteosynthesis in Open Fractures G. Neff—p. 515  
 External Transcutaneous Fixation for Mandibular Fractures R. Hoffmann—p. 521  
 Cause of Sudeck's Atrophy in Fractures R. Nicole—p. 533  
 Combination of Suction Drainage and Thoracoplasty A. Brunner—p. 551  
 Roentgenologic Pulmonary Changes in Traumatic Fat Embolism A. Fehr—p. 555

**Extra-Articular Tibial Graft Plastic in Habitual Dislocation of Shoulder**—Brun performed 65 operations for habitual dislocation of the shoulder on 63 patients. Most of the patients were young men including athletes, skiers, soldiers and hod carriers. In 50 operations he used the extra-articular implantation of a tibial graft into the neck of the scapula as suggested by Eden in 1918. He has abandoned opening of the joint and intra-articular graft plastics. He aims at the production of a bony abutment which prevents the slipping out of the humeral head. In the extra-articular implantation the tibial graft must be larger than in intra-articular grafting. He now uses a tibial graft 7 cm in length and 2.5 cm in width at its proximal end. In preparing the pocket for the graft he sees to it that it runs along the bone surface of the neck of the scapula and does not extend beyond the lower rim. This avoids the slipping in of the muscle mass of the subscapularis, and the graft will rest in its entire length on the bone surface and can merge with it. For the first eight days after operation, until the wound is healed the author fixes the arm to the body in adduction. After that he immobilizes the shoulder joint in abduction by means of a circular thorax-arm plaster cast for a period of six weeks. Abduction up to the full horizontal line has proved advantageous to regain quickly the complete function of the shoulder joint. This simple operation, which requires only about an hour, is superior to all other methods of treatment for habitual dislocation of the shoulder.

### Monatschrift für Geburtshilfe und Gynäkologie, Basel

#### 117 57-112 (Feb.) 1944 Partial Index

- \*Cholinesterase Test in Toxemias of Pregnancy A. D. Herschberg W. Cersendorf and J. Piquet—p. 57  
 \*Cause of Late Puerperal Hemorrhages F. Palik and K. Rehnitz—p. 74  
 Carcinoma of Gartner's Duct Report of 2 Cases A. Bernstein—p. 81

**Cholinesterase Test in Toxemias of Pregnancy**—Herschberg and his co-workers found that the serum cholinesterase content in pregnant and parturient women is not changed by undisturbed pregnancy and normal delivery. In the presence of pregnancy toxemia the cholinesterase content of the serum invariably shows an early decrease which is pro-

portionate to the severity of symptoms. As soon as the symptoms of toxicity subside, the cholinesterase content returns to normal values. A difference in excess of 0.4 cc of sodium hydroxide on titration is regarded as indicative of toxemia.

**Cause of Late Puerperal Hemorrhages**—In 9 cases of late puerperal hemorrhages, after 4 births and 5 abortions, Palik and Rehnitz discovered that hyaline degeneration of decidual remnants was the cause. Degeneration probably began before delivery under the influence of trophoblast cells. The liquefaction and expulsion of the decidua probably failed to take place, because the fibrinous degenerated decidua does not elicit the round cell demarcation. The treatment consisted in instrumental removal of the remnants. After abortions, the earlier onset of menstruation may produce spontaneous cure.

### Revista Clínica Española, Madrid

#### 12 291-362 (March 15) 1944 Partial Index

- Familial Acute Cirrhosis of Liver in Children J. Roí Carballo M. Morales Pleguezuelo and F. Clavel—p. 301  
 Primary Osteomyelitis of Patella Case A. Raventos Moragas—p. 316  
 \*Vitamin D Therapy in Large Doses and Calcium in Acute Rheumatic Fever A. Dosal—p. 325

**Vitamin D and Calcium in Acute Rheumatic Fever**—Dosal gave vitamin D in large doses and calcium to 7 patients with rheumatic fever complicated by endocarditis. The disease was of acute, septic form with acute anemia in 2 patients. Vitamin D was given intramuscularly in doses of 15 mg for the first injection and of 7 mg for the second injection given two days later. Calcium lactate was given by mouth beginning the day after discontinuation of vitamin D<sub>2</sub> up to saturation. Improvement rapidly followed in all cases. Fever, perspiration, tachycardia and dyspnea were controlled. The patients were discharged from the hospital in satisfactory condition three weeks after admission. The improvement was permanent three or four months after discontinuation of treatment.

### Wiener medizinische Wochenschrift, Vienna

#### 93 19-38 (Jan 9) 1943

- \*Practical Diagnosis of Active Pulmonary Tuberculosis I. W. Reichel—p. 19  
 Practical Microscopy for Physicians Review of Methods for the Study of Microscopic Material E. Schild—p. 27

**Diagnosis of Active Pulmonary Tuberculosis**—Psychic symptoms such as weakness, easy fatigability, decreasing energy and reduced intellectual productivity may be part of the patient's subjective complaints. Subfebrile temperature may be observed in patients suffering with various chronic bacteremias and with mild disturbances of metabolism, but except in the vagotomic the temperature curve of patients with active tuberculosis may be differentiated from that in other diseases by the rise of from 0.2 to 0.5 degree centigrade in the afternoon as compared with the morning temperature. Rise in temperature associated with an increase in strenuous work, may be prolonged for at least two hours in patients with tuberculosis, in normal persons and in other diseases the temperature may be restored to normal within ten minutes to one hour. Pain, of which patients frequently complain may be considered as a symptom of active tuberculosis provided it is vague and mild. An increase in the number of the eosinophils occurs in exudative tuberculosis when the exudative process has passed its height. In proliferative tuberculosis this increase occurs simultaneously with the proliferation of the specific granulation tissue. An increase in the sedimentation rate occurs in exudative tuberculosis except where the absorption of the broken down tissue is prevented by encapsulation. As a rule the sedimentation rate is normal in proliferative tuberculosis but it may be temporarily increased in cases in which an aseptic nonspecific necrosis results from disturbances of nutrition due to the pressure of the proliferating granulation tissue on the adjacent vessels. Subcrepitant rales may be heard in cases in which the inhaled and exhaled air passes through the secretion. A tuberculous process isolated from the air passages may be silent. Changes in the respiratory sounds are heard on auscultation in cases in which consolidated tissue is interposed between the ear of the listener and the larger air passages. X-ray examination is the best aid to diagnosis of active pulmonary tuberculosis.

## Book Notices

**Segmental Neuralgia in Painful Syndromes.** By Bernard Jadorich BS MD Instructor in Neurology Graduate School of Medicine University of Pennsylvania Philadelphia and William Bates BS MD F.A.C.S. Professor of Surgery Graduate School of Medicine University of Pennsylvania Foreword by Joseph C. Yaskin MD Professor of Neurology Graduate School of Medicine University of Pennsylvania Cloth Price \$5 Pp 313 with 178 Illustrations Philadelphia F. A. Davis Company 1944

Segmental pain and tenderness, or segmental neuralgia is defined by the authors as an area of spontaneous pain within one or more tender skin sensory segments, generally called dermatomes. Thus pain and tenderness may arise from any disease process, toxic absorption or mechanical disturbance which directly or indirectly causes irritation of the intraspinal or paraspinal elements which enter into the segmental distribution. Specifically these elements include the spinal roots before their exit from the vertebral column the dorsal root ganglions, the nerve trunks prior to their formation of the primary divisions and the soft structures close to the intervertebral foramina and nerve trunks. Repeated observations by the authors suggest that the combination of segmental pain and tenderness has its origin within or close to the vertebral column rather than in peripheral or referred visceral stimuli. Their purpose is to show that clinically the interpretation of pain can be greatly facilitated by eliciting hyperalgesic or tender skin zones which accompany the pain. The presence of tenderness and its distribution, whether local or segmental is of great aid in diagnosis and therapy. The work is based on the fact that clinically the combination of segmental pain and tenderness usually appears to be due to factors which irritate roots, ganglions or trunks of the spinal sensory nerves and not to painful impulses originating in diseased viscera. In other words, pain and segmental tenderness of the skin in most instances appears to be of somatic origin rather than of visceral origin. In the chest and abdomen segmental pain and tenderness may simulate the pain of visceral disease, and many patients who have submitted to medical treatment and surgical procedures are not relieved of pain until treatment is directed to the somatic origin of the pain and its cause. In the chest, segmental pain and tenderness is referred to as intercostal neuralgia. In the abdomen it has been called abdominal wall neuralgia. Other painful syndromes which are associated with segmental pain and tenderness include back sprains, scalp neuralgias, sciatic pain, brachial plexus pain, tic douloureux, scalenus anticus syndrome, herpes zoster and ruptured intervertebral disk.

The authors emphasize the diagnostic value of tenderness and devote much space to therapy, especially the technique of nerve infiltration, which in their experience has yielded the most satisfactory relief of pain. The source of back pain, in their experience is more accurately defined when approached not only from the point of view of localization by segmental tenderness but by distinguishing pain with tenderness from pain without tenderness. The patient with segmental tenderness also obtains more satisfactory relief of pain when massage heat or other modalities are applied to the spinal area rather than to the peripheral area of spontaneous pain. Paravertebral infiltration of nerve trunks is a valuable procedure in the relief of pain. The relief is more rapid than by any other form of therapy. This treatment should be reserved for pain of prolonged duration or for pain that cannot otherwise be controlled.

The authors emphasize the fact that while the complaints of the patient may lie within the distribution of the posterior primary divisions, tenderness of the anterior division is usually demonstrable and vice versa. The fact that a local infiltration of procaine into painful 'trigger points' gives relief of pain is not conclusive of the fact that these areas are the causes of the pain. Paravertebral infiltration in the same patient selecting the involved nerve trunks yields a much more satisfactory result. Although injections of irritant substances into areas of the buttock or of the back may cause acute pain in the leg or other areas they do not cause referred pain which is associated with segmental skin tenderness. The authors emphasize that

sympathetic or brachial plexus anesthesia will relieve pain whether or not a true scalenus anticus syndrome is present. The first prerequisite for acquiring proficiency in examining patients is to become familiar with the types of tenderness and the methods of eliciting tenderness. The pitcher plant distillate apparently is useful only in segmental neuralgia, which aside from the intercostal and trigeminal types, is rare. Its usefulness in meralgia paresthetica is doubtful. The authors specifically state that it is not of use in skeletal types of pain which rules out the neuritides, of which the disk syndrome is a specific type.

The choice of borrowed material is excellent especially that from Tilney and Riley, Labat, Foerster and Keegan. The book fills a need, that need being the integration of various poorly delineated painful syndromes. It should be of interest to every orthopedist, neurosurgeon, neurologist and anesthetist.

**Os milagres do 'Padre de Poá. Estudo científico. Relações com a medicina. O sobrenatural e a ciência.** Por T. de Aguiar Whitaker médico psiquiatra do Serviço de Identificação do Gabinete de Investigações de São Paulo. Paper Pp 164 with 29 Illustrations. São Paulo The Author 1944.

In 1925 a dutch priest, Father Eustace Van Lieshout arrived in Brazil. After spending ten years in a sanctuary in Minas Gerais he moved to Poa, about 20 miles from São Paulo. Poa is a small village consisting of two streets leading to a square where the church stands. Adjacent to the church there is an artificial grotto with an image of the Virgin and a source of water flowing from under her feet. Poa offers to the tourist only the rudiments of civilization and under usual circumstances its population was not higher than a few hundred inhabitants. This situation was going to change under the magic spell of Father Eustace. The dutch priest began by gaining the confidence of his parishioners, and in the course of time he acquired the reputation of being a healer not only of souls but of bodies as well. This reputation grew later in such a way that the people of Poa came to consider him as a Saint and capable of working miracles. The news spread throughout the country and soon thousands of persons afflicted with the most varied diseases flocked to Poa after the miraculous power that was to cure their ailments. Father Eustace attended everybody the best he could. In an imperfect Portuguese he would first of all ask the patient whether he wanted to get well. Then he would say a simple prayer sometimes placing his hands on the afflicted region. On other occasions the patients would fill up containers in the fountain of the artificial grotto and after the water was made holy by the priest's blessing they would throw it on their bodies. The miracles performed stimulated big headlines in the newspapers and the degree of collective excitement rose to a tempo of hysteria. The floating population of Poa rose to 10,000 human beings who camped in the streets and country under the most unhealthful conditions and were exploited by profiteers and unscrupulous merchants. This alarming state of affairs came to a natural end when Father Eustace died on Aug. 30 1943.

In the first half of his monograph the author approaches the subject quite systematically gathering all available evidence on the cures such as witnessed by other people or by himself and also on the opinions that people from the varied cultural levels have on the case. Appended photographs give the reader a clear impression about Poa and its pilgrims the blessing of the miraculous water and the plain but attractive face of Father Eustace while performing his cure. In the second half the author enters into a thorough analysis of the miraculous or supernatural phenomena the Spanish mystics Lourdes, the Iguis and also of phenomena of metapsychology, premonitions, mediums, ectoplasms and the like.

Altogether Whitaker's book is a precious document which deserves to be read by both specialists and laymen.

Through Whitaker's descriptions and documents the reader gets a very vivid impression of the atmosphere of Poa in the years preceding Father Eustace's death. Such atmosphere would undoubtedly have supplied a writer of genius with invaluable material to write something comparable to what a medieval mystic or an Emile Zola wrote.



## Queries and Minor Notes

### BLOOD TRANSFUSION FOR GASTROINTESTINAL HEMORRHAGE

To the Editor—A consultant recently advised me to omit transfusions in bleeding gastrointestinal lesions provided the blood pressure is above 80 systolic because the transfusion might increase the hemorrhage. I will appreciate an authoritative opinion on this extremely important issue.

M. D. Massachusetts

ANSWER—Much has been said and written regarding the advantages and disadvantages of transfusion of blood in the presence of gastrointestinal bleeding. The fact remains however, that this procedure, correctly applied, is the most important single means of saving life in cases of severe gastrointestinal hemorrhage. The contention that transfusion might increase or restart hemorrhage is based on the assumption that raising the blood volume and blood pressure dislodges the thrombus in the vessel. This phenomenon rarely is encountered in actual practice. Patients have died from lack of a transfusion of blood but apparently no case of fatal hemorrhage that actually was caused by transfusion has been reported. Various authorities differ concerning the indications for transfusion as based on clinical and laboratory data. A systolic blood pressure of more than 80 mm of mercury in the absence of symptoms and signs of shock does not necessarily indicate need of a transfusion if the systolic reading was within normal range before hemorrhage. As a rule if the systolic blood pressure falls to less than 70 mm of mercury, other things being equal, transfusion is indicated. In cases in which massive hemorrhage has occurred, repeated transfusions of whole blood have been given safely at the moderately rapid rate of 500 cc per half hour. Transfusion of whole or citrated blood at a rate of forty to sixty drops per minute can be performed without risk. In addition maintenance of fluid and electrolyte balance and proper nutrition is essential. In more recent years, estimation of total blood volume (total plasma as well as total cells) has furnished reliable criteria as to the indications for transfusion, the amount of blood required and the frequency of administration.

### LONG CONTINUED ADMINISTRATION OF BARBITURATES

To the Editor—A normal healthy man aged 50 weighing 185 pounds (84 Kg) and 5 feet 7 inches (170 cm) in height has taken 1½ to 3 grains (0.1 to 0.2 Gm) of pentobarbital sodium nightly for the past ten years for insomnia. Physical examination was normal with repeatedly normal urine and blood examinations. What are the eventual deleterious effects? None are so far observable.

M. D. California

ANSWER—The chance of future deleterious effects in this man would appear unlikely. Even prolonged use of therapeutic doses of barbiturates in normal persons is not likely to be marked by discernible signs or only by slight slowing of physical and mental activity. Vertigo, ataxia, mild dementia or other symptoms may appear rarely. Unstable persons may show psychic aberrations, and those who react by inebriation tend to take the drug for that reason. The chief objection to the habitual use of barbiturates is addiction. Although withdrawal symptoms are rare, the subjects come to depend on the somnifacient drugs and fail to adjust their activities so that sleep occurs naturally and then sleep does not come to them without the aid of this artificial sedation. Proper treatment for insomnia not of organic origin includes the solution of mental problems of the daytime which are carried over into the night. Even though the drug may do little organic harm it may prevent this desirable psychotherapeutic attention.

### ADRENAL CORTEX AND DIABETES MELLITUS

To the Editor—Is there information regarding the effect of whole adrenal cortex, oxycorticosterone or desoxycorticosterone on the blood sugar level in juvenile diabetes or in the pituitary type of diabetes?

M. C. Kentucky

ANSWER—The islands of Langerhans are but one part of the body involved in the metabolism of carbohydrates. The liver and muscles are probably of equal importance, and certainly the hormones of the pituitary, thyroid, adrenals and sex glands play important parts. This is not taking into consideration neurogenic influences such as those originally described by Claude Bernard. The endocrine products of both the adrenal medulla (epinephrine) and many fractions obtained from the adrenal cortex are concerned with the regulation of the blood sugar level. No fraction known as oxycorticosterone has been described but three fractions have received considerable attention: desoxycorticosterone acetate, which has little if any effect

on carbohydrate metabolism, and corticosterone and fraction E (Kendall) both of which raise the blood sugar level. Soskin has reviewed the role of the endocrine in the regulation of blood sugar. Lukens and Dohan have discussed their findings as they pertain directly to the adrenal cortex. Other references which pertain to this relationship are also listed. Probably the best discussion of this subject has been that by Joslin in the *New England Journal of Medicine*. It may be said that there is a great need for detailed metabolic investigation of the role of fractions of the adrenal cortex in the metabolism of carbohydrates, but information on the subject has not yet reached the point where it is worthy of conclusions or clinical application.

#### References

- Soskin, Samuel. The Role of the Endocrines in the Regulation of Blood Sugar. *J. Endocrinol.* 4: 75 (Feb.) 1944.  
Lukens, F. D. W. and Dohan, F. C. Further Observations on the Relation of the Adrenal Cortex to Experimental Diabetes. *Endocrinology* 22: 51 (Jan.) 1938.  
Joslin, E. P. Medical Progress. Diabetes Mellitus. *New England J. Med.* 228: 645 (May 20) 1943.  
Ferrill, H. W., Rogoff, J. M. and Barnes, B. O. Further Studies on the Influence of the Adrenal Glands on Experimental Diabetes. *Am. J. Physiol.* 133: 41 (Sept.) 1935.  
Gordon, E. S. The Use of Desoxycorticosterone and Its Esters in the Treatment of Addison's Disease. *The Journal* June 29, 1940 p. 2549.  
Joslin, E. P., Root, H. F., White, Priscilla and Marble, Alexander. Treatment of Diabetes. *Philadelphia*. Lea & Febiger 1940.  
Rogoff, J. M. and Ferrill, H. W. The Adrenals and Experimental Insular Diabetes. *Arch. Int. Med.* 60: 805 (Nov.) 1937.  
Thorn, G. W. Clinical Use of Extracts from Adrenal Cortex. *The Journal* May 6, 1944 p. 10.  
Hormones and Synthetic Substitutes. New and Nonofficial Remedies 1943 p. 409.  
Untoward Effects of Endocrine Therapy. Report of Council on Pharmacy and Chemistry. *The Journal* July 15, 1944 p. 786.

### AMINOPHYLLINE AND RENAL CALCULI

To the Editor—Recently 3 cases of renal calculi following the oral administration of aminophylline have come to my notice. Is it probable that there is a precipitation of this drug into the kidney pelvis? If so, is it likely to be avoided by drinking lots of water and giving sodium bicarbonate with the drug?

Frederick J. Walter, M.D. San Diego, Calif.

ANSWER—There is no clear evidence in the published reports that aminophylline has been the cause of renal calculi. From a pharmacologic and chemical standpoint it is difficult to visualize how the excretory products of aminophylline could give rise to or augment the formation of renal calculi. It might be well to review these cases and exclude other agents, a chemical examination of one of the stones would be of interest. In any event the use of large amounts of water and sodium ion, in the form of sodium bicarbonate, greatly enhances edema formation and would thus defeat the purpose of the diuretic.

### EDEMA PROBABLY DUE TO HEART FAILURE—SENSITIVITY TO DIGITALIS

To the Editor—A woman aged 75 gets a pitting edema in the late afternoon which almost completely disappears over night. Her blood pressure is 140/70, the heart tones are somewhat floppy but there are no murmurs. I have tried support of the heart but each time digitalis is administered (1½ grains [0.1 Gm]) of digitalis, one brand or 10 drops of tincture of digitalis a day) severe nausea and occasional vomiting follow the second dose. What can be given to support the heart? She rests every afternoon in bed.

Captain M. C. A. U. 5

ANSWER—Two questions are raised in this query. In the first place is there really congestive failure that needs digitalis or is there some other cause for the edema. It is important to establish the diagnosis with certainty. Cardiac enlargement should be found before edema due to heart disease is diagnosed. If the edema is due to constrictive pericarditis the heart need not be large but one should look for other evidence of the constriction. Otherwise a small heart means that the edema is of other origin for example, associated with poor local circulation in the legs with or without venous thrombosis.

The second question concerns the apparent sensitiveness to digitalis. On occasion frail old ladies prove to be unusually affected by the drug, but if in this case a diagnosis of myocardial weakness with congestive heart failure is definitely established digitalis should be resumed in smaller dosage or squill in the form of urguin may be tried. On the other hand it is important to rule out a digitalis psychoneurosis which on occasion can induce a disagreeable reaction that is from a fear of the drug or a dislike of its taste. Another helpful measure in addition to rest and if indicated digitalis, in reducing the dependent edema would be a restriction of salt and fluid intake. In obstinate congestive heart failure when digitalis is per se insufficient or difficult to push then the diuretic drugs should be given.



JOURNALS ABSTRACTED IN THE CURRENT MEDICAL LITERATURE  
DEPARTMENT, SEPTEMBER—DECEMBER 1944

Titles have been listed or abstracts made of important articles in the following journals in the Current Literature Department of THE JOURNAL during the past four months. Any of the journals, except those starred will be lent by THE JOURNAL to subscribers in continental United States and Canada and to members of the American Medical Association for a period not exceeding three days. Three journals may be borrowed at a time. No journals are available prior to 1933. Requests for periodicals should be addressed to the Library of the American Medical Association and should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Thus most of these journals are accessible to the general practitioner.

- Acta pathologica et microbiologica Scandinavica Copenhagen  
American Heart Journal St Louis  
American Journal of Clinical Pathology Baltimore  
American Journal of Digestive Diseases Fort Wayne Ind  
American Journal of Diseases of Children A M A Chicago  
\*American Journal of Hygiene Baltimore  
American Journal of the Medical Sciences Philadelphia  
American Journal of Obstetrics and Gynecology St Louis  
American Journal of Ophthalmology Cincinnati  
American Journal of Pathology Ann Arbor, Mich  
American Journal of Physiology Baltimore  
American Journal of Psychiatry New York  
American Journal of Public Health New York  
American Journal of Roentgenol and Radium Therapy Springfield Ill  
American Journal of Surgery New York  
American Journal of Syphilis Gonorrhea and Venereal Diseases St Louis  
American Journal of Tropical Medicine Baltimore  
American Review of Soviet Medicine New York  
American Review of Tuberculosis New York  
Analecta medica Mexico D F  
Anesthesiology New York  
Annals of Allergy Minneapolis  
Annals of Internal Medicine Lancaster Pa  
Annals of Otolaryngology and Laryngology St Louis  
Annals of Surgery Philadelphia  
Archiv für klinische Chirurgie Berlin  
\*Archives of Dermatology and Syphilology A M A Chicago  
Archives of Disease in Childhood London  
Archives of Internal Medicine A M A Chicago  
\*Archives of Neurology and Psychiatry A M A Chicago  
\*Archives of Ophthalmology A M A Chicago  
\*Archives of Otolaryngology A M A Chicago  
\*Archives of Pathology A M A Chicago  
Archives of Physical Therapy Chicago  
\*Archives of Surgery A M A Chicago  
Archivos argentinos de pediatría Buenos Aires  
Archivos de medicina infantil Habana  
Archivos uruguayos de medicina cirugía y especialidades Montevideo  
Arizona Medicine Phoenix  
Australian and New Zealand Journal of Surgery Sydney  
Boletín del Instituto de Clínica Quirúrgica Buenos Aires  
Brain London  
British Heart Journal London  
British Journal of Children's Diseases Dorling England  
British Journal of Dermatology and Syphilis London  
British Journal of Experimental Pathology London  
British Journal of Industrial Medicine London  
British Journal of Ophthalmology London  
British Journal of Radiology London  
British Journal of Surgery Bristol  
British Journal of Tuberculosis London  
British Journal of Urology London  
British Journal of Venereal Diseases London  
British Medical Journal London  
Bulletin of the Johns Hopkins Hospital Baltimore  
Bulletin of the Los Angeles Neurological Society Los Angeles  
Bulletin of the New York Academy of Medicine New York  
Bulletin of the U S Army Medical Department Washington D C  
California and Western Medicine San Francisco  
Canadian Journal of Public Health Toronto  
Canadian Medical Association Journal Montreal  
Cancer Research Baltimore  
Chinese Medical Journal Washington D C  
Chirurg Berlin  
Connecticut State Medical Journal Hartford  
Delaware State Medical Journal Wilmington  
Deutsche medizinische Wochenschrift Leipzig  
Diseases of Chest Chicago  
Edinburgh Medical Journal  
Endocrinology Springfield Ill  
Experimental Medicine and Surgery Brooklyn  
Gastroenterology Baltimore  
Hawaii Medical Journal Honolulu  
Helvetica medica acta Basel  
Hospital Rio de Janeiro  
Illinois Medical Journal Chicago  
Indian Medical Gazette Calcutta  
Journal of Allergy St Louis  
Journal of the Arkansas Medical Society Fort Smith  
Journal of Aviation Medicine St Paul  
Journal of Bone and Joint Surgery Boston  
Journal of Clinical Endocrinology Springfield Ill  
Journal of Clinical Investigation Boston  
Journal of Endocrinology London  
Journal of Experimental Medicine New York  
Journal of the Florida Medical Association Jacksonville  
Journal of Immunology Baltimore  
Journal of the Indiana State Medical Association Indianapolis  
Journal of Industrial Hygiene and Toxicology Baltimore  
Journal of Infectious Diseases Chicago  
Journal of International College of Surgeons Chicago  
Journal of the Iowa State Medical Society Des Moines  
Journal of the Kansas Medical Society Topeka  
Journal of Laboratory and Clinical Medicine St Louis  
Journal of Laryngology and Otolaryngology London  
Journal Lancet Minneapolis  
Journal of the Maine Medical Association Portland  
Journal of the Medical Association of the State of Alabama Montgomery  
Journal of the Medical Association of Georgia Atlanta  
Journal of the Medical Society of New Jersey Trenton  
Journal of Mental Science London  
Journal of the Michigan State Medical Society Lansing  
Journal of the Missouri State Medical Association St Louis  
Journal of the Mount Sinai Hospital New York  
Journal of the National Cancer Institute Washington D C  
Journal National Malaria Society Tallahassee Fla  
Journal of Nervous and Mental Disease New York  
Journal of Neurology Neurosurgery and Psychiatry London  
Journal of Neuropathology and Experimental Neurology Baltimore  
Journal of Neurophysiology Springfield Ill  
Journal of Neurosurgery Springfield Ill  
Journal of Nutrition Philadelphia  
Journal of Obstetrics and Gynecology of British Empire Manchester  
Journal of the Oklahoma State Medical Association Oklahoma City  
Journal of Oral Surgery Chicago  
Journal of Pathology and Bacteriology Edinburgh  
Journal of Pediatrics St Louis  
Journal of Pharmacology and Experimental Therapeutics Baltimore  
Journal of Physiology Cambridge  
Journal de radiologie et d'électrologie Paris  
Journal of the South Carolina Medical Association Florence  
Journal of the Tennessee State Medical Association Nashville  
Journal of Thoracic Surgery St Louis  
Journal of Urology Baltimore  
Kentucky Medical Journal Bowling Green  
Klinische Wochenschrift Berlin  
Lancet London  
Medical Annals of the District of Columbia Washington  
Medical Journal of Australia Sydney  
Medicina Buenos Aires  
Medicina Madrid  
Medicina Mexico D F  
Medicina española Valencia  
Medicine Baltimore  
Military Surgeon Washington D C  
Minnesota Medicine St Paul  
Monatsschrift für Geburtshilfe und Gynäkologie Basel  
Monatsschrift für Psychiatrie und Neurologie Basel  
Münchener medizinische Wochenschrift Munich  
Nebraska State Medical Journal Lincoln  
New England Journal of Medicine Boston  
New Orleans Medical and Surgical Journal

\*Cannot be lent

- New York State Journal of Medicine New York  
 North Carolina Medical Journal Winston Salem  
 Northwest Medicine Seattle  
 Obstetricia y Ginecología Latino Americanas Buenos Aires  
 Ohio State Medical Journal Columbus  
 Ophthalmologica Basel  
 Pennsylvania Medical Journal Harrisburg  
 Physiological Reviews Baltimore  
 Practitioner London  
 Prensa Médica Argentina Buenos Aires  
 Proceedings of the Royal Society of Medicine London  
 Psychiatrisch neurologische Wochenschrift Halle  
 Psychosomatic Medicine Baltimore  
 Public Health Reports Washington D C  
 Puerto Rico J Public Health & Tropical Medicine San Juan  
 Quarterly Journal of Studies on Alcohol New Haven Conn  
 Radiology Syracuse N Y  
 Review of Gastroenterology New York  
 Revista argentino norteamericana de ciencias médicas Buenos Aires  
 Revista de la Asociación Médica Argentina Buenos Aires  
 Revista Chilena de Pediatría Santiago  
 Revista clínica española Madrid  
 Revista clínica de São Paulo São Paulo  
 Revista Médica de Rosario Rosario  
 Revista de otorrinolaringología Santiago  
 Revista de la Policlínica Caracas Caracas  
 Rhode Island Medical Journal Providence  
 Rocky Mountain Medical Journal Denver  
 Schweizerische medizinische Wochenschrift Basel  
 Semana médica Buenos Aires  
 South African Medical Journal Cape Town  
 Southern Medical Journal Birmingham Ala  
 Surgery St Louis  
 Surgery Gynecology and Obstetrics Chicago  
 Texas State Journal of Medicine Fort Worth  
 Transactions of the Royal Society of Tropical Medicine and Hygiene London  
 Union Médicale du Canada Montreal  
 United States Naval Medical Bulletin Washington D C  
 Virchows Archiv für Pathologische Anatomie und Physiologie und für Klinische Medizin Berlin  
 Virginia Medical Monthly Richmond  
 \*War Medicine A M A Chicago  
 Western Journal of Surgery Obstetrics and Gynecology Portland Ore  
 West Virginia Medical Journal Charleston  
 Wiener medizinische Wochenschrift Wien  
 Wisconsin Medical Journal Madison  
 Yale Journal of Biology and Medicine New Haven

## SUBJECT INDEX

This is an index to all the reading matter in THE JOURNAL. In the Current Medical Literature Department only the articles which have been abstracted are indexed.

The letters used to explain in which department the matter indexed appears are as follows: 'BI,' Bureau of Investigation; "E," Editorial; "C," Correspondence; "OS," Organization Section; 'ab,' abstracts; the star (\*) indicates an original article in THE JOURNAL.

This is a subject index and one should, therefore, look for the subject word, with the following exceptions: 'Book Notices,' 'Deaths,' "Medicolegal Abstracts" and 'Societies' are indexed under these titles at the end of the letters "B," "D," "M," and "S." State board examinations are entered under the general heading State Board Reports, and not under the names of the individual states. Matter pertaining to the Association is indexed under 'American Medical Association.' The name of the author in brackets follows the subject entry.

For author index see page 1226

## A

AAF See World War I World War II  
ABD Abbott analysis cost (Council report) \*29  
III Iotency analysis cost (Council report) \*29  
ABDEC analysis cost (Council report) \*29  
ABDG Abbott analysis cost (Council report) \*29  
ABDOL Improved analysis cost (Council report) \*29  
with vitamin C analysis cost (Council report) \*29  
ACB serum of Bogomoletz for rheumatism ineffective 389  
AEF See World War I  
AM Solution 788-BI  
ASTP See Education Medical war and  
AT 10 See Dihydroachysterol  
ABBOTT Miller Tube See Miller Abbott Tube  
ABDOLEN See also Ischtes Gastrointestinal Tract Pelvis Peritoneum  
Distention See Flatulence  
Injuries See Abdomen wounds  
pain (parietal) in lower right wall [Shepler] 795-ab  
pain result of taking yeast tablets liver extract [Ruffin & Craver] \*824  
spasmodic syndrome and endocrine obesity [Schmidt] 134-ab  
surgery blood loss during [Collier & others] \*4  
surgery early rising after section [Nelson] 593-ab  
surgery early rising and pulmonary embolism after [Varescot] 135-ab  
surgery exit incision as dusting powder for gloves 236-E  
surgery gauze sponge cause adhesions? 603  
surgery instill amniotic fluid to prevent adhesions [Merle] 608-ab  
surgical Menoch's purpura stimulates [Bisson] 524-ab  
tumors gangliomerosi [Wende] 462-ab  
tumors overlooked in clinical examination neglected for laboratory tests 849  
wall peptic ulcer perforates [Morlock] 455-ab  
wounds penicillin for [Johnson] 389-ab  
wounds perforating injuries [Sloan] \*21-ab  
ARNOLD LITFIS See also Crippled Fetal dermal Defect under specific organ and region  
congenital malformations 963-F  
in newborn after measles in pregnant mother [Swan] 9-ab 237-E [Rones] 662-ab  
[Evans] 1120-ab [Frickson] 1173-ab  
ABORTION See also Medicolegal Abstracts at end of letter V  
criminal Brady (F J) sentenced 1040  
criminal death sentence Germany 111  
criminal Leslie (S A) sentenced 40  
effect of travel on incidence 500-F  
lib factor role in [Krieger] 601-ab  
uterus mucous unhealthy condition due to abortion is cause of mongolism 772-E  
ABOT BENEFERASH MAIMOLD honored for typhus work 501  
de ABRIU FLORACIO personal 1044  
ABSCESS See Ulcers under specific organs and regions as Brain Lungs Spinal Canal Epidural See Meninges  
ARSENITFIS See Industrial Health work ers arsenitism  
ABSORPTION See under organ region or substance concerned as Sulfathiazole Thio urea and Thio urea  
ACIA Treatment See Kidneys disease Nephritis glomerular  
ACADEMY See also American Academy under societies at end of letter S

ACADEMY—Continued  
Academi National de Medicine Rio de Janeiro (meeting) 583 (prize on leprosy) 1012  
Medical Sciences of U S S R organized 531  
of Medicine of Cincinnati endorses Ohio medical care plan 443-OS  
ACCIDENTS See also Disability Disasters Trauma World War II casualties Wounds Accident Facts by National Safety Council 116  
Automobile See Automobiles  
First Aid for See First Aid  
Industrial See Industrial Accidents Work men's Compensation  
ACETANILID Liebert's Ka No Mor Capsules Novem Brand Tablets 788-BI  
ACETARSON treatment not recommended for syphilis in adults 735  
ACETONE poisoning (acute) with coma and urticaria [Strong] 1116-ab  
diACETYL morphine (heroin) See Morphine diacetate  
ACETYLCHOLIN synthesis and myasthenia gravis [Tretlow] 397-ab  
ACHE Knock Tablets 48-BI  
ACID acetylsalicylic acid hemorrhagic complications [Shwartz & McKemie] \*806 [Quick] 1167-C  
acetylsalicylic foremen should not dispense N J 115  
Amino Acids See Amino Acids  
p aminobenzole mode of action of sulfonamides 31-E  
p aminobenzole treatment of Rocky Mountain spotted fever 964-E  
p aminobenzole treatment of typhus [Yeomans & others] \*349 (corrections) 351 782 964-F  
p aminohippuric acid use as penicillin excretory blockade 369-E [Beyer & others] \*1007  
Ascorbic See also Vitamin C  
ascorbic and ability to work in hot environment [Henschel] 591-ab  
ascorbic for bleeding gums and gingivitis 437-E [Stamm] 863-ab  
ascorbic N N R (Carroll Dunham Smith) 1029  
ash vitamin A diet to prevent renal calculus formation 670  
boric ruling (New York Major vetoes bill) 310 (Illinois) 715  
Carbolic See Phenol  
Cevitamic See Acid ascorbic  
Hyaluronic See Hyaluronidase  
Inhibitory effect in intestine on gastric secretion [Pinous] 260-ab  
Mesoxalic urelid of See Alloxan  
mucosin sulfuric physiologic action of anti coagulants 300-F  
Nicotinic See also Vitamins B<sub>1</sub>  
Nicotinic diethylamide of See Nicthamide  
nicotinic fluorescent factor F in urine [Najjar] 594-ab  
nicotinic in variety meats [McIntire] 393-ab  
nicotinic in vitamin mixtures Council statement \*29 33-F  
nicotinic niacin amide treatment of lupus erythematosus 466  
nicotinic niacin in prepared cereals [Klitzes & Fivelheim] \*100  
nicotinic nicotinamide N N R (Fndo) 769  
nicotinic treatment of Meniere's syndrome [Atkinson] 659-ab  
nicotinic treatment of postoperative vomiting [Mushin] 58-ab  
pancreatic deficiency increased resistance to encephalomyelitis 105-E  
parvuric in blood is test for thiamine deficiency [Corlier] \*739  
tannic proteins resist harmful sunlight 467  
thymonucleic normal cells transformed into cancer cells 964-F

ACNE See also Furunculosis  
vulgaris vitamin A for 202  
ACRIDINES in septic wounds [Porte] 864-ab  
ACROMIOCLAVICULAR joint lesions causing shoulder pain [Oppenheimer] 321-ab  
ACTINOMYCETES lavender streptothricin isolated from by S A Waksman 104-E  
ACTINOMYCOSIS of lung sulfonamide cures [Merle] 526-ab  
ACTION current records of muscle spasm in polymyositis [Schwartz & others] \*695  
ACTIVITY after Operation or illness See Convalescence and Convalescents  
effect in hypertension [Cimason & others] \*218  
restriction effect on recovery of rats from myocardial injury [Thomas] 981-ab  
ADAIR Plasma Cell Mastitis See Breast inflammation  
ADAMS Stokes Attacks See Heart block  
ADDITION See Alcoholism Morphine  
ADISON'S ANEMIA See Anemia Pernicious  
ADISON'S DISEASE treatment pork adrenal cortex extract effect on carbohydrate metabolism and work capacity [MacBryde] 599-ab  
ADENOIDS relation to polymyositis [Lucchesi] 517-ab  
ADENOMA Nontoxic of Thyroid See Goiter of bronchus [Lowry] 861-ab  
of parathyroid renal calculus with [Foulds] 1053-ab  
Toxic of Thyroid See Goiter Toxic  
ADHESIONS abdominal from use of gauze sponge in operation 603  
abdominal instill amniotic fluid to prevent [Merle] 608-ab  
ADHESIVE plasma thrombin to close wounds [Young] 922-ab  
Sant Cross Adhesive Strips 630-BI  
ADOLESCENCE Roosevelt asks youth compulsory training for youth 843-OS  
ADOPTION of children from families of poor stock 735  
sterile married couple fertile after adopting a baby 402  
ADRENALS See also Addison's Disease  
cortex extract effect in diabetes mellitus 1178  
cortex extract for vomiting of pregnancy [Botttroll] 135-ab  
cortex extract in pemphigus [Levey] 394-ab  
cortex extract (pork) in Addison's disease effect on carbohydrate metabolism and working capacity [MacBryde] 809-ab  
cortex function tests [Gall Mahlin] 959-ab  
Cortex hormone (crystalline) See Desoxy corticosterone  
corticotrophic hormone treatment of pituitary cachexia [Hemphill] 732-ab  
hemorrhage See Waterhouse Friderichsen Syndrome  
physicochemical disturbance in severe fatal tumor [Pleasant] 986-ab  
rest tumor retro orbital [Hughes & Ambrose] \*231  
ADFRTISING Giljan testimonial outlines writer 284-23  
of proprietaries in the JOURNAL is British Medical Journal 839-F  
AFROVUTICS See Aviation  
AFRO OTITIS See Otitis Media  
AFROSOI Treatment See Bromhidrosis Dermatophytosis  
AFROCOL OT medicinal use of detergents 1152-F  
AFRICA War in See World War II  
AFTRBIRTH See Placenta  
AFR restrictions on use removed 109  
AGE Adolescent See Adolescence  
average of obtaining MD degree was 28 838-E  
Mothers See Maternity  
Old Age See Old Age  
AGGLUTININS AND AGGLUTINATION cold autohemagglutinins in serum in Raynaud's disease [Benlins] 1051-ab

**AGGLUTININS AND AGGLUTINATION**—Continued  
cold in ornithosis [Levinson & others] \*1079  
Rh See Rh Factor  
test (cold) in primary atypical pneumonia [Heintzelman] 922—ab  
test in Wells disease without jaundice [Rugiero] 60—ab  
**AGGLUTINOGEN** Rh See Rh Factor  
**AGRANULOCYTOSIS** ACUTE etiology ma pharsen penicillin cures [Smith & others] \*1027  
etiology sulfadiazine in child [Koteen] \*833  
fatal from thioracil [Kahn & Stock] \*358  
**AIR** See also Oxygen Smoke  
bacteria in collecting apparatus [Robertson & others] \*994  
borne infection treat floors and bedding with oil emulsion to control [Robertson & others] \*993  
borne poliomyelitis virus in oropharynx 104—E  
borne tuberculosis 707—E  
compressed aseptic necrosis and bone necrosis from [Taylor] 261—ab  
compressed subcutaneous emphysema from [Whitwell] 1055—ab  
conditioning A M A Committee to Study Air Conditioning membership biblio graphic service 244—OS  
disinfection with propylene glycol vapor [Challinor] 732—ab  
disinfection with triethylene glycol vapor [Robertson & others] \*997  
injection See Pneumoperitoneum  
Pressure See Calson  
**AIR FORCE** See Aviation World War II  
**AIR PASSAGES** See Respiratory System  
**AIR RAIDS** allied on Germany kill British prisoners 849  
casualties and damage of Second Battle of London 510  
casualties England 448 (civil defense) 849  
hospital construction in Germany and 110  
inconveniences of blackouts Hawaii [Pinker ton] \*626  
patients not up day after labor during blitz of London [Dole] 588—C  
**AIRPLANES** See Aviation  
**ALABAMA** University of See University  
**ALANINE** biologic synthesis 106—E  
**ALBUMIN** Human Serum Therapeutic Use See Blood proteins  
in Urine See Albuminuria  
**ALBUMINURIA** emotional in air cadet applicants [Aronheim] 196—ab  
**ALCOHOL** See also Alcohols  
Addicts See Alcoholism  
caffeine acts synergistically with effect on stomach secretion [Roth & others] \*817  
in Blood See Blood  
lumbar paravertebral block in peripheral vascular disease [Salond] 51—ab  
**ALCOHOLISM** acute cyclic amphetamine sulfate in aborting [Miller] 52—ab  
blood alcohol in value in borderline cases [Gettler] 792—ab  
carbon tetrachloride poisoning relation to [Konwaler] 324—ab  
institute on Mid 39  
National Committee for Education on Inc organized 509  
treatment hospital facilities American Hospital Association committee report 239—E  
treatment knob quoted on 778—OS  
treatment strychnine sulfate for serious symptoms 138  
**ALCOHOLS** polyvinyl as blood substitutes [Roome] 1116—ab 114—F  
**ALDHYDES** effect on blood pressure [Oppenheimer] 190—ab  
**ALFPO** holl See Leshmaniasis of skin  
**ALFAMINT** Minrich and Pretorius Liquefier 48—B1  
**ALIMENTARY** Tract See Digestive System  
**ALKALEMIA** See Blood  
**ALKALIS** alkalinization by parenteral route 466  
for scalding dogs [Loeffel] 138  
sulfonamide therapy for patients on restricted sodium diets 466  
**ALLEN'S** Method See Anesthesia refrigeration  
**ALLERGY** See Anaphylaxis and Allergy  
**ALLOCAIONS** See Dogs Priorities and Al locations  
**ALLOPENICILLIN** See Penicillin V  
**ALLOXAN** diabetes [Bailey] 982—ab [Goldner] 1001—ab  
**ALOPECIA** falling hair 800  
**ALPHA** Omega Alpha Lecture See Lectures  
**ALTERATIVE** Tonic Compound 979—B1  
**ALTITUDE** High See also Aviation  
high decompression sickness with migraine symptoms [Engel] 197—ab  
high urinary secretion at [Valmejac] 392—ab  
**ALUMINUM** effect on lung to glinders of dur alumin plane propellers [Hunter] 100—ab  
hydroxide inhibits peptic activity in peptic ulcer [Steigmann] 192—ab  
splint hand contracture from 138

**AMRIDENTERITI** See Hand  
**AMBULANCES** See also Hospitals ships, Hospitals train stretcher  
plane (casualties in Normandy flown across channel) 184 (in deliver war wounded in U S) 776 (wounded flown to Britain from continent) 783  
plane Navy Schmil for Air Evacuation of Casualties established 1091  
presented to Army Medical Dept 575  
**AMBULATION** See Convalescence and Convalescents  
**AMYDUR** M A wills fund to Academy of Medicine Cincinnati 579  
**AMEBIASIS** ulcerative colitis caused by [Bar gen] \*1011  
**AMENORRHEA** thyroid or pituitary deficiency 866  
**AMERICAN** See also Inter American Latin America Pan American United States  
list of societies at end of letter S  
Academy of Pediatrics [Lenroot] 49—C 183  
717 (Cuban branch) 1097  
Association of School Administrators school health indices 1086—E  
Board of Anesthesiology (certified 233 physicians) [Wood] \*867 (new rulings) 1096  
Board of Obstetrics and Gynecology (economic nation) 447 (increases fees) 907  
Board of Orthopaedic Surgery (288 surgeons certified by serving with armed forces) [Caldwell] \*270  
Board of Otolaryngology (examinations) 848  
Board of Pathology (correction) 117  
Casualties See World War II casualties  
College of Physicians (Committee on Postwar Medical Service) 243—OS 440 708—E 709 1036—OS  
College of Physicians Wartime Graduate Medical Meetings See Education Medical wartime  
College of Surgeons (Committee on Postwar Medical Service) 243—OS 440 708—E 709 1036—OS  
College of Surgeons Wartime Graduate Medical Meetings See Education Medical wartime  
Hospital Association (committee report on hospital facilities for alcoholics) 239—F (its Service Plan Commissions testimony of Rorem) 308—OS  
Indians See Indians American Medicine See Medicine  
International Association (WPB award for quinine pool) 177  
Pharmaceutical Manufacturers Association (award in National Research Council) 718  
Physicians Serving at the Front See World War II  
Proctologic Society organized in 1899 [Terrell] \*29  
Public Health Association (compulsory sickness insurance plan) 245—OS 434—E \*441 [Godfrey] 789—C (correction membership) 1042 (school health policies) 1086—F  
Red Cross See Red Cross  
Relief for Italy Inc ask doctors for help 1092  
Society of Anesthetists (200 members certified as Fellows) [Wood] \*867  
Society of Clinical Pathologists present military program 374  
Soldiers etc See World War II  
**AFRICAN MEDICAL ASSOCIATION**  
Annual Conference of State Secretaries and Editors 243—OS 713—OS  
Board of Trustees (death of Dr Palette) 850  
Bureau of Information for medical veterans 243—OS 1036—OS  
Bureau of Investigation (Gillan testimony) outlines writer Alexander Kellough) 384 (Victor Edison Perry) 723 (FTC stipulations) 48 124 189 318 385 587 1018 (FDA notices of judgment on milk branded products) 48 124 189 514 788 979 (dangerous to health because of inadequate warning on label) \*87 788  
Bureau of Legal Medicine and Legislation See Laws and Legislation weekly summary Medicolegal Abstracts at end of letter M  
Bureau of Medical Economics (report on California Physicians Service) 112—OS (report on progress of medical service plans) 505—OS \*77—OS  
Committee on Physical Fitness 308—OS  
Committee on Postwar Medical Service (meeting) 243—OS (questionnaires) 440 (graduate education of physician veterans) 708—E 709 (determines hospital planning for postwar education) 770—E 775 (minutes of meeting) 1036—OS  
Committee to Study Air Conditioning (membership bibliography service) 244—OS  
Conference See subhead Annual Conference

**AFRICAN MEDICAL ASSOCIATION**—Continued  
Council on Foods and Nutrition (vitamin content of prepared cereal foods) [Klitzes & Elvehjem] \*100 (margarine fortified with vitamin A) \*168 (fortified milk with vitamins and minerals) \*432  
Council on Industrial Health (lists essential elements of good industrial health service) 30—E (statement on medical service prepayment plans for industrial workers) 708—E (vaccines for common cold) \*895 900—E  
Council on Medical Education and Hospitals (educational facilities required for returning medical officers) 234—E [Johnson & Arestad] \*203 (questionnaire on hospital planning for postwar education) 770—E 775 (graduate continuation courses for practicing physicians) \*103  
Council on Medical Service and Public Relations (Washington Office begins activity) 244—OS 713—OS 968—OS (Mr Hollaway outlines 6 directives) 068—OS  
Council on Pharmacy and Chemistry (statement on analysis and comparative cost of vitamin mixtures) \*29 33—E (prevention by pertussis vaccine) [Fellous & Willard] \*294 (bacteria rickettsias and viruses under electron microscope) [Mudd & Anderson] \*561 [Mudd] \*632 642—E [Coldsmith] 914—C (vaccines for common cold) \*895 900—E (British great tribute to) 899—E (report on laboratory and clinical appraisal of new drugs) [Van Winkle & others] \*958 (benzestrol) 1085  
Council on Physical Medicine (occupational therapy in private general hospital) [Coulter] \*360 (treat in surgical and orthopedic conditions) [Ober] \*769 (artificial respiration manual and mechanical) \*835  
Information Bureau See subhead Bureau of Information  
Journal advertising policy British compare with their *British Medical Journal* 899—E  
National Education Association joint report Health Education 1086—E  
Panel Discussion See also under specific sections  
panel discussion on neuropsychiatry [Grinker] \*142 [Everts & Woodhall] \*145 [Murray] \*148 [Ewalt] \*150  
Philadelphia Session (1945) (changed meeting place from New York) 713—OS 838—E (hotel reservations) 843—OS (application for space in Scientific Exhibit) 904—OS (section representatives to Scientific Exhibit) 1037—OS  
Postwar Planning Committee See subhead Committee on Postwar Medical Service  
Section on Anesthesiology (chairman's address) [Wood] \*867  
Section on Dermatology and Syphilis (panel discussion on penicillin treatment of syphilis) \*63 \*73 (panel discussion on intensive therapy of early syphilis) \*338 552 (chairman's address) [Flomcrud] \*737  
Section on Experimental Medicine and Therapeutics (joint symposium on vitamins amino acids and enzymes) \*749 758  
Section on Gastroenterology and Proctology (chairman's address) [Terrell] \*529  
Section on Laryngology Otolaryngology and Rhinology (symposium on use of penicillin in diseases of ear nose and throat) \*610 621  
Section on Miscellaneous Topics (chairman's address) [Bowman] \*331  
Section on Nervous and Mental Diseases (chairman's address) [Nielsen] \*801  
Section on Obstetrics and Gynecology (chairman's address) [Phaneuf] \*139  
Section on Ophthalmology (symposium on use of penicillin in diseases of eye) \*610 621 (chairman's address) [Berens] \*671  
Section on Orthopaedic Surgery (chairman's address) [Caldwell] \*269  
Section on Pathology and Physiology (chairman's address) [Nunn] \*467  
Section on Pediatrics (symposium on rheumatic fever) \*477 493  
Section on Practice of Medicine (joint symposium on vitamins amino acids and enzymes) \*749 758  
Section on Preventive and Industrial Medicine and Public Health (chairman's address) [Mountain] \*203 (panel discussion on industrial medical service plans) \*333 346  
Section on Radiology (chairman's address) [Arens] \*603  
Section on Surgery (chairman's address) [Coller & others] \*1  
Section on Urology (chairman's address) [Thompson] \*403  
Symposium See under names of specific sections  
Wartime Graduate Medical Meetings See Education Medical wartime

- AMERICAN MEDICAL ASSOCIATION—Continued  
Washington Office See subhead Council on Medical Service and Public Relations  
Women's Auxiliary See Women's Auxiliary  
AMIGEN use in burns [Co Tul] 323—ab  
AMINO ACIDS See also Amino Histidine  
A V A Joint section symposium on [Gover] \*749 [Serringhaus] \*751, [Spies & others] \*752 (discussion) 758  
5 AMINOACRIDINE and 2 7 diaminoacridine used for aseptical wounds [Poate] 864—ab  
p (AMINOIMPTHYL)-benzenesulfonamide See Benzenesulfonamide  
AMINOPHYLLINE See Theophylline Ethylene diamine  
AMISOGEN 124—BI  
AMMONIUM chloride treatment of tetanic contractions and alkalemia 402  
source in urine glutamine 1089—E  
AMNION See Placenta  
AMNIOTIC FLUID Instill to prevent postoperative adhesions [Merkle] 658—ab  
AMIPHTAMINE (benzedrine) sulfate in aborting acute alcoholic cycle [Miller] 52—ab  
sulfate effect on physical and psychic performance 1031—E  
sulfate N N R (Smith Kline & French) 897  
stimulates temporarily emmetropic visual acuity [Lebensohn] 273—ab  
AMPUTATION Clostridium welchii infection treated with penicillin [Kepl & others] \*90  
of finger immediate free full thickness skin graft for [McCarroll] 522—ab  
refrigeration [Neller] 665—nb  
stump (thigh) painful procaine injection relieves [Skinner] 514—C  
training blinded without hands at St Dunstan's especially to use typewriters 1098  
VVL nitrite inhalation to relieve pain in renal colic 120  
ANYOTROPIC Lateral Sclerosis See Sclerosis  
ANYTAL sodium effect in hypertension [Grimsen & others] \*218  
ANIS da Santa Casa See Journals  
ANALGESIA See Anesthesia Pain relief of  
ANAPHRODISIAC diethylstilbestrol in male hypersexuality [Foote] 402  
ANAPHYLAXIS AND ALLERGY See also Asthma Dermatitis venenata Eczema Urticaria  
annual forum on allergy 1161  
Auer's phenomenon delays healing [Hopps] 324—ab  
collitis [Bargen] \*1012  
histidine in [Ruskin] 260—ab  
House Dust N N R (Endo) 835  
in Palestine 44  
leukopenic index in 866  
of central nervous system [Clarke] 322—ab  
psychiatric studies in [Brown] 658—ab  
renal [Dott] 462—ab  
sensitivity to anesthetics ether or procaine 402  
sensitivity to catgut [Hopps] 324—ab (test ing for) 866  
sensitivity to cold 402  
Sensitivity to Food See Food Milk  
sensitivity to histamine produced violent headaches [Randolph] \*130  
sensitivity to penicillin [Crisp] \*429 [Feldberg] 522—ab  
sensitivity to penicillin sodium [Weldt & Rostenberg] \*10  
sensitivity to sulfadiazine [Kotzen] \*833  
sensitivity to sulfonamide cause of asthma [Randolph & Rawling] \*166  
VATOMY doctor's missing boot found with dead Jap (a former classmate) 242  
Vorbis See Iatrogeny  
ANATOXIN See Toxoid (cross reference)  
ANDERSON O L medical director of public health district number 4 509  
ANDROGENS excretion homosexuality and endocrine imbalance 603  
testosterone effect on bone growth [Finkler] 1118—ab  
testosterone propionate for angina pectoris 463  
treatment of male climacteric with testosterone propionate and/or methyl testosterone 300— [Ittler & Myers] \*472 [Bauer] 914—C  
ANEMIA See also Anemia Pernicious  
aplastic drugs causing 466  
complicating infection [Salt] 666—ab  
A EMIA PERNICIOUS complicating hepatic cirrhosis [Caster] 864—ab  
ANESTHESIA See also Anesthesiologist  
cervical continuous in acute pelvic thrombophlebitis [Kills] 591—ab  
cervical continuous in labor [Wingson] \*1129  
Cold See Anesthesia refrigeration  
convulsions constitutional factor electroencephalogram [Williams] 1175—ab  
effect of ether sodium amyl sodium pentothal chloralose on hypertensive patients [Crimson & others] \*218  
ether sensitivity to 402  
ANESTHESIA—Continued  
history Horace Wells centenary 779 1037  
—OS  
hypoxia and anoxia in relation to [Waters] \*1068  
in cesarean section in myocarditis and renal disorders (reply) [Nicholson] 670  
intravenous pentothal sodium in peace and war [Adams] \*232  
nitrous oxide [Rogerson] 398—ab  
pentothal sodium in Canadian Army anesthesiology service [Boddington] 1116—nb  
procaine sensitivity to 402  
refrigeration amputation [Neller] 665—ab  
spinal Pontocaine Hydrochloride [Alphand] N N R (Winthrop) 437  
steal large quantity of anesthetic drugs Brussels 111  
vitamin C in relation to [Beyer] 396—ab  
ANESTHESIOLOGIST [Wood] \*867  
ANEURYSM Arteriovenous See also Fistula arteriovenous  
arteriovenous infected with Streptococcus viridans [Lipton & Miller] \*766  
cerebral congenital embryology 963—F  
dissection of aorta lifetime diagnosis [Israel] 130—ab  
spontaneous rupture of aorta in syphilitic aortitis without [Symmers] 125 \*1035 (correction) 126 42  
thoracic aortectomy for [Alexander & Byron] \*1139  
treatment ligate aorta and both common iliac arteries [Monahan] 986—ab  
ANGINA Aggranulocytic See Aggranulocytosis  
Acute  
Monocytic See Mononucleosis Infectious  
ANGINA PECTORIS myocardial infarction in dictated by [Dressler] 453—nb  
treatment testosterone propionate 463  
ANGIOMA See Hemangioma  
ANGIOEDEMA Edema See Edema  
ANGIOSPASM peripheral See Raynaud's Disease  
ANIMAL EXPERIMENTATION Chicago Herald American and Irene Castle against 102—E  
committee on allocation of dogs from pound Chicago 578  
ANIMALS See also Dogs Frogs Hogs Rabbits Rats Sheep Veterinary  
biochemical synthesis in animal body 106—F  
Experimentation with See Animal Experimentation  
research in San Diego zoo [Picard] 190—C  
ANKLE sprained treatment [Wright] 57—ab  
ANNUAL Conference See American Medical Association  
ANOMALIES See Abnormalities under organ or region affected  
ANOXIA See Oxygen deficiency  
ANTHRA bacillus electron micrograph [Mudd & Anderson] \*564  
treatment penicillin [Murphy & others] \*948  
ANTHROPOLOGY See Man primitive  
ANTIBIOTIC AGENTS See Citrinin Cramidin Penicillin Streptothricin Syrothricin etc  
ANTIBODIES See also Agglutinins and Agglutination Antigens, under names of specific diseases  
development after vaccination against pneumococci [Hodes] 195—ab  
heterophile reaction in infectious mononucleosis [Kaufman] 593—ab  
Rh See Rh Factor  
ANTICATALASE theory of action of sulfonamides 31—E  
ANTICOAGULANTS See Blood coagulation  
ANTIGENS See also Antibodies Immunity  
antigenicity of catgut sheep intestine and sheep serum [Hopps] 324—ab  
Rh See Rh Factor  
Undenatured Bacterial Antigen pertussis vaccine [Felton & Willard] \*298  
ANTI INFECTIVES See Antiseptics Bactericides Disinfection Germicides  
ANTIPTROTHROMBIN (Swedish) Induced by prothrombinemia [von Kaula] 925—ab  
ANTISEPTICS compound G 11 for use on skin [Traub] 459—ab  
Howell's Antiseptic Healing Oil 635—BI  
phenol chloride N N R (description) 169 (Parke Davis) 169  
ANTISERUM See Pneumonia Tetanus  
ANTITOXIN See Scarlet Fever treatment Tetanus  
ANTIVIRSECTION See Animal Experimentation  
ANUS See Hemorrhoids Rectum  
AOFTA aneurysm of See Aneurysm  
correlation [Periman] 433—ab [Alexander & Byron] \*1139  
ligation for aneurysm [Monahan] 986—ab  
rupture spontaneous in syphilitic aortitis without aneurysm [Symmers] 125 \*1035 (correction) 126 42  
surgery aortectomy for thoracic aneurysm [Alexander & Byron] \*1139  
AORTIC VALVE congenital subaortic stenosis [Young] 1169—ab  
AORTITIS syphilitic without aneurysm [Symmers] 125 \*1035 (correction) 126 42  
APHTHA Eplzootic See Foot and Mouth Disease  
APOVORPHINE See Morphine  
APPARATUS See also Diathermy Instruments Medical Supplies Roentgen Rays for collecting bacteria from air [Robertson & others] \*994  
for occupational therapy at St. Luke's [Coulter] \*360  
plasma clot suture kit [Tarlov] \*747  
APPENDICITIS surgical aspect [Jones] \*1013  
APPETITE not increased by taking vitamins  
Liver extract or yeast extract [Ruffin & Cayer] \*823  
ARABIAN Oil 124—BI  
ARGASIDAE See Ticks  
ARIBOPHLYNOSIS See Riboflavin deficiency  
ARISTOTLE cosmic doctrine 356—ab  
medical knowledge 814—ab  
ARMED FORCES See World War II  
ARMY Mineral Water 514—BI  
ARMPITS See Axilla  
ARMS See also Axilla Elbow Fingers Forearm Hand Shoulder Wrist  
Amputation See Amputation  
disability due to herniation of nucleus pulposus [Michelsen] 731—ab  
ARMY See also subheads under World War II  
Camps See subheads under World War II  
Hospitals See World War II hospitals  
Japanese neuropsychiatry in [Newell] \*273  
Nurse See World War II nurses  
ARMY UNITED STATES See also World War II U S Army  
Air Forces (AAF) See under Aviation  
as Congress for permanent postwar scientific research 778—OS  
Epidemiological Board project French  
Salik influenza vaccine 364  
Medical Dept (169th anniversary) 35 (dis continues recruiting physicians) 643—E  
645—OS (Equipment Laboratory) 711  
Medical Library (meeting) 312 (consultants) 442—OS  
Medical Research Board to continue in peace 843—OS  
Army E Award See World War II U S Army Navy E  
Office of Surgeon General (reorganization) 107 (Preventive Medicine Service quarantine branch established) 965  
punishment for venereal disease in armed forces ended by Congress 572—E [Zellman] 1167—C  
Service Forces Morale Services Division now Information and Education Division 34  
Specialized Training Program (ASTP) See Education Medical war and  
ATMOLD Caric Tablets 48—BI  
ATROPHOS See Journals  
ARSENICALS See Acetarsone Arsenamine Mapharsen Neoparsphenamine  
ARSPHYNAINE toxicity massive doses by syringe [Cannon & others] \*344  
treatment massive U S P H S evaluation [Cooperating Clinics] \*554  
ART See also Physicians Associations  
artists cooperate in health education posters N 1 648  
editor W C Shepard joins Saunders 309  
exhibit of naval medicine at National Gallery 176  
Portraits See Portraits (cross reference)  
ARTERIES See also Aorta Arteriosclerosis  
Blood vessels Ductus Arteriosus Veins  
Aneurysm See Aneurysm  
Coronary See also Angina Pectoris Arteriosclerosis  
coronary disease preventive aspects [Plotz] 130—ab  
coronary hypersusceptibility to horse serum Klinge's aubel phenomenon 302—E  
Coronary Occlusion See also Thrombosis coronary  
coronary occlusion differentiated from postoperative pericarditis [Bayley] 590—ab  
coronary rupture [Dobrin] 261—ab  
Disease (obliterative) See Thromboangiitis obliterans  
Fistula See Fistula  
Iliac ligate both for aneurysm [Monahan] 986—ab  
Inflammation See Endarteritis  
Pressure in See Blood Pressure  
Sclerosis See Arteriosclerosis  
ARTERIOSCLEROSIS 642—E  
coronary nutritional role of cholesterol [Shaffer] 53—ab  
hypertensive fundus oculi after sympathectomy [Gans] 1170—ab  
treatment pancreatic tissue extracts 735  
ARTHRITIS See Endarteritis  
ARTHRITIS See also Gout Rheumatism  
Atrophic or Chronic See Arthritis rheumatoid  
etiology granuloma inguinale [Lyford] 728—ab

- ARHRITIS**—Continued  
pneumococcal [Baker] \*1062  
rheumatoid causes of death in, [Rosenberg]  
53—ab  
rheumatoid heart in [Young] 453—ab  
rheumatoid penicillin effect on [Bolind &  
others] \*820  
rheumatoid penicillin ineffective [Bloomfield  
& others] \*690  
symptom in rheumatic fever [Jones] \*481  
treatment A C B serum of Bogomoletz in  
effective 380  
treatment vitamin C and thiamine for?  
[various authors] 758—ab
- ARTIFICIAL Respiration** See Respiration  
Teeth See Teeth dentures
- ARTISTS** See under Art
- ASCARIASIS** eosinophilia in [Lowc] 308—ab  
ASCARIS cruse of Loeffler's syndrome 337—E  
ASCITES See also Dropsy Edema  
ovarian fibromas [Docherty] 320—ab
- ASCORBIC Acid** See Acid
- ASEPTIC** 189—BI
- ASHES** food contaminated with 330
- ASMOLAC** 65—BI
- ASPHYXIA Local** See Raynaud's Disease  
neonatorum pediatric aspects [Bliggs] \*1070  
treatment artificial respiration (Council re  
port) \*830  
treatment greatly increased rate of arti  
ficial respiration [Tingley] 1119—ab
- ASPIRATION** Monaldi's See Empyema Tu  
berculosis of Lung
- ASPIRIN** See Acid acetylsalicylic
- ASSAY** of penicillin in spinal fluid 370—E
- ASSOCIATION** See also American Medical  
Association list of societies at end of let  
ter S  
for Health Physical Education and Recre  
ation school health policies 1086—F
- ASTHENIA** See also Fatigue Myasthenia  
neuroregulatory sign of hypoglycemia  
[Greene] 624—ab
- ASTHMA** Amlsone 124—BI  
Bel Din 385—BI  
climate in relation to 330  
deaths from [Kackemann] 521—ab  
etiology sulfonamide sensitivity [Randolph  
& Rawlins] \*166  
treatment intensive breathing [Welser] 503—  
ab
- ASTRUC JEAN** (1684 1766) first to recognize  
syphilis as infectious malady 1138—ab
- ATABRINE** See Quinacrine
- ATELECTASIS** See Lungs collapse
- ATHLETE'S Foot** See Dermatophytosis
- ATHLETIC** Stringent for Gargle Red Hot Oint  
ment Inhibitor etc 124—BI
- ATMOSPHERE** See Air Pumes
- ATROPHY** Muscular See also Dystrophy  
muscular in exhaustion [Nielsen] \*891  
Optic See Nerves optic
- ATROPINE Sulfate** Treatment See Fallgue  
VER Lecture See Lectures  
phenomenon [Hopps] 324—ab
- AUROFECTOL** Purpall No 22 and No 600  
587—BI
- AUSTIN OLIVER** missing in action, 307
- AUSTRALIAN** diet thiamine deficiency in 315  
high cost of social services 1099  
reaction to British criticism of medical stu  
dents training 119  
vote against a war postwar plan 1099
- AUSTREGESIO ANTONIO** retirement 381
- AUTOHEMAGGLUTINATION** See Agglutination  
and Agglutination
- AUTOLOGOUS Plasma** Clot See Sutures
- AUTOMOBILES** accidents traffic hazards  
National Safety Council brochure 106—E
- AVIATION** See also Altitude high  
AAF electrically heated suits delivered to  
240  
AAF geographic distribution of hemolytic  
streptococcal and rheumatic fever [Van  
Ravenswaay] \*486  
AAF regional surgical conferences 901  
AAF rheumatic fever control, [Holbrook]  
\*84  
AAF Training Command 240  
aero oils radon treatment [Fowler] 327  
—ab  
Air Raids See Air Raids  
air shipments of Red Cross medicines to  
China 1092  
Air Surgeon's office reorganized 175  
ambulance (casualties in Normandy down  
across English Channel) 184 (airline to  
deliver war wounded) 776 (wounded flown  
to Britain from continent) 783  
combat flying [Grant] \*609  
combat operational fatigue in flyers [Mur  
ray] \*148  
flight air surgeons confer (picture) 839  
flight surgeons assistants 107 502  
Glenn (C R) appointed Deputy Air Surgeon  
304  
Jeffries Prize to Air Marshal Whittingham  
313  
medical examiners (list of) 372 (graduation  
exercises) 840  
Navy School for Air Fracuation of Casual  
ties first time for flight nurses 1091
- AVIATION**—Continued  
urine secretion at high altitudes [Malmejac]  
392—ab
- AVITAMINOSIS** See Vitamins deficiencies
- AVOCATIONS** See Physicians vocations
- AWARDS** See Prizes  
for Military Service See World War II  
Heroes and Prisoners
- AXILLA** painful masses in in pregnancy 902
- AZOTEMIA** See Uremia
- B**
- B E S** test of urine [Spies & others] \*702  
(footnote 1)
- BACILLUS** See Bacteria
- BACK** See Spine  
Pain See Backache
- BACKACHE** See also Sciatica  
diagnosis of herniated lumbar intervertebral  
disks [Kecgan] \*868  
low [Jelsma] 262—ab
- BACON** Lectures See Lectures
- BACTEREMIA** See Meningococcemia, Septi  
cemia
- BACTERIA** See also Bacteriophage Gono  
coccus Pneumococcus Staphylococcus  
Tubercle Bacillus, etc under names of  
specific organs  
Abortus infection See Brucellosis  
Anthraxis See Anthrax bacillus  
bacteriostatic activity of citrinin in vitro  
[Timonin] 1171—ab  
Botulinus infection See Botulism  
cereal electron micrograph [Mudd & An  
derson] \*367  
Coll See Escherichia coll  
collection from air apparatus for [Robert  
son & others] \*994  
Culture See Gonococcus  
Dysenteriae See Dysentery bacillary  
electron micrograph [Mudd & Anderson]  
\*561 [Mudd] \*632  
Gas See Clostridium welchii  
In Air See Air disinfection  
In Blood See Meningococcemia Septi  
cemia  
Infection See Infection  
intestinal riboflavin synthesis by [Najjar &  
others] \*337  
on Skin See Skin  
Pyocyanus See Pseudomonas pyocyanus  
Soil product of See Gramicidin Tyro  
cidine  
sulfonamide action on antileukinase also co  
enzyme theory 31—E  
Tularemia See Tularemia  
Typhosa See Eberthella typhosa  
Typhosum See Eberthella typhosa  
Welchii See Clostridium welchii
- BACTERICIDES** See also Antiseptics Disin  
fection  
canavirin [Farley] 306—ab
- BACTERIOLOGY** Eli Lilly & Co establish  
prize in 908
- BACTERIOPHAGE** electron micrograph [Mudd  
& Anderson] \*569 642—E [Goldsmith]  
914—C  
Interference phenomenon [Mudd] \*637 642—  
E
- BACTERIOSTASIS** See Bacteria
- BACTERIUM** See Bacteria
- BACTO SUPPLEMENT** A See Gonococcus  
culture
- BAKED Beans** See Beans
- BAKERS** See Bread
- BAL IN OIL** treatment of severe napharsen  
reactions 901
- BALANITIS** See Penis
- BALDNESS** See Alopecia
- BALTIMORE** chronic illness in urban area  
1032—E
- BANDAGES** See Dressings
- BANTIS Disease** See Splenomegaly
- BARBITURATES** See also Amytal Pentothal  
Sodium  
long continued administration for insomnia  
1178
- BARUCH** Committee on Physical Medicine  
(additional grants) 973
- BASEDOW'S Disease** See Goiter Toxic
- BASIC SCIENCE** special examining board  
created Va 377
- BASOPHILISM** See Pityriasis
- BASSORA** with Casarea 1048—BI
- BATES W H** eye exercises for defective  
vision 771—E
- BATTLE** casualties See World War II
- BAUMGARTEN** Cravellier Syndrome See  
Cravellier Baumgarten Syndrome
- BA** analysis comparative cost (Council re  
port) \*29
- BAYLOR University** (new medical building  
plans approved) 972 (Trust Memorial  
Building) 1041
- BEANS** See also Soy Beans  
baked typhoid outbreak from [Klehr child]  
864—ab  
home packed fatal botulism from Calif  
1094
- BEAUMONT** (William) gavel given to Michigan  
State Medical Society 506
- BEAUTY Culture** See Cosmetics, Hair
- BED Rest** See Convalescence and Convales  
cents  
Ridden See Pallenis
- BED WETTING** See Urine Incontinence
- BEDDING** See also Mattress  
treat with oil emulsion to control air borne  
infection in army camps, [Robertson &  
others] \*093
- BEECHAM'S** Pills Limited profits 44
- BESWAN** peanut oil mixture for suspension  
of penicillin to prolong action 304 43—E  
[Welch & others] \*1024
- BFETS** See Beta vulgaris
- BEHAVIOR** See also Ethics Medical Mental  
Hygiene Morals Personality  
medical direction of human drives [Grant]  
\*607
- BEIT Memorial Trustees** A N Drury honorary  
secretary 581
- BEL DIN** 385—BI
- BELDING FUND** See Foundations
- BELCIANS** grateful for liberation physicians  
experience during German occupation, 593
- BELLADONNA** Treatment See Parotitis Epi  
demic
- BLANARIS**, 385—BI
- BENISON A L** Japanese war prisoner 241
- BENNETT** College for Women extends health  
service 181
- BENZEDRINE Sulfate** See Amphetamine sul  
fate
- BENZENE** causing aplastic anemia 466
- BFVZFESULFONAMIDE p** (aminomethyl)  
(Varian) [Schmidt] 1120—ab
- BENZLSTROL** (Council statement) 1083
- BEQUESTS** See Donations (cross reference)
- BERGMAN MA** death 846
- BLIBERI** congenital and infantile malnu  
trition in pregnancy [Van Gelder] 102—ab  
polymyositis relation to [McCormick] 326—ab
- BI SLEY FREDERIC A** memorial service 71
- BESNER** Boeck Schaumann Disease See  
Sarcoidosis
- BEST HARRY** testimony before Kelley com  
mittee on handicapped 245—O5
- BETA vulgaris** and poliomyelitis 583
- BEVAN** Lecture See Lectures
- BFVFRIGES** See also Coffee Milk Tea  
Water  
Alcoholic See Alcohol  
carbonated caffeine content effect on stom  
ach secretion [Roth & others] (table 18)  
\*914
- BFVFRIDGE PLAN** (questionnaire on by Brit  
ish Medical Association) 314 (doctors  
view of) 582 (compulsory social insurance  
from cradle to grave) 651 (drugs and the  
doctor) 898—E
- BIBLIOGRAPHY** See Air Conditioning
- BICARBONATE** of Potassium See Potassium  
of Soda See Sodium bicarbonate
- BICHLORIDE** of Mercury See Mercury
- BIDDLE A P** bequest for graduate medical  
education, 576
- BIFIDUS** Anemia See Anemia Pernicious
- BILE** in Urine See Urine
- BI LETS** 979—BI
- BILIRUBIN** See Schistosomiasis
- BILIARY TRACT** See also Gallbladder Liver  
colic aminophylline relieves, [Gladstone &  
Goodman] \*1084  
surgery blood loss during [Coller & others]  
\*3 \*4
- BILIRUBIN** in Blood See Blood
- BINGHAMPTON A Y** industrial medical ser  
vice plans [Bloom] \*335
- BIOCHEMISTRY** synthesis in animal body  
106—E
- BIOLOGIC PRODUCTS** See cross references  
under Antitoxin Serum Toxoid Vaccines
- BIOPSY** See also Endometrium Testis  
spread of cancer tissue and 268
- BIO SYNTHESIS** of riboflavin by intestinal  
bacteria [Najjar & others] \*337
- BIRD SETH** (1733 1805) herb cabinet at  
Yale Library 309
- BIRDS** See Ornithosis
- BIRTH** See Labor  
Multiple See Twins  
Rate See Vital Statistics  
Stillbirth See Stillbirth
- BIRTH CONTROL** See Contraception
- BISHOP HARRY A**, Typhus Commission Medal  
to 1034
- BISUTHI** See Syphilis treatment
- BLACKOUT** inconveniences Hawaii [Pinker  
ton] \*626  
tent navy research unit develops 1033
- BIADDER** See also Urinary System  
cancer cystoscopic implantation of radium  
element [Moore] 120—ab  
cystourethrographic diagnosis of cancer  
[Brody & Robins] \*1000
- Fistula** See Fistula vesicovaginal  
Inflammation Interstitial cystitis (Dummer  
ulcer) in men silver nitrate for [Cristol  
& others] \*420



**BLADDER**—Continued  
inflammation interstitial cystitis penicillin for [Thompson] \*407  
paralysis after myopharsen intensive treatment of syphilis [Sains & Omland] \*200  
**BLAST** See Explosions  
**BLAUVELT (G F)** 95th birthday 115  
**BLEACH** See Cosmetics  
**BLEB** See Blister  
**BLEPHAROCONJUNCTIVITIS** See Eyelids  
**BLIND SPOT** See Scotoma  
**BLINDNESS** See also Vision Nerves optic atrophy  
blind veterans seeing eye dogs and other aids 903  
blind veterans training at St Dunstan's 448  
blind veterans without hands training at St Dunstan's especially to use typewriters 1098  
hearing before Kelley Labor Committee Sub committee 112—05  
radiolocation box to aid blind man to recognize obstacles in his path 909  
**BLISTER** vesicant war gases [Davis] \*209  
**BLOATING** See Flatulence  
**BLOOD Albumin in** See Blood proteins  
alcohol rise in borderline alcoholism cases [Gottlieb] 792—1b  
alkalemia from voluntary hyperventilation 402  
analysis to evaluate nutrition in tuberculosis [Getz] 592—ab  
Bacteria in See Meningococcemia Septicemia  
Bank See Blood Transfusion  
bilirubin in jaundice diagnosis [Mojano Lopez] 601—ab  
bilirubin test in infectious hepatitis epidemic in Middle East [Havens] \*17 (correction) 782  
caffeine possible hypercattinemia? 1122  
calcium level in psoriasis 607  
carotene plasma levels in rheumatism 303—E  
caroteneemia differentiated from jaundice [Caviness] 984—ab  
Cells See Erythrocytes Leukocytes  
changes in typhus [Woodward & Bland] \*287  
chemistry on fifth day after severe fatal burn [Piccart] 980—ab  
cholesterol in coronary arteriosclerosis [Shaffer] 53—1b  
cholinesterase test in toxemia of pregnancy [Hersheberg] 1176—ab  
Circulation See also Cardiovascular System Heart output Vasomotor System  
circulation Hodgkin's disease with terminal blood stream spread [Bersack] \*1025  
circulation in traumatic shock in man [Richards] 890—ab  
Clot See Blood coagulation Thrombosis  
Coagulation See also Blood prothrombin Coagulation Anticoagulants See also Dicumarol Heparin  
coagulation anticoagulants physiologic action in vivo 300—E [Shapiro] 789—C  
coagulation autologous plasma clot suture of nerves [Tarlov] \*741  
Conservation See Blood preservation  
Convalescent See Serum convalescent (cross reference)  
Count See Erythrocytes Leukocytes  
Donations See Blood Transfusion  
Dyscrasia See Agranulocytosis Acute Anemia Anemia Icteric Leukemia Erythroblastosis Fetal Leukemia Polycythemia  
Flow See Blood circulation  
glutamine 1049—E  
groups in Brazilian soldiers 186  
groups jaundice after giving human serum [Olliphant] 97—ab  
groups Rh factor in intragroup transfusion reactions [Butler] 132—ab  
Hemoglobin See Hemoglobin  
Infection See Meningococcemia Septicemia  
Injection of Whole Blood or Its Derivatives See Blood Transfusion  
Iron escape of easily detachable 1155—E  
Loss of See Hemorrhage  
macromolecular substances and colloids 770—E  
Meningococcus in See Meningococcemia  
Menstrual See Menstruation  
nitrogen (nonprotein) in shock [Duncanson] 1116—1b  
penicillin levels maintain in treating endocarditis [Molodoff & others] 1167—C  
penicillin plasma concentration adjunct effect of  $\beta$ -methylglutamic acid 369—F [Beyer & others] \*1067  
phosphotungstic acid for jaundice diagnosis [Mojano Lopez] 601—ab  
pigments (excessive) cause of teeth discoloration from erythroblastosis fetalis 670  
Plasma See under various headings of Blood Blood Transfusion Serum  
Platelets See also Purpura thrombopenic

**BLOOD**—Continued  
platelets heparin effect on 300—E  
Preservation See also Blood Transfusion  
Blood banks  
preservation prothrombin in [Band] 668—1b  
Pressure See BLOOD PRESSURE  
Procurement Project See Blood Transfusion  
protein concentration in shock [Duncanson] 1116—ab  
proteins human serum albumin used by armed forces [Kendrick] 730—1b  
proteins hypoproteinemia and shock use of human serum albumin in [Janeway] \*674  
proteins hypoproteinemia in thoracic surgery [Thornton] 921—1b  
proteins new density technique for determining [Howard] 979—C  
proteins (plasma) posthemorrhage level and ligation of thoracic duct [Co Tui] 396—ab  
proteins (plasma) relation to surgical blood loss [Coller & others] \*4  
Prothrombin See also Blood coagulation  
prothrombin dicumarol and vitamin K 300—E  
prothrombin hypoprothrombinemia induced with antiprothrombin [von Kaulla] 925—ab  
prothrombin in fatal hemorrhage from salicylate [Ashworth & McKemie] \*806  
[Quick] 1167—C  
prothrombin in preserved blood [Band] 668—ab  
prothrombin physiologic action of in vivo anticoagulants [Shapiro] 789—C  
prothrombin plasmatic activator [Feissly] 60—1b  
pyruvic acid in test for thiamine deficiency [Govier] \*749  
sedimentation rate new density technique for determining [Howard] 979—C  
sedimentation rate (rised) in neuralgia hysterical depression and lung tumor [Meerloo] \*538  
Serum See various subheads under Blood Blood Transfusion Serum  
shipment of whole blood See under Blood Transfusion  
Spitting Up See Hemoptysis  
Storage See Blood preservation  
Stream See Blood circulation  
Substitutes See Blood Transfusion  
Sugar See also Diabetes Mellitus  
sugar, fatigue hypoglycemic symptom [Portis] 230—1b \*415  
sugar hypoglycemia and restoration with glucose [Mann] \*467  
sugar hypoglycemia masked [Dyer] 796—ab  
Sugar Hypoglycemia Shock Treatment (in quilla) See Dementia Precox  
sugar hypoglycemia sign of cardiac neurosis [Greene] 924—1b  
sugar hypoglycemia (spontaneous) from uterus tumor [Ufer] 798—1b  
sulfonamide concentration [Welch] 596—1b  
sulfonamide concentration tests by colorimeter [Duffie] \*96  
thiocyanate in hyperextension [Kotler] 1169—1b  
Thrombin See Thrombin  
Transfusion See BLOOD TRANSFUSION  
transmission at birth from parents to progeny racial theory 702—ab  
Vessels See BLOOD VESSELS  
vitamin A plasma levels in rheumatic subjects 303—E  
Volume See also Blood circulation Heart output  
volume (total) in operation relation to blood loss [Coller & others] \*1  
**BLOOD PRESSURE** effect of artificial respiration methods on [Volpitta & others] \*1066  
effect of aortic ligation on [Alexander & Byron] \*1144  
high arteriosclerotic fundus oculi after sympathectomy [Gans] 1170—ab  
High See also Nephrosclerosis  
high associated with urinary obstruction? 268  
high creatinuria in [Trensch] 793—ab  
high effect of pregnancy on renal function in [Wellen] 1172—ab  
high essential surgical treatment [Berwold] 53—ab  
high fundus oculi changes in [Cohen] 54—ab [Elwyn] 44—ab [Gans] 1170—ab  
high in infant nephrectomy for [Sewans] 1171—1b  
high nephrotic syndrome in diabetes 199—1b  
high neurogenic effect of activity rest natural sleep sodium amylal pentothal sodium chloralose and ether [Grimson & others] \*218  
high portal Cravellier Brumgarten syndrome [Vater] 919—ab  
high potassium thiocyanate for [d Silva] 133—ab  
high potassium thiocyanate poisoning [Weeks] 131—ab  
high psychosomatic problems [Ewart] \*152  
high radical (humbodorsal) splenectomy [Smithwick] 1115—ab

**BLOOD PRESSURE**—Continued  
high throughout for [Cannon] 795—ab  
high transient in Army officers [Levy & others] \*829  
high vitamin A in large dosages recommended by Cubans for 759—1b  
in typhus [Woodward & Bland] \*287  
intravenous fluids effect on [Hardy & Codfrey] \*23  
pulmonary and systemic artificial respiration effect on [Volpitta & others] \*1066  
quinones aldehydes and ketones effect on [Oppenheimer] 195—ab  
surgical operations and humbodoralsympathectomy effect on [Rojas & others] \*15  
**BLOOD TRANSFUSION** Blood Bank See also Blood preservation  
blood bank (free plasma for public use) 41 (in Hawaii after Pearl Harbor) [Pinkerton] \*829 (statewide peacetime Conn.) 845 (Incorporated Washington D C) 309 (first whole blood bank aboard hospital ship) 966  
blood substitutes methylcellulose pectin isinglass gelatin 1174—E  
blood substitutes polyvinyl alcohols [Roomer] 1116—ab 1154—E  
donations service chiefs ask for increased 843—08  
during operations in relation to amount of blood lost [Coller & others] \*1  
in modern times traced to James Blundell (1790 1877) 559—ab  
of concentrated red cells [Binder] 368—ab  
of plasma and whole blood in Rocky Mountain spotted fever [Harrell & others] \*929  
of plasma, rate in shock 899—E  
of plasma whole blood by armed forces [Kendrick] 730—1b  
of polycythemic blood 1122  
reactions (intragroup) Rh factor in [Butler] 132—ab  
resuscitation of battle casualties [Dick] 667—ab  
use in gastrointestinal hemorrhage contraindicated 1178  
via umbilical cord in newborn [Mayes] 454—1b  
whole blood flown daily to European front 646—05  
whole blood shipped to France August 21 175  
**BLOOD VESSELS** See also Aorta Arteries Cardiovascular System Vasomotor System Veins  
Disease See also Arteriosclerosis Cardiovascular Disease Raynaud's Disease Telangiectasis Thrombocytopenic purpura Thrombophlebitis  
disease (peripheral) alcohol lumbar para vertebral block in [Saland] 51—ab  
disease (peripheral) fluorescein method in [Lange] 1115—ab  
disease (peripheral) pancreatic tissue extracts for 735  
theory of peptic ulcer [Best] 60—ab  
**BILL CROSS** First Aid Aids 758—BI  
Guaze Bandage Sterilized 748—BI  
Plans See Hospitals expense insurance  
**BLUE RIDGE Mountain Mineral** 979—BI  
**BLUNDELL JAMES** (1790 1877) early use of transfusion 559—ab  
**BOARD** See under specific names as American Board etc  
of Health See Health  
of Trustees See American Medical Association  
**BOATS** See Ships  
**BODY** See also Constitution  
Clawson (F) wills body and fund for research 1094  
Folds See Folds  
Odor See Bromhidrosis  
Organs See Viscera  
Temperature See Fever  
Weight See also Obesity  
weight as affected by vitamin supplements to diet [Ruffin & Cayer] \*824  
**BOECK'S Sarcoidosis** See Sarcoidosis  
**BOER F** death 975  
**BOGOVILETZ** Russian A C B serum for rheumatism ineffective 380  
**BOILS** See Furunculosis  
**BOMBARDMENT** See World War II  
**BOMBS** See Air Raids Explosions  
**BONDEASE** 387—BI  
**BONDS** doctor looks at his investments [Smith] \*894  
**BONE MARROW** See also Osteomyelitis megakaryocytes in hemorrhagic diseases [Sanchez Madrid] 399—ab  
sternal aspirated volumetric pattern [Schleicher] 792—ab  
**BONES** See also Cranium Orthopedics Osteitis Spine under names of specific bones  
Dislocation See Dislocation (cross reference) drilling in delayed union of fractures [Pusitz] 522—1b  
Fracture See Fractures  
graft plastic (extra articular tibial) in habitual shoulder dislocation [Brun] 1176—ab

- BONFS**—Continued  
growth arrest for equalizing leg lengths [White & Stubbins] \*1146  
infarcts and aseptic necrosis in (alison workers and others [Taylor] 261—ab  
lesions of myeloma treatment (reply) [Jacobson] 928  
Paret's Disease See Osteitis deformans  
Tuberculosis See Spine tuberculous abscess
- BOOKS** See Bibliography (cross reference)  
Journals Library Book Notices at end of letter B  
doctor's missing anatomy book found with dead jay (former classmate) at Altu 242  
medical translation of for Latin American use 437—E  
photostat and microfilm service for British medical officers overseas, 1162  
BORDEN Award in nutrition 312 908  
B Q (daily quota) milk (Council report) 433  
BOR C Acid See Acid  
BOSTON schools health education in Strayer Survey 1086—E  
BOTALL'S Duct See Ductus arteriosus  
BOTTLE Fed Infants See Infants  
BOTULISM fatal from home packed string beans Calif 1094  
BOURNEVILLE Disease See Sclerosis tuberosa  
BOWEL Movement See Faeces  
Regulator 979—BI  
BOWELS See Intestines  
BOWLEGS See Legs  
BOYD J S K U S of America Typhus Commission Medal to 306  
BOYS See Adolescence. Children  
BRAIN See also Head. Meninges. Nervous System  
abscess complicating sinusitis penicillin for [Putney] \*621  
concussion sugar tolerance test in [Oster christ] 526—ab  
encephalomyelitis system and gonado tropin production [Wetman] 988—ab  
Disease See Epilepsy  
electroencephalogram in anesthetic convulsions [Williams] 1175—ab  
electroencephalogram vasodepressor and carotid sinus syncope [Fazel] 728—ab  
growth, endocrine therapy effect on [Finkler] 1118—ab  
histology in electric shock treatment [Win kelman] 523—ab  
Inflammation See Encephalitis  
Injuries See Brain concussion  
phlebotrombosis in newborn [Marburg] 1070—ab  
Pressure See Cranium Intracranial pressure  
survive intelligence after prefrontal lobotomy [Love] 457—ab  
surgery psychosurgery evaluated [Freeman] 264—ab  
Syphilis See Neurosyphilis  
tumors glioma in siblings [Riese] 524—ab  
BRANDENBURG L W A arrested for illegal narcotic sale N J 310  
BRAZILIAN prize winning monographs [Bech elin] 727—C  
Society of Ophthalmology (meeting) 120  
war bread (correction) 848  
BREAD Brazilian war bread (correction) 848  
Vitamek Enriched Bread 1048—BI  
whiter England 970  
BREAKBONE Fever See Dengue  
BREAKFAST See under Food  
Foods See Cereal Products  
BREAST cancer relation to fluorescent porphyria 574—E  
cancer synthetic estrogens effect on advanced type [Haddow] 1119—ab  
Fed Infants See Infants  
hypertrophy in male gynecomastia [Goode] 263—ab  
Inflammation plasma cell mastitis of Adair [Parsons] 857—ab  
Milk See Lactation  
surgery mastectomy blood loss during [Col ler & others] \*3 41  
BREATHING See Respiration  
BRIEFER J L congenital malformations 963—E  
BRILL ABRAHAM honored 780  
BRIDGMAN E W commended 1090  
BRITISH See also England (cross reference)  
Royal World War I World War II  
Demobilization Committee of Central Medical War Committee 1043 1087—F  
dermatology founder Robert Willan (175, 1812) 15—ab  
government (workmen's compensation to be taken over by) 719 1098 (campaign against leprosy in Nigeria) 908  
Medical Association (pharmaceutical benefits free medicine for Australia) 184 (ques tionnaire on national health service) 314 (representative meeting) 448 (Doctor's View of proposed national health service by Lord Dawson) 582  
medical education radical reforms 43 381  
Medical Journal See Journals
- BRITISH**—Continued  
Medical Research Council See Medical Research Council  
Pediatric Association (joint report on care of rheumatic children) 314  
share rations with Greece 1043  
de BRITO J A tells U S 186  
BROADCASTING See Radio  
BROCKBANK E M John Dalton 582  
BROMIDROSIS treatment cadmium chloride aerosol solution [Watt] 436—ab  
BRONCHI See Bronchus  
BRONCHIAL ASTHMA See Asthma  
BRONCHIECTASIS after lung resection penicillin prevents [White & others] \*1016  
treatment dissection lobectomy [Scollers] 600—ab  
BROUCHUS See also Bronchiectasis  
cancer fulminant hemoptysis in [Crivellari] 462—ab  
infection (chronic) sulfonamides in [Oat way] 857—ab  
lesions inhale sodium sulfathiazole in [Applebaum] 919—ab  
tumor adenoma [Lowry] 861—ab  
BRONZE Star Medal See World War II Heroes and Prisoners  
BROWN University newly created department of medical sciences 446  
BRUCELOSI research in Latin America 062—E  
unrecognized menace [Staub] 984—ab  
BUBO Climate See Lymphogranuloma Venereum  
BUCCAL CAVITY See Cheek  
BULCERS Disease See Thrombophlebitis obliterans  
BUFFY Layer See Septicemia diagnosis  
BULLA See Blister  
BULLIS FAYF serologic studies [Hicks] 1114—ab  
BULLRICH RAFAEL A death 1097  
BUREAU See also Marriage bureau  
of A M A See American Medical Association  
of Clinical Information formed by Massachusetts Medical Society 1040  
of Industrial Hygiene created Cleveland 181  
of Information for Medical Veterans See American Medical Association  
of States Services C L Williams directs 117  
BURNS See also Sunburn  
burning (intermittent) of palate 62  
burning of mouth and lips from sucking sediment in gasoline fuel line 268  
carbohydrate metabolism abnormal in [Taylor] 1033—ab  
flash or actinic keratoconjunctivitis treatment [Schober] 51—ab  
Mildum 268  
severe fatal physicochemical disorders in [Flecken] 986—ab  
treatment cellophane [Farr] 327—ab  
treatment closed plaster dressings [Glenn] 323—ab  
treatment envelope method [Osborne] 987—ab  
treatment fibrinogen and thrombin locally [Hawn] 596—ab  
treatment medicated pliable gelatin film vs Pickrell's solution [Roback] 1174—ab  
treatment nutritional with dextrimaltose and amigen [Co Tu] 323—ab  
treatment plaster confusant applied at varying intervals [Alich] 262—ab  
treatment skin cover 1043  
treatment streptothricin [Robinson] 1002—ab  
vasoconstrictor substance in lymph from burned area [Alich] 262—ab  
BURSA olecranon syphilis of [Schrager] 323—ab  
painful around ischial tuberosity 139  
BURTIS symposium on Mass 1094  
BURTON J W Brown and White in the South Pacific 119  
BUTTER SUBSTITUTE See Oleomargarine  
BU U Diuretic 788—BI  
BUTON S A Special Compound 124—BI
- BOOK NOTICES**  
Accident Facts 1944 Edition 527  
Ackman F D Technique in Trauma Planned Filming in Treatment 527  
Adams R C Intravenous Anesthesia 26  
Adolescence Sex Education in Schools and Youth Organizations 734  
Agranulocytosis and Leukopenia 602  
de Aguiar Whitaker E Oa milagres do Padre de Poá 1177  
American Medical Association Council on Pharmacy and Chemistry Annual Reprint of Reports 136  
American Midland Naturalist Monograph Argasidae 401  
American Social Hygiene Association Summary of State Legislation on Examinations for Venereal Diseases 137  
American Society for Control of Cancer Inc Women's Field Army Cancer Study for Laymen 137
- Book Notices**—Continued  
Anatomy Atlas of 527  
Anemia Infectious Due to Bartonella and Related Red Cell Parasites 27  
Anesthesia Intravenous 265  
Regional Analgesia 927  
Aneurysms Intracranial Arterial 464  
Angina Pectoris Blood Pressure and Its Disorders including 1121  
Annual Reviews See Yearbook  
Antihormones Investigaciones sobre fisiopatologia tiroidea 1036  
Argasidae of North America Central America and Cuba 401  
Argentina Del estado del niño del medico 1121  
Army U S Office of Surgeon General Global Epidemiology 669  
Arnott A J Focio Maxillary Injuries 799  
Arnow L E Introduction to Physiological and Pathological Chemistry 329  
Atlas See Anatomy 527  
Babkin B P Secretory Mechanism of Digestive Glands 266  
Bailey H Emergency Surgery 927  
Barbiturates Narcosis Analysis 401  
Bartonella Infectious Anemias Due to 527  
Bates W Segmental Neuralgia in Painful Syndromes 1177  
Beardwood T T Jr Simplified Diabetic Management 602  
Beck S J Hirschbach's Test Basic Processes 927  
Behavior Neurotic Experimental Basis for 463  
Bellows J G Cataract and Anomalies of Lens 669  
Berghoff H S Heart Disease Elementary Reference for Physicians 136  
Blood Leukopenia and Agranulocytosis 602  
Plasma Program 734  
Blood Pressure and Its Disorders, 1121  
Hypertension arterial nephrosis 926  
Bowden A E State Legislation Requiring Examinations for Venereal Diseases 137  
Bowley A H Guiding the Normal Child 201  
Brain Intracranial Arterial Aneurysms 464  
Braun Menendez E Hipertensión arterial nephrosis 920  
Brodzki J editor Polish School of Medicine at University of Edinburgh 266  
Bunker H A editor One Hundred Years of American Psychiatry 137  
Burlingham D Infants Without Families 400  
Burns Planned Timing in Treatment 527  
Butler Hospital Century of 1844 1944 463  
Byrd O E compiler Health Instruction Yearbook 1944 799  
California State Dept of Public Health Conference on Tuberculosis Isolation 865  
Canadian Hospital Council Survey of Hospital Personnel and Facilities 401  
Cancer Manual for Physicians 265  
Study for Laymen 137  
Carden G Art and Science of Nutrition 201  
Carrion's disease Infectious Anemias 27  
Carr Saunders A M Young Offenders 329  
Carter L E Six Year Journey 669  
Casts Plaster of Paris Technique 990  
Cataract and Anomalies of Lens 669  
Caughy J L Jr Human Constitution in Clinical Medicine 266  
Cell Division Movements of Chromosomes in 61  
Chemistry Chemical Analysis Series of Monographs 200  
Jack's Chemical Dictionary 329  
Introduction to Physiological and Pathological Chemistry 329  
of Food and Food Products 734  
Textbook of Inorganic Pharmaceutical Chemistry, 201  
Children See also Infants. Pediatrics  
Guiding Normal Child 201  
preschool Six Year Journey Cleveland 669  
Young Offenders Enquiry into Juvenile Delinquency 329  
Christian H A editor Leukopenia and Agranulocytosis 602  
Chromosomes Movements of in Cell Division 61  
Civil War Medical Education in U S Before 799  
Civilization and Disease 799  
Cleveland Child Health Association Six Year Journey 669  
Clinical Medicine See also Diagnosis  
Human Constitution in 266  
Clinton F S First Hospitals in Tulsa 860  
Cole W H Textbook of General Surgery 400  
Conference on Problems of Human Fertility Proceedings 1056  
Constitution Human in Clinical Medicine 266  
Cooley R A Argasidae of North America Central America and Cuba 401  
Corner C W Ourselves Unborn 1121  
Crime Case Studies in the Psychopathology of 799  
Damshiek W Leukopenia and Agranulocytosis 602

Public Health See Health

Book Notices—Continued  
 Pyelitis and Hydronephrosis (Pyelonephritis) of Pregnancy 324  
 Q fever American Argasidae 401  
 Raftery T V Artificial Pneumothorax in Pulmonary Tuberculosis 328  
 Ramsay E V Antimalarial Drugs 734  
 Rand C W Neurosurgical Patient 464  
 Red Lights on the Horizon 863  
 Reference Book for Medicine and Surgery Lippincott's 734  
 Rehabilitation in Education and Remedial Exercises 926  
 Reinberger G E Lippincott's Quick Reference Book for Medicine and Surgery 734  
 Rhodes E C Young Offenders 329  
 Rich A R Pathogenesis of Tuberculosis 602  
 Robertson H E Hydronephrosis and Pyelitis (Pyelonephritis) of Pregnancy 328  
 Rocky Mountain Spotted Fever Argasidae 401  
 Roentgenology X Ray Examination of the Stomach 865  
 Rogers C H Textbook of Inorganic Pharmaceutical Chemistry 201  
 Rolleston H editor Industrial Medicine 669  
 Rorschach's Test Basic Processes 927  
 Ross A A Dust Hazards in Australian Foundries 865  
 Schools Sex Education in 734  
 Six Year Journey Cleveland 669  
 Medical Polish Medical School at University of Edinburgh 266  
 Schrader F Ulceris Movements of Chromosomes in Cell Division 61  
 Science La organizacion de la Universidad y la investigacion cientifica 1121  
 Sex See also Fertility  
 Education in Schools and Youth Organizations 734  
 Shaw N H Dust Hazards in Australian Foundries 865  
 Shepherd P R Dental Treatment of Maxillofacial Injuries 328  
 Shillaber C P Photomicrography 927  
 Short A R Medical Annual 734  
 Siegler S I Fertility in Women 329  
 Siegler H E Civilization and Disease 799  
 Sigler L H Electrocardiogram Its Interpretation and Clinical Application 990  
 Simmons J S Global Epidemiology 669  
 Sloan R P Hospital Color and Decoration 1056  
 Smith O F G Rehabilitation Re Education and Remedial Exercises 926  
 Spaeth E B Principles and Practice of Ophthalmic Surgery 329  
 Spiegel J P War Neuroses in North Africa Tunisian Campaign 463  
 Starr K W Focal Maxillary Injuries 790  
 Steinberg B Infections of Peritoneum 527  
 Sterility See Fertility  
 Stomach X Ray Examination of 865  
 Strecker I A Fundamentals of Psychiatry 137  
 Surgery Emergency 927  
 General Textbook of 400  
 Lippincott's Quick Reference Book for 734  
 Neurosurgical Patient 464  
 Ophthalmic Principles and Practice of 329  
 Urological 400  
 Sutherland R L Hogg Foundation Reports 201  
 Tallaferro W H editor Medicine and the War 61  
 Taylor Bercoff Z editor Clinical Tropical Medicine 200  
 Teeth See Dentistry  
 Temkin O Antimalarial Drugs 734  
 Templeton F E X Ray Examination of Stomach 865  
 Terry Lectures On Unborn Embryologists Essays on Man 1121  
 Thomas E W Management of Neurosyphilis 137  
 Throat See Otorhinolaryngology 927  
 Thyroid Investigaciones sobre fisiopatologia tiroidea 1056  
 Ticks Argasidae of North America Central America and Cuba 401  
 Tild H Medical Annual 734  
 Trauma Technique in Planned Timing in Treatment 527  
 Tredgold A F Manual of Psychological Medicine 990  
 Tropical Medicine Clinical 200  
 Tuberculosis Artificial Pneumothorax in Including Collapse Therapy 328  
 Conference on Tuberculosis California 865  
 of the For Nose and Throat Including Larynx Trachea and Bronchi 927  
 Pathogenesis of 602  
 Tulsa First Hospitals in 865  
 University of Edinburgh Polish School of Medicine at 266  
 Ureters Hydronephrosis and Pyelitis of Pregnancy 328  
 Urological Surgery 400  
 Van Lieshout Eunice Os milagres do Padre de Poa 1177  
 Varicose Veins Their Treatment by Injection 1056

Veneral Disease State Legislation Requiring Premarital and Prenatal Examinations 137  
 Vision See Ophthalmology  
 War Focal Maxillary Injuries 799  
 Global Epidemiology 669  
 Medicine and the War 61  
 Neuroses in North Africa Tunisian Campaign 463  
 Time Supplement of Dinbelle A B C 990  
 Waring J J Spontaneous Pneumothorax 734  
 Watson Jones R Fractures and Joint Injuries 265  
 Weinman D Infectious Anemias Due to Bartonella and Related Red Cell Parasites 727  
 Wexler C Management of Neurosyphilis 137  
 Whayne T F Global Epidemiology 669  
 Whipple D V Our American Babies Art of Baby Care 137  
 White I D Heart Disease 1056  
 Women Psychology of Psychoanalytic Interpretation 61  
 Women's Field Army Cancer Study for Laymen 137  
 Woods Hole Marine Biological Laboratory 602  
 World War See War  
 Wounds Planned Timing in Treatment of 527  
 Winer W M Fundamentals of Internal Medicine 527  
 Yearbook Health Instruction 799  
 Hospital Annual 865  
 Medical Annual 734  
 of Treatment and Practitioners Index 734  
 Young Offenders Enquiry into Juvenile Delinquency 329  
 Zilboorg G editor One Hundred Years of American Psychiatry 137

## C

CACHTIA See Pituitary  
 CADMIUM Chloride Treatment See Biom  
 Indrosis Dermalophytosis poisoning [Spolyar] 730—ab  
 CAFFEINE and peptic ulcer caffeine test meal technique [Roth & others] \*814  
 effect on human beings possibility of hypercafeinemia? 1122  
 CAISSON workers aseptic necrosis and bone infarcts in [Taylor] 261—ab  
 CALCIUM and renal calcium 670  
 carbonate inhibits peptic activity in peptic ulcer [Steigmann] 192—ab  
 In Blood See Blood  
 Treatment See Rheumatic Fever  
 CALCULI See Gallbladder Kidneys  
 CALIFORNIA See also Los Angeles San Diego  
 Medical Association public relations survey 370—E  
 Physicians Service 112—OS 247—OS 370  
 —F [Merrill & Mills] \*897  
 University of See University  
 CALLUS Foster's Wonder 30 Minute Remover 318—BI  
 CALOMEL See under Mercury  
 CALORIES determining fuel requirement of man 23—ab  
 heat production on mixed diets 237—F  
 CAMBRIDGE See University of Cambridge  
 CAMFRON Prize See Prizes  
 CAMPS Army See subheads under World War II  
 for diabetics 181  
 CANADIAN Army See subheads under World War II  
 CANAL ZONE See Panama Canal Zone  
 CANAVALLIN enzymatic bactericide [Bailey] 396—ab  
 CANCER See also Epithelioma under name of organ or region affected  
 American Cancer Society Inc (new name for American Society for Control of Women Field Army changed to Field Army) 311  
 (absorbs National Foundation for Care of Advanced Cancer Patients Inc) 600  
 case finding clinics W Va 373  
 cells in sputum [Wanda] 1120—ab  
 cells normal cells transformed into 838—F  
 (transforming agent thymonucleic acid) 964—F  
 clinic Steiner ruled part of Grady Hospital Co 779  
 control (prevention clinic Pa.) 248 (program Ky) 578 (Pardee bequest) 717  
 course (special) in oncology Rio de Janeiro 1044  
 Diagnosis See also Uterus cancer  
 diagnosis inoperative state service Illinois 715  
 environmental 836—E  
 etiology accidental trauma and metastasis [Toth] 261—ab  
 etiology nilyl thiourea and 2 acetyl amino fiorene [Bieloschowsky] 923—ab  
 etiology estrogens overdosage 604  
 etiology fluorescent porphyrins 574—E  
 etiology occupation 836—E  
 etiology single injury [Stewart] 125—C  
 [Terry] 190—C [Woodward] 724—C  
 fellowship Ind 246  
 foundations Miller cancer fund 647  
 foundations National Foundation for Care of Advanced Cancer Patients Inc 247 650

CANCER—Continued  
 In young persons [Forehead] 918—ab  
 prizes Clement Cleveland Award 732  
 Public Health Cancer Association recently organized 848  
 research Anna Fuller Fund grant for 779  
 research federal appropriation for proposed by Dr Coudry 1093—OS  
 teaching day N Y 310  
 tissue spread and biopsy 268  
 transplantation (heterologous) to anterior chamber [Greene] 514—ab 106—E  
 treatment chemosurgical with zinc chloride 32—E  
 treatment radiotherapy concentration method [Cutler] 321—ab  
 Treatment Radium See Bladder cancer  
 Trachea cancer Uterus cancer  
 treatment synthetic estrogens [Haddow] 1119—ab  
 Women's Field Army name changed to Field Army 311  
 CANFED Food See Beans Clapps products  
 Canker products  
 CANON Bill 1914 version of Townsend plan 969—OS  
 CAPILLARIES See Telangiectasia  
 CAPON NORMAN B professor of child health at Liverpool University 448  
 CARATI See Pinta  
 CARBOHYDRATES See also Dextrose Sugar etc  
 metabolism abnormal in burns [Taylor] 1053  
 —ab  
 metabolism and working capacity [MacBryde] 859—ab  
 metabolism in relation to glutamine 1089—F  
 CARBOLIC ACID See Phenol  
 CARBON DIOXIDE Treatment of asphyxia neonatorum [Biggs] \*1070  
 voluntary hyperventilation 402  
 CARBON MONOXIDE poisoning chronic experimental [Lewy] 982—ab  
 CARBON TETRACHLORIDE poisoning relation to alcoholism [Konwiler] 324—ab  
 CARBONATED Beverages See Beverages  
 CARBUACLE See Furunculosis  
 Malignant See Anthrax  
 CARCINOGENESIS See Cancer, etiology  
 CARCINOMA See Cancer  
 CARDIAC See also Heart  
 Muscles See Myocardium  
 Neurosis See Asthenia neurocirculatory  
 Society joint report on rheumatic children 714  
 CARDIACIA See Heartburn  
 CARDIOVASCULAR DISEASE See also Blood Vessels disease Heart disease etc  
 Hypertensive See Blood Pressure high  
 reals in U S Army Officers [Levy & others] \*829  
 CARDIOVASCULAR SYSTEM See also Arteries Blood Vessels Heart Vasomotor System Veins  
 In typhus [Woodward & Bland] \*287  
 test to measure physical fitness 991  
 CAREFS See Teeth  
 CAROTENE and vitamin A plasma levels in rheumatic subjects 303—E  
 CAROTENEMIA See Blood  
 CAROTID SINUS hypersensitive compression fracture from stimulation [Hauser] \*1029  
 syncope and vasodepressor [Engel] 728—ab  
 CARPIL Scaphoid See Wrist  
 CARPIL ALFARIS (dismissed from director ship by Vichy government) 117 (death) 850  
 CARRIRS See Disease carrier (cross reference)  
 CARROTS See Carotene  
 CARS See Automobiles Hospitals train de CARVALHO ARLINO C appointment 186  
 CASAFRUS 381—BI  
 CASCARA Bassoran with 1048—BI  
 Kondemul with Non Bitter Extract of 581—BI  
 with Granaya 385—BI  
 CASE finding See Cancer Tuberculosis  
 CASEIN Hydrolysate of See Amigen  
 CASH Prize See Prizes  
 CAST acetone poisoning (acute) with coma and urticaria [Strong] 1116—ab  
 plaster apply at varying intervals after burning [Aldrich] 262—ab  
 plaster closed method in prevention of shock [Sellers] 595—ab  
 plaster (closed) treatment of burns [Glenn] 323—ab  
 plaster compression fracture from stimulating carotid sinus [Hauser] \*1029  
 plaster plus Kirschner wire in fixation of thumb fracture [Johnson] \*27  
 CASTELLANI ALDO suspended from Rome faculty 117  
 CASTIGLIONI Asks doctors to aid Italy 1092  
 CASTLE IRENE as antivivisectionist 102—E  
 CASTORIA Pitcher's 514—BI  
 CASTRATION male climacteric 300—E  
 de CASTRO ALOISIO personal 1044  
 CASUALTIES See Accidents Disasters World War II

CATASTROPHES See Disasters  
CATARACT congenital in newborn rubella in pregnant mother [Swan] 99-ab 237-E  
extraction care of patients after 465  
extraction vitamin P to control ocular hemorrhage 460-ab  
immature when to operate 1007  
CATARRH See Jaundice catarrhal  
nasopharyngitis See Colds  
CATARRHAL ORAL Merrell cold vaccine (joint Council report) \*896  
CATUT antigenicity [Hopps] 324-ab  
sensitivity to effect on reaction of tissues [Hopps] 324-ab  
sensitivity to testing for 866  
CATHARTICS Alterative Poudre Compound 979-BI  
Bassoran with Cascara 1048-BI  
Bilets 979-BI  
Bowel Regulator 979-BI  
Femlax 48-BI  
Flora-Lax 114-BI  
Glyax 384-BI  
Glaxia Laxative Pills or Rx Syngelo Pills 189-BI  
Glaxia Toilet Tablets 124-BI  
Laxative with Cascara 383-BI  
Imperial Lax 101 318-BI  
Kondremul with cascara or phenolphthalein 987-BI  
Lax aid 318-BI  
Laxative 383-BI  
Metamellin R (Searle) 367  
Mineral oil in intestine 928  
My-Lax 189-BI  
NR Tablets or Nature's Remedy 318-BI  
Pond's Laxative Pills 987-BI  
Pow-O-Lin 48-BI  
Royal Lax and Oil with Phenolphthalein 124-BI  
Vog-Lax 48-BI  
CATHOLICS See Roman Catholics  
CAUDA EQUINA compression syndrome with herniated nucleus [French] 119-ab  
CAUDAL Anesthesia See Anesthesia  
CAVERNOUS SINUS thrombophlebitis with optic atrophy penicillin cures [Nicholson & Anderson] \*12  
CELIAIC DISEASE treatment vitamin B complex and liver extract [Baumhauer] 792-ab  
CEILOPHANE mask to protect against harm from sunlight 465  
treatment of burns [Farr] 327-ab  
CELSI See also Blood cells (cross reference)  
Cancer cells Plants Tissues  
acquired cellular resistance [Mudd] \*635  
cumulus hyaluronidase as cement between 1103-E  
normal transformed into cancer cells 938  
CELSI 964-F  
Plasma Cell Mastitis See Breast Inflammation  
CELLULITIS orbital penicillin for [Stoer] \*164 [Keyes] \*611 \*613 [Putney] \*621  
CELLULOSE See Methylcellulose  
CELECO photodynamic colorimeters 62  
CEMENTAL Medical War Committee (British) demobilization and doctors 1043 1087  
CEMENTAL PRODUCTS See also Wheat  
vitamins in prepared cereal foods [Klitzes & Fehleisen] \*100  
CEPHROSPINAL FLUID nonprotein nitrogen and protein in shock [Duncan] 1116-ab  
penicillin assay in meningitis treated by injection 370-F  
Pressure See Cranium Intracranial pressure  
CEPHROSPINAL MENINGITIS See Meningitis cerebrospinal epidemic  
CEPHROSPINAL SYMPHYSIS See Neurosphylls  
CEREBRUM See Brain  
CERTIFICATION See Medical Certificates  
CERVICAL See Uterus cancer (cervical)  
CESAREAN SECTION anesthesia in myocarditis and renal disorder (repl.) [Nicholson] 670  
indicated in diaphragmatic hernia 186  
test of labor or 1122  
vaginal delivery after [Kuder] 875-ab  
CEVITAMIC Acid See Ascorbic acid  
CHALIN THOMAS II A death 782  
CHARACTERISTICS See Personality  
CHARELHORSE fever of unknown origin 737  
de CHAVILLAN CUL (1700 1368) eminent authority on surgery 176-ab  
CHIFFA cancer free muscle transplant to restore [Prudent] 730-ab  
CHIKENI home typhoid epidemics [Meyer] 919-ab  
CHIMICAL Burns See Burns lithium  
Warfare Service designs head wound gas mask 901  
CHIMISTRY See Biochemistry  
CHINA Council on Pharmacy and Chemists See American Medical Association  
CHIMOSUCRY See Lys cancer  
CHIMOTRYPSIN See Arsenicals Streptothricin Sulfonamide Compounds  
CHERRY Balm 788-BI  
CHIST See Thoria

CHEWING GUM See Gum  
CHI Omega National Achievement Award See Prizes  
CHICAGO venereal disease control program Chicago Intensive Treatment Center 374-E  
virulence tumor *Herald American* and Irene Castle 102-F  
CHICKEN mite vector of St Louis encephalitis 962-E  
CHILDBIRTH See Labor  
CHILDREN See also Families Infants  
Maternity Pediatrics under names of specific diseases  
Adolescent See Adolescence  
Adoption See Adoption  
child guidance (center Wise) 182 (survey Ore) 182 (Westchester Co N Y) 906  
commission on urged by Pepper Subcom 309-OS  
Crippled See Crippled  
Health Nuffield Foundation chair of at U of London 582  
health professor at Liverpool U 448  
Hospital See Hospitals children  
Institutional care effects of Nuffield Trust to study 909  
Mental Defective See Mental Defectives  
psychiatry fellowships by National Committee for Mental Hygiene 183  
school European medical hits sent by Junior Red Cross 1092  
school heart disease in Del [Williams] 660-ab  
U S Children's Bureau American Academy of Pediatrics withdraws support [Lenroot] 49-C (opposes transfer to U S P H S) 717  
U S Children's Bureau consultant Dr Parks 904-OS  
U S Children's Bureau new regulations to services to crippled 1154-F  
welfare Child Welfare Information Service Inc organized 907  
welfare Community Service Society of New York issues pamphlet on child care 780  
welfare funds for school and child care allocated 379  
welfare New York City Committee on Mental Hygiene child care pamphlets 1041  
CHINA AND CHINESE fellowships (special) for 447  
Red Cross ships medicines to 1092  
research at Oxford and Cambridge 792  
War in See World War II  
CHINAWARE See Cooking and Eating Utensils  
CHIROPRACTOR See also Medical Legal Abs  
tracts at end of letter M  
performed tonsilectomy causing death of 2 boys Calif 714  
CHISSEL mortising growth arrest to equalize leg lengths [White & Stubbs] \*114  
CHLORALOSI See Anesthesia  
CHLORIDES See Ammonium chloride Cid-um chloride (cross reference) Sodium chloride Zinc chloride  
dichlorodithyl SULFIDE (mustard gas) contact lenses for delayed keratitis [Mann] 963-ab  
dermatologic aspects [Davis] \*209  
CHOLIFITITIS See Gallbladder exculi  
CHOLIFSTEROL in blood See Blood  
nutritional role in coronary arteriosclerosis [Shaffer] 53-ab  
CHOLINE See Acetylcholine  
CHOLINSTERASE in eye [Brückner] 668-ab  
test in loveliness of pregnancy [Herschberg] 1176-ab  
CHOREA gravidarum [Ruehl] 875-ab  
minor (Sydenham's) subarachnoid pyridoxine injection for [Stone] 661-ab  
CHORIONIC Gonadotropins See Gonadotropins  
CHORODERMALIA hereditarily [Goedbloed] 399-ab  
CHURCH See Roman Catholics  
CHYLOTHORAX in infancy [Forbes] 1032-ab  
CIGARET See Tobacco  
CHIA See Equisetaceae  
CINCINNATI Academy See Academy  
rheumatic fever in relation to rentals crowding population density and Negroes [Wedum] 1113-ab  
University of See University  
CINEMA See Moving Pictures  
CIRCULATION See Blood circulation  
CIRCULATORY SYSTEM See Cardiovascular System  
CIRCUMCISION Indications for enlisted men not routinely circumcised 928  
CIRCUS Hartford fire disaster patients in hospital [Weld] 450-ab  
CIRRHOSES See Liver  
CISTERN MAGNA puncture inject anti-tetanus serum via [Stern] 991-ab  
CITATIONS See World War II Heroes and Prisoners  
CITRIN See Vitamins P  
CITRIN bacteriostatic activity in vitro [Timmons] 1171-ab  
CIVIL SERVICE (U S) hires disabled vets quickly 969-OS  
safety conditions probed 1038-OS

CLAPP'S products for infant feeding (peaches custard pudding pears) 233  
CLAWSON EDITH wills body and fund for research 1094  
CLIPPING Preparations See Soap  
CLEVELAND Award See Prizes  
Hospital Service Association 112-OS  
CLINICTERIC male symptoms diagnosis treatment [Heller & Myers] \*472 (use term testicular insufficiency instead) [Bauer] 914-C  
male symptoms testosterone propionate or methyltestosterone for 300-E  
CLIMATE See also Cold Geography Tropics  
asthma in relation to 330  
dietary protein and physical fitness in relation to [Hitts] 195-ab  
diseases affected by 1065-ab  
influence on some diseases 1065-ab  
menstrual periodicity 28 day interval in winter 14 17 day interval in summer 670  
CLIMATIC Bubba See Lymphogranuloma Venereum  
CLIMAX C & P B 124-BI  
CLINICAL appraisal of new drugs (Council report) [Van Winkle & others] \*938  
Bureau of Clinical Information formed by Massachusetts Medical Society 1040  
Examination See Diagnosis  
Laboratories See Laboratories  
Pathologists See Pathologists  
Psychology See Psychology  
CLINICS See also Cancer Dispensaries  
Heart Physical Therapy Psychosomatic Medicine Rehabilitation  
collect blood at patient's first visit [Howard] 979-C  
Cooperating Clinics massive arsenotherapy for syphilis evaluation \*574  
CLORASEN N R (description) 169  
(Squibb) 169  
CLOSTRIDIUM botulinum infection See Botulism  
infections [Dowdy] 810-ab  
sporogenous electron micrograph of [Mudd & Anderson] \*567  
sulfathiazole proflavine powder in wounds [McIntosh] 58-ab [Feggetter] 58-ab  
tetan electron micrograph of [Mudd & Anderson] \*564 \*566  
weldi See also Gangrene gas  
weldi infection penicillin for [Kepl & others] \*96  
weldi infection roentgen therapy [Cantill] 1118-ab  
CLOTHING See also Hosiery  
electrically heated flying suits for A A F 240  
CLOVER preparation from spoiled sweet clover See Dicumarol  
COAGULATION See Blood coagulation  
COAGULUM See under Fibrin  
Contact Method See Serum plasma  
COAL Mines See Mines  
oil See kerosene  
COCA COLA effect on stomach secretion [Roth & others] \*818  
COCARBOXYLASE See Thiamine phosphorylated  
COCCIDIOIDOMYCOSIS [Jee] 918-ab  
COCKE C II wills library to Buncombe County Medical Society 181  
COCOA Howells Cocoa & Quinine Syrup 514-BI  
COGNOME theory of action of sulfonamides 31-E  
tissue in shock and anoxia [Govier] \*749  
COFFE and peptic ulcer [Roth & others] \*814  
effect of on man 1122  
COITUS See also Continence Contraception  
Impotence Marriage  
reservatus 466  
COLBY College health program 716  
COLCHICINE action in gout 736  
COLD See also Frostbite  
Agglutination Test See Agglutinins and Agglutination  
allergy to 402  
Anesthesia See Anesthesia refrigeration  
cold drops war nephritis in Russia from exposure to [Pilgerstorfer] 788-ab  
frost injuries in warfare [Liebesny] 1053-ab  
Permanent Waving See Hair  
COLDS See also Cough Tonsils infected  
treatment patulin 510 (Medical Research Council Report) 988-ab  
vaccination (intranasal) 371-E  
fever (joint Council report) \*895 900-F  
COLIC Biliary See Biliary Tract  
COLITIS Salmonella enterocolitis in childhood [Neter] 1113-ab  
ulcerative chronic [Jones] \*1013  
ulcerative chronic treated with detergents 1152-E  
ulcerative streptococcal also tuberculous medical management [Bargen] \*1009  
COLLAPSE See Shock  
Pulmonary See Lungs collapse  
COLLEGE See University  
Degree See Degrees  
Medical See Schools Medical



- COLLEGE**—Continued  
of Physicians Surgeons etc. See American College Royal College list of Societies at end of letter S  
Students See Students
- COLLOIDS** biologic pathogenic action 770—F
- COLON** *Bacillus* See *Shelchella coli*  
hypertrophied Huston's valves cause constipation? 268  
inflammatory lesions diverticulitis colitis etc surgical aspect [Jones] \*101  
Inflammation See Colitis  
megacolon and dolichocolon vitamin B<sub>12</sub> treatment 1163  
megacolon (Hirschsprung's disease) treatment prognosis [Grimson] 727—ab  
surgery urinary retention after transurethral resection for [Emmett & Cristol] \*1077
- COLORADO** Medical Service Inc (Bureau report) 505—OS  
Tick Fever See Ticks
- COLORIMETER** hemoglobin estimated by Kennedy method [Duffie] \*45  
photoelectric 62
- COLUMBIA** Fund See Foundations  
University (psychosomatic clinic) 247 (iclonor penicillin) 310 (medical alumni governor doorman) 507 (industrial hygiene courses) 716
- COLIC** in acute acetone poisoning [Strong] 116—ab
- COMBAT FLYING** See World War II aviation
- COMMISSION** on children urged by Pepper Subcommittee 308—OS
- COMMISSIONED OFFICERS COMMISSIONS** See subheads under World War II
- COMMITTEE** See also Keller subcommittee National Committee Pepper subcommittee list of Societies and other Organizations at end of letter S  
of A M A See American Medical Association  
of 400 nation wide health program 640—F on Medical Research publishes weekly Summary of Reports Received 110  
on Physical Fitness 308—OS 714—OS  
on Postwar Medical Service See American Medical Association  
on Research in Medical Economics of New York PRINCIPLES OF A NATION WIDE HEALTH PROGRAM 640—E
- COMMONWEALTH FUND** See Foundations
- COMMUNICABLE DISEASE** See Epidemics  
Infectious Disease Quarantine
- COMPENSATION** for Injuries See Workmen's Compensation  
of Physicians See Fees
- COMPLEMENT** Fixation Test See Lympho granuloma Venereal Meningococcus infections
- COMPRESSED** Air See Air
- COMPRESSION** Fracture See Spine  
Syndrome See Cauda Equina Nerves cervical
- CONCENTRATION** Radiotherapy See Radiotherapy
- CONCEPTION** See Impregnation Pregnancy  
Control of See Contraception
- CONCUSSION** See Brain
- CONDUCT** See Behavior Ethics Medical, Morals
- CONDYLOMATA** acuminata podophyllin for [Culp] 393—ab
- CONFERENCE** See also National Conference under list of societies at end of letter S  
Annual Conference See American Medical Association  
of flight air surgeons 839  
on Hospital Administration Peru 1097
- CONGRESS** See also under Societies and other Organizations at end of letter S  
Palestine Medical Congress 783  
[S] legislation enacted See Laws and Legislation federal and state
- CONJUNCTIVITIS** See also keratoconjunctivitis  
chronic blepharoconjunctivitis [Keeves] \*611  
\*613  
Granular See Trachoma  
CONJUNCTIVITIS altered states of with allergic headache [Randolph] \*430
- CONSOLIDATED** Edison Co of New York Inc medical service plan [Whitmer] \*344
- CONSTIPATION** See also Catarrhs  
hypertrophied Huston's valves not cause? 268  
treatment Metamucil N B (Searle) 367
- CONSTRICTION** See also Behavior Personality  
factor in anesthetic convulsions [Williams] 1175—ab  
hepatic dysfunction [Comfort] 1171—ab
- CONTACT** Dermatitis See Dermatitis venenata  
Lenses See Glasses
- CONTAGION** See Infection
- CONTAGIOUS DISEASE** See Infectious Disease
- CONTEST** See Prizes
- CONTINENCE** Medical Women's Federation statement on 1094
- CONTRADICTION** capsules and suppositories N B (description) 897 (Pernox vaginal Capsules) 997  
Dependent Products Intrauterine Paste 788—BI
- CONTRACTURE** of hand from mercuric cyanide dressing with aluminum splint 138
- CONVALESCENCE AND CONVALESCENTS** care of patients after removing cataract 465  
early ambulation following abdominal section [Nelson] 593—ab  
early rising after herniotomy 670  
early rising and pulmonary embolism after abdominal operations [Marescot] 135—ab  
effect of restricting activity on recovery from myocardial injury [Thomas] 981—ab  
harmful effects of recumbency in heart disease [Lerine] \*80  
nutrition in [Spies] 937—ab  
patients not up day after labor during London blitz [Daley] 588—C  
physical fitness tests [Karpovitch & others] \*873  
Plasma See Parotitis Epidemic  
reconditioning [Thorndike] \*773  
Serum See Serum (cross reference)
- CONVICTS** See Criminals Prisoners
- CONVULSIONS** See also Epilepsy  
accidental stimulation of hypersensitive carotid sinus [Hanser] \*1029  
Therapeutic See Electric shock therapy  
Insulin shock
- COOKING AND EATING UTENSILS** dishwashing in restaurants 303—F [Andrews] 664—ab  
disinfection of chipped china in restaurants 670
- COOPERATING** Clinics See Clinics
- COOPER** sulfate impregnated cotton hose for ringworm [Crittenden] 11—ab  
sulfate inactivates influenza virus [Dunham] 461—ab  
sulfate use in evacuating infant's stomach in poisoning 138
- CORAMIN** See Nikethamide
- CORNEA** Inflammation See keratitis keratoconjunctivitis  
opacities keratectomies penicillin ointment postoperatively [Castrovecio] 457—ab  
paracentesis for traumatic hyphema [Richner] \*763  
vascularization and riboflavin deficiency, [McCrea] 597—ab
- CORNS** Posters Wonder 30 Minute Corn Remover 318—BI
- CORONARY** Arteries See Arteries Arteriosclerosis  
Thrombosis See Thrombosis coronary
- CORPORATIONS** See Medicolegal Abstracts at end of letter V
- COPROSION** See Stomach inflammation
- CORTICOSTEROID** See Desoxy corticosterone
- CORNEOGRAPHY** diptheriae electron micrographs [Mudd & Anderson] \*463
- CORONA** See Colds
- COSMETICS** See also Soap  
dermatitis from nail polish [Kell] 390—ab  
Hair Preparations See Hair  
Ointment Face Bleach 314—BI  
Presto Face Cream 189—BI  
Vehicles 1048—BI
- COSMIC** doctrine of Aristotle 306—ab
- COSTAL** Big C 079—BI
- COTTON** (spool) for sutures [Floyd] 986—ab
- COTTONSEED** flours nutritional value [Jones] 393—ab
- COUGH** See also Colds Hemoptysis Sputum  
Whooping Cough  
H B Cough Drops 318—BI  
Howells Blue Label Syrup 789—BI
- COUMARIN** 3:7 Methylenedis (4 hydroxy) See Dicumarol
- COUNCIL A M A** See American Medical Association  
on Rheumatic Fever organized 42
- COUNCIL** Accredited for Tuberculosis Control See Tuberculosis  
Health Department See Health department  
Society See Societies Medical list of societies at end of letter S
- COURSES** See Education Medical  
Court decision See Medical Jurisprudence
- COUTO MIGUEL** commemorate anniversary of his death 120
- COWDRI** E V proposes federal appropriation for cancer research 1093—OS
- COWPOX** See Smallpox vaccination Vaccinia  
Cows Milk See Milk  
Tuberculosis in See Tuberculosis bovine
- CRAYER** Chemical Co preparations 124—BI
- CRAYMATE ALAN B** testimony at Kelley hearing on physically handicapped 245—OS
- CRANIOPATHY** Metabolic See Cranium
- CRANIUM** See also Brain Frontal Bone  
Head  
defects repair with tantalum [Reeves] 520—ab [Robertson] 457—ab  
Intracranial pressure effects of variations [Kahn] 193—ab  
metabolic cranioopathy clinical and x ray study [Grolman & Rousseau] \*213  
Puncture See Cisterna Magna  
trauma dextrose tolerance test after [Roth] 59—ab
- CRAWFORD** (Jane Todd) Day 1044
- CREAM** See also Cheese  
Face See Cosmetics  
Heavy advisory committee to endorse, Mass 114  
of Tarrar See Potassium bitartrate
- CREATINE** in Urine See Urine
- CRIMINALS** See also Prisoners  
classification from medical viewpoint 28—ab
- CRIPPLED** See also Disability Handicapped  
Pollomyelitis  
children Association for Aid of Belding Fund gives a million to 310  
children and adults National Society for new name 1096  
Children's Bureau services to new regulations 1154—F
- CROASDALE HANNAH T** portrait 1096
- CROWN** B B regional ileitis 199—F [Wilen sh] 789—C
- CROONIAN** Lectures See Lectures
- CROSS INFECTION** See Infection
- CRUWILFIR** Baumgarten syndrome [later] 910—ab
- CRYO** Anesthesia See Anesthesia refrigeration
- CUBA** rheumatic fever in children [Perez de los Rios] 60—ab
- CULIS** See Chiropractor, Osteopath
- CULTURE** Medium See Gonococcus  
CUMULUS cells See Cells
- CUNNING** Lecture See Lectures
- CURRICULUM** See Education Medical
- CUSHING** EDWARD HARRY Symposium Commission No 1034
- CUSSING** Syndrome See Pituitary
- CYSTAD** pudding Clapps 21
- CUTS** graft See Skin graft
- CYANIDE** Mercuric See Mercury
- CYSTITIS** See Bladder inflammation
- CYSTOSCOPY** See Bladder
- CYSTOURETHROGRAPH** See Bladder
- CYSTS** See Intestines, anomalies Intercysts
- CYTOLOGY** See Cells



DEHYDRATION effect of intravenous fluids on [Hardy & Godfrey] \*23  
DELAWARE State Medical Journal See Journals  
DELIVERY See Labor  
DELTA Omega Lecture See Lectures  
DIAPHYTIC PARALYTIC treatment subarachnoid injection of pyridoxine [Stone] 661—ab  
DEMENTIA PRECOX treatment insulin shock 437—E  
DEMFROL clinical observations [Noth] 518—ab  
DEMOLITION See World War II  
DENGUE at South Pacific advance base, [Stewart] 56—ab  
epidemic in 1943 Hawaii [Pinkerton] \*629  
DENTAL Caries See Teeth  
DENTISTRY See also Gums Jaws Teeth  
Army dental corps conference 840  
Dental corp officer Rodriguez General Hospital San Juan named for 576  
dental officers to be relieved from active duty 502  
graduate medical school of U of Pennsylvania to include 446  
National Dental Service proposed England 1162  
prisoners of war services through American Red Cross 712  
Wells (Horace) centenary celebrated (*Conneticut State Medical Journal*) 779 (by Washington dentists) 1037—OS  
DENTURES See Teeth  
DEODORANT See Odor prevention  
DEPENDON Products Intrauterine Paste 788—B1  
DEPRESSION Mental See Mental Depression  
DERMATITIS *gallinae* (chick mite) vector of St Louis encephalitis 962—E  
DERMATITIS See also Eczema Urticaria  
Actinica See Sunburn  
Contact See Dermatitis venenata  
etiology smoke and fumes 1122  
exfoliativa after arsenamine in syphilis [Cannon & others] \*548  
Industrial See Industrial Dermatoses  
Polson Ivy See Ribus  
venenata from cold permanent waving [Howell] 127—ab  
venenata from nail polish [Kell] 390—ab  
venenata in morphine factory [Dore Green] 707—ab  
venenata of feet and hands from rubber [Anderson] 660—ab  
DERMATOLOGY See also Skin under names of specific skin diseases  
British founder Robert Willan (1757 1812) 15—ab  
chair at U of Edinburgh gift of Sir Robert MacLennan Grant 1042  
DERMATOME hypaesthesia sign of herniated lumbar intervertebral disks [Hecchin] \*468  
DERMATOPHYTOSIS See also Tinea capitis  
A V Solution 788—B1  
Dondase 385—B1  
epidemic of ringworm Jersey City 647  
in industry [Peck] 856—ab  
treatment cadmium chloride aerosol solution [Watts] 456—ab  
treatment copper sulfate impregnated hose [Crittenden] 55—ab  
treatment ethyl chloride [Lewels] 1170—ab  
DERMATOSIS See Industrial Dermatoses Skin disease  
DESERT Fever See *Coccidioidomycosis*  
DESVOXYCORTICOSTERONE acetate in uremia [d'Angelo Rodriguez] 399—ab  
treatment of vomiting in pregnancy [Bottiroli] 133—ab  
DESVOYEPHEDRINE dextro for complications in shock therapy [Bauer] 798—ab  
DFTHERGENTS See also Soap  
medicinal use 1152—F  
DFTRIMALTOSE use in nutritional care in burns [Co Tul] 323—ab  
DFTTROCARDIA See Heart transplantation  
DFTTROSE hypoglycemia and restoration with glucose [Mann] \*467  
in pleuritic effusion [Garre] 526—ab  
intake effect on work in heat [Pitts] 982—ab  
tolerance test after cranial trauma [Roth] 59—ab  
tolerance test in commotio cerebri [Osterchrist] 526—ab  
tolerance test (intravenous) for hypoglycemic fatigue [Portis] \*415  
treatment of Rocky Mountain spotted fever [Harrell & others] \*929  
DIABETES INSIPIDUS clinical study [Jones] 728—ab  
treatment starvation also intranasal pituitary powder [Peters] \*1027  
DIABETES MELLITUS chemically induced with alloxan [Bailey] 982—ab [Goldner] 101—ab  
complications primipara with toxemia diethylstilbestrol controls [Powers] \*98  
complications thyrotoxicosis thioracil for [Reveno] \*1.3  
complications toxic goiter fatal agranulocytosis from thioracil [Khan & Stock] \*358  
diagnosis (differential) from glycosuria [John] 1117—ab

DIABETES MELLITUS—Continued  
insulin in time activity curves with globulin insulin [Martin] 793—ab  
nephrotic syndrome in [urol] 199—ab  
New York Diabetes Association (to develop new camp) 181 (meeting) 310 (Clinical Society of organized) 648  
remissions [Lukens] 1054—ab  
thyroid and metathyroid 975  
treatment adrenal cortex extract 1178  
treatment special foods seldom necessary 282—ab  
DIACETYL MORPHINE (heroin) See Morphine diacetyl  
DIAGNOSIS See also under names of specific diseases  
Case finding See Cancer Tuberculosis  
clinical examination neglected for laboratory tests asserts J A Ryle 849  
differential of weakness and fatigue [Allan] 920—ab  
psychosomatic problems [Ewalt] \*150  
Services See Tumors  
2 7 DIAMINOACRIDINE See Aminocridine  
DIAPHRAGM congenital malformations 963—E  
Hernia See Hernia  
DIARRHEA See also Dysentery  
Incidence Detroit phthalylsulfathiazole for carriers 1032—E  
Incidence Mexico 848  
result of taking yeast tablets liver extract or vitamins [Ruffin & Cayer] \*824  
treatment sulfadiazine in child [Menchaca] 517—ab  
DIATHERMY Fischer Crystal Short Wave Apparatus 100  
waves appeal to retain in the 40 27 and 13 megacycle radio bands 782  
DICHLORO-DIPHENYL-TRICHLOROETHANE See DDT  
DICHLOROPHENARISINE hydrochloride N N R (description) 169 (Squibb) 169  
DICUMARIN See Dicumarol  
DICTION See Terminology  
DICUMAROL physiologic action in vivo 300—F [Shapiro] 780—C  
treatment [Gefter] 917—ab  
treatment of puerperal thrombosis [Davis] 58—ab  
treatment with Swedish antithrombin [von Kaulla] 925—ab  
DIENCEPHALON hypophyseal system and gonadotropin production [Westman] 988—ab  
DIET See also Food Nutrition  
acid ash high vitamin A to prevent calculi formation 670  
Australian thiamine deficiency in 315  
Calories in See Calories  
Deficiency See Nutrition deficiency  
for sick people France III  
histidine deficient [Albanese] 194—ab  
in Pregnancy See Pregnancy  
Infants See Infants feeding  
predisposing factor in rheumatic fever 174—E  
Protein See Protein  
Salt Free See Salt  
Therapeutic See Edema angioneurotic fatigue treatment Peptic ulcer treatment  
Vitamins in See Vitamins  
DIETHYLSTILBESTROL Dihydro See Hex  
estrol  
treatment of advanced cancer [Haddow] 1119—ab  
treatment of male hypersexuality [Foote] 402  
treatment of primipara with diabetes and mild toxemia [Bowen] \*98  
treatment of prostate cancer [Denn] 665—ab  
treatment to control uterine bleeding [Karnak] 796—ab  
DIGESTANS Ponds 597—B1  
DIGESTION See Indigestion  
DIGESTIVE SYSTEM See also Indigestion under various organs involved  
granuloma Crohn's regional ileitis a symptom of [Wilensky] 789—C  
DIGITALIS cultivation Argentina 975  
poisoning [Hermann & others] \*760 (correction) 973  
sensitivity cause of edema \*1178  
DIHYDRODIETHYLSTILBESTROL See Hex  
estrol  
DIHYDROMORPHINONE strophanthin for cardiac infarction [Edens] 924—ab  
DIHYDROTACHYSTEROL treatment of pemphigus [Lever] 394—ab  
DILAUDID See Dihydromorphinone  
N DIMETHYLACROLYL thurinalamide treatment of pneumonia [Thurnherr] 798—ab  
DINGELL J D aerial security legislation 1093—OS  
DIODRASE use as penicillin excretory blockade 369—E  
DIONIN See Morphine ethylmorphine  
DIOPREN 385—B1  
DIPHTHERIA Bacillus See *Corynebacterium diphtheriae*  
epidemic in adequately immunized community [Watson] 1053—ab  
increases thirtyfold in occupied Holland 242  
Schick reactions in recently confined women and their infants [Wright] 666—ab

DIPHTHERIA—Continued  
toxoid tetanus toxoid combined N N R (National Drug Squibb) 769  
DIPLOMA See Licensure  
DIRECTORY See Specialists  
DIRT See Dust  
DISABILITY See also Accidents Crippled Handicapped Physical Fitness Rehabilitation  
Industrial See Industrial Accidents  
of shoulder and arm from herniated nucleus pulposus [Micheisen] 731—ab  
War See Rehabilitation Veterans World War II casualties  
DISASTERS Hartford circus fire patients in hospitals [Weld] 455—ab  
DISEASE See also Death Health Pathology  
Patients under names of specific diseases  
Absenteeism from Work due to Illness See Industrial Health workers (absenteeism)  
Carrier See Dysentery  
climate influence on ab—1065  
chronic illness in an urban area 1032—E  
Convalescence from See Convalescence and Convalescents  
Deficiency See Deficiency Disease  
Diagnosis of See Diagnosis  
Disabling See Disability  
Epidemics See Epidemics  
Hazard See Industrial Diseases  
Infectious See Infectious Disease  
malnutrition as cause of [Bowman] \*331  
Mental See Mental Disorders  
Nomenclature See Terminology  
Occupational See Industrial Diseases  
Physical Mental Relationship See Psychosomatic Medicine  
Prolonged Bed Rest in See Convalescence and Convalescents  
Rate See Vital Statistics morbidity  
Sickness Insurance See Insurance sickness  
Treatment of See Hospitals Therapeutics  
Tropical See Tropical Disease  
weakness due to fatigue [Allan] 920—ab  
DIVES See Cooking and Eating Utensils  
DISHWASHING methods in restaurants 303—E [Anders] 664—ab 670  
DISINFECTANT See also Antiseptics Bactericide  
of Air See Air  
of clipped china 670  
DISLOCATION See Shoulder  
DISPENSARIES See also Clinics  
bomb proof opened in Ruhr town III  
New York Dispensary blood collected at patients first visit [Howard] 079—C  
DISTINGUISHED Service Medal See World War II Heroes and Prisoners  
DISTRICT of Columbia Medical Society aware of its responsibility 443—OS  
DITRICH Museum Cleveland 649 1159  
DIURESIS AND DIURETICS Bu U 788—B1  
mercurial in congestive heart failure 992  
DIVERTICULITIS DIVERTICULUM See Colon Intestines  
DIZZINESS See Vertigo  
DOCTORS See Physicians Medical Legal Abstracts at end of letter M  
Degree See Degree  
Trade names beginning with Dr See under surname concerned  
DOCS See also Rabies  
allocation of from city pound for experimentation Chicago 102—F 378  
Disease See Papataci Fever  
pinworms and tapeworms in 466  
seeing eye to be furnished to blind veterans 903  
transmission of leptospirosis [Senckle] \*5  
DOISY EDWARD A Nobel award to 640—E 971  
DOLICHOCOLON See Colon  
DONATIONS See Education Medical graduate Fellowships, Foundations Hospitals Prizes Research grants Scholarships  
DONORS DONATIONS See Blood Transfusion  
DONOVAN Bodies See Granuloma Inguinale  
DOYLE WALTER E appointed to Industrial Hygiene Division 379  
D Q (Daily quota) milk of Borden Co 433  
DR Trade names beginning with Dr See under surname concerned  
DRAINAGE Monaldi's Suction See Empty Cma Tuberculosis of Lung treatment Transurethral See Seminal Vesiculitis  
DRAFFP W F promotion 37  
DRAWING See Art  
DRESSINGS See also Adhesive Cast Medical Supplies Splint  
Blue Cross Gauze Bandage Sterilized 788—B1  
penicillin inoculated for impetigo contagiosa [Robinson] 389—ab  
surgical waxed paper from cigaret cartons discovered by Capt Twyman 712  
DRINKING Utensils See Cooking and Eating Utensils  
DRISDOL N N R (Winthrop) 433  
DRIVING DRIVERS See Automobiles

- DROPSY** See also Ascites Edema  
cold drops [Pflgerstorfer] 798—ab
- DRUGLESS Practitioner** See Cults (cross reference) Medical Abstracts at end of letter M
- DRUGS** See also Medical Supplies Pharma-  
ceuticals under names of specific drugs  
Medical Abstracts at end of letter M  
Addition to See Morphine directly  
air shipments of Red Cross medicines to  
China 1092  
aplastic anemia from 466  
British Medical Journal editorial Drugs and  
the Doctor 898—E  
free medicine for Australia 184  
N. N. R. See under names of specific drugs  
new laboratory and clinical appraisal [Van  
Winkle & others] \*959  
Patent Medicines See Nostrums  
Priorities and Allocations See Priorities and  
Allocations  
Proprietary See Proprietaries  
Therapy See under names of specific drugs
- DRUNKENNESS** See Alcoholism
- DRURY ALAN N** Bell Memorial Trustees 581
- DUCTLESS GLANDS** See Endocrine Glands
- DUCTUS ARTERIOSUS** patent infection effect  
of litigation [Tubbs] 987—ab  
patent preoperative diagnosis, [Shupfro] \*934
- DUNN WILLIAM H** appointed neuropsychia-  
tric consultant 107
- DUODENUM ULCER** See Peptic Ulcer
- DURALUMIN** grinders effect of aluminum on  
lung [Hunter] 1053—ab
- DUST** house N. N. R. (Endo) 835  
Inhalation See Pneumonoconiosis  
treat floors and bedding, with oil emulsion  
to control air borne infection [Robertson  
& others] \*993  
wood 800
- DUSTING POWDER** for rubber gloves extl of  
236—E  
none necessary for surgical gloves [Gardner  
Quigley] 588—C
- DUTCH** See Netherlands
- DYKS** See Fluorescein Halr Verbromin  
Methylthionine Chloride
- DYSENTERY** See also Diarrhea  
Amebic See Amebiasis  
bacterial, chronic cause of colitis [Bargen]  
\*1011  
bacterial comparative effects of sulfonamides  
[Scadding] 460—ab  
bacterial, epidemic in defense plant and armed  
forces [Klanaman] 983—ab  
bacterial in Detroit plithalysulfathiazole for  
carriers 1032—E  
bacterial Waksman's streptomycin for 103  
—E [Robison] 1052—ab  
Sonne carrier state in [Hallwood] 397—ab  
Sonne sulfaguanidine prevents [Xannet]  
326—ab  
toxoid (Shiga) trial use in human volunteers  
[Farrell] 660—ab
- DYSERYTHROSIS** congenita [Garb] 856—ab
- DYSPEPSIA** See Indigestion
- DYSPEA** See Asthma
- DYSTROPHY** See also Nails  
Muscular See also Myasthenia gravis  
muscular progressive ultraviolet photomicro-  
graphy [Hoagland] 456—ab

## DEATHS

- A**
- Abercrombie John Robert 720  
Adam James R 910  
Adams Charles Baker 1045  
Adams George Sheldon 721  
Adams John Wilson 785  
Adams William Elijah 785  
Adkins Roy Wood 45  
Akins Elias Marlon 45  
Alias Jesse Curtis 1045  
Alexion Alexander 251  
Allen Cardner Weld 831  
Allen Griffin Anderson 976  
Allen James Olives 45  
Allred Thomas Warren 584  
Amdursky Abraham S. See Syn-  
ders Abraham S.  
Anderson Alexander Locle 584  
Anderson Oscar Henning 251  
Anderson Smylie Scott 121  
Ananasevich Leo Edwin 586  
Appleberry Reuben 785  
Apter Leonard 1164  
Arble Elsworth Frederick 45  
Arlitz William Jerome 449  
Armstrong Samuel Treat 449  
Arnold James Eddy 251  
Arnold Moody Warren 512  
Arwine James Tevis 721  
Asbill Fletcher Gladstone 1100  
Aste George James 1100  
Austin Jack F 114  
Austin James Cornelius 316  
Austin Oliver 913  
Auwers Joseph Theodore 785  
Avelrad Jacob 512  
Aycock Thomas Rufus 121
- B**
- Babbitt James Addison 653  
Babcock Helen Book 1164  
Bacharach Max 976  
Badcon Sidney Watson 1045  
Baer Louis 584  
Bailey Benjamin F 1045  
Bailey James Reginald 976  
Baker Abra W 721  
Baldwin Samuel Clifton 1100  
Ball Vincent A 1045  
Ballard Frederick Clifton 585  
Banks John 121  
Banks Charles Wesley 121  
Barbour Philip F 910  
Barker Abram James 1045  
Barnes Edward William 187  
Barnes Robert Lenox 585  
Barnette William Thomas 976  
Barnhill William A D 721  
Barnhill Wm D. See Barnhill Wm  
A D  
Barringer Bert Montrose 187  
Bartle Philip John 585  
Barton Blaine B 121  
Barton Francis William 785  
Barton Lyman Cur 1045  
Basler William James 785  
Bass George Willis 785  
Bates John Hall 187  
Baze Roy Ellis 978  
Bean Robert Bennett 511  
Bean William Smith 977
- Becher Webster A 512  
Becker Frederick William 251  
Beckett Albert Turner 785  
Bedford Stephen Vincent 721  
Bell Charles William 910  
Bellina George Laterra 785  
Bennet Eben Homer 382  
Berman Saul 720  
Berry Thompson Mitchell 976  
Blevie John A 585  
Blie Paul Harold 316  
Birdsong Henry Walter 910  
Blivins Burton Wayne 121  
Blwer Edward Theodore 187  
Black Howard 976  
Blackburn James Knox Poll 1100  
Blackburn William J 45  
Blair Edward Holden 440  
Blaisdell John Harper 785  
Blanchette William Henry 585  
Blatt Maurice Lamin 1164  
Blount Braxton B 585  
Boero Enrique A 975  
Bohl Ray Anderson 785  
Bolster William Wheeler 512  
Bond Wilbert White 785  
Bonesteel Arthur E 603  
Book Helen Babcock See Babcock  
Helen Book  
Borowick Stanislaus A 121  
Bottelhora Jacob Peter 976  
Bourbon Oliver Preston 121  
Bowen Willis Elliott 45  
Bower Albert James 512  
Box Harry Maxwell 976  
Boyd Robert 512  
Boyd Wesley Lewis 45  
Boynton Melbourne Wells 317  
Bradley Charles M 1164  
Brand Walter William 585  
Brandt Glenn A 251  
Brant Glenn Zimmerman 512  
Breed William Bradley 584  
Brennan Thomas Francis 1100  
Bilanza Arthur Mario 45  
Brinham Alfred William 45  
Brobst William B 785  
Broccolo Francis Joseph 654  
Brooke James Frank 512  
Brooks Albert A 1100  
Brown Charles Henry 785  
Brown Christopher William 121  
Brown Edison William 721  
Brown Edward I 1045  
Brown Frances Mary See Preston  
Brown Frances Mary  
Brown John Bernard 512  
Brown Oliver Winona See Hale  
Oliver Winona Brown  
Brown Thomas David 1045  
Brown Walter Earl 382  
Brubaker Elias Harry 45  
Brush Samuel Pierson 653  
Bryan William Alvin 1100  
Brymer William Gerald 976  
Buck Michael Joseph 251  
Buckland Romulus S 1046  
Bullock Bernard Eugene 47  
Bullrich, Rafael A 1097  
Burgess Charles O 512  
Burke Alexander Walter 187  
Burke James Alonzo 785  
Burke Thomas Henry 976
- Burns John Thomas 45  
Burns Stillwell Corson 851  
Burns Willard James 603  
Burns Carrie Simpson Coleman 449  
Burson Aaron Fenton 512  
Bush Elliot T 1046  
Bushnell Emerson Marrs 121  
Butler Charles St John 581  
Butler George Little 1164  
Butler James Clyde 1046  
Butler Joseph 187  
Buzbi Benjamin Franklin 1015  
Byrnes Victor Warren 1046
- C**
- Cameron John Franklin 785  
Campbell Gilbert Carmon 382  
Campbell William King 721  
Canaday Robert Newton 785  
Canfield Martha Nancy 449  
Carayona Domile Peter 1105  
Carmer Myron Ernest 1100  
Carpenter Brown Hitcheson 913  
Carrel Alexis 850  
Carrigan Andrew Roscoe 1046  
Carter Elmer Norral 123  
Cary Nathaniel Austin 785  
Case Edwin Myron 187  
Case George Barnes 512  
Casey Elmer Barney M 513  
Cashlon William Aaron 121  
Cather David Clark 45  
Caylor Charles Eli 121  
Chaffin William Franklin 449  
Chaplin Thomas Hancock Arnold  
782  
Charles Emily Clark 121  
Chenay Arthur Alphonsus 976  
Chenik Ferdinand 512  
Cherry Thomas Harris 382  
Childs Lloyd Hart 785  
Chism James Horace 187  
Christlenn Charles Leonard 721  
Christman George H P 653  
Clapp John Arthur 1047  
Clark Harry Elmore 1100  
Clari Leonard Hamilton 1100  
Clark William Fladger 121  
Clayton Mary See Hurlbut Mary  
Clayton  
Clement George A 449  
Cleveland Hiram Edward 512  
Cline Henry K 1046  
Coeditan James Brewer 187  
Coole Charles Hartwell 121  
Coffey Laurence H 910  
Coffman Ward Denver 851  
Cole Henry S 1100  
Cole Judson Charles 251  
Coleman Carrie Simpson See  
Burr Carrie Simpson Coleman  
Conlin Leo V James 653  
Connelly John Aloisius 785  
Conway Mark A 449  
Cook Luele A Hemenway 976  
Cook Mervin 1165  
Cooper George Proctor 316  
Copeland William Henry 187  
Corbin Emmett Addis 1100  
Corson Hiram Rand 801  
Cote Leon Charles 801  
Coughlin Francis James 910  
Cowell Edward McClelland 851
- Cowling Philip G 1100  
Craddock James William 512  
Craig William C 721  
Crain Charles Hies 910  
Crawford Francis Xavier 721  
Crease Henry George 585  
Creaven Matthew F 1100  
Crichlow Richard Smith 910  
Crosby Daniel 121  
Crysler Walter C 976  
Cullin William David 512  
Cumling Harvey Thomas 1100  
Cummings John Joseph 187  
Cummins Edward W 1045  
Cundiff Morton Atherton 317  
Cunningham Robert Law 584  
Cupler Ralph Clinton 1045  
Curless Crant W 976  
Curtis Thomas Riddles 1046  
Curtis J Demorest 449  
Cuttis John Edward 45
- D**
- Dakin Chanaag Ellery 316  
Dameron Oscar H 512  
Daniel Anne Sturges 585  
Daniel Joseph Elbert 449  
Davenport Edward 512  
Davis Claude Vernet 312  
Davis Dowdal Henry 1100  
Davis Floren Fred 45  
Davis Herbert William 1164  
Davis John Weyman 722  
Davis Nelson Park 122  
Davison Hugh Loyd 449  
Davies Spencer Lyman 449  
Dayton Edna Bowden 251  
Dean Charles G 1100  
Deantonio Emilio 721  
De Foe James L 1100  
De La Motte Anna Christensen 1164  
Deneter Peter Leo 252  
Denner William R S 449  
Dennis Foster Leonard 317  
Denton Samuel 786  
Diddy Lester Cornelius 122  
Dillingham Frederick Henry 449  
Dimond Charles A 251  
Dixon George Sloan 1045  
Donoghay Charles Jacob 1164  
Donnelly Orlando Aaron Rogers 851  
Donohue Bernard Walker 721  
Dorset Bernard Charles 976  
Dorsett Ernest Michael 910  
Douglass William H 201  
Dozer Cyril Ostello 585  
Du Bois Hugh Victor 122  
Duckett Alfred Kennon 786  
Dunlop Harry Edward 122  
Dunn Raymond Anthony 1166  
Durrill Wirt Adams 45  
Dyar Edwin William 801  
Dye John Sinclair 511
- E**
- Earthman Vernon King Stevenson  
585  
Easley William T 46  
Eaton Charles Edward 585  
Edwards Robert Samuel 1100  
Egan William Henry 449  
Fisler Oscar 1046

Elam Bishop L 201  
Elder Omar F 1046  
Elliot Elmer Noble 122  
Elliot John Adair 851  
Ellis Lorie Culver 722  
Ellis Lucius M 187  
Emerson Ralph Waldo 122  
Eggelhardt Frank George 385  
Ericksen Hugo 851  
Erost Edward Cranch 977  
Erwin Evan Alexander 851  
Eschelman Fayette Chitoo 786  
Eskla William Henry 1100  
Evling Homer Harvey 187

F

Farris Jacob Thomas 586  
Faulner Herbert Kimball 851  
Faulner Sidney A 201  
Faure Jean Louis 782  
Featon Harry Edward W 512  
Fettes James Murray 251  
Fiddes Alice Mabel Woods 316  
Field Henry Eugene 1164  
Fillmore Rollin S 911  
Finch D Harold 851  
Finch Harold See Finch D Harold  
Fischer Frank John 722  
Fischer George Lewis 1100  
Fisher Eli A 46  
Fisher Joseph Allen 1101  
Fisher William Albert 122  
Fissel John Edward Jr 722  
Flitz George G 976  
Flanagan James Edward 450  
Fletcher Arthur John 251  
Fletcher Marcus Samuel 1046  
Flint Joseph Marshall 584  
Fogel Eliezer Israel 851  
Foley Thomas Francis 122  
Forler Frederick Lewis 122  
Forman Howard Shinnickson 512  
Fortune James Lyle 851  
Fox Samuel Watson 46  
Fraunfelder Clare Edwin 512  
French Wallace J 585  
Friedman Morris 1164  
Frost Flora Eva See Moody Flora  
Frost Eva  
Fuller Abbott James 512  
Fuller Judge William 317  
Fuller Rals Marshall 976  
Funk Joseph Emil 1166

G

Gafney Thomas H 911  
Gage Simon Henry 780  
Gager Edward C 653  
Gagin Frank Nathan 1101  
Gagnon Alphonse Paul 585  
Gale William Hodsiko 122  
Gall Moore Bertram 913  
Gallagher Frank Joseph 46  
Gambrell James Halbert 513  
Garver William R 1164  
George Archibald Whittington 201  
Gernan William H 121  
Gessner Hermann Bertram 511  
Giacchella Pietro 46  
Ginnell Byron Edgar 512  
Gibbons John Asa 122  
Gibbons John Joseph Jr 787  
Gibson Charles Langdon 1164  
Gilbert Eugene A 1101  
Gilbert Irwin B 911  
Gilbert James Berry 316  
Gilbert Oscar Monroe 910  
Gillars Alexander Liddell 1101  
Gilliland John Louis 122  
Gillet Orla Hilliard 512  
Gilster Arthur Edmund 802  
Gingold Thomas Leverett 122  
Godlin David R 450  
Goldberg Moses 1164  
Golson Robert Marion 201  
Goodenough Edward Winchester 46  
Goodfellow Gordon Parker 512  
Goodwyn Henry J 653  
Gordon Mark 513  
Gose Everett Rush 976  
Gough Homer Wilford 96  
Grace Hattie Melvin 46  
Grace Thomas Andrew 910  
Graser Clarence William 585  
Graves Faustine 122  
Green Edward Melvin 585

Greene John Morton 46  
Greenwell Frederick Hugh 722  
Griffin Thomas A 911  
Grimes Warren Parker 1164  
Grishaw Harry E 853  
Groves Ernest W Hey 974  
Gruber James Caleb 911  
Guzy Morton 251  
Cwaltney Bertis Charles 653

H

Haeler Charles William Louis 187  
Hadsell Charles A 976  
Hagan Ralph 585  
Hagemann John Albert 585  
Hager Harry H 1164  
Haggerty Sherwood Adler 251  
Hah Gene W 1047  
Haile Olive Winona Brown 786  
Hall Charles Wesley 46  
Hall Edward Peter 1164  
Hall Helen Willard 46  
Hamilton Caroline Frances 911  
Hammoud Graeme Monroe 786  
Hanby Charles M 653  
Hanna Robert Cunningham 1101  
Harbaugh Charles Chilton 786  
Hargrove Julian Leo 317  
Harloe Ralph Farnsworth 316  
Harron J Edward 122  
Harris Arthur Graham 46  
Harris John Edward 122  
Hatch Clark Barrows 1046  
Hawser Fred Thomas 316  
Haverty Eugene Francis 654  
Hawes William John 913  
Haygood Atticus Greene 122  
Hays Crandmer Leland 1164  
Hayton Charles Henry 1101  
Hazen William Patterson Clark 786  
Heavy Thomas J 585  
Held Cecil Theodore 1101  
Hembee James I 653  
Hemenway Lucie A See Cook Lucie  
Hemenway A Hemenway

Henderson Charles Herbert Jr 47  
Henderson Pleasant L 46  
Henderson Richard Gray 786  
Hennung David Max 910  
Henry Julius Goodwin 1164  
Herbert Edward 46  
Hergert Emilio Leopold 786  
Herman William Cephas 1101  
Herrieck Charles Henry 722  
Herzer Henry Arch 786  
Hibbard Sherman Blaloe 976  
Hiebert Joelle Cornelius 251  
Hill Edward Lathrop Jr 122  
Hill Harry Joseph 585  
Hill Stewart Felton 46  
Hinn Otto William 187  
Hirschberg Samuel Barth 1046  
Hoch Bertalan 187  
Hoffman Max Harold 511  
Hodges Vernard Reno 911  
Hogue John Dan 187  
Hogue William Henry 1101  
Hohenberg Bernard See Hohenberg  
Hohenberg Bernard 911  
Hoke Michael 449  
Holden Frederick Clark 382  
Holford David A 449  
Holle Eugene Milton 913  
Hollingsworth Thomas J 187  
Holmsley G W 653  
Holt William Bryton 653  
Homan Charles Edwin Jr 46  
Hood Thomas Milton 585  
Hooper Robert Pearson 46  
Hooten John M 911  
Hopkins James Rembert 786  
Hopper Arthur West 46  
Hoskins Leonard D 1046  
Houck Chester Clifford 911  
Hough Harry H 786  
Hoyt Harold Eliphalet 1045  
Hoyt Katherine Pritchard 382  
Hubbard Charles Calvin 382  
Hubbard William Stimpson 910  
Huddle George P 1046  
Hughson Walter 511  
Hulick Lester Paul 585  
Hulling Mathew Marshall 46  
Hull Jesse Whippis 911  
Humphrey Joseph Harrison 122  
Hurlbut Mary Clayton 450

Hurst Arthur 380  
Huselt Elmer C 585  
Hvatt Meredith Woodsoo 786  
Hyer Carl Aaron 1046

I

Igartua Jose E 187  
Ingals George 722  
Ingraham Norman Reek 911  
Irving Ernest Walker 653

J

Jackson Dominick Phillip Douglas 187  
Jacobs Arthur Grant 851  
Jacobs Robert Samuel 976  
Jamieson Raymond Delos 1046  
Jay Leon Downie 855  
Jennings Dwight Lacey 786  
Johnsen Theodosia S Fowler 513  
John Milton Carr 187  
Johnson Cleon Denton 786  
Johnson Daniel Noble 1164  
Johnson David Joseph 1164  
Johnson Dwight David 911  
Johnson Milbank 720  
Johnson Roy Howard 722  
Johnson Tennyson Cates 721  
Johnson William Arthur 513  
Johnston John Allen 513  
Joiner William Edwin 720  
Jones Carl Lower 911  
Jones Lombard Carter 786  
Jones Thomas Monroe 911  
Jones William Merrill 382  
Jordan James Patrick 513  
Judd Addison Le Clare 653  
Judd Wilbur Verriam 513  
Jullabelle Louis A 115

K

Kahn Edwin Myron See Case  
Kahn Edwin Myron  
Kahn Lee 911  
Kamp John Charles 122  
Kauffman Edwin Jerome 122  
Kauffmann Edwin Jerome (See Kauffman Edwin Jerome)  
Kauffmann Jacob 1046  
Keefe John Patrick 383  
Kelly Benjamin Baker 382  
Kelly Evander F 715  
Kelly Frank 450  
Kendig Harry Charles 976  
Kennedy John Payson 1164  
Kent Alfred A Sr 121  
Kepner Cornelius C 976  
Kessner Christopher C 653  
Kessler George Brinlon 187  
Kieckham Edward Leonard 653  
Kilder Charles Warton 722  
Kifer Logan M 46  
Kilgore Frank Dietrich 188  
Kimball Phillip Albert 911  
King Clarence 911  
King Frank Malcolm 912  
King Jesse Arthur 976  
King William Robert 585  
Kingsbury Jerome 187  
Kinnear Claude Hamilton 786  
Kinsell Benjamin 1164  
Kirpatrick Silvanus B 585  
Kistler Robert Harrisoo 976  
Kilger Israel J 581  
Knox David Benjamin 450  
Kober William Melvin 1166  
Kocher Quintin Solomon 188  
Konther Adolph Frederick 46  
Kramer Francis Ferdinand 46  
Krauss Frederick 1046  
Krawson Amos D 183  
Kuehrich Theophilus 122  
Kuehne Henry 450  
Kuhl John Patrick 1164  
Kyger William A 911

L

Labash Charles 122  
Lalberge Pierre Ulric 383  
Lagorio Antonio 1045  
Lalacker Nelson Eberle 46  
Laird Robert 786  
Lamb John Arthur 251  
Landaal Henry Byron 654  
Landess Dantan Wyeth 585  
Landman Elbert Alonzo 1164

La Pierre Arnaud Julian 911  
Lapointe J G Honore See Lapointe  
John H  
Lapointe John H 1101  
La Rue Frank 450  
Lalmore William James 316  
Latta Jefferson Brown 46  
Lawton William Manners 911  
Layton Morris Hallowell Jr 201  
Lea Virgil Alfred 122  
Leach Daniel Guy 251  
Leadworth John Russell 46  
Le Blanc Boote Octave 786  
Leeming John 1100  
Lefell Samuel Louis 911  
Leland Thomas B W 122  
Lemen Frederic Michael 122  
Lemstrom Carl F 1101  
Leslie Francis Alexander 911  
Levitsky Joshua 513  
Lery Joseph 201  
Lewis Archibald Cary 786  
Lewis Clarence I 911  
Lewis William Figures 316  
Lieber Charles 786  
Lightbody William Russell 976  
Lile Minor Carson 911  
Lindenbaum Joseph Moses 1101  
Lins Franklin Jacob 722  
Little Elmer William 911  
Livingston William W 976  
Llames Massini Juan Carlos 975  
Lloyd John Janney 511  
Loeb Ludwig Mannheimel 911  
Logsdice Leonard Francis 45  
Love Bedford E 46  
Loveless Carl 911  
Love Ralph Curtis 188  
Lowndes Charles Henry Tilgman 584  
Lowy Julius 1097  
Lucas Frank Benson 46  
Luedl Michael Milton 316  
Ludy John Borneman 511  
Lundgren August E 188  
Lurie William A 1101  
Lynch Kevin David 853  
Lynch Richard Vance 1046  
Lynch Treau Parline 786  
Lyon Eldous De Motte 383

M

MacAuley Angus Malcolm 1101  
MacAuliffe Denis Lane 653  
McCabe Eugene Alphonse 722  
McCaffrey Jerome Joseph 851  
McCampbell John 1040  
McCarty Arnold B 383  
McClain William E Jr 1102  
McClendon Caesar Peele 586  
McConchy Robert Keating 852  
McConnell George Grant 787  
McCormack Condon Chilton 1164  
McCrory Harvey Benjamin 1101  
McEuan John M 787  
McCurdy Sidney Morrill 720  
McDaniel Irvin Hollis 46  
McDaniel Roy Cowles 122  
McDonald John Joseph 787  
McDonough Raphael Christopher 913  
McEndy Daniel Paul 913  
McEvert Joseph Leo 450  
McFadyen Archibald Alexander 911  
McGeoch Ralph Lyman 911  
McGuire Morris Spencer 852  
McHugh James R 911  
McIntosh James Higgins 910  
McIntosh J W 911  
Machodon Thomas Edward 1101  
McKee Robert Sprague 911  
McKeown Hugh Spencer 584  
Mackerron Horace Guilford 586  
McKown James Shelby 911  
McLuichlin Lucius Gould 383  
McLeod Frank Hilton 851  
McMains Vivienne Lu Gene See  
Spencer Vivienne Lu Gene Mc  
Mains  
MacMillan George W 46  
McVair Rush 1165  
McVell Charles Albert 317  
McVernin Malcolm Grieme 450  
McVitt Gilbert F 1165  
McSweeney Edward Shearman 584  
Magner James Patrick 46  
Mahany Paul Hudson 1165  
Maier Frank William 976  
Main Rufus Henry 586

- Maines John Edge 852  
 Malrena Leopoldo Ramirez See  
 Ramirez Leopoldo V  
 Malland David Powrie 251  
 Malone Jerome C 976  
 Malone, Will Hale 383  
 Maloney Daniel Joseph 586  
 Manning Jacobyn Van Vliet 786  
 Mansfield Harry Knox 383  
 Maraffino Lucy Agnes 46  
 Marsh Charles Patterson 251  
 Marshall Bessie Laird Robb 2-1  
 Martin Charles N 976  
 Martin George Scott 976  
 Martin Patrick F 122  
 Martin William Clawson 383  
 Martin William George 513  
 Marvin Hubert Burns 122  
 MASON LNOCH MARVIN 449  
 Mason William Jackson 852  
 Massini Juan Carlos Llamas 313  
 Matera Francis Xavier 786  
 Matheny Benjamin F 513  
 Matthews, Edgar Stanley 976  
 Maul Herman Gustave 586  
 May Leon Jordan 977  
 Meeks William Thomas 652  
 Mcra Orville 1044  
 Melton Onis Oliver 47  
 Meridian William J 188  
 Merrell Charles William 1165  
 Merrick William Edward 1101  
 Mess William Adam 722  
 Metcalf Henry Carter 720  
 Meyer Bernard William 977  
 Meyer Edward Joseph 787  
 Meyer Harry 513  
 Middleton James Monroe 47  
 Miller Connor Joshua 787  
 Miller Fred Ephraim 383  
 Miller George Bernhard 722  
 Miller Lucas Allen 6-3  
 Mills Ralph Garfield 720  
 Milne Lindsay Stephen 910  
 Minthorn Gertrude 122  
 Mitchell James 1101  
 Mize John Thomas 977  
 Mo Arturo 975  
 Mollinger Simon M 911  
 Moody Earl Harrell 912  
 Moody Flora Eva Frost 2-1  
 Moon Edwin Pendleton 122  
 Moore Edward Clarence 316  
 Moore Elliott D 47  
 Moore Ernest Abram 188  
 Moore Joseph A 586  
 Moore Stephen Douglas 1165  
 Moorehead Frederick Brown 121  
 Morgan Charles At 4-0  
 Moriarta Douglas C 851  
 Morris Ralph Marcellus 188  
 Morris Allen Sydney 513  
 Morrison William Howe 912  
 Morse Bertram Wallace 721  
 Morse Willis Bent 383  
 Mottler Guilford Dudley 977  
 Moulton Percy Daniel 45  
 Mouton Mare Monroe 383  
 Mozley John Marshall 47  
 Mueller Julius Daniel 251  
 Muller Emil Alfred 252  
 Mulligan Aloysius Alphonsus 513  
 Mulligan Arthur A See Mulligan  
 Aloysius Alphonsus  
 Murdoch James Moorhead 720  
 Murfin Warren Wesley 1165  
 Murtha Arthur Venton 787
- N**
- Nabowski Francis Rudolph See von  
 Nabowski Francis Rudolph  
 Narey William Joseph 1165  
 Nether Edwin Manson 382  
 Nesbitt George W 787  
 Nevard Saul D 787  
 Newlin Edgar Shane 912  
 Nichols Paul 47  
 Nelson Hans P 977  
 Noble Nathan Vernon 123  
 Noonan Cornelius James 912  
 Norcross Carlton V 123  
 Norris James Violett 252  
 Nye Frank Hoyt 450
- O**
- Oblazney Ludwig John 977  
 Ogle Oliver Lee 450  
 Oliver Ellwood 188
- Olsen Marle A 188  
 Olson Erald 787  
 O Neal Lester Ceell 852  
 O Neal Rance 912  
 Oplinsky Andrew Gazik 852  
 O Shaughnessy Edmund Joseph 188  
 Overfield Walter Willard 1101  
 Owen Elmer Ewell 722  
 Owens Clarence Edgerlon 47  
 Owens James Franklin 653
- P**
- Page Clifford Seeley 123  
 Palen Charles 977  
 Palette Edward Marshall 850  
 Palt Joseph N 47  
 Paradls Henry Alphonse 713  
 Pardee Howard Ashley 123  
 Parsh Warren Griffith 787  
 Park Lovett E 252  
 Parker Ivan Bryan 1101  
 Parier James Willis 852  
 Parker James William 188  
 Pascual William Vincent 913  
 Patric Harry Hapeman 912  
 Patterson Robert Alex T 252  
 Patton Jacob Allen 977  
 Paul William Otto 977  
 Paulus George Earl Sr 383  
 Payne Robert Lee 977  
 Pearce Herman Elwyn 121  
 Peden Samuel Edward 977  
 Pedersen Peter Marlin 722  
 Pederson Reuben Martin 1161  
 Pennington Henry Vincent 1101  
 Pepper Lester Claude 123  
 Perlins C P 977  
 Peschkowski Paul Nicolaus See  
 Nichols Paul  
 Peters John Charles 1101  
 Peterson Marcellus Leroy 252  
 Pettit Doctor Absalom 977  
 Phillips Alfred Noroton 252  
 Phillips Norman W 977  
 Pierotti Leo Francis 252  
 Pipes William Henry 252  
 Platou Carl Anton 123  
 Podvin Edward Charles 720  
 Polndexter Joel C 1101  
 Pollock John Rogers 252  
 Pomeizantz Harry 977  
 Pomeroy Woodman Bradbury 722  
 Pond Henry May 47  
 Poole Alfred R 977  
 Porter Mineria See Wertz Minerra  
 Porter  
 Porvaznik Michael L 1101  
 Potter, George Alpha 188  
 Potter Ward Elvinton 912  
 Pratt Laura M See Recher Laura  
 M Pratt  
 Preston Brown Frances Mary 977  
 Price Jesse David 188  
 Pilest John Robert Jr 977
- Q**
- Qutek Jaques Voorhees 450  
 Quinn Glendon D 977
- R**
- Rain Charles William 1165  
 Ramirez Leopoldo M 782  
 Ramroth Robert 977  
 Randall Edward 785  
 Ratnoff Hyman Leon 123  
 Ray Otis L 188  
 Ray Wyeth Elliott 1101  
 Recher Laura M Pratt 1165  
 Redding Leonard Gabriel 1165  
 Reed Allen Trousdale 1165  
 Reed Volney E H 123  
 Reed Wilbur Fish 188  
 Reeves Benjamin Prerett 512  
 Reeves Marcellus 1166  
 Reger Howard Jarvis 977  
 Reehling John Henry 722  
 Rehnert Edwin A 654  
 Rembe Boyd Cornick 912  
 Rempe Arle C 913  
 Rethers Charles Albert 913  
 Rhoades Fred Hooper 188  
 Rhoads George Kremer 317  
 Richards Ira Perry 188  
 Richardson Leo Frederick 787  
 Richardson Joseph Aloysius 47  
 Rickman William T 654  
 Riffe James Powell 1101
- Rlgbr Hugh Mallinson 313  
 Ringler Arthur Garfield 1101  
 Robbins Thomas James 383  
 Roberts Frederick Charles 654  
 Roberts Leslie Bertram 317  
 Roble Theodore Parks 912  
 Rodley Herbert Ellis 252  
 Rhee Conrad B 977  
 Robertson Clarence William 123  
 Robinson Joseph Esthner 978  
 Robinson Joseph William 978  
 Robinson Walter C 123  
 Rogers Andrews 586  
 Rogers Llenen Moss 511  
 Rollison Humphrey 313  
 Rolis James Alfred Jr 978  
 Rose Ell W 978  
 Rosenhal Charles Morton 976  
 Ross Charles Hurd 852  
 Ross Peter Maurice 852  
 Ruest Florian A 8-2  
 Ruffin Joseph B 1166  
 Rumsey Frank M 978  
 Runyon John H 316  
 Russell Presley Bliss 978  
 Russell Robert Lee 45  
 Russell Wallace Dejos 1016  
 Ryerson Claude Scott See Ryerson  
 Scott  
 Ryerson Scott 1046  
 Ryle Robert L 586  
 Rystad Olaf Halvard 978
- S**
- Saballer George J 47  
 Sabin Albert Edward 1166  
 Salisbury Frank Lyon 852  
 Salmon William Taylor 123  
 Sams Clement E V 252  
 Sanders Abraham S 978  
 Sargent Frank Henry 1101  
 Sargent John Gibson 586  
 Savine, Richard 2-2  
 Saylor Norman A 47  
 Schaffner Daniel Webster 450  
 Schery Charles William 978  
 Scholtz W Herbert 188  
 Scholtz Waldemar Herbert von See  
 Scholtz W Herbert  
 Scholz George M F 1166  
 Schoney Theodosta S Fowler  
 See Johanson Theodosta S Fowler  
 Schoney  
 Schragger Victor Lupu 653  
 Schreuder Theodore H 1101  
 Schultz Howard Frederick 6-2  
 Scott Charles Matthew 123  
 Scott James W 47  
 Serlbnar Frederick Parker 316  
 Searle Claude Howard 852  
 Shackelford William P Jr 912  
 Shaffer Charles Porter 352  
 Sharp John Sidney 123  
 Shaw Clayton Whittemore 912  
 Shedd Bert D 252  
 Sheehan John Raymond 1046  
 Sheldon Stuart Harris 978  
 Shell Arthur Edwin 1046  
 Shelton Frank Winfred 47  
 Shelton John H 47  
 Sheppard Frank Remington 787  
 Sher Samuel 852  
 Sheridan Charles Reynolds 1046  
 Sherman Frank Morton 978  
 Sherrelk Joseph Leslie 2-2  
 Sherwood Horace Watson 47  
 Shkellhood David Kalbach 913  
 Shockley Harlow Orville 513  
 Shroba Raymond Victor 787  
 Shull Joseph Horace 6-4  
 Shurtlett Henry Connely 978  
 Sieber Isaac Grafton Jr 316  
 Silverman Isaac Judah 123  
 Silverman Isadore Martin 1102  
 Simonson Jeremlah T 584  
 Skiles Hugh P 47  
 Skully Gregory Albert 317  
 Silcer John B 1046  
 Small Simon 852  
 Smead Herbert Emerson 1101  
 Smith Albert Godfrey 1046  
 Smith Arthur Montell 252  
 Smith Charles William 722  
 Smith Clarence Laverne 47  
 Smith Edward Elmer 47  
 Smith Frank Clinton 1101  
 Smith Frederick Adams 852  
 Smith Henry Damon 586
- Smith John Henry 1047  
 Smith Joseph Benjamin 1101  
 Smith Mark Harrison 978  
 Smith Martin Pendry 317  
 Smith Martin R 654  
 Smith Matthew B 1047  
 Smith Ned Rudolph 511  
 Smith Rose Marie Vastola 252  
 Smith Stephen William Jr, 722  
 Smith William Adelbert 252  
 Snell Lewis C 316  
 Snyder Charles William 1102  
 Snyder Wayne Lawson 1047  
 Solomon Jerome Daniel 722  
 Southworth Rufus 123  
 Spannare Charles Ivar 852  
 Sparks Ernest Elliot 450  
 Sparrow Charles Atsatt 1045  
 Speake John Wesley Jr 722  
 Speldel Frederick George 1102  
 Spencer, Virienne En Gene McMains  
 123  
 Splinks William Harrold 852  
 Spiller Chester A 1047  
 Spoorl Jacobyn V Manning See  
 Manning Jacobyn Van Vliet  
 Spohn Ulysses G 252  
 Spratt Solomon Ellis 1102  
 Sprungs Andrew Wilton 252  
 Staats Harlan Herbert 720  
 Stable Vito Victor 787  
 Stamey Fnoch Lafayette 1102  
 Stanley Leroy de 4-0  
 Steele William S 586  
 Steers William Henry 47  
 Stelner Louie Leo 787  
 Steinwand Oscar William 1166  
 Stephen Charles Ira 316  
 Stewart Claud Milton 852  
 Stewart Harry James 913  
 Stiles Henry Wilson 1166  
 Stoeltje Edward Charles 123  
 Stonemetz Guy N 1047  
 Stratton George W 852  
 Strayer Walter Addison 1166  
 Street M Eugene 316  
 Strohbehn Edward F 1166  
 Strossler Homer O 1047  
 Stroube Charles Nicholas 586  
 Struvo Carl Lillip 913  
 Sucherman, Samuel 1166  
 Sugg John Armstrong 1047  
 Sullivan Francis Hall 852  
 Summitt Robert Elmer 1047  
 Susse Lloyd Thomas 317  
 Swartz John Nelson 1047  
 Sweeney John Joseph 45  
 Swickard William McHenry 1102  
 Swift Henry Marshall 123
- T**
- Talbot James Henry 8-2  
 Tate Colmore Hasty 1102  
 Tatum Harry Erskine 2-2  
 Taylor Basil Whitehill 316  
 Taylor Green Benjamin 1047  
 Taylor James Henry 251  
 Taylor John Sanders 654  
 Taylor Sterling B 1045  
 Teebor Alfred 1047  
 Tellman Edwin Theodore 317  
 Temple James Preston 1166  
 Thomas David 1102  
 Thomas Hubert Dale Joseph 110-  
 Thomas John Quincy 316  
 Thompson William T 252  
 Thorington James 785  
 Thornburg Harold Babcock 978  
 Tibor Alfred See Teebor Alfred  
 Tiner Edgar Lane 188  
 Tolhurst George Monroe 252  
 Tomb Henson Foster 1047  
 Tomlinson Rufus Henry 1047  
 Tooley George Edwards 586  
 Tourner Frank F 25-  
 Tousey Ralph 852  
 Tower Amasa M 450  
 Trainor Thomas Henry 188  
 Trick Treva Really 450  
 Troselair Gaston L 123  
 Trotte George S 316  
 Tullar Arthur Gilman 722  
 Turner Alexander Loudin 852  
 Turner Thomas Freeman 123  
 Turner William Kenneth 450  
 Turney Lamma Edgar 913  
 Tutwiler Herman Luther 586

**U**  
Ulrich George Alvin 450  
Underwood Thomas L 654  
Usher Thomas Raymond 1102

**V**  
Vachon Eugene Hertel 1045  
Van Blaricum James Walter 232  
Van Campen Benjamin 1102  
Vanderleek Peter Sec van der  
Leek Pieter  
van der Leek Pieter 450  
Van Doren Burr Jessell 450  
Van Dyck Laird Sumner 720  
Van Voorhis Daniel Dewitt 513  
Van Voorhis J Frank 1047  
Varges Annibal 186  
Varoev Fred Elbridge 252  
Vastola Rose Maria See Smith  
Rose Marie Vastola  
Vaughn James B 450  
Vedder John David 722  
Vetor John Adolf 1166  
Virden John Elmer 449  
von Nahowski Francis Rudolph 912  
von Noorden Carl 1097

**W**  
Waggoner William Franklin 586  
Walker Herbert Dillon 188

**E**  
F Award See World War II U S Army  
Navy E  
EAKIL A W U S of America Typhus Com  
mission Medal to 306  
EAR See also Deafness Hearing  
disease use of penicillin for [Swanson &  
Baker] \*616  
Infection dangers of sulfonamides [Dingley]  
327—ab  
Infectious penicillin for [Johnson] 389—ab  
Inflammation of Middle Ear See Otitis Media  
Internal acute labyrinthitis penicillin for  
[Swanson & Baker] \*617  
Ringing to See Tinnitus aurium  
tympanum inject with thyroxin or ethyl  
morphine for deafness and tinnitus [Trow  
bridge] 127—ab  
EATING Utensils See Cooklog and Eating  
Utensils  
EBERTHELLA typhosa electron micrograph  
[Mudd & Anderson] \*570  
ECONOMICS MEDICAL See also Insurance  
sickness Medical Service Medical In  
digent  
A M A Bureau of See American Medical  
Association  
Committee on Research in Medical Eco  
nomics of New York Principles of a  
NATION WIDE HEALTH PROGRAM 640—E  
Economic and Social Council postwar United  
Nations organization 904—OS  
ECTHYMA treatment penicillin [Johnson]  
389—ab  
ECTODERMAL DEFECT hereditary dysplasia  
[Felsner] 127—ab  
ECZEMA Contact See Dermatitis venenata  
treatment Iso Par N R R (description)  
571 (Medical Chemicals) 571  
treatment pancreatic extracts 528  
treatment soy bean food effect in child  
[Stoesser] 1114—ab  
EDEMA See also Ascites Dropsy  
angioneurotic with urticaria diet recom  
mended 1058  
etiology heart failure or sensitivity to digi  
talis? 1178  
etiology sulfadiazine sensitivity in child  
[Kotene] \*833  
formation role of skin and thin dead cornel  
layer of epidermis [Burch & Wisor] \*163  
General or Universal of Newborn See Ery  
throblastosis Fetal  
in Rocky Mountain spotted fever [Harrell &  
others] \*929  
pathogenic action of biologic colloids 770—E  
refractory of legs 62  
FACIAL (Dr) Health Shoes 587—BI  
FACITORS Annual Conference of See American  
Medical Association Annual Conference  
EDUCATION See also Children school  
Schools Students University  
Health Education See Health  
Higher See University  
military surgeons instruct service hospital  
and patients by television 777  
EDUCATION MEDICAL See also Interns and  
Internships Schools Medical Students  
Medical University  
A M A Council on See American Medical  
Association  
(courses) See also subhead Graduate courses  
courses also graduate work in anesthesiology  
[Wood] \*567

Walker Robert Lee 2a2  
Wall Arthur Allen 913  
Wallace Charles R 913  
Wallis Samuel Reasin 978  
Walrath Charles M 188  
Walsh Groesbeck Francis 187  
Walsh John Thomas 913  
Walsh Maria Constantine 978  
Walters Royal Wilson 450  
Ware Burtrum L 1102  
Warford John T 513  
Warner George Van Voris 1047  
Warren Lloyd Cyrus 1047  
Warren Nathan Alonzo 913  
Washburn Hubert Horace 912  
Watkins Edwin Dial 511  
Watson Elbert Lycurgus 123  
Watson Lester Dow 316  
Way George Fritz 722  
Weber John William 188  
Weeks Edmund Arthur 785  
Well Grover Cleveland 449  
Weinberger Carl Frederick 722  
Weinburg Harry Bennett 47  
Weiner Benjamin 1047  
Weingart Zephaniah Branch Jr  
1102  
Weir Charles F 913  
Welch Thomas Francis 586  
Wells Cephas John 586

Wells Frank Newton 45  
Wells Milton Madison 1047  
Wells Virgil H 913  
Wertz Minerva Porter 1102  
Westfall Frank Kemper 1047  
Weston Herbert Tiffany 513  
White James Alexander 586  
White Myron La Verne 123  
Whitney Edward Luther 584  
Whitson John Samuel 852  
Whittaker Arthur Ellwood 188  
Widder Edgar Allen 1047  
Wiggins Lee Wilbert 654  
Wilcox Earl E 913  
Wilkinson Charles B 910  
Willinson James Salmon 1047  
Willinson Maurice Houston 654  
Wilbern David York 654  
Williams David Edgar A P 913  
Williams Francis Marion 450  
Williams John Scott 978  
Williams Samuel E 913  
Williams William Robert 913  
Williamson Joseph Carlin 188  
Wills W Charles 654  
Wills Wm Chas See Wills W  
Chas  
Wilmeth Ossie Frank 852  
Wilson Clarence Leon 513  
Wilson Harry M 654

Wilson Lyman W 1166  
Winemiller James Lewis 1166  
Withers James Johnston 586  
Wood Fred C 47  
Wood John Harrison 1102  
Wood Wilbur Stuart 720  
Woodley James D 252  
Woods John Russell 513  
Woods Alice Mabel See Fiddes  
Alice Mabel Woods  
Woodward Chester Pearce 913  
Worstell Gaylord 913  
Wright Lucius Could 1047  
Wright Robert Elmore 513  
Wright William Wesley 1100  
Wyatt Ralph Wilton 317  
Wynne Eugene 1102

**Y**  
Yarborough Richard Fenner 45  
York Herbert Leroy 1047  
Young James Frederick 123  
Youngman Jacob Andrew 722  
Youtz Hiram La Mont 653  
**Z**  
Zaring Everett Thomas 1047  
Zeller Frederick Caroline 852  
Zulick Arthur John 1102

EDUCATION MEDICAL—Continued  
courses in industrial hygiene at Columbia 716  
courses (refresher) in Dutch universities by  
American physicians 111  
curriculum Australian reaction to British  
criticism 119  
curriculum radical reform England 43 381  
Fellowships See Fellowships  
fund established by Kansas Medical Society  
444  
Graduate See also subheads Postwar  
Graduate Wartime Graduate  
graduate American College of Surgeons ex  
pands program 580  
graduate continuation courses for practition  
ers \*1103  
graduate courses in industrial medicine and  
hygiene Pa 1096  
graduate Foundation for Post Graduate Medi  
cal Education Biddle bequest 578  
graduate psychiatric program questionnaire  
for practitioners W Va 717  
graduate students from overseas at London  
House 783  
Latin Americans studying in U S 848  
of an ophthalmologist [Berens] \*671  
postwar graduate facilities required 234—E  
[Johnson & Arestad] \*253  
postwar graduate hospital planning determined  
by Committee on Postwar Medical Service  
770—E  
postwar graduate joint committee report  
708—E 709  
postwar graduate 6 practical questions from  
overseas officer [Long] \*239  
program to train 300 000 physicians in 30  
year period British India 48  
Scholarships See Scholarships  
teaching hygiene in Brazil at Sao Paulo U  
185  
war and men now in Army to recontinue  
college courses 1093—OS  
war and mustering out payments of dis  
charged ASTP students 504  
Wartime Graduate Medical Meetings 37 110  
177 (committee on) 213—OS 307 374  
440 504 645 712 777 842 967 1043  
(will clear through Committee on Postwar  
Medical Service) 1036—OS 1092 1157  
EFFORT Intellectual See Thinking  
Syndrome See Asthenia neurocirculatory  
FFUSION See Pleurisy  
EGGS carotenemia from eating differentiated  
from jaundice [Caviness] 984—ab  
EISENHOWER DWIGHT D pays tribute to  
Army nurses 240  
ELASTIC Rupture Guard 124—BI  
ELBOW synchysis of olecranon bursa [Schragner]  
323—ab  
ELDERING GEORGE W statement on first aid  
station nt Guam 306  
ELDERLY See Old Age  
ELECTRIC See also Electro Photoelectric  
Hearing Aids See Hearing aids  
High Frequency Apparatus See Diathermy  
shock therapy complications d desoxyephe  
drine vitamin B1 and C for [Bauer] 798  
—ab  
shock therapy neurohistologic findings  
[Winkelmann] 523—ab  
treatment (nonconvulsive) in depression  
[Plattner] 601—ab  
ELECTROCARDIOGRAPH See Heart  
ELECTROCOMA See Electric shock therapy  
ELECTROENCEPHALOGRAPHY See Brain

ELECTROMAGNET to pass Miller Abbott tube  
through pylorus [Mayer] 922—ab  
ELECTRON Microscope See Microscope  
ELECTROPYREXIA See Fever therapeutic  
ELECTROTHERMY See Diathermy  
ELIZABETH (1533 1603) queen of England  
William Gilbert physician to 371—E  
FIBRILEMS See Insignia  
FIBRINOLYSIS See also Thrombosis  
pathology of embolic encephalitis [Alpers]  
523—ab  
pulmonary acute fatal in hypertension dur  
ing bed rest [Levine] \*83  
pulmonary and early rising after abdominal  
operations [Marescot] 135—ab  
pulmonary femoral vein ligation in [Lowen  
berg] 132—ab  
pulmonary medical treatment [Beckwith]  
132—ab  
treatment dicumarol [Geffter] 917—ab  
FIBRINOGEN of congenital aneurysms of  
cerebral arteries 063—E  
EMERGENCY Medical Service See also First  
Aid  
Medical Service of OCD recent developments  
38—OS  
EMETICS See Vomiting  
ENORY University proposed department of  
psychiatry 779  
EMOTIONS See also Psychosomatic Medicine  
albuminuria in air cadet applicants [Abrah  
mson] 196—ab  
prefrontal lobotomy effect on [Watts] 457—ab  
psychiatric studies in clinical allergy [Brown]  
658—ab  
EMPHYSEMA etiology ingestion of kerosene  
in boy aged 2 [Scott] 597—ab  
subcutaneous from compressed air [Whit  
well] 1055—ab  
EMPLOYEES EMPLOYMENT See Industrial  
Health employment work workers  
EMPIEMA acute penicillin for [Butler] 732  
—ab  
acute nontuberculous Monaldi's drainage for  
[Gonzalez Ribas] 1055—ab  
postoperative penicillin prevents [White &  
others] \*1016  
reconditioning in chest surgery [Grow &  
others] \*1039  
treatment [Gomez Plimienta] 526—ab  
ENCEPHALITIS See also Encephalitis Epi  
demic Encephalomyelitis  
metastatic or embolic [Alpers] 523—ab  
toxic from arsenotherapy in syphilis [Eagle]  
\*541 [Cannon & others] \*547 [Thomas &  
Wexler] \*550 [Cooperating Clinics] \*537  
ENCEPHALITIS EPIDEMIC St Louis new  
vector chick mite 962—E  
tick borne [Smorodintsev] 193—ab  
ENCEPHALOMYELITIS equine virus electron  
micrograph [Mudd & Anderson] \*568  
virus Theiler's pantheonic acid deficiency in  
creased resistance to 105—E  
ENCEPHALOMYELOPATHY with Icterus See  
Kernicterus  
ENDAMEBA histolytica cause of Loeffler's  
syndrome 837—E  
ENDARTERITIS subacute bacterial complica  
ting patent ductus [Tubbs] 987—ab  
subacute bacterial of arteriovenous aneurysm  
[Lipton & Miller] \*766  
ENDICOTT JOHNSON medical plan [Jones]  
\*339



- ENDOCARDITIS** acute bacterial in heroin addict [Hussey & others] \*535  
bacterial penicillin ineffective in glomerular nephritis with [Bloomfield & others] \*688 (dosage to maintain elevated penicillin blood levels plus continued medication) [Vokotoff & others] 1167—C  
subacute bacterial pathologic aspects [Alpers] 523—ab  
subacute bacterial penicillin for [Collins] \*233
- ENDOCRINE GLANDS** See also under names of specific glands  
Imbalance and homosexuality excretion of estrogens and androgens 603  
spastic abdominal syndrome and [Schmidt] 134—ab
- ENDOMETRIUM** biopsy to determine anovulatory menstruation frequency [Levin] 454—ab  
remnants hyaline degeneration cause of late puerperal hemorrhages [Palik] 1176—ab  
unhealthy condition at time of impregnation cause of mongolism 772—E
- ENERGY** not increased by taking vitamins  
liver extract and yeast extract [Ruffin & Cayer] \*823  
Value of Food See Calories
- ENGLAND** See British London Royal Universities in See University of Cambridge University of Oxford
- ENLISTED Men or Women** See World War II
- ENTEROBUS vermicularis** See Oxuriasis
- ENTORAL LILY** cold vaccine (Joint Council report) \*896
- ENURESIS** See Urine Incontinence
- ENVELOP** Method See Burns, treatment  
Wounds treatment
- ENVIRONMENT** cancer 836—E
- ENZYMES** See also Coenzyme under names of specific enzymes as Cholinesterase Histoaminase Hyaluronidase Thrombin  
A M A joint section symposium on [Gorler] \*749 [Serringhaus] \*751 [Spies & others] \*752 (discussion) 758  
bactericide cannibal [Farley] 396—ab  
treated milk in peptic ulcer [Stelgmann] 792—ab
- EOSINOPHILIA** in men returned from service in tropics [Love] 398—ab  
transitory pulmonary infiltrations with Loeffler's syndrome [Pirke] 322—ab 887—E
- EPHEDRINE Sulfate** See Urine Incontinence
- EPIDEMIC** See also under names of specific diseases as Diphtheria Dysentery bacillary liver inflammation Scarlet Fever Throat capitis Thyphoid  
control in Hawaii since Pearl Harbor [Pinkerton] \*628  
Netherlands facing 842  
Prevention See Quarantine cross references under Immunization Vaccination
- EPIDEMIOLGY** See also Liver Inflammation  
Army board project on Influenza 304
- EPIDERMIS** See Skin
- EPIDERMOPHYTOSIS interdigitalis** See Dermatomyctosis
- EPIDIDYMITIS** treatment penicillin [Thompson] \*406
- EPIDURAL Abscess** See Meninges
- EPILOTIS** epithelioma late results of roentgen therapy [Baclesse] 668—ab
- EPILEPSY** first institutions in U S in Ohio and Kansas [Skog] 190—C
- EPILOIA** See Sclerosus tuberosus
- EPIPHYSIS** growth arrest for equalizing leg lengths [White & Stibbins] \*1146
- EPITHELIOVA** glossoepiglottic therapy [Baclesse] 668—ab
- ERB GOLDFLANS Disease** See Myasthenia Gravis
- ERGONOVINE** synthetic (methergline) in third stage of labor [Roberts] 731—ab
- ERGOSTEROL** irradiated See Vitamin D
- ERIODICTYOL** glucoside See Vitamin P
- ERLANGER JOSEPH** Nobel award to 640—E 971
- ERUPTIONS** See also Urticaria under names of specific diseases as Measles Scarlet Fever  
Occupational See Industrial Dermatoses  
sunlight producing 465
- ERYTHEMA** See Lupus erythematosus  
Nodosum (valley fever) See Coccioidomycosis  
Solar See Sunburn
- ERYTHREMA** See Polycythemia
- ERYTHROBLASTOSIS FETAL** etiology pathogenesis [Percler de Mesquita] 924—ab  
prevention treatment 235—E  
Rh factor and [Krieger] 601—ab  
teeth discolored from excessive blood pigments during prenatal formation 670  
term clarified [Macklin] 192—ab
- ERYTHROCYTES** concentrated red cell transfusions [Blinder] 388—ab  
Count See also Anemia Pernicious Polycythemia  
count anoxic erythrocytosis 1089—E
- ERYTHROCYTES—Continued**  
hematocrit changes during operations [Collier & others] \*4  
Sedimentation See Blood sedimentation
- ESCHERICHIA coli** plus virus electron micrograph [Mudd & Anderson] \*569 [Goldsmith] 914—C  
coli streptothricin isolated from by Waksman 103—E
- ESOPHAGUS** strictures from lyc prophylactic dilation [Crowe] 517—ab
- ESPASANDIN J** research on brucellosis 962—E
- ESSEN** College of Medicine (to open Oct 1) 115 (Dr Lira named dean) 647 (resigns) 906
- ESTERFZ CARLOS** personal 379
- ESTROGENIC SUBSTANCES** See also Hexoestrol  
benzestrol nonproprietary designation (Council report) 1085  
Diethylstilbestrol See Diethylstilbestrol  
excretion in homosexually 603  
in oil with chlorobutanol 3% N N R (Bron) 433  
overuse induce cancer 604  
refractory pruritus vulvae 991  
synthetic effect on advanced cancer [Haddow] 1119—ab
- ETHFR** Anesthesia See Anesthesia
- ETHICS** See Morals
- ETHICS MEDICAL** amendment on fee splitting by New York Academy 1095  
for ophthalmologist and his relation to optometry [Bicus] \*672
- ETHYL CHLORIDE** treatment of trichophytosis [Lewis] 1170—ab
- ETHYL MORPHINE** See Morphine
- DIETHYLSTILBESTROL** See Diethylstilbestrol
- EUNUCHOIDISM** See Castration
- EUROPEAN WAR 1939—** See World War II
- EYES** Rocking Method See Respiration drill  
Scleral
- EVIDENCE** See Medical Abstracts at end of letter M
- EXAMINATION** See American Board Physical Examination
- EXANTHEMA** See Eruptions
- EXERCISE** See also Physical Education and Training  
apparatus for in occupational therapy for injured workmen [Coultter] \*364  
eye for defective vision 771—E
- EXFOIATION** See Dermatitis exfoliativa
- EXHAUSTION** See Fatigue
- EXHIBIT** See American Medical Association Philadelphia Session Exposition
- EXOPHTHALMIC GOITER** See Goiter Toxic
- EXOPHTHALMOS** See also Goiter Toxic  
diagnosis of orbit tumors [Benedict] \*880  
intermittent pathogenesis [Walsh] 457—ab
- EXPECTORATION** See Sputum
- EXPLOSION** blast injuries [Hogan] 194—ab
- EXPOSITION** See also Exhibit (cross reference) Fair  
survival Pensacola 903
- EX SERVICE Men** See Veterans
- EXTREMITIES** See Ankle Arms Elbow  
Foot Legs  
Amputation See Amputation  
Blood Supply See Blood Vessels disease (peripheral) Raynaud's Disease Thromboangiitis obliterans
- EYEGLASSES** See Glasses
- EYELASHES** Lachry 587—BI
- EYELIDS** autoocclusion with vacuola [Kinnzinger] 323—ab  
blepharoconjunctivitis (chronic) penicillin for [Keyes] \*611 \*613  
Granular lids See Trachoma  
Infection penicillin for [Crawford] 797—ab
- EYES** See also Blindness Cornea Glasses  
Ophthalmology Orbit Vision etc Medical Abstracts at end of letter M  
anterior chamber cancer transplanted in [Greene] 54—ab 106—E  
cholinesterase content [Bruckner] 668—ab  
Defects See also Choroideremia  
defects (congenital) in child German measles in pregnancy [Rones] 662—ab  
Disease See also Conjunctivitis Glaucoma Keratoconjunctivitis Trachoma  
disease penicillin for [Keyes] \*610  
disease phemeral chloride N N R (description) 169 (Part I Davis) 169  
disease use of tincture of iodine in glycerin in 800  
exercises for defective vision Huxley's experience 771—E  
fatigue symptoms riboflavin effect on [McCree] 395—ab  
foundry work does not affect 800  
fundus after sympathectomy in hypertension [Gans] 1170—ab  
fundus changes in hypertension [Elwyn] 54—ab  
fundus changes in urologic diseases with hypertension [Cohen] 54—ab  
headaches from [MacDonald] 921—ab
- EYES—Continued**  
hemorrhage vitamin P to control [Watberson] 460—ab  
Infection penicillin for [Crawford] 797—ab  
Injuries Admiral J. D. Mounibatten praises 20th General Hospital for treatment 575  
Injuries hyphema paracentesis and miotics for [Rychner] \*763  
Injuries penicillin treatment and prevention [Keyes] \*613 \*614  
Proptosis of See Exophthalmos  
symptoms of malaria encountered in tropics [Robertson] 1118—ab
- F**
- F R C S** See Royal College of Surgeons
- F W A** See Federal Works Administration
- F** fluorescent factor in human urine [Najjar] 594—ab
- FABRICS** See Nylon
- FACF** See Cheek Eyes Jaws Lips Mouth  
Nose etc  
Bleach See Cosmetics  
Mask See Mask
- FACTOR** See Penicillin
- FACTORY Workers** See Industrial Health, etc
- FACULTY** See Schools Medical
- FAIR** Kansas State free rays in tuberculosis case finding 845
- FAITH** healing 1058
- FALLOPIAN TUBES** See Oviducts
- FAMILIES** See also Children Infants Marriage Maternity under names of familial diseases  
allowances for and social insurance scheme England 974  
allowances for \$2.50 for each child Brazil 1163  
home leave of British soldiers to start a family 652  
streptococcal (hemolytic) types in same household [Foley] 1113—ab
- FAMILY** horrors of German occupation of Greece 793 (British share food with Greeks) 1043  
Netherlands facing 842
- FARM** See also Rural Communities  
Security Administration medical service plans and West Virginia State Medical Ass'n 847
- FARRAND** Formula 48—BI
- FASCIA** strips for autoplasmic sutures in inguinal hernia [Chiles] 263—ab
- FASCIOLA** hepatica cause of Loeffler's syndrome 837—F
- FATIGUE** See Fatigue  
See also Asthenia neurocirculatory allergic headache with from milk sensitivity [Randolph] \*430  
amphetamin sulfate effect on performance 1031—E  
diagnosis (differential) from weakness [Allan] 920—ab  
hypoglycemic symptom [Portis] 230—ab \*415  
measuring physical fitness 991  
mental exhaustion from intellectual effort 538—ab  
operational in those returning from combat [Murray] \*448  
syndrome of weakness with muscular atrophy and fascicular twitching from overwork [Weisen] \*801
- FAURE JEAN LOUIS** death 782
- FEBRIS** lymphocytica [Rosenbaum] 914—C  
remittens aricularum 250
- FECES** Defecation See Constipation Diarrhea Dysentery  
polymyositis virus isolated from [Paul] 460—ab [Horstmann & others] \*1061  
riboflavin in, [Najjar & others] \*357
- FECUNDITY** See Fertility
- FEDERAL** See also United States  
Drug Administration notice of judgment See American Medical Association Bureau of Investigation  
Employees See U S Employees  
Funds See United States government  
Laws and Legislation See Laws and Legislation  
Office of Vocational Rehabilitation standards established 577—OS  
Trade Commission stipulation See American Medical Association Bureau of Investigation  
Works Administration grants to Washington hospitals 178—OS 778—OS
- FEEBLEMINDED** See Idiotcy, Mental Defectives
- FEEDING** See Diet Food  
of Infants See Infants feeding
- FEEES** Industrial accident surcharge over existing Calif 180  
paid in private hospitals in Europe increased by 100% 111  
splitting amendment by New York Academy 1095  
splitting and participation in sale of glasses [Berens] \*672
- FEET** See Foot
- FELIX R H** heads mental bygiene division of U S P H S 713—OS 908 1097



- FELLOWSHIPS** See also Scholarships  
in cancer 126  
in child psychiatry by National Committee for Mental Hygiene 183  
in pharmacology at Wayne 1158  
Ledyard (Lewis Cass) 115  
Nourse in public health available by Nassar College 1040  
Putnam (Helen) for advanced research 1094  
special for Chinese 447  
**FEMUR** fractures of neck [Siris] 132—ab  
growth arrest or equalizing leg lengths [White & Stubbs] \*1146  
necrosis (aseptic) of head [Kleinberg] 837—ab  
**FLATRATION** Operation See Otosclerosis  
**FLANGER** Lecture See Lectures  
**FERMENTS** See Enzymes  
**FERNLEY** 48—BI  
**FERNEL JEAN PAUL** (named in violation of drug act) 39 (affirm jail term for) 444  
**FERTILITY** See also Sterility  
married couple become fertile after adopting baby 402  
**FERTILIZATION** See Impregnation  
**FETUS** See Embryology Infants Newborn  
Placenta Pregnancy  
Death of See Stillbirth  
Erythroblastosis See Erythroblastosis Fetal  
**FEVER** See also Rheumatic Fever Scarlet Fever Yellow Fever  
Breakbone \* See Dengue  
Bullis (Louie Star or Texas) See Bullis Fever  
Cerebrospinal See Meningitis cerebrospinal epidemic  
Desert See Coecidiodomycosis  
Glandular See Mononucleosis Infectious  
high in child from sulfadiazine sensitivity [Koteen] \*833  
Japanese River See Tsutsugamushi Fever  
Mite Bite See Tsutsugamushi Fever  
of unknown origin 735 992  
Rabbit See Tularemia  
remittent rural 250  
Rocky Mountain Spotted Fever See Rocky Mountain Spotted Fever  
Sandfly (or Soldier's) See Papathel Fever  
Therapeutic See also Syphilis treatment  
therapeutic electrocardiographic changes after [Clagett] 388—ab  
therapeutic inductothermy after implanting metal pin for femur fracture 1122  
Tick See Bullis Fever Rocky Mountain Spotted Fever Ticks  
Undulant See Brucellosis  
Valley See Coecidiodomycosis  
**FIBRIN** fibrinogen and thrombin in surface treatment of burns [Hawn] 396—ab  
fibrinogen coagulum to remove renal calculi [Dees] 596—ab  
film in surgery [Ingraham & Bailey] \*684  
foam as hemostatic in neurosurgery [Ingraham] 128—ab [Woodhall] \*469  
foam to control hemorrhage in head injuries [Everts & Woodhall] \*145  
foam with thrombin as hemostatic in surgery [Ingraham & Bailey] \*680  
**FIBRINOGEN** See Fibrin  
**FIBROIDS** See Myoma  
**FIBROMA** ovarian [Doeherty] 320—ab  
**FIBROMYOMA** See Myoma  
de FICHERFO FLAVIO I visits U S 186  
**FIBROSIS** [Riacy] 131—ab  
early in American troops [King] 1114—ab  
early lymphatic lesions in [Wartman] 1114—ab  
possible hazards in U S from returning service men 267  
registry U S Navy establishes at Klamath Falls Ore 902  
treatment penicillin ineffective [Bloomfield & others] \*490  
troops exposed to observed at Wakeman General Hospital 305  
**FILMS** See Microfilms Moving Pictures  
**FINGERAILS** See Nails  
**FINGERS** amputation See Amputation  
fracture of base of thumb Kirschner wire and plaster cast fixation [Johnson] \*27  
paresthesia from herniated intervertebral disk [Bucy & Chenault] \*26  
**FLR** See also Burns Explosion  
Hartford circus disaster patients in hospitals [Weld] 453—ab  
**FIRST AID** See also Emergency Medical Service  
Blue Cross kits 748—BI  
station at Guam Dr Elderling's statement 306  
Tip Top Emergency kits 670—BI  
**FISCHER** Crystal Short Wave Diathermy Apparatus Model 100  
**FISTULA** arteriovenous See also Aneurysm arteriovenous  
arteriovenous cavernous hemangioma of lung [Adams] 594—ab  
arteriovenous of lung pneumonectomy cures [Jones] 111—ab  
revascularization surgery for [Pbneuf] \*140  
**FITNESS** See Physical Fitness  
**FITZGIBBON JOHN H** American medicine aware of its responsibility 443—OS  
**FIVE DAY** Treatment See Gonorrhea Syphilis  
**FLUORELLA** electron micrographs [Mudd & Anderson] \*563  
**FLASH** burns See Burns  
**FLATULENCE** postoperative use of Harris drip proctoclysis 604  
result of taking yeast tablets liver extract or vitamins [Huffin & Cayer] \*824  
**FLEWING ALEXANDER** discovery of pearl cilium 118 170—F  
**FLIES** See also Sandfly Tsetse Fly  
PDB used in Pacific theater to kill maggots and 575  
sprays toxicity of DDT described by Dr Paul A. Neal 714  
transmission of poliomyelitis 528  
**FLIGHT** surgeons See Aviation  
**FLOORS** treat with oil emulsion to control airborne infection [Robertson & others] \*993  
**FLORANUCIN** 514—BI  
**FLOREY** Sir HOWARD history of penicillin 170—E  
**FLOUR** See also Bread  
cottonseed nutritional value [Jones] 393—ab  
thiamine deficient in Australian diet 315  
**FIU** See Influenza  
**FLUIDS** See also Beverages Cream Milk  
Water  
administration rate in shock 899—E  
Body See also Ascites Cerebrospinal Fluid  
body blood intracellular and interstitial fluid 217—ab  
body glutamine in 1089—E  
Intravenous See Injections Intravenous  
**FLUKE** liver See Fasciola hepatica  
**FLUORENE** 2 acetyl amino thyroïd tumors produced by [Blieschowski] 923—ab  
**FLUORESCENCE** method in peripheral vascular diseases [Lange] 1115—ab  
**FLUORESCENT** factor F<sub>1</sub> in urine [Naffar] 594—ab  
Microscopy See Microscopy  
porphyrins (red) relation to cancer 374—E  
**FLUORINE** and dental caries (controlled experiment Mich) 40 [Ockerse] 1170—nb  
to prevent dental caries 267  
**FLUOROGRAPHY** See Roentgen Rays  
**FLU** See Flies  
**FLILLS FLIAC** See Aviation  
**FOOD** See also Beverages Bread Cereal  
Products Cheese Diet Eggs Meat  
Milk Nutrition Peanut Restaurant  
Vegetables Vitamins Medicolegal Abstracts at end of letter M  
A M A Council on See American Medical Association  
Allergy See also Milk  
allergy soy bean food in child [Stoesser] 1114—ab  
allergy urticaria and angioneurotic edema 1059  
amount of money allowed for in prisons increased Argentina 975  
Appetite for See Appetite  
breakfast importance [Portis] \*416  
(anecd See Canned (cross reference)  
Containers See Cooking and Eating Utensils  
contamination with cigarette ashes 330  
Deficiencies See Nutrition deficiencies  
Energy Values See Calories  
fuel requirement of man 23—ab  
habits changing for better nutrition 234—E  
handlers diarrhea and bacillary dysentery dangers in 1042—E  
handlers educational program Fla 39  
in international relations Harris Foundation Institute discusses 180  
Infants See Infants feeding  
Ingestion of See Indigestion  
labeling to protect public England 118  
Medical and Surgical Relief Committee to ship overseas 903  
Poisoning See also Botulism Mussels poisoning  
poisoning outbreak N Y 115  
poisoning streptothricin for [Robinson] 1052—ab  
poisoning typhoid epidemic from baked beans [Kleinschmidt] 664—ab  
ration test (controlled) completed for Army 439  
rationing diets for sick people France 111  
rationing Germans told to expect further restrictions 967  
Supply (acute shortage) See Famine Starvation  
U S Food and Drug Administration Notice of Judgment See American Medical Association Bureau of Investigation  
**FOOT** See also Ankle Hosiery Nails Or thopedic Shoes  
Athletes See Dermatophytosis  
Corns on See Corns  
dermatitis from rubber [Anderson] 660—ab  
Cray's (Dr) Foot Bath Powder 124—BI  
march [Tyner] 657—ab  
trench treatment 644  
tumors hemangiomas treatment [Anderson] 140—C  
Warts on See Verruca plantarum  
**FOOT AND MOUTH DISEASE** virus electron micrographs [Mudd & Anderson] \*565  
**FOOTWEAR** See Hosiery Shoes  
**FOREARM** paresthesia from herniated intervertebral disk [Bucy & Chenault] \*26  
stimulate carotid sinus by applying cast to [Hauzer] \*1029  
**FOREIGN** Countries See under names of specific countries as Germany Netherlands  
Language See Language  
**FORMULA** SBS 11 189—BI  
**FORT** See subheads under World War II  
**FOSTER** S. W. 30 Minute Corn and Callous Remover 318—BI  
**FOUNDACTIONS** Belding (M V) Fund gift to Association for Aid of Crippled Children 310  
Fuller (Anna) Fund grant for work in cancer 779  
Columbia fund for tropical medicine 246  
Commonwealth Fund (gifts professors provided under new fund) 506  
Georgia Warm Springs addition 1097  
Grego (Virginia F) ellates for heart diseases Buenos Aires 970  
Harris (Norman Walt) Institute discusses food in international relations 180  
Hennepin County Medical Foundation 507  
Industrial Hygiene Foundation of America 880  
Kellogg (W H) gift for health education 152  
Lasker (establishes award) 880  
Menninger (new building for research in psychiatry) 180 (meeting) 782  
National Foundation for Care of Advanced Cancer Patients Inc 247 (absorbed into American Cancer Society) 650  
National Foundation for Infantile Paralysis (funds for use during epidemic) 378 (director of technical education) 447 (1945 March of Dimes) 1037  
Auffield (child health chair established at U of London) 582 (effects of institutional care of young children) 909  
Permanent medical care in war industry area [Merrill & Mills] \*887  
Poynter (C V M) established 309  
Riggs (Austin) anniversary 971  
Sage (Russell) (creates dept studies in the profession) 509  
Seaman (Louis Livingston) Fund for research in bacteriology and sanitary science 377  
Snider Ophthalmic (grant for glaucoma research) 1095  
Sugar Research (grants for research) 1097  
Wisconsin Alumni Research wins court reversal 41 1096  
**FOUR** work does not affect eyes 800  
**FOVIS** vector for St Louis encephalitis 962—F  
**FOX LEON A** Typhus Commission Medal to 501  
**FOX T F** new editor of *Lancet* 974 1105—E  
**FRACTURES** See also under specific bones as Femur  
compound penicillin for [Carpenter] 860—ab  
compression from stimulating carotid sinus [Hauzer] \*1029  
growth arrest for equalizing leg lengths [White & Stubbs] \*1146  
march [Carlson] 395—ab [Tyner] 657—ab  
[Hullinger] 729—ab [Krause] 917—ab  
nitrogen metabolism after [Howard] 1170—ab  
of base of thumb Kirschner wire plaster cast fixation [Johnson] \*27  
traumatic with intact periosteum 62  
treatment occupational therapy [Coulter] \*362  
treatment ring sequestrums complicates fixed skeletal traction [Truog] 518—ab  
united bone drilling in [Pushtz] 522—ab  
**FRANZESIA** (saws) [Chambers] 725—C (reply) [Fox] 725—C  
treatment dichlorophenarsine hydrochloride (chlorarsen) N Y R (description) 169 (Squibb) 169  
treatment penicillin 1163  
**FRANCIS T Jr** vaccine to protect army against influenza 304  
**FRIDERICHSEN** Waterhouse Sydrome See Waterhouse  
**FRIEDLANDER** Lecture See Lectures  
**FRIEDMAN** Lectures See Lectures  
**FROGS** vs rabbits for ectopic pregnancy tests 1122  
**FRONTAL BONE** metabolic cranioopathy [Grollman & Rousseau] \*213  
osteomyelitis [Otter] 924—ab  
osteomyelitis complicating sinusitis penicillin for [Putney] \*621  
**FROST** See Cold  
**FROSTBITE** treatment procaine infiltration of sympathetic nerve [Büch] 989—ab  
**FRUIT** See Peaches Pears Pectin Strawberry  
**FULLER** Fund See Foundations  
**FUNES** dermatitis from 1122  
**FUND** See Foundations  
**FUNDUS** oculi See Eyes

FUNGI See Actinomyces Monilia Tinea  
Yeast  
Infection with See Coccidioidomycosis  
Dermatophytosis  
FURUNCULOSIS superimposed on miliaria  
penicillin for [Coleman & Sako] \*427

## G

G 11 compound used in soap to reduce skin  
bacteria [Traub] 459—ab  
GAGE SIMON HENRY death 780  
GALLBLADDER See also Biliary Tract  
calculi aminophylline for colic [Gladstone &  
Goodman] \*1084  
sulfonamide excretion [Shay] 456—ab  
GALLOWAY R W U S of America Typhus  
Commission Medal to 306  
GANGLIONEUROMA of thorax and abdomen  
[Allende] 482—ab  
GANGRENE gas [Dowdy] 860—ab  
gas in Owen Stanley and Buna Gona cam-  
paign [Ross] 667—ab  
gas penicillin for [Kepl & others] \*96  
gas sulfonamide and penicillin therapy 493  
—E

GANN MARK E on staff for Office of Vocational  
Rehabilitation 374  
GARLIC Arnold Tablets 48—BI  
GAS See also under names of specific gases  
as Carbon Dioxide Carbon Monoxide  
Oxygen

antigas protective ointment (V5) commend  
500 men in tests of 501  
Bacillus See Clostridium welchii  
Gangrene See Gangrene  
Mask See Mask  
Mustard See diChlorodethyl sulfide  
Pains See Flatulence  
war resuscitant [Davis] \*209

GASOLINE burning of mouth and lips from  
sucking sediment in fuel line 268

GASSER HERBERT S Nobel prize to 640—E  
971

GASTRECTOMY See Stomach surgery

GASTRIC See Stomach

Juice See Stomach secretion

Ulcer See Peptic Ulcer

CASTRITIS See Stomach inflammation

GASTROENTEROLOGY See Journals

(ASTROENTEROLOGY conference N 1 310

GASTROINTESTINAL TRACT See also Digestive  
System Indigestion Intestines

Stomach

complaints psychosomatic problems [Ewalt]  
\*151

disease psychosomatic relationship [Vorhaus  
& Orgel] \*225

fatigue and [Portis] \*413

hemorrhage transfusion contraindicated?  
178

GAUZE Blue Cross Bandage Sterilized 738—BI  
sponge use in abdominal surgery cause of  
adhesions 603

GEE HILTER S Disease See Celiac Disease

GELATIN film (pillable medicated) for burus  
[Roback] 1174—ab

plasma substitute 1154—E  
solution rate of administration in shock  
588—E

GEN SEN Perry S 723—BI

GENERAL COUNCIL postwar United Nations  
organization 904—OS

GENERAL PARALYSIS See Dementia para-  
lytica

GENESEE Valley Medical Care Inc N Y 716

GENITALS See Penis Vagina

GENTOURINARY SYSTEM See also Ure-  
inary Tract

Infections penicillin for [Thompson] \*403

GEOGRAPHY hemolytic streptococci distribu-  
tion and rheumatic fever incidence [Van  
Ravenswaay] \*486

GEORGE WASHINGTON University FWA grants  
to 179—OS

GEORGETOWN University FWA grants to 179  
—OS

GEORGIA prepayment plan 179—OS

University of See University

Warm Springs Foundation See Foundations

GERBER S products for infant feeding (chopped  
vegetables) 233

GERMAN Measles See Rubella

GERMAN health news from Europe 37  
110 307

restrict food further 967

War with See World War I World War II

GERMICIDES See Antiseptics Disinfection

GESTATION See Pregnancy

G 1 BILL OF RIGHTS (graduate education of  
physician veterans) 708—E 709 (hospital  
planning for postwar education) 770—E  
775

G 1 JOE Literary Award See Prizes

GIDDINESS See Vertigo

GIFFORD SANFORD R memorial 376

GIFTS See Donations (cross reference)

GILBERT WILLIAM physician to Queen Eliza-  
beth and James I of England 371—E

GILES (twins of A A F of World War I 900—E

GILMAN testimonial autlives A Kellough 381—  
BI

GILLIAN ALEXANDER G Typhus Commis-  
sion Medal to 1034

GILLMAN T whole stomach extract treat-  
ment of infantile pellagra 249

GILMORE S Headache Powders 738—BI

GLAND See under names of specific glands  
of Internal Secretion See Endocrine Glands

Sex See Gonads

GLANDULAR FEVER See Mononucleosis in-  
fectious

GLASSES (beverage) See also Cooking and  
Eating Utensils

methods of washing 303—E [Andrews]  
664—ab

GLASSES (spectacles) contact lenses for de-  
layed mustard gas keratitis [Vann] 863—ab

for prisoners of war through American Red  
Cross 712

sale of ophthalmologists participation in,  
[Berens] \*672

Society for Advancement of Contact Lens  
Research organized 1041

GLAUCOMA prize by National Society for  
Prevention of Blindness 1041

research grant by Snyder Ophthalmic Founda-  
tion 1099

GIENN CHARLES R Deputy Air Surgeon 304

GLIOMA See also Retinoblastoma

corneal in siblings [Rieser] 24—ab

GLOBIN Insulin See Diabetes Mellitus Insulin  
in

γ GLOBULIN in measles [Janeway] \*674  
(compared with placental globulin) [Green-  
berg & others] \*844

GLOMERULOPHRIITIS See Nephritis  
glomerular

GLOMERULOSCLEROSIS Interarterial See  
Nephrosclerosis glomerular

GLORIA Laxative Pills or P 308230 Pills  
189—BI

Tonic Tablets 124—BI

GLOVES See Rubber Gloves

d GLUCOSE See Dextrose

Tolerance Test See Dextrase tolerance

GLUTAMINE 1039—E

GLUCOSE See Blood sugar

GLYCERIN tincture of iodine in use in eye  
conditions 800

GLYCOGEN hypoglycemia and restoration with  
glucose [Vann] \*467

GLYCOLS See Iroylene glycol Triethylene  
glycol

GLYCOSURIA See also Diabetes Mellitus

diagnosis (differential) [John] 1113—ab

in meningitis [Terguson] 592—ab

GODEFROY S Lariuse Hair Coloring 385—BI

GOITER central iodized table salt Brazil 120  
(correction) 313

medialastinal posterior [Vana] 862—ab

pathology and clinical Brazil 186

GOITER TOXIC problems [Ljunghusen] 300—  
ab

treatment thiauracil [Williams] 56—ab  
[Revena] \*153 [McGavack] 996—ab

treatment thiauracil fatal acute agranulo-  
cytosis from in diabetic [Kahn & Stock]  
\*303

treatment thioracil and thiauracil 172—E  
(correction) 446 [Paschiks] 325—ab

GOLDBY F appointment 742

GOLDEN ALFRED new assignment 304

GOVADS See Ovary Testis

GOVADOTROPIN chorionic effect on bone  
growth [Finkler] 1118—ab

chorionic hyaline N N H. (Sharp & Dohme)  
1029

production and dienecephalohypophysial sys-  
tem [Westman] 988—ab

urinary excretion in male climacteric [Heller  
& Myers] \*172 [Bauer] 914—C

GOVOCOCUS culture medium chocolate agar  
with bacto-supplement A [Morton] 922—ab

electron micrographs [Mudd & Anderson]  
\*563

Infection See Gonorrhea

Resistant See Gonorrhea treatment

CONORRHEA See also Venereal Disease

prevention sulfathiazole [Gooch] 129—ab

treatment chemoresistant in women peni-  
cillin for [Greenblatt & Street] \*161

treatment in women sulfonamide (1 day)  
[Strauss] 320—ab

treatment in women sulfonamide also peni-  
cillin at Venereal Disease Treatment Center  
[Thomas & others] \*623

treatment penicillin [Thompson] \*403

treatment penicillin and sulfonamides 575  
(synergic action) [Bigger] 666—ab

treatment penicillin early syphilis masked  
by 110 [Shafer] 656—ab

treatment penicillin A single intramuscular  
injection [Welch & others] \*1024

treatment sulfathiazole (1 day) [Jacoby]  
389—ab

treatment sulfathiazole single 5 day [Camp-  
bell] 389—ab

treatment sulfonamide resistant antisulfon-  
amide action of serum [Boroff] 391—ab

treatment sulfonamide resistant penicillin  
for [Murphy] 595—ab (1 day) [Page]  
599—ab

treatment sulfonamide resistant penicillin  
sodium for [Sternberg & Turner] \*107

GORGAS Medal See Prizes

GOUT KOLA 385—BI

GOUT action of colchicine in 736

GOVERNMENT See British government

Federal United States government

Hospitals See Hospitals building Hospitals  
veteran

CRADLE H S hearings on blindness before  
Kelley Subcommittee 112—OS

GRADUATE Courses See Education Medical  
Fellowships See Fellowships

War-time Graduate Medical Meetings See  
Education Medical War-time

GRAFT GRAFTING See Skin graft, Trans-  
plantation (cross reference)

GRAIN See Cereal Products Wheat

GRANICIDIN See also Tytrabridin

S treatment of infected wounds [Gause] 1054  
—ab

treatment of varicose ulcers 466

CRANAY with Cascara 385—BI

GRANT Sir ROBERT M chair of dermatology  
at U of Edinburgh 1042

GRANTS for Research See Fellowships

Foundations Research

GRANULAR Lids See Trachoma

GRANULOCYTOPENIA See Agranulocytosis  
Acute

GRANULOMA Coccidioidale See Coccidioido-  
mycosis

Inguinal arthritis and osteomyelitis due to  
[Lyford] 728—ab

Inguinal penicillin for [Nelson] 728—ab

nonspecific of digestive tract symptom of  
Crohn's regional ileitis [Wilensky] 739—C

talum powder of peritoneal cavity [Gard-  
ner] 588—C

GRASS Jahnson lacerated rectum from case  
report [Larson] 330

GRAVES DISEASE See Gatter Toxic

GRAY LADIES See Red Cross American

GRAY S (Dr) Foot Bath Powder 124—BI

GREAT BRITAIN See British London

Royal World War II

GREECE horrors of German occupation 733  
(British share food) 1043

CREEN S Reliable Restorer 1048—BI

CREGO Foundation See Foundations

GRIP See Influenza

GRO FAS Hair Balm Formula Hair Treatment  
1048—BI

CROSS Lecture See Lectures

GROUP Hospital Service Inc (Bureau report)  
505—OS

Hospitalization See Hospitals expense in  
insurance

GROVES ABD analysis cost (Council report)  
\*29

GROWTH See Bones growth

GUM Arabic See Acacia (cross reference)

chewing sulfathiazole to control past tonsil-  
lectomy hemorrhage [McGavern] 918—ab

GUMS See also Jaws

bleeding ascarbic acid for 437—E [Stamm]  
863—ab

GUT See Catgut

CYFCOLOGISTS Royal College of site of  
home 1097

CYCOLOGY Brazilian Society of (meeting)  
1044

operative changes in last 25 years [Phaneuf]  
\*139

GYNECOMASTIA See Breast hypertrophy in  
the male

## H

HQZ Hair and Scalp Oil HQZ Shampoo HQZ  
Lustre 385—BI

H R S Hilly's 655—BI

HADDOW A normal cells transformed into  
cancer cells 838—E 964—E

HAGGARD Lecture See Lectures

HAIR See also Scalp

Falling See Alopecia

Goedfroy's Lariuse Hair Coloring 385—BI

Green's Reliable Restorer 1048—BI

Gro Fas Hair Balm Formula Formula for

Treating Gray Hair Gro Fas Hair Treat-  
ment 1048—BI

Hennafom Shampoo 587—BI

HQZ Hair and Scalp Oil HQZ Shampoo and  
HQZ Lustre 385—BI

Kulker's East Indian Hair Dressing 189—BI

Loss of See Alopecia

Naturalone 1048—BI

olly seborrheic oleosa 28

Orlene Pure Shampoo Vlu Scalp Treat-  
ment V kol and Couleur de Ton 189—BI

permanent wave Nilly Wayne Solution 385  
—BI

permanent waving (cold) contact dermatitis  
from [Howell] 127—ab

HAND See also Fingers Nails Wrist

ambidexterity defective speech and left  
handedness 866

contracture from mercuric cyanide dressing  
with aluminum splint 138

dermatitis from rubber [Anderson] 660—ab

HANDICAPPED See also Crippled Disability

physically Kelley hearing on 112—OS 245  
—OS 375—OS 904—OS

HANDS (Dr) Worm Elixir 788—BI

HANGER Test See Jaundice diagnosis

HANNA MINFORD A memorial to 780  
HARGRAVES J M institutes new program of  
Industrial health 439  
HARRIS drip proctoclysis postoperative use  
604  
Memorial Foundation See Foundations  
HARTFORD circus fire disaster patients in hos-  
pitals [Weld] 455—ab  
HARVARD Medical School women eligible for  
376  
School of Public Health (nutrition instruc-  
tion) at 309  
HARVEY WILLIAM bust unveiled Mexico  
1042  
HARVEY Lecture See Lectures  
HATFIELD C J portrait 579  
HAWAII wartime experiences in after blitz  
on Pearl Harbor [Pinkerton] \*625  
HAY FEVER treatment vitamin C for  
[Engelscher] 318—C  
H B Cough Drops 318—B1  
HEAD See also Brain Cranium Face Hair  
Neck Scalp  
Bald See Alopecia  
Injuries (open and closed) Army manage-  
ment use of penicillin fibrin foam etc  
[Everts & Woodhall] \*145  
Injuries unrecognized cervical spine and cord  
injuries with [Walshe] 667—ab  
wound gas mask designed by Chemical War  
fare Service 901  
HEADACHE See also Migraine  
allergic with fatigue and altered conscious-  
ness [Randolph] \*430  
caffeine withdrawal 1122  
eye ear nose and throat conditions cause of  
[MacDonald] 921—ab  
Gilmores Powders 788—B1  
violent from histamine sensitivity [Ran-  
dolph] \*430  
HEALING See Wounds  
HEALTH See also Disease Hygiene Sanita-  
tion  
activities in Latin America 42 313 379  
447 718 848 1042 1097  
American Public Health Association (com-  
pulsory sickness insurance plan) 245—OS  
434—L \*441 [Godfrey] 789—C (cor-  
rection membership) 1042 (school health  
policies) 1086—E  
Center See also Medical Center  
Center (Latin America) 718 (dedicated  
W Va) 781  
committee (Negro) 1004  
department (combined) proposed Tulsa 781  
department (county) citizens vote to estab-  
lish in 970  
department (county and city) proposed mer-  
ger Dallas 1041  
Edgar (Dr) Health Shoes 587—B1  
Education See also Physical Education and  
Training  
education in Boston schools Strayer Survey  
1086—E  
education Institute in Calif 444  
education Kellogg Foundation gift for 182  
education posters artists cooperate N Y  
648  
education Prentiss Award in 781  
Examination See Physical Examination  
in Panama 313  
Industrial See Industrial Health  
Insurance See also Insurance sickness  
Insurance Plan of Greater New York Inc  
377  
Mental See Mental Hygiene  
Mexico 848  
Minister (French) of Pasteur Valley  
Radoi 248  
National Health Service (England) See  
Beveridge Plan  
National Wartime Health Program hearings  
resumed Sept 18 20 178—OS  
news from Europe 37 110 242 307  
of Recruits See World War II  
Pan American Health Day Mrs Roosevelt  
praises epidemic control at 969—OS  
officials Egyptian (3) honored for typhus  
work by U S Commission 501  
plan (national) advocated by Dr Parran  
113—OS  
program (5 year) in Liberia all Negro mis-  
sion for 969 1042  
PROGRAM PRINCIPLES OF NATIONAL HEALTH  
PROGRAM pamphlet by Committee on Re-  
search in Medical Economics of New York  
640—E  
program West Virginia State Medical Asso-  
ciation acts to remove politics from 847  
public Massachusetts dept 75th year first in  
America 971  
public national dept created in 1913 Argen-  
tina 652  
public National Public Health Nursing Day  
(ist) 848  
public Palestine Medical Congress discusses  
754  
Public Health under Hitler See Health news  
from Europe  
Service See Medical Service Students  
health service  
Statistics See Vital Statistics

HEALTH—Continued  
Student See Students  
Supplies See Medical Supplies  
U S P H S (private home of P S Straus  
given to) 117 (nursing in) 440 (evalua-  
tion of massive arsenotherapy for syph-  
ilis) \*554 (Mental Hygiene Division new  
mental hygiene chief R H Felix) 713  
—OS 908 (American Pediatric Society)  
opposes Children's Bureau transfer to) 717  
(W L Treadway resigns) 908 (backs  
Liberal 5 year health plan for Negroes)  
969—OS 1042 (L Kolb retires) 1017  
vitamins supplementing diet effect on [Ruffin  
& Cayer] \*823  
wartime experiences in Hawaii after blitz on  
Pearl Harbor [Pinkerton] \*625  
work in Palestine funds for 1097  
HEARING See also Ear  
aids advance in aural rehabilitation program  
305  
aids Radioear 1151  
aids Telex Super 705  
Loss of See Deafness  
National Hearing Week 311  
HEART See also Arteries coronary Cardio-  
vascular System  
ancients considered it source of emotion  
Intellect wisdom and courage 886—ab  
anomalies (congenital) in newborn rubella  
in mother [Swan] 59—ab  
arteries infarction [Young] 917—ab  
block (complete) Stokes Adams attacks  
[Campbell] 133—ab  
clinic role in rheumatic program [Rutstein]  
\*484  
Decompensation See Heart Insufficiency  
Disease See also Cardiovascular Disease  
Pericarditis  
disease and inflammation (rheumatic) [Jones]  
\*481  
disease bed rest harmful [Levine] \*80  
disease clinics for Buenos Aires 975  
disease digitals poisoning [Herrmann &  
others] \*760 (correction) 973  
disease etiologic role of trauma 1041  
Disease (Hypertensive) See Blood Pressure  
high  
disease in Delaware school children mortality  
and prevalence [Williams] 660—ab  
disease patients occupational therapy [Coul-  
ter] \*366  
disease patients social care Buenos Aires  
652  
disease psychosomatic problems [Ewalt] \*102  
disease reversibility 436—E  
disease (rheumatic) auscultatory signs of  
mitral valve stenosis [Boone] 1173—ab  
disease (rheumatic) Cardiac Society and  
British Pediatric Ass'n Joint report 314  
disease (rheumatic) program N Y 181  
electrical axis (great left) deviation [Faulk-  
ner] 590—ab  
electrocardiogram differentiates coronary oc-  
clusion and pericarditis [Bailey] 590—ab  
electrocardiogram after induced fever [Clag-  
ett] 388—ab  
electrocardiogram in constrictive pericarditis  
[Koch] 135—ab  
electrocardiogram in patent ductus arteriosus  
[Shapiro] \*935  
electrocardiogram in vasodepressor and carotid  
sinus syncope [Engel] 728—ab  
electrocardiograph continuous recording  
[Likhoff] 453—ab  
Failure See Heart Insufficiency  
fluoroscopy and x ray course on N Y 1095  
hypertrophy in beriberi [Van Gelder] 1002  
—ab  
in pregnancy [Donovan] 134—ab  
in rheumatoid arthritis [Young] 403—ab  
in typhus [Woodward & Bland] \*287  
Infarction See Heart arteries Myocardium  
inflammation See Pericarditis  
insufficiency decompensation in pneumonia  
potassium bicarbonate and sulfonamides for  
[Olnitsky] 860—ab  
insufficiency edema due to cardiac failure or  
sensitivity to digitals \* 1178  
insufficiency mercurial diuretics in congestive  
failure 992  
insufficiency sulfonamide therapy for patients  
on restricted sodium diets 466  
Irritable See Asthenia neurocirculatory  
Muscle See Myocarditis Myocardium  
Neurosis See Asthenia neurocirculatory  
Output See also Blood circulation  
output and stroke volume Intravenous fluids  
effect on [Hardy & Godfrey] \*23  
Pain See Angina Pectoris  
Rate See Tachycardia  
transposition myocardial infarction in con-  
genital dextrocardia [Geeslin] 524—ab  
Valves See Aortic Valve Mitral Valve  
wounds (stab) in right ventricle [Gillesby]  
984—ab  
HEARTBLIN [Alvarez] 521—ab  
HIFAT See also Burns Cold Fever Fire  
Tropics  
effects in British service personnel in Iraq  
[Morton] 198—ab

HEAT—Continued  
foundry work does not affect eyes 800  
Frickly Heat See Miliaria  
production on mixed diets 237—E  
Therapeutic Use See also Diathermy Fever  
therapeutic  
therapeutic use in surgical and orthopedic  
conditions (Council report) [Ober] \*769  
vitamin C and ability to work in hot environ-  
ments [Henschel] 591—ab  
HEBREWS See Jews  
HELLER J R JR National Conference on  
Venereal Disease Control 178—OS  
HFLMANTHIASIS See Tapeworm Infection  
HEMAGGLUTINATION See Agglutination  
HEMANGIOMA cavernous of lung (arterio-  
venous fistula) [Adams] 594—ab  
treatment [Anderson] 190—C  
HEMOGLOBIN changes relation to blood loss  
during operations [Coller & others] \*4  
determination new density technique [Howard]  
970—C  
determined by colorimetric method of Kennedy,  
[Duffie] \*95  
Test See Medicolegal Abstracts at end of  
letter M  
HEMOGLOBINURIA march [Byree] 733—ab  
HEMOLYSIS Disease involving in Newborn  
See Erythroblastosis Fetal  
HEMOPHILIA treatment fibrin form with  
thrombin [Ingraham & Bailey] \*634  
HEMOPHILUS pertussis vaccines See Whoop  
ing Cough  
HEMOPHILUS See Blood formation  
HEMOPHTYSIS fulminant in bronchopulmonary  
cancer [Crivellari] 462—ab  
sources of bronchial veins source of [Fer-  
guson] 1169—ab  
HEMORRHAGE See also Hemophilia Purpura  
Telangiectasia under names of diseases and  
organs affected Medicolegal Abstracts at  
end of letter M  
blood loss in surgical operations [Coller  
& others] \*1  
bone marrow megalocytes in [Sanchez  
Vlades] 399—ab  
complications with death from silicosis [?] [A-  
shworth & McChemic] \*806 [Quelch]  
1167—C  
control absorbable agent fibrin form with  
thrombin [Ingraham & Bailey] \*630  
control after tonsillectomy 991  
control after tonsillectomy sulfathiazole  
chewing gum in [McGovern] 918—ab  
control fibrin form in head injuries [Everts  
& Woodhall] \*146  
control fibrin foam in neurosurgery [Ingraham  
& Bailey] 128—ab [Woodhall] \*469  
diagnosis in man study volunteers bled  
large amounts [Shenkin] 981—ab  
in late pregnancy determining placental site  
in [McCort] 607—ab  
Menstrual Bleeding See Menstruation dis-  
orders  
plasma protein level after and ligation of  
thoracic duct [Co Tul] 396—ab  
Prothrombin relation to See Blood pro-  
thrombin  
HEMORRHOIDS Nomo for Piles 675—B1  
HEMOSTATIC See Hemorrhage control  
HEMOTHERAPY See Blood Transfusion  
Serum therapy  
HENDESON RICHARD G tsutsugamushi  
fever vaccine martyr 786  
HENNAFOAM SHAUPOO \*87—B1  
HENNEPIN County Medical Foundation See  
Foundations  
HFNOCHE'S Purpura See Purpura  
HEPARIN in intravenous infusions employing  
penicillin [Martin] 987—ab  
physiologic action in vivo 300—L [Shapiro]  
789—C  
toxicity leukopenia [Jucker] 923—ab  
HEPATITIS See Liver inflammation  
HEPICEBRIN analysis cost (Council re-  
port) \*29  
HERBS cabinet of Dr Seth Bird (1733 1800)  
Yale Library acquires 309  
HERFDITY See also Fcdermal Defect Te-  
langiectasia  
adoption of children from families of poor  
stock 735  
HERNIA See also Spine Intervertebral disk  
diaphragmatic cesarean section because of  
186  
diaphragmatic congenital 963—E  
Elastic Rupture Guard 124—B1  
lingual autoplasmic suture using fascial  
strips [Chiles] 263—ab  
treatment 3 types of sutures used also  
early rising after herniotomy 670  
HERNIOTOMY See Hernia treatment  
HEROES See Martyrs  
War See World War II Heroes and Prisoners  
HEROIN See Morphine diacetyl  
HERPES virus interference phenomenon ac-  
quired cellular resistance [Mudd] \*63  
zoster virus 898—F  
HESPERIDIN See Vitamins P  
HFANSTROL dipropionate inhibits lactation  
[Prescott] 1175—ab  
H H R (description) 061 (Jocser Merrell)  
061

HEY GROVES ERNEST W death 974  
HIGH Blood Pressure See Blood Pressure high  
Frequency Apparatus See Diathermy  
HILLIS H R 5 635—BI  
HIP See Femur Pelvis  
HI QUAL Balm Howells 788—BI  
HIRSCHSPRUNG'S Disease See Colon mega-  
colon  
HISTIDINASE treatment of prurigo estivalis  
465  
synergistic action of caffeine effect on  
stomach secretion [Roth & others] \*817  
HISTAMINE sensitivity to produced violent  
headaches [Randolph] \*430  
treatment for Menière's syndrome [Turvey]  
325—ab  
HISTIDINE deficient diet in man [Albanese]  
194—ab  
in allergy and shock [Ruskin] 260—ab  
HISTORY of Medicine See Medicine  
HITLER Public Health under See Health  
news from Europe  
racial theory of blood transmission at birth  
from parents to progeny 702—ab  
HIVES See Urticaria  
HOBBIES See Physicians vocations  
HODGKIN THOMAS (1798 1866) 273—ab  
HODGKIN'S DISEASE See also Medicolegal  
Abstracts at end of letter M  
cutaneous terminal blood stream spread  
[Bersack] \*1025  
HOGBEN Test See Pregnancy diagnosis  
HOGS scalding alkalis for [Loeffel] 138  
HOLLAND See Netherlands  
HOLT L E JR human thiamine requirement  
1031—E  
HOME See House Housing  
HOMOSEXUALITY excretion of estrogens and  
androgens 603  
HONORABLE DISCHARGE See Musterin  
Out World War II honorable discharge  
HORMONES See Endocrine Glands under  
names of specific glands  
Sex See Androgens Estrogens Gonado-  
tropins  
HORSE serum See Serum  
HOSIERY copper sulfate impregnated for ring  
worm [Critchendon] 55—ab  
HOSPITALIZATION Insurance See Hospitals  
expense Insurance  
HOSPITALS See also Clinics Dispensaries  
Sanatoriums Medicolegal Abstracts at end  
of letter M  
accommodation extension in Haifa Palestine  
44  
administration conference Ieru 1097  
administrators institute Latin America 417  
American Hospital Association (facilities for  
treating alcoholism) 238—E (Hospital Ser-  
vice Plan Commission) 308—OS  
A M A Council on Medical Education and  
See American Medical Association  
Army See World War II  
Baylor University Gruett Memorial Bldg.  
1041  
Billings General McEvers (A E) command-  
ing officer at 1156  
Blank Memorial dedicated 1040  
Blue Cross plans See under Hospitals ex-  
pense Insurance  
Bruns General becomes tuberculosis treat-  
ment center 373  
building FWA grants to 179—OS 778—OS  
building (in Germany and air raids) 110  
(by U S government) 379 (Latin America)  
718  
Butler centennial R I 116 446  
Care See Hospitals service  
center Washington D C (action prom-  
ised on Tydings D Alessandro bill) 112—OS  
713—OS  
children's surgical ward streptococcus epi-  
demic in [Doyle] 660—ab  
children's wards prevent cross infection in  
[Jacoby] 133—ab  
civilian Army's reconditioning program may  
influence 501  
civilian medical attendance for serviceman on  
leave 712  
Construction See Hospitals building  
Corps See World War II  
Doctors King County Medical Society dedi-  
cates *Bulletin* to 972  
Expense Insurance See also Medical Service  
Plans  
expense Insurance Blue Cross Plan Ohio  
medical care plan 443—OS  
expense Insurance Blue Cross relation to  
society prepayment plan [McCinn] \*312  
expense insurance Hospital Saving Associa-  
tion of North Carolina Inc (Bureau re-  
port) 505—OS  
facilities for treating alcoholism A H A  
report 238—E  
Hooded N Y C 377  
Gaffree Gulem Foundation sets aside 2 wards  
for rapid treatment of syphilis Brazil 361  
Government See Hospitals buildings Hos-  
pitals veterans  
Grady court ruling on Stetler Clinic for  
Cancer and Allied Diseases 779  
Group Hospitalization See Hospitals ex-  
pense Insurance

HOSPITALS—Continued  
Cuy's rebuilding 118  
Hartford clemis fire disaster patients in  
[Weld] 400—ab  
history first in Western Europe 380 AD by  
Fabiola 427—ab  
history first institutions for epileptics in  
U S in Ohio and Kansas [Skog] 190—C  
Infection (chills) in See Infection  
Insurance See Hospitals expense Insurance  
Isolation See Hospitals quarantine  
Jewish University of Cincinnati cooperates  
in psychiatric program 1159  
list of cooperating in massive arsenotherapy  
for syphilis [Cooperating Clinics] \*554  
Madigan General named for Col Madigan  
711  
Massachusetts General staff memorial fund  
647  
Mayo General R H Kennedy appointed to  
304  
maternity facilities Brazil 1041  
Medical Service Plans See Hospitals ex-  
pense Insurance  
Military See World War II  
Moore General (malaria) treatment center  
opened by Army 30 (scope of work)  
240  
Mount Zion psychiatric rehabilitation clinic  
opens San Francisco 177 180  
National Hospital Service Society ordered  
dissolved 714—OS  
Needling Interns See Interns and Intern  
ships  
New Britain General lends Dr Rosalind to  
U S to study penicillin in syphilis 177  
news Brazil 186  
of the future 748—ab  
orderly sentenced on larceny charge 1096  
patients not up dny after labor during  
1040 11 blitz of London [Daley] 538—C  
patients pellagra develops in those given  
vitamin B complex [Roberts] 594—ab  
People's Community opened Mich 1159  
pollomycitis treatment in supplies and equip-  
ment for 242  
Post (radiate staff over 400 non in armed  
forces 109  
postwar expansive program (a 970  
postwar hospitalization under study 112—OS  
postwar planning for education 770—E 775  
Psychiatric See also Hospitals state  
psychiatric care of insane Buenos Aires  
784  
psychiatric therapeutic use of music in  
National Music Council survey 718  
quarantine (new) Atlanta 970  
Queen Victoria for plastic surgery treat-  
ment of war injuries England 1162  
Rodriguez General named for dental corps  
officer San Juan 576  
roentgen units in invasion carried by  
[McKoon] 386—C  
St Elizabeths (Indiana U affiliates with)  
309 (FWA grants to) 778—OS  
St Luke's Chicago occupational therapy in  
[Coulter] \*369  
service Cleveland Hospital Service Associa-  
tion 112—OS  
service for dependents of naval personnel 125  
1047 (correction) 126 133  
Service Plan See also Hospitals expense  
Insurance  
Service Plan Commission of American Hos-  
pital Association 308—OS  
ship *Charles A Stager* (ex Siboney) 241  
ship first whole blood bank aboard 966  
ship Fleet Hospital No 113 commissioned  
1147  
ship patients write in praise of excellent care  
240  
ships American Red Cross women on 907  
staffed by German doctors opened in Oila  
Ioma 240  
state administrative change in 647  
state insulin shock therapy available ill  
dementia precoc patients New York 181  
state political care in New York 37—E  
state tuberculosis control Calif 246  
Tonopah Mines closed Nev 40  
train new car for use in U S 967  
Unit Units See World War II hospital  
unit  
University of Pennsylvania Twentieth Gen-  
eral unit praised by Mountbatten 575  
veterans facilities extended 303—OS  
veterans Neuropsychiatric Tomah Wis 1092  
Wakeman General observes troops exposed to  
filariasis 307  
Washington FWA grants \$4 100 000 179—OS  
Winter General buildings clinics named for  
distinguished medical officers 840  
HOUSE See Floors  
Dust See Dust  
HOUSING conditions in relation rheumatic  
fever Cincinnati [Wedum] 1113—ab  
HOWARD Silvester Method See Respiration  
artificial  
HOWE Prize See Prizes  
HOWELL'S Antiseptic Healing Oil 605—BI  
Blue Label Cough Syrup 788—BI  
Cocor & Quinine Syrup 514—BI  
Hi Qual Balm 788—BI  
HS (mustard gas) See diChlorodithyl sulfide

HUGONOT GEORGES A French officer cited  
by U S Army 107  
HUMAN Serum Albumin See Blood proteins  
HUNGER See Famine Starvation  
HUNTER'S Ulcer See Bladder Inflammation  
HUNTLE College call to graduates 378  
HURST Sir ARTHUR death 380  
HUSION'S Valves hypertrophied cause con-  
striction? 268  
HUXLEY ALDOUS eye exercises for defective  
vision 771—P  
HYALURONIDASE common factor in infection  
and fertilization 1153—F  
HYDROCELE See Medicolegal Abstracts at  
end of letter M  
HYDROGEN ion concentration See Water  
HYDRONEPHROSIS with hypertension fundus  
oculi changes in [Cohen] 54—ab  
HYDROPHOBIA See Rabies  
HYDROPS fetalis See Erythroblastosis Fetalis  
HYDROTACHYSTEROLOL See Dihydrotachy-  
sterol  
HYDROTHORAX ovarian fibromas [Dockerty]  
320—ab  
HYDROXYCOUNAMIN methylnephis See Di-  
cumarol  
HYGIENE See also Sanitation  
Industrial See Industrial Hygiene  
Mental See Mental Hygiene  
Social See Social Hygiene  
teaching in Brazil 185  
HYALGLSIA dermatome in diagnosis of  
herniated lumbar intervertebral disks  
[Keegan] \*868  
HYPEREMESIS Gravidarum See Pregnancy  
vomiting in  
HYPERHIDROSIS capitis See Seborrhea oleosa  
HYPEROSTOSIS frontalis interna See Frontal  
Bone  
HYPERPARATHYROIDISM See Parathyroid  
HYPERPNFA See Respiration hyperventila-  
tion  
HYPERPYREXIA See Fever therapeutic  
HYPERSENSITIVITY See Anaphylaxis and  
Allergy  
HYPERSTASIS See Sex  
HYPERTENSION See Blood Pressure high  
HYPPERTHYROIDISM See also Colter  
creatinuria in [Trensch] 794—ab  
in children medical treatment vs thyroid  
ectomy [McIntosh] 661—ab  
thyrotoxic cirrhosis of liver [Bielci] 462  
—ab  
treatment thioracil [Astwood] 536—ab  
[Cannon] 790—ab  
HYPERTROIHY See Splenomegaly under  
specific organs vs Bicast Heart Prostate  
HYPERVENTILATION See Respiration  
HYPERVEMIA traumatic management with para-  
centesis and mitosis [Rychener] \*763  
HYPOGLYCEMIA See Blood sugar  
HYPOPHYSIS See Pituitary  
HYPOPROTEINEMIA See Blood proteins  
HYPOPROTHROMBINEMIA See Blood pro-  
thrombin  
HYPOTHALAMUS fertility in relation to 402  
gonadotropin production in relation to [West-  
man] 988—ab  
pathogenesis of Cushing's syndrome [Helm-  
becker] 859—ab  
psychosomatic problems [Farr] \*150  
HYPOXIA See Oxygen deficiency  
HYPERFECTOMY Uterus (cancer)  
HYSTERIA War See Neurosis war  
Depression See Mental Depression

ICF Anesthesia See Anesthesia refrigeration  
ICKELHEIMER HENRY R bequest 846  
ICTERUS See Jaundice  
Incephalomyelopathy with See Hermitismus  
IDENTIFICATION See Identity  
IDIOCY what causes mongolism? 772—E  
ILEITIS regional first described by Crohn  
499—E (repley symptom of nonspecific  
granuloma lymphangitis of intestinal wall)  
[Wilensky] 780—C  
ILLEGAL operation See Abortion criminal  
ILLINOIS See Chicago  
University of See University  
INFESS See Disease  
Time Lost Because of See Industrial Health  
workers (absenteeism)  
ILLUSTRATION See Art  
IMMUNE globulin in measles [Greenberg &  
others] \*944  
IMMUNITY See also Antibodies Antigens  
under names of specific diseases  
electron micrographs showing relation of bac-  
teria rickettsias and viruses [Mudd] \*632  
malnutritional antiviral 105—E  
IMMUNIZATION See Vaccination (cross ref-  
erence) under names of specific diseases  
as Influenza Measles  
Treatment See Vaccines  
IMMUNOLOGY Lilly prize lu established 908  
IMPERIAL Lav 101 318—BI  
IMPETIGO contagiosa Penicillium inoculated  
dressings for [Johnson] 389—ab  
IMPOSTORS hospital orderly sentenced on lar-  
ceny charge 1096

**IMPOTENCE** male climacteric [Hetter & Myers] \*472 [Bauer] 914—C  
**IMPRECAZIONE** See also Pregnancy  
hyaluronidase as factor in 1153—J  
Preventing See Contraception  
**INCOME** See Fees  
**INDALONE** tick repellent 268  
**INDIANA** prepares prepayment plan 375—OS  
University (medical school affiliates with St Elizabeth Hospital) 309 (Children's Bureau services to crippled) 1154—F  
**INDIAN AMERICAN** pemmican used by [Stefanssoo] 662—ab  
**INDIGENT** See Medically Indigent Physicians Indigent  
**INDIGESTION** chronic intestinal vitamin B and liver extract for [Baumhauer] 792—ab  
result of taking yeast tablets liver extract or vitamins [Ruffin & Cayer] \*824  
**INDO-VIN CHUW** test (moulal) 384  
**INDUCTION** See World War II  
**INDUCTOTHERMY** See Fever Therapeutic  
**INDUSTRIAL ABSENTEISM** See Industrial Health workers (absenteeism)  
**INDUSTRIAL ACCIDENTS** See also Workmen's Compensation  
cancer from single injury [Stewart] 125—C [Perry] 190—C [Woodward] 72—C  
fees surcharge over existing Calif 190  
Industrial Commission of Ohio gave \$145,727 for services to injured 247  
injuries in coal mines 972  
occupational therapy for injured workmen [Coulter] \*363  
Rhode Island State Curative Center for injured workers J E Donley director 781  
**INDUSTRIAL DERMATOSES** contact dermatitis in morphine factory [Dore Green] 797—ab  
course on Calif 114  
dermatophytosis [Peck] 856—ab  
tetral effects [Probst & others] \*424  
**INDUSTRIAL DISEASES** See also Industrial Dermatoses  
alkalis for scalding hogs [Loeffler] 138  
aluminum effect on lungs of grinders of duralumin plane propellers [Hunter] 1011—ab  
burns from lithium 268  
cadmium poisoning [Spolyar] 730—ab  
cannal workers aseptic necrosis and bone infarcts in [Taylor] 261—ab  
mercurous chloride (cyclomel) exposure 604  
Pneumoconiosis See Pneumoconiosis  
Silicosis See Pneumoconiosis  
tetral effects [Probst & others] \*424  
**INDUSTRIAL HAZARD** See Industrial Diseases  
**INDUSTRIAL HEALTH** See also Industrial Hygiene  
A M A Council on See American Medical Association  
Army psychiatrist asks cooperation of industry 304  
cancer and occupation 836—E [Stewart] 125—C [Perry] 190—C [Woodward] 72—C  
colds vaccines for (Joint Council report) \*995 900—E  
conference Conn 1158  
conference on labor health security 1041  
course at Long Island College 115  
dysentery epidemic in war industry [Kinnaman] 983—ab  
employment of disabled vets by civil service 969—OS  
employment (sheltered) for disabled England 974  
foremen should not dispense acetylsalicylic acid N J 115  
foundry work does not affect eyes 800  
Intelligence test of laborers 1016—ab  
International Labor Organization on sickness Insurance 32—E  
medical service for federal employees 30—F  
medical service for foreign workers in Germany 111  
medical service in war industry area by private physicians Permanent Foundation California Physicians Service [Merrell & Mills] \*987  
medical service plans prepayment A M A Council statement 30—E 708—E  
medical service plans variations in panel discussion on (Stannicola) [Adams] \*333 (at Birmingham N Y) [Bloom] \*335 (Halser Shipyards) [Garfield] \*337 (Fidelity Johnson plan) [Jones] \*339 (medical society plans Massachusetts) [McCann] \*341 (Consolidated Edison Co of New York) [Wittmer] \*344 (question and answer period) 346  
medicine and hygiene program instituted by Col Hargraves in A F commands 439  
medicine course (N Y) 191 (Philadelphia) 1096  
medicine role in rehabilitation of veterans [Johnson & Hoffman] \*1071  
physical fitness standards 1088—F  
placement program for veterans by Northrop Aircraft Inc 842

**INDUSTRIAL HEALTH**—Continued  
rehabilitation center established by Ministry of Labor England 43  
rehabilitation with occupational therapy apparatus [Coulter] \*360  
safeguarding war workers health need emphasized 375—OS  
sessions on by 4 national organizations 907  
study N J 507  
tuberculosis case finding with x rays 778—OS  
wood dusts hazard 800  
work extreme weakness syndrome from overwork [Nielsen] \*901  
work in heat affected by intake of water salt and glucose [Pitts] 982—ab  
work in hot environments and vitamin C [Henschel] 591—ab  
workers absenteeism medical certificates and war production 706—E  
workers WPB gives extra combined vitamin pills to sponsored by National Research Council [Fahelst] 738—ab  
**INDUSTRIAL HYGIENE** See also Industrial Health  
bureau created Cleveland 181  
courses at Columbia University 716  
Division of U S P H S (Dr Doyle appointed) 379 (revised Colo) 970  
Foundation of America meeting 580  
state division named as Information center in cooperative program Wash 610  
**INDUSTRIAL INJURIES** See Industrial Accidents  
**INDUSTRIAL POISONING** See Industrial Dermatoses Industrial Diseases  
**INDUSTRIAL STRIKE** See Telephone  
**INDUSTRIAL TRADE UNION** plans social security legislation 969—OS  
**INFERTILITY** Periculous See Fatigue  
**INFANTILE PARALYSIS** See Poliomyelitis  
**INFANTISM** Intestinal See Celiac Disease  
**INFANTS** See also Children Infants Newborn Pedaliles under names of specific diseases  
Adoption See Adoption  
beriberi in malnutrition in pregnancy [Van Celder] 1052—ab  
chlorothorax in [Forbes] 1052—ab  
feeding breast and bottle fed mortality 603  
feeding Clapps products (Berbers products) 233  
mortality England 249 849  
feeding breast and bottle fed 603  
premature sympathetic block for left femoral thrombophlebitis [Dickins & Richmond] \*1149  
stomach evacuation in poisoning use of emetics and gastric lavage 178  
tachycardia (paroxysmal) in [Verzina] 326—ab  
toxoplasmosis in 368—F [Zuelzer] \*20—ab  
**INFANTS NEWBORN** See also Fetus (cross references)  
Birth Rate See Vital Statistics birth rate  
care of in asphyxia [Biggs] \*1070  
congenital defects in after rubella in mother during pregnancy [Swain] 59—ab 237—F [Hones] 662—ab [Frans] 1120—ab [Frickson] 1177—ab  
Death of See Stillbirth  
Frythroblastosis in See Erythroblastosis  
fetal  
diphtheria Seidel reactions in [Wright] 666—ab  
phlebotomosis of brain in [Warburg] 1050—ab  
Rh factor and [Andujar] 459—ab  
umbilical cord transfusions in [Mayes] 451—ab  
**INFARCTION** See Heart arteries Myocardium Placenta  
**INFECTIO** See also Bacteria Immunity  
Liver inflammation Neutrococcus Pneumococcus Staphylococcus Streptococcus under names of organs and regions  
acute and chronic meningitis associated with [Saffi] 666—ab  
nir borne treat floors and bedding with oil emulsion [Robertson & others] \*993  
cross prevent in children's wards [Jacob] 133—ab  
Focal See Tonsils Infected  
hyaluronidase as common factor in fertilization 1133—E  
Prevention See Disinfection Germicides etc  
surgical penicillin for [Lockwood] 1050—ab  
Wound See Wounds  
**INFECTIOUS DISEASE** See also Epidemics  
Epidemiology Immunity Immunization (cross reference) Vaccination (cross reference) under names of specific infectious diseases  
acute sulfadiazine prevents in 9000 at A F school [Warren] 729—ab  
In Netherlands 37  
Quarantine In See Quarantine  
remittent rural fever (Febris Remittens Agri-colarum) 250  
**INFECTIOUS MONONUCLEOSIS** See Mononucleosis Infections

**INFLAMMATION** See also under names of specific disease and organs  
treatment crude penicillin filtrate locally [Alston] 58—ab  
**INFLUENZA** epidemic in winter of 1943 1944 [Holland] 861—ab  
epidemic virus streptothricin for [Robinson] 1052—ab  
immunization duration of immunity induced by inactive virus [Hirst] 993—ab  
interference phenomenon in acquired cellular resistance [Mudd] \*675  
meningitis sulfadiazine for [Scho] 661—ab  
type 1 outbreak Oct Dec 1943 [Andrews] 600—ab  
type 1 virus electron micrograph [Mudd & Anderson] \*569  
vaccine (Francis Salt) to protect army Army Epidemiological Board project 304  
virus mild antiseptics inactivate [Dunham] 661—ab  
**INFORMATION** and Education Division of U S Army 34  
Bureau See Bureau  
Bureau for Medical Veterans See American Medical Association Bureau of Information Service See Children welfare  
**INFUSIONS** See Injectives  
**INHALATION** See Amyl nitrite Anesthesia Oxygen  
of Dust See Pneumoconiosis  
**INJECTIONS** See also under names of specific substances  
alkalization by parenteral route 466  
intramuscular continuous of penicillin [Harrell] \*232  
intramuscular danger of using gluteal muscles 118  
intramuscular (single) of penicillin N [Welch & others] \*1024  
intravenous See also Blood Transfusion  
intravenous anticoagulant to facilitate 528  
intravenous fluids effect on dehydrated and on normal persons [Hardy & Godfrey] \*23  
intravenous fluids for Rocky Mountain spotted fever [Harrell & others] \*929  
intravenous of penicillin & aminohippuric acid as adjunct 369—F [Bejer & others] \*1007  
intravenous of penicillin heparin as adjunct [Martin] 987—ab  
intravenous vs oral treatment of rheumatic fever 736  
**INJURIES** See Accidents Burns Trauma  
under specific organ or region as Head Spinal Cord  
Industrial See Industrial Accidents  
**INSANE ASYLUM** See Hospitals state  
**INSANITY** See Dementia Paralytica Dementia Precox Mental Disorders etc  
**INSECTICIDES** DDT See DDT  
PDB new deodorant to kill flies and maggots in latrines 575  
**INSECTS** See also Flies Lice Mosquitoes  
Moth  
control programs after war 504  
**INSEMINATION** See Impregnation  
Preventing See Contraception  
**INSIGNIA** honorable discharge emblem authorized 903  
**INSOMNIA** See Sleep  
**INSTITUTE** See also Army United States Psychiatry Societies and Other Organizations at end of letter S  
for hospital administrators Latin America 447  
**INSTITUTIONS** See under Children Hospitals  
**INSTRUMENTS** See also Apparatus Medical  
Supplies  
hemoglobin estimation colorimetric method of Kennedy [Duffie] \*95  
mortising chisel with obturator [White & Stubbins] \*1146  
photoelectric colorimeters 62  
**INSULAR TISSUE** (Islands of Langerhans) See Pancreas  
**INSULIN** shock therapy, combating complications by d desoxyephedrine and vitamin B<sub>1</sub> and C [Bauer] 798—ab  
shock therapy for dementia precox 437—E  
Treatment See Diabetes Mellitus  
**INSURANCE** See also Workmen's Compensation  
Medicolegal Abstracts at end of letter M  
Health See Insurance sickness  
Hospitalization See Hospitals expense Insurance  
Life See also Metropolitan Life Insurance Co  
life 87,000 policies matured of National Service Life Insurance Co for veterans 646—OS  
Medical Society Medical Service Plan See Medical Service Plans  
Ohio State Medical Association organizes company 1041  
private security system Eric Johnston speaks high praise for 113—OS  
Sickness See also Hospitals expense Insurance Medical Service Plans  
Sickness Beveridge Plan See Beveridge Plan



- INSURANCE**—Continued  
sickness Health Insurance Plan of Greater New York Incorporated 113—OS 375—OS 377 649 906  
sickness indemnity Indiana State Medical Association approves 005  
sickness International Labor Organization on 32—E  
sickness national compulsory and American Public Health Ass'n 245—OS 434—E \*441 [Godfrey] 789—C (correction membership) 1042  
sickness national health plan advocated by Dr Parran 113—OS  
sickness plans discussed at meeting of representatives of medical societies 968—OS  
sickness PRINCIPLES OF A NATIONWIDE HEALTH PROGRAM by Committee on Research in Medical Economics of New York 640—E  
social and medical care Argentine 975  
social compulsory from cradle to grave England 651  
social in Australia vote against 5 year postwar plan 1099  
social scheme and family allowances England 974  
**INTELLECTUAL EFFORT** See Thinking  
**INTELLIGENCE** See also Mental Defectives  
Thinking  
pneumonal lobotomy effect on [Watts] 457—ab  
tests of laborers 1016—ab  
**INTR AMERICAN** See also Pan American Association of Postgraduate Physicians established in Buenos Aires 784  
**INTERCAPILLARY** glomerulosclerosis See Nephrosclerosis glomerular  
**INTERCOURSE** Sexual See Coitus  
**INTERFERENCE PHENOMENON** [Mudd] \*632  
**INTERNAL SECRETION** Glands of See Endocrine Glands  
**INTERNATIONAL** See also Hist of Societies at end of letter S  
Labor Organization on sickness Insurance 32—E  
Patronage for Leprous organized Buenos Aires 784  
**INTRINSIC AND EXTRINSIC** hospitals needing residents and 37 109 177 242 307 374 440 504 645 777 903 967 1035 1157  
rotating 509  
**INTRAPERITONEAL DISK** See Spine  
**INTESTINAL INFANTILISM** See Celiac Disease  
**INTUSSUSCEPTIONS** See also Colon Gastrointestinal Tract Peritoneum Rectum etc  
acid in inhibitory effect on gastric secretion [Pincus] 260—ab  
anomalies (congenital) duplication re duplication cysts ilium duplex giant diverticula 965—E  
bacteria biosynthesis of tetracycline by [Najjar & others] \*387  
Disease See Amebiasis Appendicitis Colitis Diarrhea Dysentery Typhoid (caseous Distention See Flatulence  
Hernia See Hernia  
lymphangitis of wall Crohn regional ileitis [Wilensky] 789—C  
mineral oil in 928  
obstruction electromagnet aids passage of Miller Abbott tube [Mayer] 922—ab  
obstruction mercury weighted Miller Abbott tube (correction) 718  
Parasites See also Tapeworm Infection parasites Dr Hays Worm Elmer 788—BI perforation due to typhoid [Dubrow] \*495  
Salmonella enterocolitis in infants and children [Neter] 1113—ab  
sheep antigenicity [Hopps] 324—ab  
syntheses in 174—E  
**INTOXICATION** See Alcoholism  
**INTRACRANIAL PRESSURE** See Cranium  
**INTRADERMAL TEST** See Skin Test  
**INTRAVENOUS ANESTHESIA** See Anesthesia  
Injections See Injections  
**INFLUENZA** See Patients  
**INVASION** See World War II  
**INVESTMENTS** doctor looks at his [Smith] \*894  
**IODINE** radioactive fails to show thyroid origin of tracheal cancer [Pierston] \*206  
tincture of also Lugol's solution inactivates influenza virus [Dunkham] 661—ab  
tincture of use in glycerin in eye conditions 800  
**IODIZED SALT** See Salt  
**IOPECAC** use in emphysemic infants stomach in poisoning 138  
**IRITIS** recurrent post traumatic penicillin for [Keyes] \*614  
**IRON** blood escape of easily detachable 1155—E  
Luebert's Tonic Compound Tablets 587—BI  
**IRRADIATION** See Radium Roentgen Rays  
Ultraviolet Rays  
**ISCHIA** tuberosity painful bursae around 138  
**ISHAM ASA BRAINERD** portrait 847  
**ISINGLASS** as plasma substitute 1154—E  
**ISLANDS** of Langerhans See Pancreas  
**ISONIPECAINE** clinical observations [Nath] 518—ab  
**ISO PAR N A R** (description) 571 (Medical Chemicals) 571  
**ITALY** doctors asked to aid 1092  
**ITCH** See Scabies  
**ITCHING** See Pemphigus Pruritis  
**IVY** Polson See Rhus  
  
J  
**J A M A** See American Medical Association  
**JOURNAL**  
**JACKSON** Lecture See Lectures  
**JACOBSON** CHARLES fraudulent license revoked 717  
**JAIL** See Prisons  
**JANFIS** J (1566 1625) King of Great Britain  
William Gilbert physician to 371—E  
**JANEWAY** Lectures See Lectures  
**JAPANESE** in War See World War II  
River Fever See Tsutsugamushi Fever  
**JAUNDICE** catarrhal chronic latent hepatitis after [Wishnoff] 731—ab  
catarrhal epidemic hepatitis differential diagnosis [Maucek] 733—ab  
complicates infectious mononucleosis [Boger] 983—ab  
diagnosis carotenemia differentiated from [Caviness] 984—ab  
diagnosis (differential) bilirubinemia phosphatemia Hanger test [Lopez] 681—ab  
etiology human serum [MacCallum] 59—ab [Olliphant] 59—ab [Bradley] 863—ab  
icterus gravels Rh factor and mental deficiency [Lanette] 794—ab  
intrahepatic obstructive after mapharsen with sprue [Preis & Vater] \*892  
transmitted by syringes in nontyphoidic treatment [Salaman Sheehan] 461—ab  
phase in infectious hepatitis epidemic in Middle East in American soldiers [Havens] \*17 (correction) 782  
posttraumatic (yellow fever) at naval hospital fatal case [de Veer] 57—ab  
spirochetal in Louisiana [Senckle] \*5  
spirochetal Weil's disease [Tattersall] 325—ab  
toxic from arsenotherapy in syphilis [Eagle] \*341  
**JAPANESE** U S doctors save 200 242  
**JAWS** See also Cums Teeth  
osteomyelitis of maxilla complicating sinusitis penicillin for [Pulney] \*621  
**JAY HAWKER** M D See Journals  
**JEFFRIES** Prize See Prizes  
**JFWS** See also Palestine  
venereal diseases in Palestine 250  
**JOACHIM HENRI** portrait 1095  
**JOBS** See Industrial Health  
**JOHNSON** Grass See Grass  
**JOHNSTON** ERIC prizes America's private security system of insurance 114—OS  
**JOINTS** See Arthritis under specific names  
as Acromioclavicular Joint Ankle Fibrous  
**JOHNSTON** SH ROBERT work on orthopedic surgery during World War I [Caldwell] \*260  
**JOHNS (JOHN)** Surgical Clinic 940  
**JOURNALS** See also Bibliography (cross reference) Library Newspapers  
Anals da Santa Casa de Misericordia do Rio de Janeiro 186  
Anales Brasilenses de Nutricao 1042  
Belgian during German occupation 587  
British Medical Journal editorial Drugs and the Doctor 898—P  
Bulletin of King County Medical Society dedicated to Doctors Hospital 972  
Connecticut State Medical Journal Horace Wells centenary number 779  
Delaware State Medical Journal (new address) 945  
Gastroenterology dedicated to A J Carlson 39  
Jayhawker M D first student annual 845  
Lancet editor Dr Morland retires Dr Fox his successor 974 1145—F  
Journal of Clinical Psychology established 311  
Journal of the A M A See American Medical Association  
Ophthalmologica Ibero Americana 975  
photostat and microfilm service for British medical officers overseas 1162  
Reconditioning News Letter sent to all ASF hospital commanders 305  
Rhode Island Medical Journal Butler Hospital Centennial Issue 446  
Rocky Mountain Medical Journal now official journal of New Mexico 40  
Summary of Reports Received of Committee on Medical Research 110  
**JULIANELLE** L A death 115  
**JURISPRUDENCE MEDICAL** See Medical Jurisprudence  
  
K  
**KAGI** E S prisoner of war 34  
**KAHN** TEST in leprosy [Hopkins & Faget] \*941  
**KAISER INDUSTRIES** health plan principles in [Garfield] \*337 [Merrill & Mills] \*887  
**KALA AZAR** See Leishmaniasis  
**KANNO MOR** Capsules Liebert's 788—BI  
**KANSAS** University of See University  
**KEEN** Neurosurgical Clinic at Winter General Hospital 810  
**KELLEY** Subcommittee hearings on handicapped 112—OS 178—OS 245—OS 375—OS 904—OS  
**KELLOGG** Foundation See Foundations  
**KEILY EVANDER** F death 715  
**KENNEDY** ROBERT H appointed to Mayo General Hospital 304  
**KFNANDY** colorimetric method to estimate hemoglobin [Duffie] \*95  
**KENNY** Method See Polymyositis  
**KERATITIS** dendritic penicillin for [Keyes] \*613  
mustard gas delayed fitted with contact lenses [Mann] 863—ab  
ulcerative penicillin for [Keyes] \*612  
**KERATOCONJUNCTIVITIS** acetic or flash burn treatment [Scobee] 51—ab  
**KERATOSIS** See Dyskeratosis  
**KERNICERUS** Rh factor and mental deficiency [Lanette] 794—ab  
**KROSFINE** ingestion pneumonia pneumothorax and emphysema after [Scott] 597—ab  
**KETONES** effect on blood pressure [Oppenheimer] 197—ab  
**KETOSTEROIDS** in Urine See Urine  
**KIDNEYS** See also Urinary Tract  
agenesia [Nation] 458—ab  
anaphylaxis sulfanilamide [Dotta] 462—ab  
aplasia [Nation] 393—ab  
calcium aminophylline cause? 1178  
calcium fibrinogen coagulum for removal [Dees] 596—ab  
calcium what foods tend to form high vitamin A acid ash diet as preventive 670  
calcium with parathyroid adenoma [Foulds] 1033—ab  
damage from sulfonamide compounds 302—E [Murphy] 390—ab  
Disease See also Hydronephrosis  
disease nephrotic syndrome acacia for [Smalley & Binger] \*532  
disease transient hypertension in Army officers [Ley & others] \*829  
disorders anesthesia for cesarean section in (repl) [Nicholson] 670  
dysfunction in severe fatal burn [Ficarra] 986—ab  
excision for hypertension in infant [Semans] 1171—ab  
excision wound infection penicillin cures [Thompson] \*406  
infection effect of pregnancy on in hypertension and glomerulonephritis [Wellen] 1172—ab  
function effects of aortic ligation [Alexander & Byrnes] \*1144  
(glomerulonephritis) See Nephritis glomerular Nephrosclerosis glomerular  
Inflammation See Nephritis  
pain relief by inhaling amylnitrite 120  
levels See Pylonephritis Pylonephritis  
polycystic fundus oculi changes in [Cohen] 54—ab  
Roentgen Examination See Pylonephritis  
**KILLED** in Action See World War II  
Heroes and Prisoners  
**KIMMELSTIELS** Inter-capillary glomerulosclerosis See Nephrosclerosis glomerular  
**KIRSCHNER** wire in fixation of thumb fracture [Johnson] \*87  
**KISCH EUGENE** visits Rio de Janeiro 1044  
**KITCHEN** Utensils See Cooking and Eating Utensils  
**KLETT SUMMERSON** photoelectric colorimeter 62  
**KLIGLER ISRAEL** J death 581  
**KLINGER** Laubel phenomenon coronary hypersusceptibility to horse serum 302—E  
**KOHLER'S** Disease osteochondritis of navicular 866  
**KOLB LAWRENCE** retires 1097  
**KOLLESOL** Wise Tablets 655—BI  
**KOLLMORGEN** Optical Corp Army Navy E awards to 777  
**KOLMER** Test in leprosy [Hopkins & Faget] \*941  
**KONDREMUL** 587—BI  
**KONJOLA** Giljan testimonial of Alexander Kellogg 384  
**KORSAKOFF'S** syndrome pyridoxine subarachnoid injection for [Stone] 661—ab  
**KRAUROSIS** vulvae refractory 941  
**KREISELMAN** resuscitator bellows type (Council report) 99 1151  
**KULVER** S East Indian Hair Dressing 189—BI  
  
L  
**LABELING** of foods to protect public England 118  
**LABOR** See also Abortion Cesarean Section Obstetrics Pregnancy Puerperium Anesthesia In See Anesthesia  
patients not up day after during London blitz [Daley] 88—C



**LABOR**—Continued  
Immature See Infants  
Rh factor in [Andujar] 459—ab  
test of or cesarean section 1122  
third stage mothergline in [Roberts] 731—ab  
vaginal delivery after cesarean section [Kau-  
der] 855—ab  
**LABORATORIES** See also under names of  
specific laboratories as Lakeside  
appraisal of new drugs (Council report) [Van  
Winkle & others] \*958  
clinical examination neglected for laboratory  
tests asserts J. A. Ryle case of abdominal  
tumor 849  
Medical Department Equipment Laboratory of  
U. S. Army 711  
**LABOR UNIONS** See Industrial Trade Unions  
**LABYRINTHITIS** See Ear Internal  
**LACTATION** hexestrol dipropionate inhibits  
[Prescott] 1175—ab  
**LACTOFLAVIN** See Riboflavin  
**LA GUARDIA F. H.** Health Insurance Plan of  
Greater New York Inc 113—OS 375  
—OS 377 648  
**LAKESIDE Laboratories** Army Navy E award  
to 777  
**LAME** See Crippled  
**LAMINECTOMY** See Spinal Canal abscess  
**LAMP** See Ultraviolet Rays  
**LANCET** See Journals  
**LANGER Senator** asks \$10,000,000 for infant  
paralysis study 178—OS  
**LANGERHANS** Islands of See Pancreas  
**LANGUAGE** See also Terminology  
foreign translate medical books for Latin  
American use 437—E  
**LARCENY** See Stealing  
**LARD** rancid toxicity 573—E  
**LARYNX** See also Flies  
recurrent urticaria from contact with [Steele]  
555—ab  
**LARYNX** See also Epiglottitis  
cancer concentration radiotherapy [Cutler]  
321—ab  
club for patients who have lost their larynx  
Anaheim 1159  
**LASHES** See Eyelashes  
**LASHGRO** 587—BI  
**LASHER Foundation** See Foundations  
**LATIN AMERICA** See also Pan American  
health activities in 42 313 379 447 718  
848 1042 1097  
physicians studying in U. S. 848  
translate medical books for use in 437—E  
**LAUREL COMPOUNDS** See Sodium alkyl sul-  
fate Sodium lauryl sulfate  
**LAVAGE** See Stomach  
**LAWS AND LEGISLATION** borle acid bill  
New York mayor vetoes 310  
Cannon bill 1944 Townsend plan 969—OS  
federal and state (weekly summary) 38  
113 313 1039  
hospital center for Washington D. C. Ty-  
dings D'Alessandro bill 112—OS 713—OS  
Labor plans social security legislation 969—  
OS  
Medical Practice Acts See Medical Prac-  
tice Acts  
pensions for widows and children of first  
world war veterans 1099—OS  
punishment for venereal disease in armed  
forces ended by Congress 51—E [Leu-  
man] 1167—C  
Randolph Bill industrial health service for  
federal employees 30—E  
Service Men's Readjustment Act (GI Bill)  
708—E 709 770—E 775  
social security Dingell compromises 1093  
—OS  
socialization of medicine Argentina 784  
to encourage large families Brazil 1113  
Workmen's Compensation Acts See Work-  
men's Compensation  
**LAX AID** 318—BI  
**LAXATIVES** See Cathartics  
**LAXATRATE** 385—BI  
**LEAD** poisoning burning of mouth and lips  
from sucking sediment in gasoline 268  
**LEAGUE OF NATIONS** United Nations postwar  
organization covers medical and health  
fields 901—OS  
International unit of penicillin 1043 1097  
**LECTURES** See also Book Notices at end of  
letter B  
Alpha Omega Alpha 309 906  
Auer (John) (1st) 1095  
Bacon 647  
Bevan 309  
Croonian 117  
Cunning (Anne B.) 117  
Davis (D. J.) 578  
Delta Omega 248  
Fenger 941  
Friedlander 1093  
Friedman 647  
Gross 376  
Haggard 41  
Harvey (1st) 445 (2nd) 716 (3rd) 971  
Jackson (1st) 907  
Janeway 846  
Long (Leroy) 116  
Lower 780  
McArthur 1039

**LECTURES**—Continued  
Pancoast 847  
Pateur 114 578  
Pi Lappa Epsilon 647  
Rennie (C. F.) 117  
Salmon 597 1031  
Sulzer created 445  
**LEEDARD Fellowship** See Fellowships  
**LIFE ROGER I** hearings of Lepper subcom-  
mittee 244—OS  
**LIFE** See Legs  
**LIFECAL MEDICINE** See Laws and Legislation  
Medical Jurisprudence Medical Legal Ab-  
stracts nt end of letter M  
**LIFEGION of Merit** See World War II Heroes  
and Prisoners  
**LIGSLATION** See Laws and Legislation  
**LEGS** See also Ankle Foot Hosiery  
Amputation See Amputation  
bowlegs corrective surgery for 800  
edema (refractory) 62  
lengths growth arrest for equalizing [White  
& Stubbins] \*1146  
paralysis after intensive anaphraset treatment  
[Sahs & Noland] \*360  
Ulcers See Varicose Veins  
**LEISHMANIASIS** of skin [Chambers] 725—C  
(reply) [Fox] 725—C  
of skin vaccination against oriental sore  
[Katzenebogen] 1170—ab  
visceral (American) diagnosis by splenic  
puncture [Monteiro da Barros] 1120—ab  
**LENS CRYSTALLINE** opacity of See Cataract  
**LENSES** contact See Glasses  
**LEON J. BLANCO** studies on pinta 1030—E  
**LEPROSY** British government campaign against  
in Algeria 908  
in California 2 cases 376  
in U. S. report from National Leprosarium  
[Hopkins & Faget] \*937  
International Patronage for Leprous organized  
Buenos Aires 794  
Pan American Leprosy Conference (2nd) 142  
postwar program by American Mission to  
Lepers 1161  
prizes by National Academy of Medicine Rio  
de Janeiro 1042  
Roca Grande Leprosarium Brazil 1163  
**LEPTOSPIROSIS** See also Jaundice spiro-  
chetal  
clinical manifestations in Louisiana [Senek-  
je] \*7  
Wells disease agglutination tests [Rugler]  
60—ab  
**LEUKEMIA** acute complicating pregnancy  
[Applebaum] 261—ab  
lymphoid and leukemic myeloid penicillin  
ineffective [Bloomfield & others] \*690  
monocyte with oral signs [Aseltine] 597—ab  
treatment new cures? 992  
**LEUKOCYTES** Count See also Agranulo-  
cytosis Acute Leukemia Mononucleosis in  
fections  
count leukopenia after heparin [Jueker] 91,  
—ab  
count transient leukopenia after arsenpha-  
mine [Cannon & others] \*548  
cream or buffy layer or in rapid diagnosis of  
septicemia [Humphrey] 455—ab  
leukopenic index in allergy 866  
**LEUKOPENIA** See Leukocytes count  
**LEUKOPENIC Index** See Leukocytes  
**LEUKOPLAKIA** refractory pruritus vulvae 991  
**LEWISITE** dermatologic aspects [Davis] \*209  
**LIBERIA** USPHS backs Liberian 5 year  
health plan for Negroes 969—OS 1012  
**LIBRARY** See also Bibliography (cross refer-  
ence) Books Journals Newspapers  
Army Medical (meeting) 312 (honorary con-  
sultants) 442—OS  
Cleveland Medical Library Association 50th  
year 649  
Coke (Charles H.) with library to Dun-  
combe County Medical Society 181  
medical progress of plans Texas 182  
Royal Society of Medicine 1162  
Smith Memorial 378  
Woman's Auxiliary Library endowment fund  
Texas 649  
Yale acquires herb cabinet of Dr Seth Bird  
(1733 1805) 309  
**LICE** borne typhus See Typhus  
control by DDT 504  
toxicity of DDT described by Dr Neal 714  
**LICENSE** See also Medical Practice Acts  
court orders restoration of physicians license  
Calif. 506  
diploma mill operated by George William  
Manus 648  
Maryland and District of Columbia squabble  
969—OS 1039  
revoke license of H. J. Sehlreson trial to  
prevent 116 972  
**LIDS** See Eyelids  
**LIFE** See Death  
Duration See Old Age  
Insurance See Insurance  
**LIGATION** See Veins femoral  
**LIGATURE** See Sutures  
**LIGHT** See Sunlight  
Toxicity See Sunburn  
**LILLI P. L. & CO.** establish prize in im-  
munology and bacteriology 908

**LIP** See Lips  
**LIPOCAIC** treatment of peripheral vascular  
disease and arteriosclerosis 773  
**LIPS** burning from sucking sediment in gaso-  
line fuel line 268  
cancer chemosurgery with zinc chloride 32  
—E  
perleche [Flinnerud] \*737  
restoration free muscle transplantation for  
[rudente] 730—ab  
**LIQUOR** Alcohol See Alcohol  
**LITERATURE** See Books Journals Lan-  
guage Newspapers Terminology  
**LITHIASIS** See Calculi (cross reference)  
**LITHIUM** burns from 268  
**LITTLE JOHN R.** California public relations  
survey 370—E  
**LIVER** See also Biliary Tract  
cancer (primary) without cirrhosis [Valdes-  
Ruiz] 327—ab  
cirrhosis Baumgarten Cruveilhier syndrome  
[later] 019—ab  
cirrhosis pernicious anemia complicating  
[Caster] 864—ab  
cirrhosis thyrotoxic [Bickel] 162—ab  
Disease See Jaundice  
dysfunction (constitutional) [Comfort] 1171  
—ab  
dysfunction in severe fatal burn [McCarthy]  
986—ab  
Fetret See Liver preparations  
Fluke See Fasciola hepatica  
function blood prothrombin dicumarol and  
vitamin K 300—F  
function physiologic action of heparin and  
dicumarol [Shapiro] 739—C  
hypoglycemia and restoration with glucose  
[Viana] \*467  
inflammation after using convalescent plasma  
in mumps epidemic [Deeson McKearlan  
Hawley] 461—ab  
inflammation after yellow fever inoculation  
[Findlay] 923—ab 988—ab  
inflammation (chronic latent) after catarrhal  
jaundice [Altschule] 741—ab  
inflammation differentiated from catarrhal  
jaundice [Maneck] 733—ab  
inflammation epidemic cholera [Stek] 927  
—ab  
inflammation epidemic in American soldiers  
[Havens] \*17 (correction) 782  
inflammation from arsenphenamine [Cannon &  
others] \*548  
inflammation infective epidemiology [Shee-  
han] 462—ab  
oil codanol brand procromorph with cholesterol  
N. N. R. (American Pharmaceutical) 767  
preparations extract for chronic intestinal  
indigestion [Baumhauser] 792—ab  
preparations extracts added to diet effect  
on normal persons [Tiffin & Ayer] \*82  
sulfonamide excretion [Hay] 446—ab  
**LIVERTON University** professor of child health  
449  
**LIVINGS MASSINI JUAN CARLOS** death  
313 975  
**LOYD BFRTHAM (Mrs.)** appointed professor  
of obstetrics at U. of Birmingham 1,  
104 LO1 See Filariasis  
**LOBECTOMY** See Lungs surgery  
**LOBOTOMY** prefrontal See Brain  
**LOCASCIO NICHOLAS R.** post surgeon of  
Army Station Hospital Pine Camp 373  
**LOCKJAW** See Tetanus  
**LOFFELF S. SYNDROME** [Pirkle] 322—ab  
837—E  
**LONDON** blitz of 1940 41 patients not up  
day after labor during (correction) [Daly]  
588—C  
House center for postgraduate students from  
overseas 782  
second battle of casualties and damage 510  
**LONG Star Fever** See Bull's Fever  
**LONG (Leroy)** Lecture See Lectures  
**LONG ISLAND** College of Medicine (course in  
industrial medicine) 115 (first alumni  
achievement award) 507  
**LONGEVITY** See Old Age Physicians vet-  
eran  
**LOS ANGELES County Physicians Aid Asso-**  
ciation fund for needy physicians 376  
**LOTIONS** to protect against harmful sunlight  
463  
**LOUISIANA** leptospirosis in [Senekje] \*5  
**LOUSE** See Lice  
Borne Typhus See Typhus  
**LOW J. JULIUS** death 1047  
**LOWRY Lecture** See Lectures  
**LUBERTS Iron Tonic Compound Tablets** 587  
—BI  
La No Mor Capsules 788—BI  
Nozem Brand Tablets and Capsules 788—BI  
**LUGOL'S Solution** See Iodine  
**LUNGS** See also Bronchus Pleura Re-  
spiratory System  
abscess after resection penicillin prevents  
[White & others] \*1016  
abscess surgical treatment [Grow & others]  
\*1059  
absence of [Vallie] 598—ab

## LUNG—Continued

- aetionomyosis sulfonamide cures [Merkle] 526—ab  
aluminum effect on in grinders of aeroplane propellers [Hunter] 1055—ab  
blood pressure in effect of mechanical artificial respiration [Volpito & others] \*1066  
cancer cells in sputum [Wandall] 1120—ab  
cancer fulminant hemoptysis in [Crivellari] 462—ab  
cancer surgical treatment [Rienhoff] \*1123  
collapse See also Pneumothorax  
collapse atelectasis in acute poliomyelitis [Cooperstock] 192—ab  
Disease See Influenza Pneumonia Pneumonoconiosis  
Embolism of pulmonary artery See Embolism  
Hyperventilation See Respiration  
infiltrations (transient) with blood eosinophilia [Pirkle] 322—ab 337—E  
nasal clinical and radiologic studies [Johnston] 390—ab  
opacities (apical) differential diagnosis 603  
pathology in primary atypical pneumonia 112—E  
roentgen study in silicosis from wheat dust [McKay] 833—C  
Surgery See also other subheads under Lungs  
surgery dissection lobectomy for bronchiectasis [Sellers] 600—ab  
surgery hypoprotecemia in [Thornton] 921—ab  
surgery penicillin to prevent empyema after [White & others] \*1016  
surgery pneumonectomy cures arteriovenous fistula [Jones] 1117—ab  
Tuberculosis See Tuberculosis of Lung  
tumors cavernous hemangioma (arteriovenous fistula) [Adams] 594—ab  
tumors penicillin to control postoperative empyema [White & others] \*1021  
tumors symptom triad [Meerloo] \*553  
varices of bronchial veins source of hemoptysis [Feigenson] 1169—ab

LYPUS ERYTHEMATOSUS treatment niacin amide 466

LIE esophageal strictures from prophylactic dilation [Crove] 57—ab

LYMPH vasomotor substance in from burned area [Aitch] 262—ab

LYMPHANGITIS of intestinal wall [Wlensky] 739—C

streptococci penicillin for [Johnson] 339—ab

LYMPHATIC SYSTEM See also Mononucleosis Infections Thoracic Duct

adenopathy sulfadiazine sensitivity in child [Kotene] \*833

lesions in early filariasis [Wartman] 1114—ab

LYMPHOCLASTIC acute infectious or febrile lymphocytosis [Rosenbaum] 914—C

LYMPHOGLANULOMA benignum See Sarcomatosis

LYMPHOGLANULOMA GENERAL complete fixation test [Becson] 1113—ab

virus ulcerative colitis due to [Bergen] \*1011

LYMPHOGLANULOMATOSIS See Hodgkin's Disease

## M

M D Degree See Degrees

M new anti gas protective ointment 501

McARTHUR Lecture See Lectures

McCALLY Prize See Prizes

McDOWELL EPHRAIM removal of ovarian cyst from Jane Crawford 1094

McEYERS A E Commanding officer at Billings General Hospital 1106

McMAHON ALPHONSE Mississippi Valley Medical Society honors 438

McNUTT LAUL V policy statement on procurement and assignment service 438

MACROMOLECULAR substances pathogenic action 770—E

MADAME trade names beginning with Madame See under surname

MADIGAN PATRICK S hospital named for 711

MAGAZINES See Journals

MAGGOTS See Flies

MAGNESIUM hydroxide inhibits peptic activity in peptic ulcer [Steigmann] 192—ab

renal calculus 670

Silicate See Talcum

MAGNET See also Electromagnet

magnetic ray belt maker filed Dr Frank B Moran 60

MAJOR RALPH H JR Italian government awards Cross of War 340

MAL DEL PINTO See Pinta

MALARIA control DDT Puerto Rico 313

control in Pacific successful use of new deodorant PDB 375

Control Section F A Nantz chief 241

eosinophilia in [Lowe] 398—ab

epidemic danger in U S remote 307

in Sao Paulo 1044

mortality and morbidity in 1942 [Faust] 128—ab

ocular manifestations in the tropics [Robertson] 1118—ab

## MALARIA—Continued

pneumonia with [Applebaum] 1115—ab

quinine supply Argentina 58

treatment center (Army) at Moore General Hospital 55

treatment quinaerine Medical Research Council committee report 1163

treatment (suppressive) mepracine (quinacrine) 1098

MAL Climacteric See Climacteric

Hormone See Androgens

Impotence See Impotence

MALFORMATION See Abnormalities

MALIGNANCIES See Cancer Epithelioma

Sarcoma

MALITRATE F 1 979—BI

MALNUTRITION See Nutrition

MALPRACTICE See Medical Abstracts at end of letter M

MALTA FEVER See Brucellosis

MAMMIS New Discovery Scalp Ointment 318—BI

MAMMARY GLAND See Breast

M primitive Burton's pamphlet Brown and White in the South Pacific 119

MANDIBLES See Jaws

MANNITOL hexanitrate N A R (description) 497 (Abbott) 497

MANPOWER See Physicians supply

MANTOUX TEST See Tuberculosis case finding

MANIZ FRANCIS A appointed chief of Malaria Control Section 241

MANS G W operates diploma mill 648

MAPHARSEN tolyl [Eagle] \*538 [Thomas & Wexler] \*530 [Cooperating Clinics of New York and Midwestern Groups] \*554

tolyl acute agranulocytosis, penicillin for [Smith & others] \*1027

tolyl intrahepatic obstructive jaundice with sprue [Frels & Moler] \*892

tolyl myelopathy [Sahs & Nomland] \*560

toxic severe reactions but in oil for 901

Treatment See Syphilis

MARCELLE Cosmetics Inc first award of prize 580

MARCH Fractures See Fractures

Hemoglobinuria See Hemoglobinemia

MARFAN chemotherapeutic effect [Schmidt] 1120—ab

MARGARINE See Oleomargarine

MARQUETTE University honors Brig Gen Simmons 439

MARRIAGE See also Coitus Continence Contraception Pregnancy

bureau founded Germany 37

number of England 249 349

MARROW See Bone Marrow

MARTINS Henderson (R G) Isutsugamushi fever fatal while developing vaccine 736

MARYLAND See Baltimore

MASK cellophane to protect against harmful sunlight 465

gas heard wound designed by Chemical Warfare Service 901

MASSACHUSETTS See also Boston

experience with society prepayment programs [McNann] \*341

Medical Service (Bureau report) \*505—OS

MASTECTOMY See Breast surgery

MASTITIS See Breast Inflammation

MASTOID wounds (simple) primary suture [Johnson] 662—ab

MASTOIDITIS acute penicillin for [Swanson & Baker] \*617

MATERNITY See also Families Pregnancy age elderly primipara [Kuder] \*20—ab

mortality 1942 593

mothers between age of 20 and 30 contribute to rapid wartime increase in births 378

welfare administration Brazil 1044

MATHEWS JOSEPH father of proctology [Terrell] \*29

MATHEW EMILIO personal 313

MATRESS tying Accepts 159—BI

MAURICEAUS text in obstetrics in 18th century 937—ab

MAYALLA See Laws

MAYSON CHARLES W commended 1090

MED JOHNSON C O awards 312 1161

MEALS See Food Restaurant

Test Veril See Caffeine

MEASLES gamma and placental globulin [Greenberg & others] \*944

gamma globulin in [Janeway] \*674

Cernun See Rubella

MEAT dried pemican used by American Indians [Stefansson] 662—ab

vitamin content [McIntire] 393—ab

MEALS See Prizes

for War Service See World War II Heroes and Prisoners

MEDIASTINUM posterior Intrathoracic goiter in [Mora] 862—ab

MEDICAL ADMINISTRATIVE CORPS See World War II

MEDICAL AND SURGICAL CARE Inc (Bureau Report) 505—OS

MEDICAL AND SURGICAL REIFF COMMITTEE (donation to Halloran General Hospital and others) 110 (medical supplies and food sent overseas) 903

## MEDICAL ASSOCIATION See American Medical Association Societies Medical list of societies at end of letter S

MEDICAL AWARDS See Prizes

MEDICAL BOOKS See Books Library Book Notices at end of letter B

MEDICAL CAMP See Medical Service

MEDICAL CENTER See also Health center Hospitals center

Detroit 780 (fund raising campaign at Wayne U) 903

Latin America 718

MEDICAL CERTIFICATES for absenteeism and war production 706—E

MEDICAL COLLEGE See also Schools Medical University

MEDICAL CORPS See World War II

MEDICAL DEPOSITS See Medical Supplies

MEDICAL DIATHERMY See Diathermy

MEDICAL DIRECTORY See Specialists

MEDICAL ECONOMICS See Economics Medical

MEDICAL EDITORS Annual Conference of See American Medical Association annual conference of

MEDICAL EDUCATION See Education Medical

MEDICAL EQUIPMENT See Medical Supplies

MEDICAL ETHICS See Ethics Medical

MEDICAL EXAMINATION See Physical Examination

MEDICAL EXAMINERS Aviation See Aviation

MEDICAL EXPENSE Fund of New York Inc 577—OS

MEDICAL FEES See Fees

MEDICAL FIELD Service School See World War II

MEDICAL HISTORY See Medicine history

MEDICAL ILLUSTRATION See Art

MEDICAL INSTITUTE See Institute (cross reference)

MEDICAL JOURNALS See Journals

MEDICAL JURISPRUDENCE See also Laws and Legislation Medical Abstracts at end of letter M

court orders physician restored to civilian job 310

court orders physician's license restored 506

physician fined \$10,000 for narcotic violation Fla 570

Supreme Court upholds board of health's denunciation in osteopathy case 1160

Wisconsin Alumni Research Foundation wins court reversal 41 1006

MEDICAL KITS for European school children from American Junior Red Cross 1092

MEDICAL LECTURES See Lectures

MEDICAL LEGISLATION See Laws and Legislation

MEDICAL LIBRARY See Library

MEDICAL LICENSES See Licensure

MEDICAL MEETINGS See Societies Medical list of societies at end of letter S

Wartime See Education Medical wartime

MEDICAL OFFICERS See World War II

MEDICAL PERIODICALS See Journals

MEDICAL PICTURES See Art

MEDICAL PLANNING Postwar See World War II postwar

MEDICAL PRACTICE See Medicine practice Physicians practicing

MEDICAL PRACTICE ACTS See also Licensure Medical Abstracts at end of letter M

special examining board in basic science created Va 377

MEDICAL PREPAREDNESS See World War II

MEDICAL PRIZES See Prizes

MEDICAL PROFESSION See Physicians Specialists Surgeons

MEDICAL RESEARCH See also Research Council (human nutrition research unit established) 313 (tuberculosis diagnosis by mass radiography) 510 (patulin in common cold) 388—ab (use of quinine in malaria) 1163

MEDICAL SCHOOLS See Schools Medical

MEDICAL SCIENCE See Medicine Research

MEDICAL SCIENCE CENTER See Medical Center

MEDICAL SERVICE See also Health center Hospitals Insurance sickness Medical Center Medically indigent

A V A Council on See American Medical Association

civilian for military personnel while on leave 712

cutting costs for wage earners testimony of C Rufus Rorem 308—OS

Emergency See Emergency for Armed Forces See World War II

for dependents of service men adopted by American Red Cross 1035

foreign nonprofit corporations cannot enter state of Pennsylvania to provide 116

In a national health program American Public Health Association report 245—OS 434—F

\*441 [Godfrey] 789—C (correction membership) 1042

**MEDICAL SERVICE**—Continued  
in boarding schools Argentinea 975  
Industrial See Industrial Health  
National Physicians Committee for Extension  
of (Michigan state division) 715  
New York State Temporary Commission of  
846  
of naval dependents Navy Relief Society  
assistance in 438  
Pepper subcommittee hearings 244—OS  
phone calls for handled in Washington etc  
during strike 904—OS  
Plans See Medical Service Plans following  
postwar A M A Committee on (meetings)  
243—OS 440 708—E 709 770—E 775  
1036—OS  
postwar planning National Health Service  
(Beveridge plan White Paper) 314 582  
661 898—E  
relocation of physicians prerequisite to better  
medical care [Mountain] \*203  
social insurance and Argentinea 975  
Supply of Physicians for See Physicians  
relocation Physicians supply  
ten point program S C 311  
volume in war industry area [Merrill &  
Mills] \*887  
**MEDICAL SERVICE PLANS** (prepayment)  
See also Hospitals expense insurance  
Binghampton (N Y Industrial) [Bloom] \*337  
California Physicians Service 112—OS 243  
—OS 370—E [Merrill & Mills] \*887  
Consolidated Edison Company of New York  
Inc [Wittmer] \*344  
Endicott Johnson [Jones] \*339  
for industrial workers A M A Council  
statement 708—E  
Genesee Valley Medical Care Inc N Y 716  
Georgia 179—OS  
Indiana (preparation) 375—OS (approves  
indemnity sickness insurance) 905  
Kaiser Industries [Gusfield] \*337 (Per  
manente Foundation) [Merrill & Mills]  
\*887  
Medical Service Association Inc North Caro-  
lina (Bureau report) 505—OS  
Medical Service Association of Pennsylvania  
577—OS  
medical society programs experience in Massa-  
chusetts [McCann] \*341  
medical society representatives discuss 968  
—OS  
Medical Surgical Plan of New Jersey 179  
—OS 245—OS  
Milwaukee Medical Society expands 179—OS  
Missouri soon in operation 443 1095  
National Hospital Service Society ordered  
dissolved 714—OS  
New York City mayors health plan 125 161  
290 126 113—OS 377 648 906  
Ohio 443—OS  
Oklahoma 648—OS  
progress (Bureau report) (mutual compari-  
son) 505—OS 577—OS  
Stanecola [Adams] \*333  
United Medical Service plan of New York  
443—OS 577—OS  
Virginia proposed 781  
West Virginia State Medical Association acts  
to remove politics from health program 847  
Winnebago County Illinois Medical Society  
plan [Knattelbaum] \*844  
**MEDICAL SOCIETY** See Societies Medical  
list of societies at end of letter S  
Prepayment Plan See Medical Service  
Plans  
**MEDICAL STUDENTS** See Students Medical  
**MEDICAL SUPPLIES** See also Apparatus  
Cast Dressings Instruments Splints etc  
American Red Cross sends penicillin by air  
for prisoners of war in Germany 842  
Italy requests American doctors for 1092  
Japanese medical depots (4) on Biak Island  
[Schaffer] \*34  
Medical and Surgical Relief Committee of  
America See Medical and Surgical Re-  
lief Committee  
surplus recommendations on Committee re-  
port 219—OS  
**MEDICAL TERMINOLOGY** See Terminology  
**MEDICAL TESTIMONY** See Evidence un-  
der Medical Legal Abstracts at end of letter V  
**MEDICAL WOMEN** See also Physicians  
women Students Medical women  
Federation statement on relation of venereal  
diseases England 1098  
**MEDICAL HANDICAPPED** See Crippled  
Disability Handicapped  
**MEDICAL INDICIA** New York state com-  
mission named to study care of 247  
**MEDICAL SURGICAL PLAN** of New Jersey re-  
vises contract 179—OS 245—OS  
**MEDICAL HERBS** See Herbs  
**MEDICAL** See also Economics Medical  
Medical Service Physicians Surgery etc  
Academy of See Academy  
America aware of its responsibility says  
Dr John H Fitzgibbon 443—OS  
Association See Association  
Congress of See Congress  
Cults See Chiropractor Osteopath Medi-  
cal legal abstracts at end of letter V

**MEDICINE**—Continued  
Deaf See under Dentistry  
Fellowships See Fellowships  
Forensic See Medical Jurisprudence  
Foundations aiding See Foundations  
history Aristotle (384 322 B C) 814—ab  
history authority on surgery Guy de Chai-  
lue (1300 1368 156—ab  
history blood transfusion traced to James  
Blundell (1790 1877) 539—ab  
history first hospital in Western Europe 350  
A D by Fabiola 427—ab  
history founder of British dermatology  
Robert Willan (1757 1812) 15—ab  
history Jane Crawford Day 1094  
history Official Army Medical History of the  
War 1156  
history Official Naval Medical History of the  
War 841  
history phyla 1030—E  
history syphilis as an infectious malady first  
recognized by Astruc (1684 1766) 1133—ab  
history syphiliologist Philippe Ricord (1800  
1889) 828—ab  
history Walter Reed and yellow fever  
Truth & account 33—E  
history William Beaumont given given to  
Michigan Society 506  
history William Gilbert physician to Queen  
Elizabeth and James I of England 371—F  
history Yale Library acquires herb cabinet  
of Dr S Bird (1733 1805) 309  
Industrial See Industrial Health  
Institute of See Institute (cross reference)  
Lectures on See Lectures  
Legal See Legal Medicine (cross reference)  
Military See World War II  
Naval See Navy United States  
Organized See American Medical Associa-  
tion Societies Medical  
Physical See Physical Medicine Physical  
Therapy  
Practice See also License Physicians  
practicing Specialists  
practice future role of general practitioner  
[Bowman] \*331  
practice future in Australia vote against  
5 year postwar plan 1099  
Prizes in See Prizes  
Profession of See Physicians Specialists  
Surgeons etc  
Psychosomatic See Psychosomatic Medicine  
Research in See Research  
Royal Society of See Royal  
Scholarships See Scholarships  
Socialized See also Insurance sickness  
Insurance social  
socialized Argentina 784  
socialized National Health Service (White  
Paper Beveridge Plan) See Beveridge  
Plan  
socialized role of general practitioner [Bow-  
man] \*331  
socialized workmen's compensation to be  
taken over by British government 719 1095  
Societies See Societies Medical  
Specialization See Specialists  
Tropical See Tropical Medicine  
Veterinary See Veterinary  
Women in See Nurses Physicians women  
Students Medical  
**MEDICINE AND THE WAR** See World War II  
**MEDICINES** See Drugs Nostrums Pro-  
prietarys  
**MEDICOLEGAL** See Legal Medicine (cross  
reference)  
**MEDULLA SPINALIS** See Spinal Cord  
**METROO** A M lecture motivations for  
treason 374—F  
**MEETINGS** See Societies Medical list of  
Societies and Organizations at end of letter S  
Warfare Graduate Medical See Education  
Medical wartime  
**MICACOLON** See Colon  
**MICROCYTES** See Bone Marrow  
**MILHA OVIDIO** death 1044  
**MILNICK** D human thymine requirement  
1031—E  
**MELANCHOLIA** See Mental Depression  
**MEMORIAL** to Physicians See Physicians  
memorial  
**MEN** See Boys (cross reference) Male  
(cross reference) Man  
**MENADIONE** N N R (Mead Johnson) 169  
**MENIERE'S** Syndrome See Vertigo aural  
**MENINGES** abscess (acute spinal epidural)  
[Boger] 1169—ab  
abscess (acute epidural) of spinal canal  
emergency laminectomy and penicillin  
cures [Donathan] \*956  
abscess (epidural) complicating sinusitis  
penicillin for [Putney] \*621  
Tuberculosis See Meningitis  
**MENINGITIS** cerebrospinal epidemic penicil-  
lin for [Rosenberg] \*99—ab  
cerebrospinal epidemic sulfadiazine for  
[Grice] 593—ab  
deafness from 1122  
glycosuria in [Ferguson] \*92—ab

**MENINGITIS**—Continued  
in children refractory to sulfonamides  
[Gross Helsler] 197—ab  
influenza sulfadiazine for [Sako] 661—ab  
Meningococci See Meningitis cerebro-  
spinal epidemic  
pneumococci penicillin and sulfonamide  
combined [Waring & Smith] \*418  
pneumococci penicillin ineffective [Bloom  
field & others] \*689  
pneumococci penicillin intrathecal for  
[Calms] 131—ab  
treatment penicillin intravenously or intra-  
muscularly 370—E  
tuberculous [McMurray] 600—ab  
tuberculous pathogenesis clinical symptoms  
[Engel] 197—ab  
**MENINGOCOCCIA** from station hospital in  
this country [Ochs] 729—ab  
fulminating Waterhouse-Friderichsen syn-  
drome [Boger] 860—ab  
**MENINGOCOCCUS** in Blood See Meningo-  
cocci  
Infection sulfadiazine as preventive reac-  
tions after mass administration [Lee] \*630  
[Palinton] 983—ab  
Infections complement fixation tests [Bon-  
nia] 398—ab  
Meningitis See Meningitis cerebrospinal  
Septicemia See Meningococci  
**MENINGOENCEPHALITIS** syphilitic See  
Dementia Paralytica  
**MENINGOMYELORADICULITIS** treatment py-  
ridoxine subarachnoid injections [Stone]  
661—ab  
**MENINGER WILLIAM C** Lister Award to  
902  
**MENINGER** Foundation See Foundations  
**MENORRHACIA** See Menstruation disorders  
**MENSTRUATION** anovulatory endometrial bi-  
opsy determines frequency [Levin] 474  
—ab  
Cessation of See Amenorrhea  
delayed neostigmine for [Grossman] 1174  
—ab  
disorders menorrhagia vitamin K for [Cub-  
ner] 985—ab  
Lees Periodic Pills Periodic Capsules 189  
—BI  
periodicity 28 days interval in winter 14 17  
in summer 670  
**MENTAL DEFECTIVES** See also Epilepsy  
Idiot  
children care of 508  
Rh factor and [Yannet] 794—ab  
**MENTAL DEPRESSION** initial syndrome of  
pulmonary growth [McCrack] \*518  
treatment nonconvulsive electric [Plattner]  
701—ab  
treatment pentothal narcosis synthesis [Crimler]  
\*442  
**MENTAL DISORDERS** See also Alcoholism  
Dementia Paralytica Dementia Precox  
Psychoses  
etiology diet deficiency [Spies & others]  
\*52  
Hospitalization in See Hospitals psychi-  
atric Hospitals state  
in children treatment New York City 1040  
population density in relation in study made  
at Boston Induction Station 900—F  
treatment at Rio de Janeiro Institute of Psy-  
chiatry 185  
treatment care of insane Buenos Aires 784  
treatment occupational therapy [Coulter]  
\*361  
treatment political care of in New York  
33—E  
treatment psychosurgery evaluated [Free-  
man] 264—ab  
treatment recommend insulin shock therapy  
be made available N Y 181  
**MENTAL FUNCTIONING** See Thinking  
**MENTAL HEALTH** See Mental Hygiene  
**MENTAL HOSPITALS** See Hospitals psychi-  
atric Hospitals state  
**MENTAL HYGIENE** Division of U S P H S  
(Dr Felix heads) 71—OS 908 1097  
in Hawaii since the war [Pinkerton] \*627  
National Committee for (fellowships in child  
psychiatry) 183 (honors M J Gen Mark)  
540  
prize Taster Foundation Award created 580  
(to Dr Menninger) 902  
state division director named Wis 907  
**MENTAL TEST** See Intelligence Test  
**MENTAL WORK** See Thinking  
**MINTHA PIPERITA** culture peppermint oil  
extraction developed Brazil 120  
**MINTHO THYMOLIN** 514—BI  
**MIPACIN** See Quinacrine  
**MIBROMIN** (mercurochrome) N N R  
(Premo) 433  
**MIBRICURIC** Cyanide See Mercury  
**MIBICUROCHROMY** See Mibromin  
**MIBICUROUS** Chloride (calomel) See Mer-  
cury  
**MIBICURY** bichloride inactivates influenza  
virus [Dunham] 661—ab  
diuretics for patient with congestive heart  
failure 902  
mercuric cyanide dressing contracture of hand  
from 138

- MERCURY**—Coal-tar  
mercurous chloride (enlomef) industrial ex-  
posure 604
- MESUDIN** (Marfanil) chemotherapeutic effect  
[Schmidt] 1120—ab
- METABOLIC** Craniopathy See Cranium
- METABOLISM** See under names of specific  
substances as Carbohydrates Nitrogen
- METALS** See also Aluminum Copper Lead  
Mineral Silver  
pin implanted for femur fracture safe to use  
Inductothermy 1122
- METAMICIN** N R (Searle) 367
- METASTASIS** See Tumors
- METATARSUS** fractures (march) [Tyner]  
637—ab
- METHILICIN** See Ergonovine
- METHYL TESTOSTERONE** See Androgens
- METHYLACRYL Sulfanilamide** See Dimethyl  
acryl sulfanilamide
- METHYLCELLULOSE** colloidal plasma substi-  
tutes 1154—E
- METHYLPHNE BLUE** See Methylthionine  
chloride
- METHYLPHENIS** hydroxycoumarin See Di-  
cumarol
- METHYL NAPHTHOQUINONE** See Menadi-  
one
- METHYLTHIONINE CHLORIDE** (methylene  
blue) orally recovered by peritoneal tap  
diagnostic value [Kaufman] 594—ab
- METROPOLITAN** Life Insurance Co (Dr  
Bonnett medical director) 718
- METTOZOL Tablets** 655—BI
- MILK** O brucellosis in 962—E  
health 818  
sixth assembly of surgeons 949
- MICHIGAN** See also Detroit Wayne Univer-  
sity  
Medical Service (Bureau report) 905—OS
- MICROFILM** service for British medical officers  
overseas 1162
- MICROORGANISMS** See Bacteria
- MICROSCOPES** bacteriophage electron micro-  
graphs 642—E [Goldsmith] 914—C  
electron bacteria rickettsias and viruses  
shown by [Mudd & Anderson] \*361  
[Mudd] \*632 642—E  
fluorescent in tuberculosis [Tanner] 920—ab
- MICTURITION** See Urination
- MIDWIFERY** See Obstetrics
- MIGRAINE** See also Headache  
allergy of central nervous system [Clarke]  
422—ab  
Migraine syndrome complicating decompression  
sickness [Fengel] 197—ab  
sick headaches [Alvarez] 796—ab
- MILIARIA** multiple furunculosis superimposed  
on penicillin for [Coleman & Sakai] \*427
- MILITARY** Citations See World War II  
Heroes and Prisoners  
Service See World War II  
Training (compulsory years) President  
Roosevelt asks for young men 813—OS
- MILK** See also Cheese Cream  
Borden's D Q (daily quota) (Council report)  
433  
enzyme treated for peptic ulcer [Steigmann]  
792—ab  
fortified with vitamins and minerals (Council  
report) \*432  
Human See Infants feeding Lactation  
sensitivity headache with fatigue and altered  
consciousness [Randolph] \*430
- MILKY WAY** Permanent Wave Solution 385  
—BI
- MILLER** cancer fund 617
- MILLER ABBOTT TUBE** mercury weighted  
(correction) 718  
passage through pylorus using electromagnet  
[Wayer] 922—ab
- MILWAUKEE** Medical Society expands prepay-  
ment plan 179—OS
- MINERAL** See also Copper Lead  
Borden's D Q (daily quota) milk 433  
diet as predisposing factor in rheumatic fever  
174—E  
fortified milk (Council report) \*432  
Oil See Petroleum  
water Arm 514—BI  
water Stevens 587—BI
- MINES** coal injuries in 972  
Tonopah Mines Hospital closed Nevada 40
- MINICH** 48—BI
- MIOTICS** in traumatic hyphemia [Rycheaer]  
\*763
- MISCHANCE** See Abortion
- MISSING IN ACTION** See World War II  
Heroes and Prisoners
- MISSISSIPPI** Valley Medical Society honors  
Dr McMahon 438
- MISSOURI** Medical Service plan soon in opera-  
tion 445 1897
- MITE** JAMES M 90th birthday 970
- MITE** See Chicken mites  
Bite Fever See Tausuganush Fever
- MITRAL VALVE** stenosis auscultatory signs  
[Boone] 1173—ab  
stenosis hemoptysis la due to bronchial  
varicose veins [Ferguson] 1169—ab
- MOLD** See Actinomyces Monilia Penicil-  
lium Trinea Yeast
- MONALDIS** Suction Drainage See Empyema  
Tuberculosis of Lung treatment
- MONGOLISM** See Idiocy
- MONILIA** refractory pruritus vulvae 991
- MONONUCLEOSIS INFECHIOSA** [Contatto]  
390—ab  
complicated by jaundice [Boger] 985—ab  
heterophile antibody reaction in [Kaufman]  
593—ab  
treatment penicillin ineffective [Bloomfield  
& others] \*690
- MOORE WHITE** Clinic Los Angeles 376
- de MORAYS** (RFA) JORCE personal 1044
- MORALE** Services Division now Information  
and Education Division 31
- MORALS** See also Ethics Medical Stealing,  
disrupted by the war Medical Women's  
Federation statement 1098
- MORAN** FRANK B magnetic ray belt maker  
fined 650
- MORBIDITY** See Disease  
Statistics See Vital Statistics
- MORFIRA** RAUL resignation 136
- MORFEL** Stewart's Syndrome See Frontal Bone
- MORGAGNI** Syndrome See Frontal Bone
- MORLAND** LEBERT Lancet editor retires  
974 1157—E
- MORPHINE** diacetyl (heroin) addiction sepi-  
cemia and endocarditis from [Hussey &  
others] \*335  
apomorphine use in emptying infants stom-  
ach in poisoning 138  
ethylmorphine (dionin) inject tympanum for  
deafness and tinnitus [Frowbridge] 127—ab  
factory contact dermatitis in [Dore Green]  
797—ab
- MORRISON** Prize See Prizes
- MORTALITY** See Death Infants Maternity  
Vital Statistics under names of specific  
diseases as Malaria
- MOSAIC** plant electron micrograph [Mudd  
& Anderson] \*668
- MOSBY** CLIBERT H Gillan testimonial 384  
—BI
- MOSQUITOES** eradication with DDT Puerto  
Rico 313  
vector of St Louis encephalitis 962—F
- MOUTH** brownish and larva urticaria from  
contact with [Steel] \*98—ab
- MOTHERS** See Families Maternity Preg-  
nancy
- MOVING PICTURES** See Moving Pictures
- MOTOR VEHICLES** See Automobiles
- MOUNTBATTEN** LOUIS praises hospital unit  
treatment of eye injury 975
- MOUTH** See also Gums Jaws Lips Oro-  
pharynx Teeth Tongue  
burning from sucking sediment in gasoline  
fuel line 268  
cancer concentration radiotherapy [Cutler]  
321—ab  
cancer free muscle transplantation for res-  
toration [Irukenle] 730—ab  
foul taste in during pregnancy 866  
Inflammation See Stomatitis  
leukoplakia syndrome [Garb] 836—ab  
perleche [Finchard] \*737  
sore in monocytic leukemia [Aseltine] 597  
—ab
- MOVING PICTURES** color film record of  
tongue movements in speech 249  
medical presented to physicians Rio de  
Janeiro 969
- MUCOUS MEMBRANE** See Eudometrium
- MULTIBERN** analysis comparative cost  
(Council report) \*29
- MUMPS** See 1. Fatality Epidemic
- MUSCLES** See also Fascia Tendons  
Atrophy See Atrophy  
Cardiac See Myocardium  
Dystrophy See Dystrophy  
electromyographic evidence that spasm initi-  
ates weakness [Schwartz & others] \*695  
fascicular twitching from overwork [Nelson]  
\*801  
glutal danger of using for intramuscular  
injections 118  
injections into See Injections Intramus-  
cular  
paralysis (pseudohypertrophic) 1058  
pathology in poliomyelitis [Dublin] 192—ab  
rectus abdominis spontaneous rupture [Vid-  
goff] 1170—ab  
rupture or strain charleyhorse 735  
Spasm See Poliomyelitis Tetany  
Spasm Kenny concept See Poliomyelitis  
Sprain See Sprain  
Strength See Dystrophy Myasthenia  
syphilis of biceps [Schlager] 323—ab  
transplantation (free) in restoring lips and  
cheek [Prudente] 730—ab
- MUSEUM** See Dittrich Museum
- MUSIC** as aid to treatment (at Walter Reed  
General Hospital) 179—OS (National Mu-  
sic Council survey) 718
- MUSSELL** poisoning 2 deaths Calif 970
- MUSTARD** use in emptying infants stomach  
in poisoning 138
- MUSTARD GAS** See diChlorodimethyl sulfide
- MUSTERING** out payments of discharged  
ASTP students 504
- MYASTHENIA GRAVIS** See also Dystrophy  
muscular  
acetylcholine synthesis relation to thymus  
[Tretlow] 397—ab  
treatment thymectomy [Blafock] 598—ab
- MYCOBACTERIUM** tuberculosis See Tubercle  
Bacillus
- MYCOSIS** See also Actinomyces Cocci  
oldomycosis Dermatophytosis Monilia  
Tinea capitis  
fungoid penicillin ineffective [Bloomfield  
& others] \*690  
Iso Par N N R (description) 571 (Medi-  
cal Chemicals) 571  
of nose 736  
pulmonary clinical and radiologic studies  
[Johnston] 397—ab
- MYELITIS** See Encephalomyelitis Poliomye-  
litis
- MYELOMA** bone lesions treatment (reply)  
[Jacobson] 928
- MYELOPATHY** See Spinal Cord
- MYOBLASTOMA** [Howe] 986—ab
- MYOCARDITIS** anesthesia for cesarean sec-  
tion in (reply) [Nicholson] 670
- MYOCARDIUM** See also Myocarditis  
infarction angina pectoris indicates [Dress-  
ler] 453—ab  
infarction impending [Waltzkin] 856—ab  
infarction in dextrocardia [Cesalln] 524—ab  
infarction preventive aspects [Plotz] 130  
—ab  
infarction without coronary disease [Sim-  
mons] 394—ab  
injury in rats effect of restricting activity  
on recovery [Thomas] 981—ab
- MYOMAS** uterine management [Phancuf]  
459—ab (surgery for) \*140  
uterine fibroids relation to ovarian function  
[Baker] 1054—ab
- MYOTONIA** dystrophica See Dystrophy mus-  
cular
- MYOTOXISIN** See Mussell poisoning
- MYXIM** 189—BI

## Medicolegal Abstracts

- ABORTION** criminal medical license revoca-  
tion 50 980
- CHIROPRACTIC PRACTICE ACTS** constitu-  
tionality Texas act unconstitutional 915  
licenses annual renewal effect on original  
license 589  
licenses revocation renewal of license  
failure to renew as affecting proceedings  
599
- CORPORATIONS** medicine right to practice  
238
- DOCTOR** drugless practitioner's right to use  
title 657
- DRUGLESS PRACTITIONER** See Medical Prac-  
tice Acts particular type of practitioner
- DRUGS** drugless practitioner's right to use  
655  
vitamin capsules as constituting 655
- EVIDENCE** See also Valpractice  
hypothetical questions answer to supple-  
mented incomplete question proper 790  
witnesses expert basis of testimony when  
examining merely for purpose of testifying  
790  
witnesses expert evaluation of testimony  
790  
witnesses expert specialist witness need not  
be 790
- LYE** gonorrheal infection workmen's com-  
pensation 397
- POODS** opium poppy seeds production of  
prohibited 803
- CONORRHEA** See Venereal Diseases
- HYMOGLOBIN TEST** right of drugless prac-  
titioner to perform 655
- HYMORRHEGE** cerebral workmen's compensa-  
tion in relation to 126
- HERBALISTS** limited to treatment of referred  
patients 726
- HODGKIN'S DISEASE** trauma in relation to  
1048
- HOSPITALS** CHARITABLE status criteria  
for tax purposes 515  
taxes criteria of charitable status 515  
taxes unemployment state exemption from  
515
- HOSPITALS FOR PROFIT** bed injury from  
1167  
care degree required 1167  
contributory negligence on part of patient  
1167  
equipment adjustable bed patient injured  
1167  
nurses negligence of 1167  
physician employee liability for negligence  
of 248
- HOSPITALS IN GENERAL** medical prac-  
tice by 258
- HYDROCELE** trauma in relation to 1112
- VALPRACTICE** cyst pilonidal mistaken for  
furunculosis 790  
cyst pilonidal treatment by roentgen ray  
improper 790  
diagnosis mistake in 790

Medicolegal Abstracts—Continued  
MALPRACTICE—Continued  
evidence admissions of defendant physician 451  
evidence witnesses expert necessity for 451  
foreign bodies sponge left in patient 258  
fracture failure to make roentgenograms 451  
furunculosis pilonidal cyst mistaken for 790  
hospital physician employee liability for negligence of 258  
judgment error of physician not liable for 451  
limitation of actions accrual of right of action 258  
limitation of actions foreign bodies 258  
nurses liability for sponge left in patient by operating physician 258  
roentgen rays use in treatment of pilonidal cyst improper 790  
roentgenograms failure to make in treating fracture 451  
skill and care standards doctors of medicine 451 790  
sponge left in patient 258  
willful and wanton injury not necessary as basis of liability 790  
MEDICAL PRACTICE ACTS abortion revocation of license 30 980  
corporations practice of medicine by 28  
diagnosis hemoglobin test as 655  
doctor's drugless practitioner's right to use title 655  
drugless practitioner right to make hemoglobin test 655  
drugless practitioner vitamin capsules right to prescribe 655  
drugs right of drugless practitioner to use 655  
hemoglobin test as diagnosis 655  
herbalists limited to treatment of referred patients 726  
hospitals practice of medicine by 258  
licenses limited practitioner board's right to restrict practice 726  
licenses revocation abortion criminal 70 980  
licenses revocation appellate courts right to alter penalty of board 655  
licenses revocation complaint sufficiency of 980  
licenses revocation crimes moral turpitude 50  
licenses revocation hearings notice to licensee sufficiency of 980  
licenses revocation mandamus court's right to hear new evidence 50  
licenses revocation moral turpitude disturbing peace 50  
licenses revocation proceedings instituted by committee of board legality 980  
licenses revocation unprofessional conduct 655  
limited practitioner practice limited to referred patients 726  
ARCOTICS opium Poppy Control Act of 1942 validity of 853  
opium poppy defined 853  
poppy seeds production of for food purposes prohibited 853  
NURSES See Malpractice  
OPHTHALMIA gonorrhea workmen's compensation 387  
OPIUM POPPY CONTROL ACT constitutionality 853  
PARALYSIS hemiplegia workmen's compensation 126  
PNEUMOCOCCUS silicosis common law liability of employer 319  
silicosis workmen's compensation 319  
ROENTGEN RAYS See Malpractice  
ROENTGENOGRAMS See Malpractice  
SILICOSIS See Pneumococcus  
SPONGES left in patient 258  
SYPHILIS See Venereal Diseases  
TAXES unemployment state exemption charitable hospital 515  
TETANUS hand injury workmen's compensation 387  
TRAUMA Hodgkins disease 1048  
hydrocele 112  
VENEREA DISEASES gonorrhea workmen's compensation 387  
syphilis workmen's compensation 126  
VITAMIN CAPSULES as drugs 655  
WORDS AND PHRASES abortion 980  
exclusively operated for charitable purposes 515  
Hodgkins disease 1048  
injury by accident 319  
mistake 451  
moral turpitude 50  
opium poppy 853  
penetrate the tissues 655  
practice of chiropractic 915  
practice of medicine 915  
raw opium 853  
unprofessional conduct 655  
WORKMEN'S COMPENSATION ACTS back strain 191  
eye gonorrheal infection following burn from wood preservative 387

WORKMEN'S COMPENSATION ACTS—Continued  
eye wood preservative fluid causing injury to 387  
hands superficial injury followed by tetanus 387  
hemorrhage cerebral following exertion by syphilitic 126  
Hodgkins disease traumatic aggravation 1048  
hydrocele trauma to leg allegedly as cause of 112  
injury by accident silicosis 319  
medical fees liability of employer failing to provide services of physician 191  
medical treatment physicians selection of by employee 191  
paralysis hemiplegia 126  
pneumococcus silicosis not an injury by accident 319  
silicosis See pneumococcus supra  
syphilis activation of 126  
tetanus sequela of hand injury 387  
RAYS See Malpractice roentgen rays roentgenograms

## N

N E A See National Education Association  
N I R See under names of specific products  
as Hevelost Menadione etc  
N R Tavelet or Nature's Remedy 318—B1  
NAILS of fingers and toes dystrophy [Garb] 856—ab  
polish dermatitis from [Kell] 390—ab  
NAPHTHOQUINONES Having Vitamin K activity See Menadione Vitamins K  
NARCOSIS THESIS See Mental Depression  
NARCOTICS See also Morphine Opium  
Medicolegal Abstracts at end of letter M  
Addiction See Morphine  
control in sanatoriums Buenos Aires 784  
violation physician fined \$10 000 for Fla 970  
NASAL See Nose  
sinusitis See Sinusitis  
NASOPHARYNGITIS See Colds  
NASOPHARYNX See also Adenoids  
epitheliomas & rays for [Baclesse] 668—ab  
NATIONAL See also American International  
list of societies at end of letter S  
Academy of Medicine of Rio de Janeiro See Academy  
Achievement Award medal to Dr Florence Selbert 509  
Broadcasting Co military surgeons instruct by television 777  
Cancer Institute federal appropriation for cancer research 1093—OS  
Committee for Education on Alcoholism Inc organized 599  
Committee for Mental Hygiene (fellowships in child psychiatry) 183 (honors Dr Kirk) 840  
conference on venereal disease control 178 —OS 646—OS 969  
Congress of Parents and Teachers recommends social hygiene instruction in schools 178 —OS  
Dental Service proposed England 1162  
Education Association and A M A Health Education 1086—E  
Foundation See Foundations  
health program medical care in American Public Assn report \*441  
health program (nation wide) by Committee on Research in Medical Economics N Y 640—F  
Health Service (England) See Beveridge Plan  
Hospital Service Society ordered dissolved 714—OS  
Leprosarium [Hopkins & Faget] \*937  
Music Council survey on use of music in psychiatric hospitals 718  
Physicians Committee Michigan state division 715  
Public Health Nursing Day (1st) 848  
Research Council (admits American Society of Tropical Medicine to membership) 183 (Committee on Applications of Electron Microscope) [Vudd & Anderson] \*61  
[Vudd] \*632 (given American Pharmaceutical Manufacturers Association award) 718 (extra combined vitamin pills for industrial workers) [Fishbein] 738—rb (appointment) 782 (human thiamine requirement) 1031—E  
Safety Council (brochure on postwar traffic dangers) 106—E (accidents facts) 116  
Service Life Insurance \$7 000 policies have matured on veterans deaths 646—OS  
University of Rio de Janeiro 120  
Warfare Health Program hearings to be resumed Sept 18 20 178—OS  
NATION WIDE Health Program See National health program  
NATURAL Perry's 723—B1  
NATURAL TONE 1048—B1  
NATURE'S Remedy or N R Tablets 318—B1  
NUSEA See also Vomiting  
from taking yeast tablets liver extract or vitamins [Ruffin & Cayer] \*824  
NAVEL CORD See Umbilical Cord

AVICULAR Bone osteochondrosis (Kobler's) 866  
NAVY UNITED STATES See also World War II  
asks U S Congress for permanent postwar research 774—OS  
changes in Navy Medical Corps commands 902  
E Award See World War II U S Army Navy E  
filariasis registry at Klamath Falls Ore 902  
Medal See World War II Heroes and Prisoners  
medicine (exhibit at National Gallery of Art) 176 (featured in 6th War Loan Drive) 776  
physicians needed by number 643—E 643 —OS 841  
Relief Society assistance in medical care of naval dependents 438  
respiratory infections sulfadiazine prophylaxis in [Coburn] \*88  
School for Air Evacuation of Casualties 1091  
venereal disease in punishment ended by Congress 572—F [Fellmann] 1167—C  
NEAL PAUL A described toxicity of DDT 714—OS  
NECK See Spine cervical  
NECROSIS See also Femur  
aseptic in callous workers etc [Taylor] 261—ab  
NEEDY See Medically Indigent Physicians Indigent  
NECROSIS health plan (5 year) for Liberia U S backs 969—OS 1042  
health committee chairman Maurice F Rabb 1094  
gonorrhea in women sulfonamide and penicillin for [Thomas & others] \*623  
leprosy in [Hopkins & Faget] \*937  
lymphogranuloma venereum in [Deesou] 1113—ab  
Rh factor distribution [Invernizzi] 864—ab  
rheumatic fever in Cincinnati vs rentals crowding population density [Wadum] 1113—ab  
syphilis and pulmonary tuberculosis in [Hoffman] 582—ab  
syphilis treatment [Cagle] \*538  
NEISSERIA gonorrhea See Gonococcus intracellularis See Meningococcus  
NEOARSTHEMINE treatment of syphilis [Cooperating Clinics] \*554  
NEOPLASMS See Cancer Sarcoma under region or organ affected  
NEOSTIGMINE to diagnose pregnancy and treat delayed menstruation [Kossmann] 1174—ab  
NEPHRECTOMY See Kidneys excision  
NEPHRITIS See also Pyelonephritis  
glomerular effect of pregnancy on [Wellen] 1172—ab  
glomerular penicillin ineffective [Bloomfield & others] \*688  
glomerular acacia for [Smalley & Binger] \*332  
NEPHROSCLEROSIS glomerular (Kimmelstiel's and Wilson's intercapillary) [Auro] 199 —ab  
NEPHROSIS See Kidneys disease  
NEURAL See also Nervous System Neur—  
Anesthesia See Anesthesia  
block (alcohol lumbar paravertebral) in peripheral vascular disease [Saland] 51 —ab  
block (lumbar sympathetic) for femoral thrombophlebitis in premature infant [Dickins & Richmond] \*1149  
cervical (7th) compression by herniated intervertebral disk operation relieves [Buey & Chenuault] \*26  
Deafness See Otosclerosis  
electrophysiology Nobel prize to Drs Erlanger and Gasser for 640—F 971  
fascicular twitching from overwork [Nielsen] \*801  
optic atrophy (unilateral ascending) in cavernous sinus thrombophlebitis [Nicholson & Anderson] \*12  
Paralysis See Paralysis  
pathology in poliomyelitis [Dublin] 192—ab  
Reflex See Reflex  
Sciatic See Sciatica  
splanchinctomy (radical lumbar) effect on hypertension [Smithwick] 1115—ab  
Surgery See Nerves splanchinctomy Nerves vagotomy Neurosurgery suture autologous plasma clot [Tarlo] \*741  
sutureless reunion with tantalum foil [Wells] 129—ab  
sympathetic procaine infiltration in frost bites [Bück] 989—ab  
symptoms in herniated lumbar intervertebral disks [Heegan] \*868  
vagotomy in peptic ulcer [Weinstein] 862 —ab  
NERVOUS SYSTEM See also Brain Nerves Spinal Cord  
complications of typhoid [Bambach] 733—ab  
Disease See also Encephalomyelitis disease pyridoxine subarachnoid injection in [Stone] 661—ab



- NERVOUS SYSTEM**—Continued  
Surgery See Neurosurgery  
Syphilis See Neurosyphilis  
toxoplasmosis 368—E  
tumors (metastatic) from lungs [Meerloo] \*558
- NERVOUS SYSTEM SYMPATHETIC** See Nerves sympathetic  
Surgery See Sympathectomy
- NETHERLANDS** American physicians to give university refresher courses 111  
facing famine and epidemics 842  
health news from Europe 242  
liners become mercy ships to evacuate American wounded 177
- NEURALGIA** in lung tumors [Meerloo] \*558
- NEURITIS** polyneuritis especially acute varieties [Pirzada] 1055—ab  
Sciatic See Sciatica
- NEUROCIRCULATORY** Asthenia See Asthenia neurocirculatory
- NEUROFIBROSIS** and osteitis fibrosa cystica 174—E
- NEUROLOGY** See also Nerves Nervous System  
Initial syndrome of pulmonary growth [Meerloo] \*558  
Surgery in See Neurosurgery
- NEURONS** muscle spasm in poliomyelitis [Schwartz & others] \*695
- NEUROPSYCHIATRY** A M A panel discussion on [Grinker] \*142 [Everts & Woodhall] \*145 [Murray] \*148 [Ewalt] \*150 assembly at Institute of Medicine of Chicago 114  
for general medical officer 644  
in Japanese Army [Newell] \*373
- NEUROPSYCHOSIS** See Psychoneurosis
- NEUROSIS** See also Psychoneurosis  
Cardiac See Asthenia neurocirculatory  
clinical allergy [Brown] 658—ab  
intermittent burning of palate 62  
treatment thioracil [Cannon] 745—ab  
war treatment [Grinker] \*142 [Murray] \*148
- NEUROSURGERY** See also Brain surgery  
Nerves splanchnicectomy Nerves vagotomy Sympathectomy  
autologous plasma clot suture of nerves [Tarlov] \*741  
fibrin foam as hemostatic agent [Ingraham] 128—ab [Woodhall] \*469  
fibrin foam with thrombin [Ingraham & Bailey] \*681  
for head and spinal cord injuries in the army [Everts & Woodhall] \*145
- NEUROSYPHILIS** See also Dementia paralytica  
asymptomatic and treatment with trypanamide 928  
treatment penicillin [Stokes & others] \*73
- NEUTROPENIA** See Agranulocytosis Acute
- NFW JERSEY Medical Surgical Plan** 179—OS 245—OS
- NEW YORK** See also Columbia University  
Committee on Research in Medical Economics health program 640—E  
Community Service Society of Issues pamphlet on child care 780  
Diabetes Association to develop new camp 181  
Dispensary blood collected at patient's first visit [Howard] 979—C  
Mayor La Guardia's Health Insurance Plan of Greater New York incorporated 125 161 296 126 113—OS 377 648 906  
Medical Expense Fund of New York Inc merges with Community Medical Care Inc 577—OS  
political care of mentally ill in 33—E  
rabies in 643—E  
State Committee on Physical Fitness honors Dr G Rowntree 1092  
state commission to study care of needy 247  
United Medical Services 443—OS 577—OS  
Western New York Medical Plan Inc (Burau report) 503—OS
- NFWBORN** See Infants Newborn
- NEWSPAPERS** See also Journals  
Chicago *Herald American* as antivivisectionist 102—E
- NICACIN** See Acid nicotinic
- NICHOLS** Medal See Prizes
- NICOLAS** Favre Durand Disease See Lymphogranuloma venereal
- NICOTINAMIDE** See Acid nicotinic
- NICOTINIC** Acid See Acid nicotinic
- NIKETHANIDE** temporarily stimulates emmetropic visual acuity [Lebensohn] 263—ab
- NITRATES** mannitol hexanitrate N N R (description) 497 (Abbott) 497
- NITROGEN** loss after gastrectomy [Co Tul] 519—ab  
metabolism after fracture [Howard] 1170—ab  
metabolism histidine deficient diet [Albanese] 194—ab
- NITROFAN** 124—B1
- NITROUS OXIDE** uroanalysis with [Roger son] 398—ab
- NOBEL** Prize See Prizes
- NOMENCLATURE** See Terminology
- NOVO** for Piles 655—B1
- von NOORDEN** CARL death 1097
- NORTHINGTON** Roentgenological Clinic at Winter General Hospital 840
- NORTHROP Aircraft Inc** placement program for veterans 842
- NORTHWESTERN University** (scholarship awards) 779
- NOSE** See also Nasopharynx  
Accessory Sinuses See Sinusitis Nasal  
Colds See Colds  
disease penicillin in [Putney] \*620  
fungus infection 736  
intranasal vaccination for colds 371—E (Joint Council report) \*896  
phenol chloride N N R (description) 169 (Parke Davis) 169
- NOSTRUMS** See also under names of specific nostrums  
dangerous to health because of inadequate warning on label 587 788  
Federal Drug Administration notices of judgment on misbranded products 48 124 189 514 788 979  
Federal Trade Commission stipulations 48 124 189 318 385 587 1048
- NOURSE** Fellowship See Fellowships
- NOVOCAIN** See Procaine Hydrochloride
- NOVEN** Brand Tablets and Capsules Lueberts 788—B1
- NR Tablets** 318—B1
- NUCLEUS Pulposus** See Spine Intervertebral disk
- NURFIELD** Foundation See Foundations
- NURSES** See also Nursluk Medicolegal Abstracts at end of letter M  
civilian needed for Army hospitals 502  
Army See World War II nurses  
first nurses to School of Military Government 504  
Flying See Aviation  
Heroic Action See World War II Heroes and Prisoners  
Navy See World War II nurses  
tuberculosis case finding by Royal College of Physicians 249  
tuberculous infection in [Daniels] 666—ab  
U S Cadet Nurse Corps See World War II nurses
- NURSING** American Red Cross home nursing program 503  
in U S Public Health Service 440  
profession committee report on reorganization Australian 1099
- NUTRITION** See also Diet Famine Food  
Infants feeding Starvation Vitamins  
A M A Council on Foods and Nutrition  
See American Medical Association  
better changing food habits for, 234—E  
Deficiencies See also Vitamins deficiencies  
deficiencies level of vitamin B complex in [Foltz] 50—ab  
in convalescence and rehabilitation [Spies] 985—ab  
in tuberculosis evaluated by blood analysis [Getz] 592—ab  
instruction in Harvard 309  
malnutrition cause of disease [Bowman] \*331  
malnutritional antiviral immunity 105—E  
research Borden Award in 312 908  
research unit Medical Research Council establishes 313  
toxicity of rancid lard 573—E  
value of soybean peanut and cottonseed flours [Jones] 393—ab
- NUTS** See under specific kinds as Peanut
- NUVITA** Perry's 723—B1
- NYLON** poleless field stretcher weighing less than 7 ounces Navy develops 1033
- O
- OBER FRANK R** hearings before Kelley committee 178—OS
- OBSIDITY** endocrine and spastic abdominal syndrome [Schmidt] 134—ab  
in melabolic carnopathy [Grollman & Rousseau] \*213  
thyroid or pituitary deficiency 866  
treatment Re Duce Olds Capsules 655—B1
- OBITUARIES** See list of Deaths at end of letter D
- OBSTETRICIANS** Royal College of to locate at Lincoln's Inn Fields 1097
- OBSTETRICS** See also Abortion Cesarean Section Labor Pregnancy  
Anesthesia in See Anesthesia  
Brazilian Society of 1044  
improvements during 18th century 937—ab  
woman professor of Mrs Bertram Lloyd 315
- OCCUPATIONAL** Dermatoses See Industrial Dermatoses  
Disease See Industrial Diseases  
therapy at St Luke's Chicago [Coulter] \*360
- OCTOFOLLIN** benzenol nonproprietary designation for (Council report) 1085  
N N R (Scheffelin) 769
- OCULAR** Symptoms Tests See Eyes Vision
- ODORS** See also Bromohydrocarbons  
new deodorant PDB 575
- OFFICE** of Civilian Defense See World War II
- OFFICERS** See subheads under World War II
- OHIO** See also Cincinnati Cleveland  
medical care plan 443—OS  
State University (Dr Doan dean) 1041
- OIL** See also Lard Peanut Oil  
bal in treatment of severe myopharsen reactions 901  
cargo German files under Red Cross flag protection 974  
emulsion used on floors and bedding to control airborne infection [Robertson & others] \*993  
Liver See Liver oil  
Mineral See Petroleum  
of peppermint extraction Brazil 120  
oil hair and scalp (seborrhea oleosa) 528  
ointment Iso Par N N R (description) 571 (Medical Chemicals) 571  
treatment of psoriasis 603  
use as protection against harmful sunlight 463
- OKLAHOMA** prepayment surgical and obstetric plan for 646—OS
- OLD AGE** See also Physicians veteran  
1944 version of Townsend plan considered Cannon bill 969—OS
- OLEOCRAON** See Elbow
- OLEOMARGARINE** vitamin A fortified (Council report) 178
- ONCHOCERCIASIS** See Filariasis
- ONE DAY** Treatment See Gonorrhea
- OPERATION** See Surgery  
Early rising after See Convalescence and Convalescents  
Illegal See Abortion criminal  
OPERATIONAL fatigue in those returning from combat [Murray] \*148
- OPHTHALMIA** See Medicolegal Abstracts at end of letter M
- OPHTHALMOLOGY** *Ibero Americana* See Journals
- OPHTHALMOLOGIST** making [Berens] \*671
- OPHTHALMOLOGY** See also Eyes Vision  
Brazilian Society of (meeting) 120  
F R C S in 314  
Ophthalmological Society of Egypt gold medal 513  
Pan American Congress meeting postponed to 1945 975  
penicillin in [Keyes] \*610  
Snider Foundation grant for glaucoma research 1095  
teaching and research Institute London 314
- OPIMUM** See also Morphine  
production U S government to limit in interest of troops overseas 503—OS
- OPTIC** See Eyes Ophthalmology Vision  
Atrophy See Nerves optic
- OPTOMETRY** and medical ethics [Berens] \*672
- ORAL** Gargle See Mouth
- ORAXAX** Merrell (Joint Council report) \*896
- ORATIONS** See Lectures
- ORBIT** cellulitis penicillin for [Sloane] \*164  
[Keyes] \*611 \*613 [Putney] \*621  
tumors diagnosis [Benedict] \*380  
tumors retro orbital adrenal rest [Hughes & Ambrose] \*231
- ORCHIECTOMY** See Castration
- ORDER** of the Purple Heart See World War II Heroes and Prisoners
- ORGANIZED** Medicine See American Medical Association Societies Medical
- ORGENE** Pure Shampoo 189—B1
- ORIENTAL** Sore See Leishmaniasis of skin
- ORNITHOSIS** as cause of sporadic atypical pneumonia [Levinson & Gibbs] \*1079  
treatment penicillin [Turgasen] \*1150
- OROPHARYNX** airborne poliomyelitis virus in 104—E
- ORTHOPEDECS** consultants of various service commands 775  
surgery postwar challenge to [Caldwell] \*269  
treatment heart in various conditions (Council report) [Ober] \*760
- OSBORNE** Medal See Prizes
- OSLER** Weber Rendu Disease See Telangiectasia hereditary hemorrhagic
- OSTEITIS** deformans (Paget's disease) of bones [Relfenstein] 859—ab  
fibrosa cystica and neurofibromatosis 174—E
- OSTEOCHONDROSIS** of navicular (Kohler's) 866
- OSTEOMYELITIS** acute hematogenous with and without sulfonamides [Kenney] 986—ab  
chronic penicillin and surgery for 120  
chronic staphylococcal penicillin ineffective [Bloomfield & others] \*690  
etiology granuloma inguinale [Lyford] 728—ab  
of frontal bone [Otte] 924—ab  
of frontal bone and maxilla complicating sinusitis penicillin for [Putney] \*621  
roentgenology [Petersen & Roach] \*884
- OSTEOPATHS** defeated in Montana 846  
performed tonsilectomy causing death of 2 boys Calif 714  
Supreme Court upholds board of health's demurrer in case of 1160



OTHINE Face Bleach 318—B1  
OTITIS MEDIA See also Mastoiditis  
acute penicillin for [Swanson & Baker] \*G17  
etiology barotrauma radon treatment for  
[Fowler] 327—ab  
OTOSCLEROSIS treatment fenestration opera-  
tions [Smith] 663—ab  
OUBAIN N R [Carroll Dunham Smith]  
1029  
OVARY cysts chemistry [Watts] 451—ab  
function relation to uterine fibroids [Baker]  
1051—ab  
tumors fibromas [Docherty] 320—ab  
tumors removal by Dr Ephraim McDowell  
Jane Crawford Div 1094  
tumors surgery for [Phineuf] \*141  
OVARIO Seeds Perry S 723—B1  
OVERVENTILATION See Respiration hyper-  
ventilation  
OVERWEIGHT See Obesity  
OVERWORK See Fatigue  
OVIDUCTS inflammation postpartum salpin-  
gitis and one child sterility [Black Schaf-  
fer] 350—ab  
OVI fertilization factor hyaluronidase  
1153—E  
OXFORD See University of Oxford  
OXYGEN deficiency relation of anesthesia to  
hypoxia and anoxia [Waters] \*1068  
deficiency visceral reactions to anoxia 1059  
—E  
deficiency vitamins for [Govier] \*749  
therapy with and without carbon dioxide in  
asphyxia neonatorum [Biggs] \*1070  
OXYQUINOLINE sulfate Diopreen 335—B1  
OXYTRIASIS dogs do not suffer from pin  
worms 466

## P

PAB See Sodium  $\beta$ -aminohippurate  
PAB decodant used in Pacific theater 315  
PAA See National Congress of Parents and  
Teachers  
PACHA GEORGE T visits Rio de Janeiro 909  
PADEA PAUL A promotion new assignment  
510  
PACETS Disease of Bones See Osteitis de-  
formans  
PAIN See also Backache Headache Neu-  
ralgia Sciatica under names of specific  
organs and regions as abdomen  
Precordial See Angina Pectoris Throm-  
bosis coronary  
Relief See also Anesthesia Nerves block  
Sympathectomy  
relief Ache Knock Tablets 48—B1  
relief in biliary colic with aminoxylline  
[Gladstone & Goodman] \*1084  
relief in renal colic by inhalation of amyl  
nitrite 120  
PAIN Drug Co prize 1095  
PAINTING See Art  
PALATE intermittent burning 62  
PALESTINE foreign letter from 44 250 783  
funds for health work in 1097  
Medical Congress 783  
PALLETTE EDWARD M death portrait 550  
PAN AMERICAN See also Inter American  
Latin America  
Congress of Ophthalmology 2nd meeting post-  
poned to 1945 975  
Congress of Tuberculosis (6th) 1044  
Health Day Mrs Roosevelt praises epidemic  
control 964—OS  
PANAMA CANAL ZONE travelling health re-  
quirements in 379  
PANCAST Lecture See Lectures  
PANCREAS See also Diabetes Mellitus  
excision thyroid and metathyroid diabetes  
970  
extract for dermatologic disorders 528  
extract (tissue) treatment of peripheral vas-  
cular disease and arteriosclerosis 735  
fibrocystic disease [Phillipsbora] 1173—ab  
inflammation (acute) management [Shal-  
low] 700—ab  
inflammation (acute) x-ray diagnosis [Me-  
theny] 1174—ab  
Islands of Langerhans regeneration [von  
Baker] 988—ab  
Secretion See Insulin Lipocyte  
PANCREATITIS See Pancreas excision  
PANCREATITIS See Pancreas inflammation  
PANCL DISCUSSION See under American  
Medical Association  
PANOTHEMATOP See Acid panthothenic  
PANVITEX analysis comparative cost  
(Council report) \*29  
PARACETAMOL nomocladure [Schwarz]  
833—C  
PARER See also Newspapers  
waved from cigar cartons as surgical  
dressings Capt Twyman discovers 712  
White Paper See Berkeley Plan  
PARVIOVA virus electron micrographs  
[Vudd & Anderson] \*368  
PARVITACI Fever See Parvovirus  
PARA AMINO BENZOIC ACID See Acid  
PARACENTESIS oculi See Cornea  
PARAFFIN Liquid See Petroleum

PARALYSIS See also Medicolegal Abstracts  
at end of letter M  
Aptans See Parkinsonism  
complications of typhoid [Bambach] 733—ab  
etiology nupharsa intensive treatment of  
syphilis [Sals & Noland] \*360  
General See Dementia paralytica  
in neuromuscular exhaustion syndrome  
[Nielsen] \*891  
lafanille See Polymyositis  
of Bladder See Bladder  
pseudohypertrophic muscular 1058  
puerperal from herniated lumbar interverte-  
bral disk [O Connell] 921—ab  
spastic subarachnoid pyridoxine injection  
for [Stone] 661—ab  
syndrome of lung tumor [McCrone] \*538  
PARANASAL SINUSITIS See Sinusitis Nasal  
PARASITES intestinal See Intestines para-  
sites  
PARASITOLOGISTS cancel requisition for  
107  
PARATHYROID tumors and hyperparathyroid-  
ism [Alexander] 657—ab  
tumors adenoma renal calculus with  
[Foulds] 1053—ab  
PARATHYROID immunization for travelers in  
Central or South America 379  
PARENT TEACHERS ASSOCIATION See Na-  
tional Congress of Parents and Teachers  
PARENTHOOD planned See Contraception  
PARESIS See Dementia Paralytica  
PARESTHESIA from herniated intervertebral  
disk [Buey & Chenault] \*26  
PARKINSON G B Typhus Commission Medal  
to 306  
PARKINSONISM treatment vitamin B<sub>6</sub> [Sana-  
bria] 199—ab  
PARKS JOHN LOUIS U S Childrens Bureau  
consultant 904—OS  
PAROTITIS EPIDEMIC clinical character-  
istics belladonna treatment [Potter] 856  
—ab  
treatment convalescent plasma injection  
hepatitis after [Beeson McFarlan Haw-  
ley] 461—ab  
PARRAN THOMAS (advocates national health  
plan) 113—OS (before Kelley Committee)  
904—OS  
PARTURITION See Labor  
PASTEUR Lecture See Lectures  
PASTURELLA tularensis infection See  
Tularemia  
PATENT MEDICINES See Nostrums  
PATENTS Wisconsin Alumni Research Founda-  
tion wins court reversal 11 1096  
PATHOLOGISTS clinical American Society of  
present military program 374  
PATHOLOGY See also Disease  
Army Institute of J E Ash appointed di-  
rector 840  
veterinary registry established 175  
PATIENTS See also Disease Hospitals  
Medical Service under names of specific  
diseases  
blood collected at first visit at New York  
Dispensary [Howard] 970—C  
load California vs other states [Merrill &  
Wills] \*891  
Prolonged Bed Rest vs early rising See  
Convalescence and Convalescents  
Transport of See Ambulances Hospitals  
ship Hospitals tria Stretcher  
PATULIN treatment of colds 510 (Medical Re-  
search Council report) 938—ab  
PAULINO AUGUSTO JR elected to National  
Academy of Medicine 120  
PEACHES strained Clapps 213  
PEANUT nutritional value [Jones] 393—ab  
oil beeswax mixture to prolong action of  
penicillin 304 435—E [Welch & others]  
\*1024  
PEARL HARBOR wartime experiences in  
Hawaii after blitz on [Plunkerton] \*625  
PEARS strated Clapps 233  
PECTIN solution intravenously for shock [Mc-  
Clure] 858—ab  
solution as blood substitute 1154—F  
PEDIATRICS See also Children Infants  
American Academy of (withdraws support  
from Childrens Bureau) [Lenroot] 49—C  
(report) 183 717 (Cuban branch) 1097  
aspects of asphyxia neonatorum [Biggs]  
\*1070  
child health at Liverpool University 448  
Nuffield Foundation establishes chair of child  
health at U of London 582  
PELLAGRA in hospital patients receiving vita-  
min B complex [Roberts] 594—ab  
Infantile whole stomach extract for 249  
PELVIS acute thrombophlebitis of continuous  
caudal anesthesia in [Ellis] 591—ab  
periodic examination to control uterine cancer  
[Macfarlane & others] \*877  
roentgenography of 1000 pregnant women  
[Kennedy] 923—ab  
PELVICAN used by American Indians  
[Stefansson] 662—ab  
PELVIPHIGUS treatment adrenal cortex extract  
dihydrochysterol vitamin D massive doses  
[Lever] 394—ab

PENICILLIN See also Penicillium  
action on staphylococcus in vitro [Rantz]  
392—ab  
action (prolonged) by suspending it in bees-  
wax peanut oil mixture 304 435—E  
[Welch & others] \*1024  
allotia (synergic) of sulfathiazole etc [Big-  
ger] 666—ab  
allergy to [Crisp] \*429 [Feluberg] 522—ab  
American Red Cross sends it by air for war  
prisoners in Germany 542  
excretory blockade use of diodrast and  
 $\beta$ -aminohippuric acid 369—E  
excretory blockade use of  $\beta$ -aminohippuric  
acid [Beyer & others] \*1007  
G (crystalline) compared with penicillin  
[Welch & others] \*1024  
history accidental discovery address by Dr  
Fleming 118  
history 170—E  
inactivation by serum [Bigger] 1175—ab  
International unit League of Nations 1043  
1097  
N N R (description) 367 (Winthrop) 367  
oligotact (ophthalmic) [Keyes] \*614  
oligotact postoperative use in keratectomies  
for cornea opacities [Castroville] 450—ab  
sodium crystalline tuberculin type hyper-  
sensitive to [Welch & Rosenberg] \*10  
sodium N N R (Parke Davis Lederle  
Squibb) 897 (Sharp & Dolme) 961  
sodium treatment of sulfonamide resistant  
gonorrhea [Sternberg & Turner] \*137  
substitute patulin la common cold 510  
(Medical Research Council report) 988—ab  
supply center Hawaii 182  
supply Columbia U receives 310  
supply distribution Argentina 652  
supply for childrens England 448  
supply San Juan 379  
toxicity reactions [Stokes & others] \*78  
Treatment See also Agranulocytosis Acute  
Anthrax Arthritis rheumatoid Cellulitis  
Clostridium welchii infection Ear disease  
Empyema Endocarditis subacute bacterial  
lyellid infections Eyes disease Eyes  
infection Fractures compound Furuncu-  
losis Gangrene gas Genito urinary Tract  
infections Gonorrhea Granuloma in  
genital Head injuries Impetigo contact  
osa Infection surgical Meningitis cere-  
brospinal epidemic Meningitis pneumo-  
cocci Meningitis treatment Miliaria  
Neurosyphilis Nose disease Ophthalmol-  
ogy Otitis Otitis media Osteomyelitis Peritonitis  
Rheumatic fever Smallpox Spinal Canal  
abscess Syphilis congenital Syphilis  
treatment Throat disease Thrombophlebi-  
tis  
treatment continuous intramuscular infusion  
[Harris] \*232  
treatment heparin in intravenous infusions  
[Warlin] 987—ab  
treatment local crude filtrate for [Alston]  
58—ab  
treatment of battle casualties [Jeffrey] 520  
—ab  
treatment of framesia 1163  
treatment of gonorrhea masks early syphilis  
110 [Shirfer] 807—ab  
treatment of no value though not harmful in  
polymyositis [Toomey] 49—C  
treatment of syphilis A M panel dis-  
cussion \*63 73  
treatment of tularemia without effect [Jocoy]  
\*496  
treatment plus sulfonamides in pneumococci  
meningitis [Warlin & Smith] \*418  
treatment study of failures [Bloamfield &  
others] \*680 [Mokotoff & others] 1167—C  
treatment symposium on in diseases of eye  
ear nose and throat \*610 621  
treatment to prevent capyema after lung re-  
section [White & others] \*1016  
treatment topical applications 292  
\ (factor  $\alpha$  allopenicillin) 304 435—E  
[Welch & others] \*1024  
PFACILLIUM chlamydiae chlamydiae bacterio-  
static [Thomson] 1171—ab  
filtrate, crude for local use [Alston] 58—ab  
inoculated dressing for impetigo contagiosa  
[Robinson] 389—ab  
PFNIS See also Circumcision  
bubonitis penicillin for [Thompson] \*406  
PFANSTYLANIA Medical Service Association  
of 377—OS  
University of See University  
PENSIONS for disabled veterans 646—OS  
for widows and children of First World War  
veterans 1093—OS  
1944 version of Townsend plan Cannon bill  
969—OS  
PENTOTHAL SODIUM effect in hypertension  
[Grimsen & others] \*218  
in Canadian Army anesthesia service [Bod-  
diagon] 1116—ab  
intravenous anesthesia la perco and war  
[Adams] \*282  
narcosis synthesis for war neuroses [Grinker]  
\*142  
PEOPLE See Population

- PEP (rigor) not increased by taking vitamins  
liver extract yeast extract [Ruffin & Cayer]  
\*823
- PEPPER Subcommittee testimony at hearings  
244—OS 308—OS
- PEPPERMINT Oil See Oil of Peppermint
- PEPSI COLA caffeine content [Roth & others]  
\*818
- PEPSIN activity inhibition in peptic ulcer  
[Steigmann] 192—ab
- activity sodium alkyl sulfato effect on  
[Kirsner] 55—ab
- PEPTIC ULCER etiology caffeine (coffee  
Coca Cola Pepsi Cola tea etc) [Roth &  
others] \*814
- etiology hypothalamus damage [Enzli] \*101
- etiology vascular theory [Best] 60—ab
- gastric of greater curvature [Blum] 917—ab
- incidence invariable [Patterson] 130—ab
- pepsin activity inhibited in [Steigmann]  
192—ab
- perforated diagnosis by methylene blue orally  
recovered by peritoneal tap [Kaufman]  
594—ab
- perforation into abdominal wall [Morlock]  
455—ab
- surgical treatment vagotomy [Weinstein]  
862—ab
- treatment changing concepts [Best] 60—ab
- treatment cholesterol in coronary arterio  
sclerosis [Shaffer] 53—ab
- treatment diet for duodenal ulcer [Portis]  
\*414
- treatment enzyme treated milk [Steigmann]  
792—ab
- treatment sodium alkyl sulfate 1102—E
- PELTONE Pep Pills Perry's 723—B1
- PERFORMORP liver oil with vlistrol Codanol  
Brand N N R (American Pharmaceu  
tical) 367
- PEREIRA DE QUEIROZ CAPIOTA lecture at  
National Academy of Medicine 383
- PEREIRA FILHO J appointment 186
- PERFORATION See Intestines Peptic Ulcer
- PERFORMANCE physical and psychic am  
phetamine sulfate effect on 1031—E
- PERICARDITIS constrictive treatment [Koch]  
135—ab
- postoperative electrocardiogram differentiates  
from coronary occlusion [Bayley] 590—ab
- PERIODICALS See Journals
- PERIOSTEUM intact in traumatic fracture 62
- PERITONEUM See also Pneumoperitoneum
- Inflammation See Peritonitis
- talcum powder granulomas of peritoneal  
cysts [Gardner] 588—C
- tap recovers methylene blue given orally  
diagnostic value [Kaufman] 594—ab
- PERITONITIS treatment penicillin [Faulley  
& others] \*1132
- treatment sulfaeryldine [Gardner] 987—ab
- PERLECHE nosologic status [Finerud] \*737
- PERMANENT WAYF See Hair
- PERMANENTE Foundation See Foundations
- PERNICIOUS Anemia See Anemia Pernicious
- PEROVA vaginal Capsules N N R 897
- PERRY VICTOR EDISON adventures of a  
dodger 723—B1
- PERSONALITY See also Behavior
- in clinical allergy [Brown] 638—ab
- PERTUSSIS See Whooping Cough
- PETROLATUM liquid mineral oil in intestine  
928
- protects against harmful sunlight 465
- PETROLEUM PRODUCTS See Benzene Gaso  
line Kerosene Petrolatum
- PHAGE See Bacteriophage
- PHARMACEUTICALS See also Drugs
- American Pharmaceutical Ass'n (given WPB  
award for quinine pool) 177
- American Pharmaceutical Manufacturer's  
Ass'n award to National Research Council  
718
- PHARMACOLOGY fellowships at Wayne 1158
- PHARMACY A M A Council on See Amer  
ican Medical Association
- PHARYNX See also Nasopharynx Oro  
pharynx
- cancer concentration radiotherapy [Cutler]  
321—ab
- PHENOL chloride N N R (description)  
169 (Parke Davis) 169
- PHENOL inactivated influenza virus [Dunham]  
661—ab
- synthetic compound G 11 in soap to reduce  
bacteria on skin [Traub] 459—ab
- PHENYLHYDRAZINE Hydrochloride Treatment  
See Polycythemia vera
- PHILADELPHIA Session See American Medi  
cal Association
- PHLEBITIS See also Thrombophlebitis
- vitamin K cause in late pregnancy? 138
- PHLEBOTOMOSIS See Thrombosis ven  
ous
- PHLEBOTOMUS See Sandfly
- Fever See Papataci Fever
- PHONE See Telephone
- PHOSPHATEMIA See Blood phosphate
- PHOTOELECTRIC colorimeters 62
- PHOTOGRAPHY See Moving Pictures Photo  
micrography
- PHOTOMICROGRAPHY ultraviolet in muscu  
lar dystrophy [Hoagland] 456—ab
- PHOTORENTGEN See Roentgen Rays
- PHOTOSTAT service for British medical officers  
overseas 1162
- PTHALYL SULFATHIAZOLE clinical use,  
[Poth] 597—ab
- treatment of carriers of diarrhea and bacil  
lary dysentery 1032—E
- PHYSICAL DEFECTS See Crippled Dis  
ability Handicapped, Physical Fitness Re  
habilitation
- PHYSICAL EDUCATION AND TRAINING  
See also Exercise
- amphetamine sulfate effect on physical per  
formance 1031—E
- Association for Health Physical Education  
and Recreation school health policies  
1086—E
- compulsory (1 year) for young persons  
Roosevelt urges 843—OS
- routine ordered in naval hospitals 841
- special course in 902
- PHYSICAL EXAMINATION See also Physical  
Fitness
- periodic of pelvis to control uterine cancer  
[Macfarlane & others] \*977
- PHYSICAL FITNESS in temperate or hot  
climate and dietary protein [Pitts] 195—ab
- Joint Committee on 714—OS
- measuring 991
- New York State committee on honors Dr  
Kowntree 1093
- program R L Sencenich urges in testimony  
before Pepper committee 308—OS
- standards 1088—E
- tests for convalescents [Karpovich & others]  
\*873
- PHYSICAL INFLUENCES on localization of  
skin lesions skin has a long memory  
992
- PHYSICAL MEDICINE See also Physical  
Therapy
- A M A Council on See American Medi  
cal Association
- Burch Committee on additional grants 977
- PHYSICAL RESTORATION See Rehabilita  
tion
- PHYSICAL THERAPY See also Diathermy
- Heat therapeutic use Physical Medicine
- Radium Roentgen Rays Ultraviolet Rays  
under names of specific diseases
- A M A Council on See American Medical  
Association Council on Physical Medicine
- clinic in jungle 240
- Lyon of Merit to 1st Lieut Metta L. Bax  
ter physical therapist 502
- PHYSICAL TRAINING See Physical Educa  
tion and Training
- PHYSICALLY HANDICAPPED See Handi  
capped
- PHYSICIANS See also Economics Medical  
Medical Jurisprudence Medical Service  
Surgeons etc
- American asked to aid Italy American  
Relief for Italy Inc 1092
- American College of Committee on Postwar  
Medical Service 243—OS 440 708—E  
709 770—E 775 1036—OS
- American College of Wartime (graduate  
Medical Meetings See Education Medical  
wartime
- American Serving Overseas See World  
War I World War II World War II  
Heroes and Prisoners
- American to give refresher courses in Dutch  
universities 111
- anatomy book found with dead Jap (former  
classmate) 242
- Army See World War II physicians
- Army Medical Library honorary consultants  
442—OS
- Aviation Medical Examiners See Aviation
- awards art prize contest 183
- Awards to See Prizes
- Belgian experience during German occupa  
tion 583
- Brazilian shown medical films 909
- British India plans to train 300 000 over  
30 year period 248
- California Physicians Service 112—OS 24  
—OS 370—E [Merrill & Mills] \*887
- Commissions (Military) See World War II  
Courses for See Education Medical grad  
uate
- Deaths See Deaths at end of letter D
- Demobilization See World War II physicians
- Directory of See Specialists
- Discharged See World War II physicians  
honorably discharged
- Distinguished Service Medal See World War  
II Heroes and Prisoners
- Drugs and the Doctor editorial in *British  
Medical Journal* 898—E
- Education of See Education Medical
- Ethics See Ethics Medical
- Fees See Fees
- Fellowship See Fellowships
- French may not leave Paris region without  
permission 111
- German hospital staffed by opened in Okla  
homa 240
- PHYSICIANS—Continued
- Graduate Courses Work See Education
- Medical graduate
- Heroic Action See World War II Heroes  
and Prisoners
- Honorably Discharged See World War II  
physicians
- In Industrial Practice See Industrial Health
- in politics in congress Ohio 1159
- in politics in the legislature Oregon 649
- In Service See World War II
- Income See Fees
- Indigent Los Angeles County Physicians Aid  
Association fund for 376
- Indigent Physicians Home N Y City 1159
- Industrial See Industrial Health
- Inter American Association of Postgraduate  
Physicians established Buenos Aires 784
- Investments [Smith] \*894
- Killed in Action See World War II  
Heroes and Prisoners
- Latin American studying in U S 848
- Lectures Honoring See Lectures
- Licensing See Licensure
- Martirs See Martyrs
- Medals for See Prizes
- medical certificates and war production 706  
—E
- Medical Responsibility See Medical Juris  
prudence
- Medicolegal Abstracts at end of let  
ter M
- Memorial to See also Fellowships, Lectures  
Prizes
- memorial to Dearhold Day 782
- memorial to Dr Christopher G Johnson  
pipe organ 1041
- memorial to Dr Karl Kanzier 905
- memorial to Sweeting Fund 846
- Memorial to World War Physicians 41
- Military Service See World War II
- Mixing in Action See World War II  
Heroes and Prisoners
- Monuments to See Physicians memorial to
- National Physicians Committee Michigan  
state division 715
- Negligence of See Malpractice under  
Medicolegal Abstracts at end of letter M
- patient load California etc [Merrill &  
Mills] \*891
- patients abstain from calling doctors at night  
France 111
- Payment of See Fees
- Portraits See Portraits (cross reference)
- Practicing See also Physicians supply
- practicing graduate continuation courses for  
\*1103
- practicing role in future practice of medicine  
[Bowman] \*331
- Prisoners of War See World War II Heroes  
and Prisoners
- Prizes for See Prizes
- Procurement and Assignment Service See  
World War II
- Recruiting See World War II physicians
- relocation prerogative to better medical care  
[Mountain] \*203
- Residences See Residences
- Resident Hospitals needing See Interns and  
Internships
- Royal College of (criticism of medical stu  
dents training) 119 (tuberculosis case  
finding in nurses) 249 (plan to locate  
at Lincoln's Inn Fields) 1097
- Service by See Medical Service Medical  
Service Plans
- Specialization by See Specialists
- Supply See also Physicians relocation
- supply in war industry area [Merrill &  
Mills] \*887
- supply shortage Germany (recruit students)  
37 (fear of) 1035
- supply shortage in West Africa 116
- supply statistics Palestine 200
- Testimony See Kelley Subcommittee Pep  
per Subcommittee Evidence under  
Medicolegal Abstracts at end of letter M
- veteran (Dr Blauvelt 90) 110 (honored  
Michigan) 246 (Dr Carner 90) 507  
(Dr Rosenberg 92) 647 (Dr T H Sol  
mann) 649 (Sir Humphry Rolleston 82)  
719 (Dr Brill honored at 70) 780 (Dr  
Ramirez Matrena 78 Dr Chaplin 80 Dr  
Faure 82) 782 (Dr Waggener 92) 846  
(Dr Mitchell 90) 970 (honored P) 1160
- Veterans of World War II See Veterans
- vocational rehabilitation program federal  
state 577—OS
- War Service See Veterans World War I  
World War II
- Women See also Students Medical
- women Dr Albertine Winner (British army  
doctor) honored 967
- women Dr Helen Putnam fellowship for  
advanced research honoring 1094
- women Medical Women's Federation state  
ment on venereal diseases continence  
etc England 1098
- women Mrs Bertram Lloyd professor at  
Birmingham 315
- PHYSIOTHERAPY See Physical Medicine
- Physical Therapy
- PI KAPPA Epsilon Lectures See Lectures

- PICKHARDT W L missing in action now a German war prisoner 573  
PICKERELL'S Solution See Burns treatment  
PICTURES See Art Moving Pictures Photo micrography Portraits (cross reference)  
PIGEONS ornithosis due to [Levinson & others] \*1079 (treated with penicillin) [Turgasen] \*1150  
PIMENTS See Blood pigments  
PIGS See Hogs  
PILES See Hemorrhoids  
PILOTS See Aviation  
PIMPLES See Acne vulgaris  
PIN metal implanted for femur fracture in diathermy contraindicated? 1122  
PINTA yaws and cutaneous leishmaniasis [Chambers] 725—C (reply) [Fox] 725—C studies on 1030—E  
PINWORM infection See Oxyuriasis  
PITCHER S Castoria 514—B1  
PITUITARY See also Diabetes insipidus crechevia corticotrophic hormone for [Hemp hill] 732—ab  
Cushing's basophilism [McLetchie] 197—ab  
Cushing's syndrome differentiating from metabolic craniohypophysectomy [Grollman & Rousseau] \*213  
Cushing's syndrome pathogenesis [Helm becker] 859—ab  
deficiency or thyroid 866  
dienecephalohypophyseal system and gonadotrophin production [Westman] 988—ab  
growth extract effects on bone growth [Finkler] 1118—ab  
obesity and spastic abdominal syndrome [Schmidt] 134—ab  
posterior fractions effect on uterus [Moir] 460—ab  
powder (Intranasal) plus starvation treatment in diabetes insipidus [Peters] \*1027  
PLACENTA See Industrial Health  
PLACENTA globulin in measles [Greenberg & others] \*944  
Infarcts and stillbirth 928  
previa diagnosis [McCort] 657—ab  
PLAGUE infection (Mont) 579 (Calif) 1039  
111—ES See Aviation  
PLANNED Parenthood See Contraception  
PLANTAGO SEED Plantain See Psyllium  
See  
PLANTS See also Betula vulgaris Grass Rhus glutamine in cells of 1069—F  
immunity to viral diseases [Mudd] \*636  
virus of cucumber mosaic 4 electron micrograph [Mudd & Anderson] \*570  
PLASMA See subheads under Blood Blood Transfusion Serum  
Cell Vitis See Breast inflammation  
Clot See Sutures  
Fission See Serum  
Substitute See Blood Transfusion Blood substitutes  
PLASTER See Adhesive  
Cast Dressings See Cast  
PLASTIC Surgery See Surgery  
PLATELETS See Blood platelets  
PLEURA friction rub without pain 1037  
PLEURISY dextrose in effusion [Garre] 526—ab  
Purulent See Empyema  
PNEUMOCOCCUS arthritis (primary) [Boger] \*1062  
electron micrograph [Mudd & Anderson] \*564 \*565 \*566  
infection reactions after sulfadiazine as preventive [Lee] \*630  
infections synergic action of penicillin and sulfathiazole etc [Bigger] 666—ab  
Meningitis See Meningitis  
vaccination antibody development after [Hodes] 195—ab  
PNEUMOCOCCUSIS See Pneumococcosis  
Medicolegal Abstracts at end of letter V  
PNEUMONITIS See Lungs  
PNEUMONIA antiserum gratis discontinued III 1039  
atypical primary 1152—E  
atypical primary cold agglutination test in [Heintzelman] 922—ab  
atypical primary differentiating apical opacities 603  
atypical sporadic ornithosis [Levinson & others] \*1079 [Turgasen] \*1150  
complications cardiac decompensation potassium bicarbonate and sulfonamides in [Ohmsted] 860—ab  
complications pneumococcal arthritis [Boger] \*1062  
etiology kerosene ingestion in boy aged 2 [Scott] 397—ab  
in Mexico 848  
pneumonitis with malaria [Applebaum] 1115—ab  
shocklike state after 736  
treatment canavanin [Farley] 396—ab  
treatment  $\Delta$  dimethylacryl sulfanilamide [Thurmer] 798—ab  
treatment fatal purpura after sulfapyridine [Sherlock] 1119—ab  
Virus See Pneumonia atypical primary  
PNEUMONITIS See Pneumonia  
PNEUMONOCONIOSIS See also Medicolegal Abstracts at end of letter V  
research England 380  
silicate cause silicosis [Gardner] 589—C  
silicosis due to wheat dust [McKay] 543—C  
PNEUMOTHORAX etiology kerosene ingestion in boy aged 2 [Scott] 397—ab  
PODOPHYLLIN treatment of condylomata acuminata at Camp Bowie [Culp] 393—ab  
POISON IVY Dermatitis See Rhus  
POISONING See also under names of specific substances as Acetone Carbon Monoxide Digitalis kerosene Potassium thiocyanate  
emptying infants stomach in poisoning emetics and gastric lavage 133  
Food See Botulism Food poisoning Mussell Industrial See Industrial Diseases  
POLIOYELITIS abortive or nonparalytic 103—E  
acute atelectasis complicating [Cooperstock] 192—ab  
air borne virus in prothyrinx 104—E  
beriberi in relation to [McCormick] 326—ab  
education of public with pamphlets Buenos Aires 583  
epidemic delays opening of schools New York 40  
epidemic in Hawaii since Pearl Harbor [Pinkerton] \*620  
epidemic situation U S 717  
Georgian Warm Springs Foundation 1097  
in troops in Middle East [Paul] 460—ab  
incidence in U S troops 305  
incidence U S 1944 312  
interference phenomenon in acquired cellular resistance [Mudd] \*635  
Kelley committee hearings 178—OS  
Langer (Senator) asked \$10 000 000 for 178—OS  
muscle spasm in acute stage notion current records Kennedy's concept [Schwarz & others] \*695  
National Foundation for Infantile Paralysis (funds available in epidemic) 378 (director of technical education) 447 (1945 March of Dimes) 1037—OS  
pathologic findings in nerves and muscles [Dublin] 192—ab  
quarantine modified (W Va) 41 (adults) ability not 267  
tumors and adenoids in relation to [Luchesi] 517—ab  
transmission 528  
treatment at Children's Hospital Denver use of Kennedy method [Ishchenko] 664—ab  
treatment penicillin ineffective though not harmful [Toomey] 49—C  
treatment pyridoxine subarachnoid injection [Stone] 661—ab  
treatment resources to be pooled  $\Delta$  716  
treatment sulfonamides warning against [Toomey] 49—C  
treatment hospitals assured supplies and equipment 242  
virus presence during winter [Ward] 326—ab  
virus in stools [Paul] 460—ab [Horstmann & others] \*1061  
virus resistance to effects of thiamine deficiency 105—E  
POLISH Water Woda Polska 1048—B1  
POLITICS care of mentally ill in New York 33—L  
Physicians in See Physicians  
West Virginia State Medical Association acts to remove from health program 817  
POLLEN See also Hay Fever  
Beta vulgaris and pollinosis 583  
POLYCYTHEMIA vera phenylhydrazine hydrochloride for [Stein & Sumerlin] \*104  
vera transfusions with blood from patient with 1122  
POLYNEURITIS See Neuritis  
POLYURIA See Diabetes insipidus  
POLYVINYL ALCOHOLS as blood substitute [Roome] 1116—ab 1134—E  
POND S Digestants Laxative Pills 387—B1  
PONTICINE See Tetracycline  
POOR See Medically indigent Physicians indigent  
POPULATION See also Vital Statistics density and mental disorder 900—F  
density and rheumatic fever [Wedum] 1113—ab  
PORADENITIS See Lymphogranuloma venereum  
PORES enlarged of skin 202  
PORPHYRIA fluorescent relationship to cyanide 374—F  
PORTAL VEIN hypertension Cruveilhier Baumgarten syndrome [later] 919—ab  
PORTO E V appointment 186  
PORTRAIT See Crossdale Hatfield Joachim Isham Little Vaughan  
PORTUGUESE translation of medical books for Latin American use 447—F  
POSITION in Space See Posture (cross reference)
- POSTGRADUATE WORK See Education  
Medical  
POSTOPERATIVE See Surgery  
Shock See Shock surgical  
POSTPARTUM See Puerperium  
POSTUM effect on stomach secretion [Roth & others] \*818  
POSTURE recumbency after operation or in disease See Convalescence and Convalescents  
POSTWAR Planning See World War II postwar  
POTASSIUM bicarbonate in pneumonia with cardiac decompensation [Ohmsted] 860—ab  
bitartrate dusting powder for surgical gloves 230—E  
permanganate inactivates influenza virus [Dunkam] 661—ab  
thiocyanate in hypertension [d Silva] 135—ab (blood concentration urine output) [Koffler] 1169—ab  
thiocyanate poisoning in hypertension [Weels] 131—ab  
POVERTY See Medically indigent Physicians indigent  
POWDER See Dusting Powder  
POWELL W H Jr appointment with nation wide A A F Training Command 240  
POWOLIN 48—B1  
PRAETER Foundation See Foundations  
PRACTITIONER See Physicians practice, drugless See Cults (cross reference) illegal See Licensure Medical Practice acts under names of individuals is Schreiner  
PREFRONTAL Lobotomy See Brain surgery  
PRENATAL See also Fetus Labor Maternity Obstetrics Placenta Puerperium etc  
Complications See also Incompetent previa Pregnancy toxemia in complications  
complications leukemia [Applebaum] 261—ab  
complications chorea [Ruch] 855—ab  
complications diabetes insipidus starvation treatment [Peters] \*1027  
complications hypertension glomerulonephritis and renal function [Wells] 1172—ab  
complications painful axillary masses 992  
complications pyelonephritis sulfonamides in [Crabtree] \*810  
complications rubella congenital defects in infants [Swan] 30—ab 237—E [Rones] 662—ab [Klaus] 1112—ab [Frickson] 1173—ab  
complications uterine cancer [Monckeburg] 668—ab  
diagnosis Hogben toad test breeding of Xenopus laevis [Landgrebe] 198—ab  
diagnosis neostigmine [Grossman] 1174—ab  
diagnosis rabbits vs frogs for ectopic pregnancy tests 1122  
diet deficiency in severe beriberi in newborn [Van Gelder] 1052—ab  
Ectopic See Pregnancy diagnosis  
elderly primipara [Kuder] 320—ab  
heart in [Donovan] 134—ab  
hemorrhage in placental site in bleeding [McCort] 637—ab  
interruption of See Abortion  
Multiple See Twins  
pelvis roentgenography in 1000 women [Kennedy] 923—ab  
Protection from See Contraception  
Rh factor in [Krieger] 601—ab  
syphilis in intensive therapy with mapharsen [Nelson] 727—ab  
syphilis in penicillin for [Leutz & others] \*408  
taste (foul) in mouth during 866  
toxemia of cholinesterase test in [Herscheberg] 1176—ab  
toxemia of in diabetic primipara diethylstilbestrol control [Boven] \*98  
traveling during effect on incidence of abortion 500—E  
Urine See Gonadotropins chorionic  
vitamin K cause phlebotomy 133  
vomiting in adrenal cortex extract for [Bottolli] 135—ab  
PREMATURE Infant See Infants  
PRENTISS AWARD See Prizes  
PREPAREDNESS Medical See World War II  
PREPARATION PLANS See Hospitals expense insurance Medical Service Plans  
PREPUCE See Circumcision  
PRESERVATIVE See Blood preservation  
PRESS See Newspapers  
PRESSEY S L maturity and completion of higher education 839—E  
PRESTO Free Cream 189—B1  
PRETORIUS Liqueur 48—B1  
PREVENTIVE MEDICINE See Immunization (cross reference) Quarantine Vaccination (cross reference)  
PRICKLY Heat See Miliaria  
PRIORITIES AND ALLOCATIONS See also Food rationing  
agar restrictions removed 109  
medical x ray equipment for civilians quota restriction 1092  
PRISONERS OF WAR See World War II Heroes and Prisoners

- PRISONS** See also Criminals  
increase money allowed for food Argentina 975
- PRIZES** See also Fellowships Lectures Scholarships  
American Pharmaceutical Manufacturers Association award to National Research Council 718  
American Physicians Art Association contest 183  
American Urological Association competition open 650  
Army Navy E Award See World War II U S Army  
Atlanta Chamber of Commerce achievement certificate to Dr Paulin 970  
Awards for Distinguished War Service See World War II Heroes and Prisoners  
Borden Award in nutrition 312 908  
Brazilian prize winning monographs [Becklin] 725—C  
Bronze Star See World War II Heroes and Prisoners  
Cameron 181  
Cash (Merritt H.) competition open 579  
Chi Omega National Achievement Award 509  
Cleveland (Clement) Award 782  
G I Joe Literary Award 183  
Gorgas Medal 966  
Howe (Lucien) competition open 579  
Jeffries 313  
Lasher Award 580 902  
Legion of Merit See World War II Heroes and Prisoners  
Lilly (Eli) & Co in immunology and bacteriology established 908  
Long Island College first alumni achievement award 507  
McCuley (John W.) by Rochester Academy 1095  
Marcelle first award 580  
Mead Johnson awards 312 1161  
Mississippi Valley Medical Society honors  
Alphonse McMahon 438  
Morrison (A. Cressy) 1159  
National Academy of Medicine of Rio de Janeiro for articles on leprosy 1042  
National Society for Prevention of Blindness for work on glaucoma 1041  
Navy Cross See World War II Heroes and Prisoners  
New York Academy of Medicine gold medal 570  
New York State Committee on Physical Fitness scroll of honor 1092  
Nichols (William H.) Medal 1159  
Nobel (1943 and 1944) 640—E (correction) 849 971  
Ophthalmological Society of Egypt gold medal 313  
Order of the Purple Heart See World War II Heroes and Prisoners  
Osborne Medal 1096  
Prentiss (Elizabeth S.) Award in health education 781  
Ravenel Cup 717  
Red (Walter) Medal 963  
Remington Medal 1041  
Rochester Academy of Medicine 1095  
Silver Star Medal See World War II Heroes and Prisoners  
Tulane University awarded students 1094  
U S of America Typhus Commission Medal 501 1034  
Wayne University to students 715  
Wisconsin Council Award of State Medical Society of 781  
WPB Award for quinine pool 177
- PROCAINE HYDROCHLORIDE** infiltrate sympathetic nerve in frostbites [Bück] 989—ab  
injection for painful thigh stump and sciatica [Skilern] 514—C  
injections (local) for sprains [Ranieri] 202  
sensitivity to 402
- PROCTOCLISIS** Harris drip postoperative use of 604
- PROCTOLOGY** present day [Terrell] \*529
- PROCUREMENT** and Assignment Service See World War II
- PROFLAVINE** powder treatment of wounds [Raven] 525—ab  
sulfabiazole powder in wounds [McIntosh] 55—ab [Feigetter] 55—ab
- PROMIN** treatment in pulmonary tuberculosis [Dancey] 321—ab [Hinslaw] 322—ab
- PROPRIETARIES** analysis and cost of vitamin mixtures (Council statement) \*29 33—E  
Beckman Pills Limited profits 44  
Drugs and the Doctor *British Medical Journal* editorial 898—E
- PROPYLENE GLYCOL** inactivates influenza virus [Dunham] 661—ab  
vapor as air disinfectant [Chaffinor] 732—ab
- PROSTATE** cancer diethylstilbestrol for [Dean] 665—ab  
hypertrophy interstitial cystitis stimulates [Cristol] & others \*825  
Inflammation See Prostatitis  
resection (transurethral) for postoperative urinary retention [Emmett & Cristol] \*1077
- PROSTATITIS** acute and chronic penicillin for [Thompson] \*406  
colitis reserratus 466
- PROSTIGMINE** See Neostigmine
- PROTAMINE** physiologic action of in vitro anticoagulants 300—E [Shapiro] 789—C
- PROTEIN** See also Meat  
diet and physical fitness in temperate and hot environment [Pitts] 193—ab  
in Blood See Blood proteins  
in Urine See Albuminuria  
of hemolytic streptococcal skin response to [Tarant] 1172—ab  
research Swift & Co \$50 000 gift for 847
- PROTHROMBIN** See Blood
- PRURITUS** A M Solution 788—B1  
anal and vaguine Iso Pal A & R (description) 571 (Medical Chemicals) 571  
estivals histaminase for 465  
ultrac refractory 991
- PSUDOMONAS** aeruginosa septilemia from heroin addiction [Hussey & others] \*535
- PSITTACOSIS** See Ornithosis
- PSORIASIS** treatment various methods 603
- PSYCHIATRIST** British inspects army facilities hero Brig Rees 1053  
U S Army asks cooperation of industry 504
- PSYCHIATRY** See also Neuropsychiatry  
Psych  
child fellowships by National Committee for Mental Hygiene 183  
evaluation of those returning from combat operational fatigue [Murray] \*148  
medical direction of human drives in war and peace [Grant] \*607  
proposed dept at Emory University 779  
questionnaires to determine program for practitioners W Va 717  
rehabilitation clinic at Mount Zion Hospital, San Francisco 177 180  
selection of men for armed forces [Waggoner & others] \*221  
study of successful soldiers screening standards [Sheps] \*271  
syndrome of pulmonary growth [Meerloo] \*358  
treatment of mental disorders at Rio de Janeiro Institute 185  
University of Cincinnati and Jewish Hospital joint program 1159
- PSYCHOLOGY** See also Psychosomatic Medicine  
*Journal of Clinical Psychology* 311  
motivations for treason Major Meerloo's theory 574—E
- PSYCHONEUROSIS** See also Neurosis  
in male elimaeretic [Heller & Myers] \*472 [Bauer] 914—C
- PSYCHOPATHIC** Hospitals See Hospitals psychiatric
- PSYCHOSIS** See also Mental Disorders  
Korsakoff's See Korsakoff's Syndrome  
War See Neurosis war
- PSYCHOSOMATIC MEDICINE** clinic at Columbia 247  
problems [Ewalt] \*150  
relation to gastrointestinal tract diseases [Vorhaus & Orgel] \*225 [Portis] \*413
- PSYCHOSURGERY** See Brain surgery
- PSYCHOTHERAPY** course of 8 lectures Calif 376
- PSYLLIUM** Seed Metamucil N N R (Searle) 367
- PUBERTY** Age of See Adolescence
- PUBLIC Health** See Health  
Relations A M A Council on See American Medical Association Council on Medical Service  
relations survey of California 370—F  
works U S government funds for 117
- PUERPERIUM** hemorrhage (late) etiology [Pallik] 1176—ab  
paralysis from herniated intervertebral disc [O'Connell] 921—ab  
patients not up day after labor during London blitz [Daley] 788—C  
postpartum salpingitis and one child sterility [Black Schaffer] 855—ab  
Schick reactions in [Wright] 666—ab  
thrombosis in dicumarol treatment [Davis] 59—ab
- PULMONARY** See Lungs  
Fimbolism See Fimbolism  
tuberculosis See Tuberculosis of Lung
- PULSE** rate effect of intravenous fluids [Hardy & Godfrey] \*23
- PURGATIVES** See Cathartics
- PURPOIL** No 22 and Purpoil No 600 587—B1
- PURPLE HEART** See World War II Heroes and Prisoners
- PURPURA** fatal after sulphydryl [Sherlock] 1119—ab  
Fulminans See Waterhouse Friderichsen Syndrome  
Heoch's stimulating surgical abdomen [Bisson] 524—ab  
thrombopenic idiopathic hemorrhagic fatal from sulcyates [Ashworth & McKemie] \*806 [Quick] 1167—C  
thrombopenic idiopathic hemorrhagic from sulfadiazole in child [Kotene] \*833
- PURREL** research on brucellosis 962—E
- PUTNAM** Fellowship See Fellowships
- PYELOCGRAPHY** aspect of urologic problem [Arens] \*605  
serial pyelogram in thrombosis of renal vein [Vedick] 373—ab
- PYELOPHRITIS** fundus oculi changes in 54—ab  
in pregnancy sulfonamides for [Crabtree] \*810  
treatment penicillin [Thompson] \*407
- PYLORUS** Miller Abbott tube passed through with electromagnet [Mayer] 922—ab
- PYREXIA** See Fever
- PYRIDOXINE HYDROCHLORIDE** N N R (Merck) 1029  
treatment subarachnoid injection in neurologic disorders [Stone] 661—ab  
treatment of parkinsonism [Sinabaria] 199—ab
- PYROSIS** See Heartburn
- Q**
- QUARANTINE** See also Poliomyelitis  
branch established in Preventive Medicine Service 965  
hospital new Atlanta 970
- QUEEN** Elizabeth See Elizabeth
- QUESTIONNAIRE** on national health service by British Medical Association 314  
to determine psychiatric program for practitioners W Va 717
- QUINACRIN** (atabrine mepacrine) suppression treatment of malaria 1098  
treatment of malaria Medical Research Council committee report 1163
- QUININE** Howell's Cocoa & Quinine Syrup 514—B1  
pool American Pharmaceutical Assn WPB award for 177  
protects against harmful sunlight 463  
supply and malaria Argentina 583
- QUINONES** effect on blood pressure [Oppenheimer] 105—ab
- R**
- RABB** A F chairman of Negro health committee 1094
- RABBIT** Fever See Tularemia  
is frog for ectopic pregnancy tests 1122
- RABIES** epidemic Vienna 1035  
fatal after bite of rabid dog Calif 845  
fatal first death in 8 years Bronx N Y 579  
fatal first death upstate N Y 1159  
fatal in child infected via dogs saliva through scratches on skin 845  
in New York City 643—E  
10 years survey New Orleans [Pallik] 984—ab
- RACE** See also China and Chinese Indians American Negroes  
Burton's pamphlet Brown and White in South Pacific 119  
Rh factor distribution in various races [Jernvall] 864—ab  
theory of blood transmission at birth from parents to progeny 702—ab
- RADIATION** See Radium Roentgen Rays Ultraviolet Rays
- RADIO** See also Television  
medical by Medical Society of County of Monroe N Y 376
- RADIOACTIVE** Iodine See Iodine
- RADIOEAR** Model 45 CM 1151
- RADIOLOCATION** box aids blind man to recognize obstacles in his path 909
- RADIOLOGY** aspect of urologic problem [Arens] \*605
- RADIOGRAPHY** concentration method [Cutter] 321—ab
- RADIOOTHERMY** See Diathermy
- RADIUM** Emanation See Radium  
precautions suggested by King Edwards Hospital Fund committee 184  
Treatment See Bladder cancer Trachea cancer Uterus cancer Veruca
- RADON** treatment for acute otitis [Fowler] 327—ab
- RAIDS** See Air Raids
- RAILROADS** See Hospitals train
- RAINFZ** MAIRENA LEOPOLDO death 782
- RAISON** GASTON personal 782
- RAMSDELL'S** Sulphur Cream, 48—B1
- RACIDITY** See Lard
- RANDALL** EDWARD memorial to 311
- RANDOLPH** BILL industrial health service for federal employees 30—E
- RASH** See Eruptions
- RAT** See Rats
- RAYON** Test See Food
- RATIONING** See Food rationing Priorities and Allocations
- RATS** menace Washington D C 1038—OS  
transmission of leptospirosis [Senekjle] \*5
- RAYDI** I S 20th General Hospital Unit praised by Mountbatten 573
- RAYENEL** Cup See Prizes
- RAY** (Dr) Wheat Embryo 788—B1
- RAYNAUD'S** DISEASE vasospastic factor in serum in [Benlans] 1041—ab
- READING** stimulate visual acuity with nile (amide or amphetamine [Lebensohn] 263—ab

- RECKLINGHAUSEN Disease** See Neurofibromatosis
- RECONDITIONING** See Rehabilitation
- See Letter* See Journals
- RECREATION** See also Physicians avocations facilities extension urged 1037—OS
- RECRUITS** See World War II
- RECTUM** cancer blood loss during combined abdominoperineal resection [Coller & others] \*4
- cancer operability 186
- diseases [Terrell] \*29
- lacerated from Johnson grass case report [Larson] 330
- postoperative use of Harris drip proctoclysis 604
- surgery urinary retention after treated by transurethral resection [Emmett & Cris] 1017
- RECUVIBENCY** (bed rest) See Convalescence and Convalescents
- RED CELLS** See Erythrocytes
- RED CROSS** German flag protects oil cargo under 974
- RED CROSS AMERICAN** Dublin (L I) serves as temporary head 530
- Gray Ladies Major Gen Lull addresses 965
- Hanson (M C) joins 311
- Junior sends medical kits for European school children 1092
- home nursing program 503
- medical committee to recommend plans for postwar period 371—E
- medical service for dependents of service men 1035
- penicillin sent by air for war prisoners in Germany 842
- prisoners of war services 712
- women on hospital ships 903
- REDUCE OIDS Capsules** 655—B1
- REED WALTFR** and yellow fever Truby's account 38—L
- Vedol* See Prizes
- REES JOHN R** British psychiatrist inspects army facilities here 1033
- REFLEX** Carotid Sinus See Carotid Sinus syncope
- conditioned occupational therapy for injured workmen [Coulter] \*363
- stretch in poliomyelitis [Schwartz & others] \*693
- REFRESHER Courses** See Education Medical
- REFRIGERATION Anesthesia** See Anesthetics refrigeration
- REGENERATION** See Pancreas Islands of Langerhans
- REGISTER REGISTRY** See Filariasis Specialists Tuberculosis Veterinary
- REHABILITATION** appoint aides on 379
- army wounded (two thirds) returned to duty 06% of wounded recover 35
- aural program advance in 305
- convalescent reconditioning [Thorudike] \*773
- Industrial See Industrial Health
- military surgeons instruct patients by television 777
- neurosurgery fibrin foam as hemostatic agent [Woodhall] \*469
- nutrition in [Spiles] 985—ab
- occupational therapy at St Luke's Chicago [Coulter] \*360
- physical restoration program advisory committee W Va 311
- problem [Grant] \*607
- project (N Y City) 716 (U S Navy) 841
- psychiatric clinic at Mount Zion Hospital San Francisco 177 180
- reconditioning in chest surgery [Grow & others] \*1049
- veterans Rehabilitation Center dedicated Chicago 1034
- veterans role of Industrial medicine [Johnson & Hoffman] \*1073
- vocational federal state program 577—OS
- vocational office of (new medical staff members) 374
- RELIGION** See Roman Catholics
- RELOCATION** See Physicians relocation
- REMYNGTON Medal** See Prizes
- RENAL** See Kidneys
- RENDU Osler Weber's Disease** See Telangiectasia hereditary hemorrhagic
- RENIE Lecture** See Lectures
- REPRODUCTION** See Families Fertility Pregnancy Sterility
- RESEARCH** See also Animal Experimentation under specific subjects as Cancer Economics Medical Nutrition Poliomyelitis Army and Navy asks Congress for permanent postwar continuation 775—OS
- Army Medical Research Board to continue in peace 843—OS
- at Oxford and Cambridge by Chinese \*82
- Clauston (Edith) gives fund and wills her body for 1094
- Committee on Medical Research (Summary of Reports Received) 110
- Fellowships See Fellowships
- grants by Sugar Research Foundation 1097
- grants for Seaman fund to further 377
- in San Diego zoo [Pickard] 190—C
- Medical Research Council See Medical Research Council
- RESEARCH—Continued**
- National Research Council See National Research Council
- postwar importance stressed 1093—OS
- Roosevelt wants it continued his view in letter to Dr Bush 904—OS
- RESIDENTS AND RESIDENCES** List of Hospitals Needing Residents See Interns and Internships
- rotating 509
- RESORCINOL** to protect against harmful sun light 465
- RESPIRATION** artificial greatly increased rate in asphyxia [Tingley] 1119—ab
- artificial in asphyxia neonatorum [Biggs] \*1070
- artificial in emergencies [Drinker] 395—ab
- artificial Krieselman resuscitator bellows type (Council report) 99 1101
- artificial methods effect on blood pressure [Volpito & others] \*1066
- artificial methods Howard Silvester Schaffer Eves rocking methods respirators resuscitators (Council report) \*835
- Disorders See Asphyxia
- hyperventilation (voluntary) causing alkalemia and tetany ammonium chloride and rebreathing from a bag for 402
- test to measure physical fitness 991
- therapeutic intensive in asthma [Welsch] 593—ab
- RESPIRATORY SYSTEM** See also Bronchus Lungs Pleura Trachea
- Disease See also Bronchiectasis Pneumoniaconiosis
- disease AAF Control with sulfadiazine [Holbrook] \*84
- disease geographic hemolytic streptococcus distribution [Van Ravenswaay] \*486
- Infection See also Colds Influenza Pneumonia Tuberculosis of Lung
- infection (air borne) control by treating floors and bedding with oil emulsion [Robinson & others] \*993
- Infection pyrexia of undetermined origin 992
- Infection sulfadiazine prophylaxis in Navy [Coburn] \*88
- wood dusts effect 800
- REST Abuse of Bed Rest** See Convalescence and Convalescents
- center for merchant seamen N Y 445
- effect in hypertension [Grimsom & others] \*218
- RESTAURANTS** dishwashing in 303—E [Audrews] 664—ab 670
- RESUSCITATION** See Respiration artificial
- RESUSCITATOR** Krieselman (Council report) 99 1151
- RETINA** detachment 78 cases in Middle East force [Stallard] 987—ab
- RETINOBLASTOMA** genetics [Grimm] 307—ab
- REYNOLDS R B** heads Sixth Service Command 840
- RH FACTOR** erythroblastosis fetalis and [Macklin] 192—ab 235—E [Perchia de Mesquita] 924—ab
- Importance in mental deficiency [Tanner] 794—ab
- in Intragroup transfusion reactions [Butler] 132—ab
- in obstetrics [Andujar] 409—ab [Kreger] 601—ab
- immune after giving human serum [Ollphant] \*95—ab
- racial distribution [Inverizzi] 864—ab
- RHEUMATIC FEVER** A M A symposium on \*477 493
- blood plasma levels of vitamin A and carotene in 303—E
- Cardiac Complications See Heart disease rheumatic
- conference by Army Air Forces 34
- control program with sulfadiazine by AAF [Holbrook] \*84
- control role of cardiac clinic [Rutstein] \*484
- Council organized 42
- diagnosis [Jones] \*481
- etiology diet as predisposing factor 174—E
- in Canadian Army [Feasby] 104—ab
- in children Cardiac Society British Pediatric Ass'n joint report on care of 314
- in Chelmsford relation to rentals crowding population Negroes [Wedum] 1113—ab
- in Cuban children [Perez de los Reyes] 60—ab
- recurrence [Jones] \*482
- recurrence rate [Wilson & Lubsech] \*477
- recurrence sulfadiazine immunization still elates prevent [Thomas] \*490
- skin response to hemolytic streptococcal proteins in [Taran] 1172—ab
- treatment penicillin [Watson & others] \*273
- [Foster & others] \*291
- treatment silicic acid oral vs intravenous 736
- treatment vitamin D and calcium for acute type [Dosal] 1176—ab
- RHEUMATISM** See also Arthritis
- Acute Articular See Rheumatic Fever
- Desert See Coccioidomycosis
- treatment Russian A C B serum of Bogomoletz ineffective 380
- RHEUMATOID ARTHRITIS** See Arthritis
- RHINITIS Vasomotor** See Hay Fever
- RHINOPHARYNX** See Nasopharynx
- RHOE ISLAND Medical Journal** See Journals
- RHUS** patch tests in poison ivy dermatitis [Kell] \*21—ab
- RIBOFLAVIN** analysis and cost of vitamin mixtures (Council statement) \*29 33—E
- biosynthesis by intestinal bacteria in man [Najar & others] \*357
- content of prepared cereal foods [Kiltz & Elvehjem] \*100
- content of variety meats [McIntire] 393—ab
- deficiency and corneal vascularization [McCreary] 295—ab
- deficiency stomatitis in service men in North Africa [Jones] 264—ab
- N R (Endo) 367 1029
- RICKETS** in young child corrective surgery for bowlegs 800
- incidence in children in Bristol hospitals [Corner] 600—ab
- RICKETTSIA** Diseases due to See Dull's Fever Rocky Mountain Spotted Fever Typhus
- electron micrograph [Mudd & Anderson] \*361 [Mudd] \*632
- Orientalis See Tausuguanish Fever
- RICORD PHILLIPS** (1800 1889) great syphilologist 828—ab
- RICBY Sir HUGH WALLINSON** death 313
- RIGGS Foundation** See Foundations
- RINCHWORM** See Dermatophytosis of Scalp
- See Thinea capitis
- RISING** early after sickness on operation See Convalescence and Convalescents
- RISSE R** research on brucellosis in Latin America 962—E
- ROAD Accidents** See Automobiles
- ROCHESTER Academy Prize** See Prizes
- ROCKY MOUNTAIN MEDICAL JOURNAL** See Journals
- ROCKY MOUNTAIN SPOTTED FEVER** transmission of Colorado tick fever contrasted with [Florida] 794—ab
- treatment especially intravenous fluids [Harrell & others] \*829
- treatment progress in 964—E
- RODENTS** See Rats
- RODRIGUEZ FERNANDO E** hospital named for 576
- Dental Clinic at Winter General Hospital 840
- ROENTGEN RAYS** See also Medical Legal Abstracts at end of letter M
- apparatus quota restrictions for civilians 1002
- Diagnosis See Osteomyelitis Pancreas inflammation Psychography Spine cervical
- Thrombosis mesenteric Tuberculosis case finding X-ray
- fluorography discloses pulmonary tuberculosis [Brooks] 398—ab
- long continued exposure to 1053
- photoregen film washing 775
- photoregen method of 100 000 chest examinations [Zaner] 664—ab
- units (mobile) hospital able to carry in in vasion [Mekann] 386—C
- ROENTGEN THERAPY** See Clostridium welchii Epithelioma Tinea capitis Uterus cancer Concentration See Radiotherapy concentration
- ROENTGENOGRAMS** See Medical Legal Abstracts at end of letter M
- ROBERTS JOHN** promotion 1156
- ROILSTON Sir HUMPHRY** death 313 719
- ROMAN CATHOLICS** and venereal disease control program 375—OS
- fath healing 1058
- RONETTI VIANTE** sentenced Chicago 114
- ROOMS** See Floors
- ROOSEVELT ANNA ELEANOR** (Mrs Franklin D Roosevelt) praises epidemic control during this war 969—OS
- ROOSEVELT FRANKLIN D** asks year's compulsory training for young persons 843—OS
- endorses 1945 poliomyelitis drive 1037—OS
- wants research continued view in letter to Dr Bush 904—OS
- RORPM C R** testimony before Pepper committee 308—OS
- ROUNDWORMS** See Ascariasis Ascaris
- ROWNTREE I C** New York State Committee on Physical Fitness honors 1092
- ROYAL** See also British
- College of Obstetricians and Gynecologists (new location in Lincoln's Inn Fields) 1097
- College of Physicians (criticism of medical students training) 119 (tuberculosis case finding in nurses) 249 (new location in Lincoln's Inn Fields) 1097
- College of Surgeons (an F R C S in ophthalmology) 314 (location) 1097
- Society of Medicine (building alterations proposed) 909 (photostat and microfilm service for medical officers overseas) 1162
- ROYALE Agar** and Oil with Phenolphthalein 124—B1



- RUBBER dermatitis of feet and hands from [Anderson] 660—ab  
gloves dusting powder none necessary [Gardner Quigley] 588—C  
gloves dusting powder potassium bitartrate replaces talcum 236—F
- RUBEOLA in pregnant woman relation to congenital defects in newborn [Swan] 59—ab 237—E [Rones] 662—ab [Frans] 1120—ab [Erickson] 1173—ab
- RUBEOLA See Measles
- RUIZ CASTANEDA M research on brucellosis 902—E
- RUPTURE See Hernia under specific headings as Arteries coronary Muscles
- RURAL COMMUNITIES See also Farm epidemics in Palestine 783  
mental disorders and population density 900—E  
relocation of physicians [Mountain] \*203
- RURAL FEVER remittent 250
- RUSH Neuropsychiatric Clinic at Winter General Hospital 840
- RUSSELL SAGE Foundation See Foundations
- RUSSIA Academy of Medical Sciences of U S S R organized 581  
A C B serum of Bogomoletz for rheumatism ineffective 350  
at War See World War II
- RYLE I A neglect clinical examination for laboratory tests case of abdominal tumor 849
- S**
- S22 tick repellent 268
- S140 See Demerol
- SABETAL 1048—BI
- SACRAL CANNAL Injection into See Anesthesia caudal continuous
- SADER ABDEL HAMID typhus commission medal to 501
- SAFETY See Industrial Accidents National Safety Council
- SAGE (Russell) Foundation See Foundations
- SAILORS See Navy ships World War II
- ST DUNSTON S See under Blindness
- SI LOUIS Encephalitis See Encephalitis University postwar plans 906
- SAINT PASTOUS A resignation 196
- SALICYLATES See also Acid acetylsalicylic Sodium salicylate  
blood prothrombin decumarol and vitamin K 300—F [Shapiro] 739—C  
toxicity fatal hemorrhagic complications? [Ashworth & McKemie] \*806 [Quick] 1167—C  
treatment oral vs intravenous use in rheumatic fever 736
- SALMON features See Lectures
- SALMONELLA enterocolitis in childhood [Neter] 1113—ab  
food poisoning streptothelin for [Rabinson] 1002—ab  
Typhosa See Typhoid typhosa
- SALPINXITIS See Otitis inflammation
- SALT See also Sodium chloride  
diet (free) sulfanamide therapy for those on 466  
iodized to combat goiter Brazil 120 (correction) 313  
work in heat affected by intake of [Pitts] 982—ab
- SALVARSAN See Arspenamine
- SAN DIEGO zoo research in [Pickard] 190—C
- SAN JOAQUIN Valley Fever See Coecidialidiosis
- SANAFRIG 655—BI
- SANATORIO See also Tuberculosis control narcotics in Buenos Aires 784
- SANDFLY control committee appointed 42  
Fever See Papataci Fever
- SANICROSS Adhesive Strips 655—BI
- SANITATION disinfecting in restaurants 303—E [Andrews] 664—ab 670  
Industrial See Industrial Hygiene
- SANKA effect on stomach secretion [Roth & others] \*818
- SAPERO JAMES T Corgis Medal to 966
- SARCOIDOSIS [Boone] 796—ab
- SARCOMA See also under origin of region affected  
single trauma [Woodward] 72—C
- SAR TOL Cough Drops Nose Drops Cough Syrup 124—BI
- SAUER S Vaccine See Whooping Cough
- SAVINGS See Investments
- SCABIES control by soap impregnated with tetraethylthiuram monosulfide [Cordon] 397—ab
- SCALDS See Burns
- SCALP See also Alopecia Hair Head  
HQZ Scalp Oil 385—BI  
Mamie's New Discovery Scalp Ointment 318—BI  
olly seborrhea oleosa 528  
Ringworm of See Tinea Capitis  
Seborol Lotion and Ointment 48—BI  
Viva Treatment 189—BI
- SCAPHOID BONE carpal fractures in Canadian Army [Dickson] 962—ab
- SCAPULA See also Shoulder  
pain in herniated intervertebral disk [Bucy & Chenuault] \*26
- SCARLET FEVER epidemic control by sulfonamides [Holbrook] \*84  
epidemic sulfadiazine effect on attack rate [Thomas] \*491  
geographic distribution of hemolytic streptococci [Van Ravenswaay] \*486  
in Tsinan [Fan] 60—ab  
prevention by sulfadiazine in U S Navy [Coburn] \*88  
serologic types of hemolytic streptococci in same household [Foley] 1111—ab  
treatment sulfonamides antitoxin and convalescent serum [Fox] 604—ab
- SCHAFER METHOD See Respiration artificial
- SCHAUMANN Besnier Boeck Disease See Sarcoidosis
- SCHICK REACTION See Diphtheria
- SCHRESON HENRY I (Injunction against state board) 116 (trial set for January) 972
- SCHISTOSOMIASIS mansonii cause of Bauri's syndrome [Almy & Harper] \*703
- SCHIZOPHRENIA See Dementia Precox
- SCHOIARSHIL See also Fellowships awards at Northwestern 779  
Perry (M L) 781
- SCHOOLS See also Education Students University  
boarding medical care in Argentina 075  
care funds allocated 379  
Children in See Children school  
health education in Boston Strayer School Survey 1046—1  
health study Kansas 1094  
medical kits for Europe sent by American Junior Red Cross 1092  
Navy School for Air Evacuation of Casualties 1091  
of Military Government first nurses to 501  
palpatitis delays opening of N Y 40  
social hygiene instruction recommended by PTA 178—OS
- SCHOOLS MEDICAL See also Education Medical Students Medical University under names of specific schools  
Faculty of Medicine of Ia Iata 20th year 583  
medical field service school Carlisle Barracks 711  
new Brown University 146  
new Essex College of Medicine opens Oct 1 115 (Dr Ilva named dean) 647 (re signs) 906  
new Univerity of Washington 907
- SCIATICA diagnosis (differential) of herniated lumbar intervertebral disks [Kegan] \*868 [Astrom] 1058  
etiology herniated intervertebral disk surgery far [Rotterell] 808—ab  
treatment procaine injection [Skliern] 514—C  
treatment subarachnoid pyridoxine injection [Stone] 661—ab
- SCITACF See Research  
Basic Science See Basic Science  
Medical See Medicine
- SCIROSIS See also Arteriosclerosis Liver sclerosis Nephrosclerosis  
amyotrophic lateral primary and symptomatic [Wechsler] 388—ab  
Intra ar Interapillary See Nephrosclerosis glomerular  
multiple subarachnoid pyridoxine injection for [Stone] 661—ab  
tuberculous [Sachs] 518—ab
- SCOTOMA complicating decompression sickness [Engel] 197—ab
- SCRUB Typhus See Tsutsugamushi Fever
- SCURVY survey of 33 cases [McMillan] 863—ab
- SFA BEET See Beta vulgaris
- SEAMAN FUND See Foundations
- SEBOROL Scalp Lotion Scalp Ointment 48—BI
- SEBORRHEA oleosa 528
- SICRITAFIS Conference See Societies Medical
- SFCUNDINIS See Placenta
- SEASONS See Climate Winter
- SEATWORMS See Oxyuriasis
- SECURITY See Farm Security Social Security
- SFDIMENTATION Rate See Blood
- SFEINAC FIE Dogs See Dogs
- SFIZURES See Convulsions
- SELECTIVE SERVICE See World War II
- SFMF See Spermatozoa
- SFMAL VESICULITIS transurethral drainage in [Herbst] 1117—ab
- SFNILITY See Old Age
- SFNATION See Parasthesia
- SFNENICH R L testimony before Pepper committee 308—OS
- SFNSEFS See Hearing Taste Vision
- SFNSTIVITY See Anaphylaxis and Allergy
- SFNSTORI stimuli test to measure physical fitness 991
- SEPTICEMIA See also Meningococcemia  
diagnosis (rapid) by buffy layer or leukocyte cream [Humphrey] 453—ab  
etiology heroin addiction [Hussey & others] \*535  
of arteriovenous aneurysm surgical cure [Lipton & Miller] \*766
- SERODIAGNOSIS See Syphilis
- SEROTHRAPY See Serum therapy (cross reference)
- SERUM See also Vaccine (cross reference)  
Yellow Fever  
A C B of Bogomoletz for rheumatism ineffective 350  
antisulfonamide action [Boroff] 391—ab  
Blood See Serum plasma etc and subheads under Blood  
Convalescent See Parotitis Epidemic Scarlet Fever treatment  
horse (anti typhus) treatment of typhus [Wolman] 732—ab  
horse coronary hypersusceptibility to Killage Vaubel phenomenon 302—E  
Human Serum Albumin See Blood proteins  
Immune See Globulin  
Jaundice after giving [Olliphant] 595—ab [Bradley] 863—ab  
Lymphic Human See Whooping Cough treatment  
penicillin inactivated by [Bigger] 1175—ab  
plasma clot suture of nerves [Tarlov] \*741  
plasma coagulum contact method of skin grafting [Sano] 52—ab [Harris] 855—ab  
plasma fixation of skin grafts [Sheehan] 454—ab  
plasma fractionation products [Janeway] \*674 [Ingram & Bailey] \*680  
plasma normal human N R (Hyland) 897  
Plasma Substitutes See Blood Transfusion blood substitutes  
plasma thrombin adhesive of wounds [Young] 922—ab  
Plasma Transfusion See Blood Transfusion  
plasma use in armed forces [Kendrick] 730—ab  
plasmatic activator of prothrombin [Feisly] 60—ab  
Reaction See Anaphylaxis and Allergy  
Therapy See Tetanus Typhoid
- SERVICE MEN See also Veterans World War II  
Disabled See Veterans World War II wounded  
Readjustment Act of 1944 708—E 709 770—E 775
- SEWAGE systems Rio Grande do Sul 381 (transmission of poliomyelitis) 528
- SFX See also Fertility Sterility  
Hormones See Androgens Estrogenic Substances Gonadotropins  
hypersexuality in male diethylstilbestrol in [Foote] 402  
Impotence See Impotence  
Intercourse See Coitus  
Perversion See Homosexuality
- SHAMPOO preparations for See Hair
- SHASTA Armenian Culture 345—BI
- SHEET Intestine and serum antigenicity [Hopps] 324—ab
- SHILLFISH See Mussel poisoning
- SHPARD WILLARD C joins Saunders as art editor 309
- SHINGLES See Herpes Zoster
- SHIPPEN Clinic for women at Winter General Hospital 840
- SHIPS See also Navy  
German oil cargo under Red Cross flag protection 974  
Hospital See Hospitals  
mercy converted Netherlands liners to evacuate American wounded 177
- SHI LADS Kaiser Industries [Garfield] \*337 [Merrill & Mills] \*887
- SHOCK Allergic See Anaphylaxis and Allergy  
blood spinal fluid nonprotein nitrogen and protein content [Condon] 1116—ab  
Convulsive Therapeutic See Convulsions therapeutic (cross reference)  
Electric See Electric shock  
Insulin See Insulin  
prevention closed plaster method [Sellers] 95—ab  
shocklike state after pneumonia 736  
surgical blood loss in [Coller & others] \*1  
traumatic circulation in [Richards] 390—ab  
treatment albumin [Janeway] \*674  
treatment colloidal plasma substitutes 1154—F  
treatment histidine [Ruskin] 260—ab  
treatment intravenous pectin solution [McClure] 858—ab  
treatment pentothal sodium intravenous anesthesia [Adams] \*282  
treatment rate of giving fluid in 898—E  
treatment vasoconstrictors 643—E  
treatment vitamins [Gorler] \*749
- SHOES See also Hosiery  
Dr Edgar Health Shoes 587—BI
- SHORT WAVE See Diathermy



- SHOULDER** See also Scapula  
dislocation (habitual) extra articular tibial  
graft plastic in [Brun] 1176—ab  
disability from horned nucleus pulposus  
[Michelsen] 731—ab  
pain from acromioclavicular lesions [Oppen-  
heimer] 321—ab  
**SHOUSHA ALI TOWFIK** Typhus Commission  
Medal to 501
- SICK** See Patients  
Headache See Migraine  
Transport See Ambulances  
**SICKNESS** See Disease Health Therapeu-  
tics  
Insurance See Insurance sickness  
Rate of See Vital Statistics  
Serum See Anaphylaxis and Allergy  
Time Lost Because of See Industrial Health  
workers (absenteeism)
- SIGHT** See Blindness Vision  
**SILICATE** See Colon  
**SILICATE** cause silicosis? [Gardner] 588—C  
**SILICOSIS** See Pneumoconiosis Medical  
Abstracts at end of letter V  
**SILK** Envelop Method See Burns treatment  
**SILVER** nitrate for interstitial cystitis [Cristol  
& others] \*925  
Star Medal See World War II Heroes and  
Prisoners
- SILVESTER HOWARD** Method See Respira-  
tion artificial  
**SIMMONS JAMES S** (honored at Marquette  
U.) 439 (Walter Reed Medal) 96  
**SINUS** Carotid See Carotid Sinus  
Cavernous See Cavernous Sinus  
treatment crude penicillin filtrate locally  
[Vislou] 58—ab  
**SINUSITIS NASAL** complications penicillin  
for [Putney] \*621  
headaches from [MacDonald] 921—ab  
treatment conservative and operative 1057
- SKIN** See also Dermatology Tissues  
Abnormalities See Ectodermal Defect  
bacteria compound G 11 to reduce [Traub]  
459—ab  
Blisters on See Blister  
Burns of See Burns  
Cleansing See Soap  
Creams or Cosmetics See Cosmetics  
Disease See also Acne Eczema Derna-  
titis Urticaria  
discae Autoeczema Purpall No 22 and  
Purpall No 600 587—B1  
Disease (Industrial) See Industrial Derma-  
toses  
Eruptions See Eruptions  
Exfoliation See Dermatitis exfoliativa  
graft for war wounds and burns 1043  
graft herpes zoster virus infection 899—F  
graft (immediate free full thickness) for am-  
putated finger [McCarroll] 522—ab  
grift uses of derma transplant in surgery  
[Cannaday] 599—ab  
grift plasma Avatloo [Sheehan] 454—ab  
grafting coagulum contact method [Sano]  
52—ab [Harris] 805—ab  
Hodgkin's disease [Bersack] \*102  
Infection See Anthrax Furunculosis  
Inflammation See Dermatitis  
Iso Par A N R (description) 571 (Medi-  
cal Chemicals) 571  
Itching See Eczema Pruritus Scabies  
Leshmaniasis of See Leshmaniasis  
lesions of vesicant war gases mustard gas  
lewisite [Davis] \*209  
lesions physical influences on localization  
skin has a long memory 992  
Mycosis See Dermatophytosis  
Peeling See Dermatitis exfoliativa  
pores enlarged 202  
Protective Creams or Ointment See Oint-  
ment  
Purpura See Purpura  
Rash See Eruptions  
Reaction See also Anaphylaxis and Allergy  
sensitivity to Dermatitis venenata Skin  
test Urticaria  
reaction to insulin and insulin modifiers [Page  
& Bauman] 124 \*704 (March 11 44)  
role of and thin dead corneal layer of epi-  
dermis in edema [Burch & Winsor] \*16  
test (intradermal) with penicillin sodium  
[Welch & Rosenbergs] \*10  
test (patch) in poison ivy dermatitis [Kell]  
521—ab  
test trichinella [Horne] 51—ab  
Ulcers See Ulcers
- SKULL** See Cranium  
**SLEEP** Induced See Anesthesia  
Insomnia long continued use of barbiturates  
harmful? 1178  
natural effect in hypertension [Grimson &  
others] \*218  
**SVALIPOX** treatment penicillin [Jeans] 325  
—ab  
vaccination See also Vaccinia  
vaccination autoinoculation of eyelids with  
vaccinia [Kunzinger] 323—ab  
vaccination (forcible) of soldier 184  
vaccination in Canal Zone 379
- SWELL** See Odors  
Body See Bromhidrosis  
**SWIFT** dermatitis from 1122
- SWIDER** Foundation See Foundations  
**SOAP** compound G 11 use in to reduce skin  
bacteria [Traub] 459—ab  
impregnated with tetraethylthiuram mono-  
sulfide in control scabies [Gordon] 397  
—ab  
**SOCIAL** care of patients with heart disease  
Buenos Aires 652  
Hygiene Day Feb 7 1947 972  
hygiene instruction in schools recommended  
by PTA 178—OS  
Insurance See Insurance social  
maladjustments relation to venereal diseases  
England 1099  
Medicine See Socialized Medicine (cross  
reference)  
security extension medical stand on doubling  
taxes next year 843—OS  
security legislation Brazil 1163  
Security legislation (Labor plans) 969—OS  
(Rep Dingell offers compromises) 1093—OS  
security plans free medicine for Australia  
184  
services high cost in Australia 1099
- SOCIALIZED MEDICINE** See Hospitals ex-  
pense Insurance Insurance sickness In-  
surance social Medical Service planning  
Medical Service Plans Medicine socialized  
**SOCIETIES** MEDICAL See also American  
Medical Association also under names of  
specific societies Medical Abstracts at  
end of letter V list of societies at end of  
letter S  
A M A Annual Conference of State Secre-  
taries and Editors 243—OS 713—OS  
coordinating council considers reorganization  
New York 971  
county medical broadcasting Monroe N Y  
376  
Medical Service Plans See Medical Service  
Plans  
representatives of Ohio Kentucky Indiana  
and West Virginia met in Cincinnati 968  
—OS  
state building fund Conn 845  
state medical students recommended for mem-  
bership (Ore) 649 (Conn) 1039  
state picture of new home N J 1040
- SODIUM** See Hosiery  
**SODIUM** alkyl sulfate effect on peptic activity  
of human gastric juice [Klurmer] 55—ab  
alkyl sulfate medicinal use of detergents  
1152—E  
p aminolipurate (PAL) as adjunct to peni-  
cillin [Beyer & others] \*1008  
Amryal See Amryal  
bicarbonate alkalization by parenteral route  
466  
Chloride See also Salt  
chloride intravenously in Rocky Mountain  
spotted fever [Harrell & others] \*929  
chloride rate of fluid administration in shock  
899—E  
p p Diamino diphenyl n n Ddextrose Sulfo-  
nate See Promin  
lactate alkalization by parenteral route 466  
lauryl sulfate inhibits pepsin activity in peptic  
ulcer [Stelgmann] 192—ab  
Pentothal See Pentothal  
salleicylate facial hemorrhagic complications  
[Ashworth & McKemie] \*806 [Quick] 1167  
—C  
salleicylate oral vs intravenous use in rheu-  
matic fever 736  
Sulfathiazole See Sulfathiazole  
thiosulfate washing photorecogen films 775
- SOFT** Drinks See Beverages  
**SOIL** Bacteria Substance obtained from See  
Cramicidin Tyrocidine Tyrothricin  
Removal of See Soap  
**SOLDIERS** See also Army Veterans World  
War II  
Brazilian of Italian expeditionary forces  
blood groups in 186  
Fever See Papataki Fever  
Heart See Asthenia neurocirculatory  
Medal See World War II Heroes and  
Prisoners  
successful psychiatric study [Sheps] \*271
- SOLUTION** See Fluids under names of  
specific substances  
**SOMATIC** Complaints See Psychosomatic Medi-  
cine  
**SOPE** FRFD L Typhus Commission Medal to  
1034
- SOUTH AMERICA** See Brazilian Inter Ameri-  
can Latin America Pan American  
**SOUTHERN** Surgical Association meeting at  
Ashford General Hospital 1090
- SOVIET** Russia See Russia  
**SOY** BEAN food in eczema of child [Stoessner]  
1114—ab  
nutritional value [Jones] 393—ab
- SPANISH** translate medical books for Latin  
American use 437—F
- SPASM** Muscles in (Kenny Concept) See  
Polymyositis
- SPEAKING** See Speech  
**SPECIAL** Formula 833 979—B1  
**SPECIALISTS** Directory of Medical Special-  
ists [Taus] 386—C  
register proposed England 314
- SPECIALTIES** See under names of specific  
specialties as Gynecology  
Examining Board See American Board  
**SPECTACLES** See Glasses  
**SPEECH** defective and left handedness 866  
tongue movements in color film record 249
- SPERMATIC CORD** See Varicocele Hydro-  
cele under Medical Abstracts at end  
of letter V
- SPERMATOZOA** fertilization factor hyaluronil  
dase 1153—E
- SPIES** TOM D Swift & Co gives \$50 000 for  
study on proteins 847
- SPINAL ANESTHESIA** See Anesthesia  
**SPINAL** CANAL abscess (acute epidural)  
[Boger] 1169—ab  
abscess (acute epidural) emergency laminec-  
tomy and penicillin [Donathan] \*906  
**SPINAL** CORD See also Cauda Equina  
Disease See also Encephalomyelitis Menin-  
goencephalitis Polio myelitis  
disease from mapharsen in syphilis [Sals &  
Nominad] \*560  
Injury management in the army [Everts &  
Woodhall] \*145  
Injury (recoil) [Cramer] 1174—ab  
Injury with head injuries commonly un-  
recognized [Walsh] 667—ab  
varicoles [Uehlinger] 199—ab
- SPINAL FLUID** See Cerebrospinal Fluid  
**SPINAL** MENINGITIS See Meningitis cerebro-  
spinal epidemic  
**SPINE** cervical traumatic lesions roentgen  
diagnosis [Heublein] \*950  
fracture (compression) from stimulating  
carotid sinus [Hauwer] \*1029  
Injuries unrecognized with head injuries  
[Walsh] 677—ab  
Intervertebral disk herniated causing sciatica  
surgery for [Botterell] 908—ab  
Intervertebral disk herniated compresses 7th  
cervical nerve root surgical relief [Bury  
& Chennault] \*26  
Intervertebral disk herniated lumbar cause  
lumbar paralysis [O Connell] 921—ab  
Intervertebral disk herniated nucleus pul-  
posus diagnostic test [Astrom] 10 8  
Intervertebral disk herniated nucleus pulposus  
shoulder arm disability [Michelsen] 731  
—ab  
Intervertebral disk herniated nucleus pulp-  
osus with cauda equina compression syn-  
drome [French] 519—ab  
Intervertebral disk herniation diagnosis by  
neurologic signs [Keegan] \*868  
Intervertebral disk nucleus pulposus role  
in recoil cord injuries [Cramer] 1174—ab  
Intervertebral disk operative results [Grant]  
730—ab  
Intervertebral disk (protruded) differentiated  
from intraspinal tumors [Love] 457—ab  
sign in poliomyelitis [Schwartz & others]  
\*695  
tuberculous paravertebral abscess penicillin  
ineffective [Bloomfield & others] \*690
- SPLANCHNIC TONY** See Nerves  
**SPLFN** Enlarged See Splenomegaly  
puncture in leishmaniasis diagnosis [Mou-  
telro de Barros] 1120—ab
- SPLENOMEGALY** Banti's syndrome from  
Schistosomiasis [Almy & Harper] \*703
- SPLINT** aluminum hand contracture from 139
- SPONGE** gauze use in abdominal surgery  
cause of adhesions 603
- SPOTTED** FEVER See Rocky Mountain Spotted  
Fever  
**SPRAINS** See also Ankle  
treatment local procaine injections [Ranier]  
202
- SPREADING** Factor See Hyaluronidase  
**SPRUF** like syndrome after mapharsen [Frels  
& Water] \*892  
Nontropical See Cellac Disease  
**SPUR** caffeine content [Both & others] \*818
- SPUTUM** neoplastic cells in [Wandall] 1120  
—ab
- SQUIBB** Special Formula analysis compara-  
tive cost (Council report) \*29
- STAB** Wound See Wounds  
**STAMMS** analysis comparative cost (Council  
report) \*29
- STANDARD** OIL CO medical care plan  
[Adams] \*333
- STANLEY** W M comparative sizes of viruses  
by [Mudd & Anderson] \*568
- STANOCOLA** medical care plan [Adams] \*333
- STAPHYLOCOCCUS** aureus electron micro-  
graphs [Mudd & Anderson] \*563  
aureus infection (resistant) penicillin for  
[Keyes] \*611  
penicillin effect on [Rantz] 392—ab  
phage electron micrographs [Goldsmith] 914  
—C  
septicemia and endocarditis from heroin addic-  
tion [Hussey & others] \*535
- STARCH** dusting powder for rubber gloves  
236—F
- STARVATION** See also Famline  
treatment of diabetes insipidus [Peters]  
\*1027
- STATE** Health Department See Health  
Hospitals See Hospitals state  
Legislation See Laws and Legislation  
Societies See Societies Medical

- STATISTICS** See Vital Statistics  
**STATUS** Thymicolymphaticus See Thymus  
**STEALING** hospital orderly sentenced on larceny charge 1096  
**STEFATORRHEA** Idiopathic Sec Cellac Disease  
**STERILITY** See also Impotence  
 couple tends to become fertile after adopting a baby 402  
 Inducing See Castration  
 investigations on [Sharman] 198—ab  
 one child and postpartum salpingitis [Black-Schaffer] 855—ab  
**STERILIZATION BACTERIAL** See Antiseptics  
 Disinfection  
 of Air See Air Disinfectant  
**STERILIZATION SEXUAL** See Castration  
**STERILINES** W K Compound 587—BI  
**STERNUM** Marrow from See Bone Marrow  
**STEVENS** Mineral Water 50 50 Water 587—BI  
**STEWART** Morel's Syndrome See Frontal Bone  
**STILBESTROL** See Diethylstilbestrol  
**STILBIRTH** and placental infarcts 928  
**STITH** Memorial Library 378  
**STOCKINGS** See Hosiery  
**STOKES ADAMS** Attacks See Heart block  
**STOMACH** See also Digestive System Gastrointestinal Tract  
 cancer chronic gastritis in relation to, 572—E  
 Disorder See Indigestion  
 Excision See Stomach surgery  
 extract (whole) for infantile pellagra by T Gillman 249  
 Flatulence See Flatulence  
 inflammation (chronic) relation to cancer 72—E  
 inflammation (corrosive) [Meyer] 862—ab  
 lavage vs emetics in poisoning of infants 138  
 secretion effect of coffee and other beverages [Roth & others] \*814  
 secretion inhibition in peptic ulcer [Steigmann] 192—ab  
 secretion inhibitory effect of acid in intestine [Pincus] 260—ab  
 secretion sodium alkyl sulfate effect on pepsin activity [Kirsner] 55—ab  
 surgery excision nitrogen loss after [Co-Tul] 519—ab  
 surgery for complicated gastric lesions blood loss during [Collier & others] \*4  
 Ulcer See Peptic Ulcer  
**STOMATITIS** from riboflavin deficiency in service men [Jones] 264—ab  
**STONE HAREY** testimony before Pepper committee 245—OS  
**STONES** See Calculi (cross reference)  
**STOOLS** See Feces  
**STORAGE** of Blood See Blood preservation  
 Blood Transfusion blood bank  
**STOVARSOL** See Acetarsone  
**STRAWBERRIES** preventing urticaria from 1058  
**STRAYER** School Survey Boston 1086—E  
**STRENGTH** See Dystrophy Myasthenia  
**STREPTOCOCCUS** disease control by Army Air Forces with sulfadiazine [Holbrook] \*84  
 dispersed into air sources [Robertson & others] \*994  
 epidemic in children's surgical ward [Doyle] 660—ab  
 hemolytic geographic distribution relation to rheumatic fever incidence [Van Raven-swaay] \*486  
 hemolytic proteins skin response in rheumatic fever [Taran] 1172—ab  
 hemolytic types in same household isolated from scarlet fever [Foley] 1113—ab  
 Infection See also Rheumatic Fever Scarlet Fever  
 infection reactions after sulfadiazine as preventive [Lee] \*630  
 infections penicillin ineffective in glomerular nephritis [Bloomfield & others] \*638  
 infections (respiratory) sulfadiazine preventive U S Navy [Coburn] \*88  
 infections synergic action of penicillin and sulfathiazole etc [Bigger] 866—ab  
 ulcerative colitis [Bargen] \*1009  
 viridans fever of unknown origin 737  
 viridans septicemia of arteriovenous aneurysm surgical cure [Lipton & Miller] \*776  
**STREPTOTHRICIN** chemotherapeutic agent [Robinson] 1052—ab  
 isolated from Actinomyces lividulae by Wisnman 103—E  
**STRETCH** reflex in poliomyelitis [Schwartz & others] \*695  
**STRITCHER** poleless field of nylon Navy develops 1033  
**STRIKE** See Telephone  
**STROXYLOIDES** stercoralis infection eosinophilia in [Lowie] 398—ab  
**STROPHANTHIN** G— See Ouabain  
 treatment of fresh cardiac infarction [Edens] 924—ab  
**STRUMI** See Goiter  
**STPYCHINE** sulfate for nervous manifestations of alcoholism 138  
**STUART** Formula analysis comparative cost (Council report) \*29  
**STUDENTS** See also Children school Education Schools Students Medical University  
 health program at Colby College 716  
 health service at Bennett College for Women 181  
 University of London students return to London 909  
**STUDENTS, MEDICAL** See also Education Medical Interns and Internships Schools Medical  
 ASTP See Education Medical  
 Fellowships See Fellowships  
 men now in army to continue college courses after war 1093  
 Prizes for See Prizes  
 state society membership for (Ore) 649 (Conn) 1039  
 Teaching See Education Medical  
 women eligible for Harvard Medical School 376  
**STUMP** See Amputation stump  
**SUBARACHNOID** injection See Pyridoxine  
**SUCCINYL-SULFATHIAZOLE** riboflavin biosynthesis by intestinal bacteria [Najjar & others] \*357  
 toxic reactions [Vilter & Blankenhorn] \*691  
**SUCTION** Drainage Monaldi's See Empyema  
 Tuberculosis of Lung treatment  
**SUFFOCATION** See Asphyxia  
**SUGAR** See also Carbohydrates Dextrose  
 in Blood See Blood  
 in Urine See Glucosuria  
 Research Foundation grants for research 1097  
 Tolerance Test See Dextrose tolerance  
**SUGGESTION** faith healing 1058  
**SUICIDES** rate declines 183  
**SUITER** Lectureship See Lectures  
**SULFADIAZINE** preventive of infectious diseases in AAF [Warren] 729—ab  
 preventive of meningococcal infection [Pain-ton] 983—ab  
 preventive of respiratory bacterial infections in Navy [Coburn] \*88  
 preventive of rheumatic fever in AAF [Holbrook] \*84 [Thomas] \*491  
 toxicity [Vilter & Blankenhorn] \*691  
 toxicity multiple severe symptoms in a child [Kooten] \*833  
 toxicity reactions after mass administration of 25,000 persons [Lee] \*630  
 Treatment See Diarrhea Meningitis cerebrospinal epidemic Meningitis influenza  
**SULFAGUANIDINE** preventive of Sonne dysentery [Yannet] 326—ab  
 thiourea and thiouracil treatment of thyrotoxicosis 172 (correction) 447  
 toxic reactions [Vilter & Blankenhorn] \*691  
**SULFAMERAZINE** N N R (Squibb) 367  
**SULFANILAMIDE** N dimethylacryl See Dimethylacryl  
 renal anaphylaxis [Dotta] 462—ab  
 treatment See Tuberculosis  
**SULFAPYRAZINE** toxic reactions [Vilter & Blankenhorn] \*691  
**SULFAPYRIDINE** toxicity fatal purpura [Sherlock] 1119—ab  
 Treatment See also Tuberculosis  
 treatment intraperitoneal [Cardner] 987—ab  
**SULFASULIDINE** See Succinylsulfathiazole  
**SULFATES** See Copper sulfate Ephedrine sulfate (cross reference) Strichmine sulfate Zinc sulfate  
**SULFATHALIDINE** See Phthalylsulfathiazole  
**SULFATHIAZOLE** absorption from wounds [Waud] 858—ab  
 chewing gum in secondary post tonsillectomy hemorrhage [McGovern] 918—ab  
 N N R (Premo) 367  
 penicillin synergic action with [Bigger] 666—ab  
 Phthalylsulfathiazole See Phthalylsulfathiazole  
 prophylaxis for gonorrhea [Gooch] 129—ab  
 sodium intravenous advantages limitations [Milles] 57—ab  
 sodium nebulized solution Inhalation in bronchial lesions [Applebaum] 919—ab  
 Succinal See Succinylsulfathiazole  
 toxic reactions [Vilter & Blankenhorn] \*691  
 Treatment See also Gonorrhea  
 treatment plus proflavine powder in wounds [Mchitshi] 58—ab [Feggetter] 58—ab  
**SULFOCARBAMIDE** See Thiourea  
**SULFOCYANATE** See Potassium thiocyanate  
**SULFONAMIDE COMPOUNDS** action anti-catalase and coenzyme theory effect of paraaminobenzol acid 31—E  
 action (synergic) of penicillin [Bigger] 666—ab  
 Benzenesulfonamide See Benzenesulfonamide  
 concentrations in blood [Welch] 590—ab  
 concentration tests by colorimeter [Duffie] \*96  
 excretion liver and gallbladder in [Shaj] 456—ab  
 prevent recurrences in rheumatic fever [Thomas] \*490  
 renal damage from 302—E [Murphy] 390—ab  
**SULFONAMIDE COMPOUNDS—Continued**  
 Sulfadiazine Sec Sulfadiazine  
 Sulfaguanidine Sec Sulfaguanidine  
 Sulfamerazine Sec Sulfamerazine  
 Sulfanilamide Sec Sulfanilamide  
 Sulfapyrazine Sec Sulfapyrazine  
 Sulfapyridine Sec Sulfapyridine  
 Sulfathiazole Sec Sulfathiazole  
 syntheses in intestine 174—E  
 toxicity asthma sign of sensitivity [Randolph & Rawling] \*166  
 toxicity fatal [Gessier] 262—ab  
 toxicity reactions [Vilter & Blankenhorn] \*691  
 Treatment See also Actinomycosis Bronchus infections Dysentery bacillary Gangrene gas Gonorrhea Osteomyelitis Pylonephritis Scarlet Fever Tonsils infected Trachoma Yellow Fever  
 treatment dangers in ear infections [Dingle] 327—ab  
 treatment for patients on restricted sodium diets 466  
 treatment plus penicillin in pneumococcal meningitis [Waring & Smith] \*418  
 treatment plus potassium bicarbonate in pneumonia [Ohnyst] 800—ab  
 treatment plus vitamin C for healing wounds [Kushlin] 659—ab  
 treatment resistance to and antisulfonamide action of serum [Boroff] 391—ab  
 treatment resistant gonorrhea penicillin for [Murphy] 505—ab [Page] 509—ab  
 treatment resistant gonorrhea penicillin sodium for [Sternberg & Turner] \*107  
 treatment resistant meningitis in children [Cross Helser] 197—ab  
 treatment topical applications 202  
 treatment warning on in poliomyelitis [Toomey] 49—C  
 vitamin affected by? 709—ab  
 yellow fever virus in cultures [Koprowski] 517—ab  
**SULFONE** See Promlin  
**SULPHUR** Ramsdell's Cream 49—BI  
**SUMMER** 14 17 day menstrual interval in 670  
**SUNBURN** prolonged induced resistance by ultraviolet irradiation [Rudd] 194—ab  
**SUNLAPPS** See Ultraviolet Rays  
**SUNLIGHT** harmful use ointments or lotions or cellophane mask to protect 465  
**SUPPOSITORIES** See Contraception  
**SUPPURATION** See Abscess (cross reference)  
 Empyema Otitis Media Ulcers  
**SUPRARENALS** See Adrenals  
**SUPREME** Court See Medical Jurisprudence  
**SURGEONS** See also Physicians Surgery  
 American College of Committee on Postwar Medical Service 243—OS 440 708—E 709 770—E 775 1036—OS  
 American College of War-time Graduate Medical Meetings See Education Medical wartime  
 consultants of various service commands 770  
 Flight See Aviation  
 de Chauliac (Guy) (1300 1369) 156—ab  
 Heroic Action See World War II Heroes and Prisoners  
 Mexican assembly (6th) Mexico City 848  
 Military See World War II  
 Royal College of (an F.R.C.S. in ophthalmology) 314 (location at Lincoln's Inn Fields) 1097  
 Surgeon General See Army U S  
**SURGERY** See also under specific diseases  
 organs and operations as Cesarean Section Lungs Peptic Ulcer Thorax Thyroidectomy Tuberculosis of Lung  
 AAF regional conferences 001  
 Amputation See Amputation  
 Anesthesia in See Anesthesia  
 blood loss in operations [Collier & others] \*1  
 Early Rising after Operation See Convalescence and Convalescents  
 fibrinogen and thrombin products used in [Ingraham & Bailey] \*680  
 Gloves See Rubber gloves  
 gynecologic changes in last 25 years [Planteuf] \*139  
 heat in surgical conditions (Council report) [Ober] \*769  
 Indemnity Plan See Medical Service Plans  
 Instruments See Instruments  
 Neurosurgery See Neurosurgery  
 operating trucks take hospital to wounded soldiers 107  
 Operations (illegal) See Abortion  
 operations instill amniotic fluid to prevent adhesions [Merle] 658—ab  
 operations (nonspecific major) effects on blood pressure [Rojas & others] \*15  
 Orthopedic See Orthopedics  
 osteopath and chiropractor perform causing death of 2 boys Cliff 714  
 plastic of lips and cheek free muscle trans-plantation in [Prudent] 730—ab  
 plastic treatment of war injuries at Queen Victoria Hospital 1162  
 postoperative care after removing cataracts 463

**SURGERY**—Continued  
Postoperative Complications See Empyema  
Lungs abscess Pericarditis Vomiting  
postoperative use of Harris drip prociolsols  
604  
Shock In See Shock surgical  
skin graft transplant In [Cannaday] 599—ab  
Sutures See Sutures  
War See World War II surgery World  
War II wounded  
**SURGICAL** Care Inc Kansas Missouri 577  
—OS  
Dressings See Dressings  
Gloves See Rubber gloves  
Cut See Catgut  
Infection See Infection  
**SURVIVAL** exposition Navy Pensacola 903  
**SUTURES** eritgut antigenicity [Hopps] 324  
—ab  
eritgut effect of sensitivity on tissue retraction  
[Hopps] 324—ab  
eritgut testing for allergy to 866  
cotton (spool) [Floyd] 986—ab  
fascial strips (autoplastic) for inguinal  
hernia [Chiles] 263—ab  
for repair of tendons 528  
plasma clot (autologous) of nerves [Tarlov]  
\*741  
plasma thrombin adhesion [Young] 922—ab  
primary of simple mastoid wounds [Johnson]  
662—ab  
types (3) used for herniotomy 670  
**SWEAT GLANDS** hereditary ectodermal dys-  
plasia [Felsner] 127—ab  
**SWIFT & CO** gives \$50 000 for protein re-  
search 847  
**SWINE** See Hogs  
**SYCOSIS** vulgaris penicillin for [Johnson]  
338—ab  
**SYPHILITIC** Block See Nerves  
**SYPHILITIC** arteriosclerotic hyperten-  
sive fundus oculi after [Gans] 1170—ab  
in Buerger's disease [de Takats] 921—ab  
in essential hypertension [Bernard] 53—ab  
lumbosacral effect on blood pressure [Rojas  
& others] \*15  
**SYNCOPE** See Vertigo  
Carotid Sinus See Carotid Sinus syncope  
**SYPHILIS** See also Venereal Disease under  
specific disease organ or region affected  
Cerebrospinal See Neurosyphilis  
complications pulmonary tuberculosis in  
Negro [Hoffman] 592—ab  
congenital penicillin in prevention and treat-  
ment [Stokes & others] \*73 [Lentz &  
others] \*408  
Diagnosis See Syphilis serodiagnostics  
Early See also Syphilis treatment  
early masked by penicillin used for gonor-  
rhea 110 [Shirer] 847—ab  
history Astruc (1094 1766) first to recognize  
it as an infectious malady 1138—ab  
in Jewish population of Palestine 240  
in Pregnancy See Pregnancy  
of tendon of biceps and of olecranon bursa  
[Sehrager] 323—ab  
relapse or reinfection 62  
serodiagnostics blood collected for at patient's  
first visit [Howard] 979—C  
serodiagnostics Kolmer and Kahn test in  
leprosy [Hopkins & Faget] \*941  
serodiagnostics variations in response to 800  
treatment acetarsone not recommended for  
adults 735  
treatment dichlorophenarsine hydrochloride  
(clararsen) NDR (description) 169  
(Squibb) 169  
treatment 5 days with neoarsphenamine  
arsphenamine typhoid vaccine or maphar-  
sen U S P H S evaluation [Cooper  
ating Clinics] \*554  
treatment intensive of early type A M A  
panel discussion \*538 552  
treatment jaundice spread by syringes [Sala-  
man] 461—ab [Sheehan] 462—ab  
treatment mapharsen [Goldblatt] 127—ab  
treatment mapharsen acute agranulocytosis  
from treated with penicillin [Smith &  
others] \*1027  
treatment mapharsen also bismuth of early  
and latent types [Eagle] \*538  
treatment mapharsen intensive myelopathy  
as result of [Saks & Nomland] \*560  
treatment mapharsen (massive dose) [Berry]  
1116—ab  
treatment mapharsen obstructive jaundice  
with sprue after [Freis & Mater] \*892  
treatment mapharsen reactions bil in oil  
for 901  
treatment of early type with arsphenamine  
by syringe method using 7 different plans  
[Cannon & others] \*544  
treatment of early type with mapharsen  
[Vellou] 727—ab  
treatment of late type with penicillin [Stokes  
& others] \*73  
treatment penicillin [Mahoney & others]  
\*63 [Moore & others] \*67  
treatment penicillin to be studied by Dr  
Rosin 177

**SYPHILIS**—Continued  
treatment 10 day combined fever induced  
with typhoid vaccine and mapharsen  
[Thomas & Wexler] \*570  
**SYPHILITIC** history Philippe Ricord (1800  
1859) 828—ab  
**SINGLE** jaundice spread by [Salmann] 461  
—ab [Sheehan] 462—ab  
Method See Syphilis treatment

## SOCIETIES AND OTHER ORGANIZATIONS

*Acad—Academy* *Indust—Industrial*  
*Am—American* *Internot—International*  
*A—Association* *M—Medical*  
*Coll—College* *Med—Medicine*  
*Comm—Commission* *Not—National*  
*Comm—Committee* *Pharm—Pharmaceutical*  
*Conf—Conference* *Phys—Physicians*  
*Cong—Congress* *Soc—Society*  
*Dist—District* *Surg—Surgery*  
*Found—Foundation* *Surgs—Surgeons*  
*Hosp—Hospital* *S—Surgical*

Aero M A of the United States 509 908  
Alabama Pediatric A 444  
Albany M Coll Alumni A of 445  
Allegheny County (Pa) M Soc 847  
Am Acad of Neurological Surg 509  
Acad of Ophthalmology and Otolaryngology  
312 630 907 1159  
Acad of Orthopaedic Surgs 650 1096  
Acad of Pediatrics 42 183 312 580 908  
1161 Cuban branch 1097  
Acad of Tropical Med 581 1161  
A for Cancer Research 848  
A for the Advancement of Science Section  
42  
A for Thoracic Surg 42  
A of Allergists for Micrological Investiga-  
tion 580 1161  
A of Cereal Chemists 1096  
A of Eye Ear Nose and Throat Soc  
Secretaries 313  
A of Indust Hygienists 907  
A of Indust Hyg and Surgs 907  
A of M Record Librarians 715  
A of M Social Workers 42  
A of Obstetricians Gynecologists and Abdom-  
inal Surgs 41 907  
A of Orthoptic Technicians 313  
A of Public Health Dentists 248  
Board of Anesthesiology 1096  
Board of Obstetrics and Gynecology 447  
Board of Ophthalmology 313  
Board of Otolaryngology 313 848  
Board of Pathology 117  
Board of Pediatrics 907  
Cancer Soc 311 650 781 782 848 1160  
Kentucky division 578  
Chemical Soc New York section 1159  
Coll of Allergists 312  
Coll of Chest Phys Meiblan chapter 181  
Pennsylvania chapter 446 southern chap-  
ter 581 1161 Wisconsin chapter 508  
Coll of Hosp Administrators 39 907  
Coll of Phys 42 311  
Coll of Surgs 41 580 715  
Dental A 779  
Dietetic A 1096  
Federation for Clinical Research Eastern  
section 580 908 Southern section 972  
midwestern section 1161  
Found for Mental Hygiene 1160  
Gastroenterological A 39  
Group Therapy A 1096  
Heart A 42  
Hosp A 39 42 116 782  
Indust Nurses A 907  
Institute of Nutrition 312  
M Women's A Blackwell branch 20 905  
Mission to Lepers 1161  
Museum of Health 648  
Nurses A 42  
Ophthalmological Soc 42  
Orthoptic Council 313  
Pediatric Soc 248 717  
Pharm A 715 1096 New York branch 1041  
Pharm Manufacturers A 718  
Phys Art A 183  
Prison A 908  
Proctologic Soc 41  
Public Health A 42 248 447 509 848  
Southern branch 581  
Red Cross 311 580  
Rheumatism A 42  
Roentgen Ray Soc 42 447  
Scandinavian Found 971  
School Health A 248 848  
Social Hygiene A 248 905 972  
Soc for Research in Psychosomatic Problems  
248 782  
Soc for the Control of Cancer 246 311  
Soc for the Hard of Hearing 311  
Soc of Anesthetists 377 580 907  
Soc of Parasitologists 42  
Soc of Tropical Med 183 581 782  
Soc of Zoologists 42  
S Trade A 782  
Trudeau Soc Missouri chapter 780  
Urological A 650 North Central section  
447

Societies and Other Organizations—Continued  
Anamilo 1159  
Anderson M D Found for Cancer Research  
182  
Anglo Am Caribbean Comm 42  
Arkansas First Councilor Dist M Soc of  
Northeast 779  
Third Councilor Dist M Soc of 779  
Asociacion Medica Argentina 42  
Associate Alumnae of Hunter College 378  
A for Research in Nervous and Mental Dis-  
ease 973  
for the Aid of Crippled Children 310  
of Am M Colleges 378 650  
of Pa Resident and Resident Phys 649  
of Internal and Child Health Directors 782  
of Military Surgs of the United States 1161  
of State and Territorial Health Officers 782  
1096  
Atlanta Chamber of Commerce 970  
Baltimore City M Soc 846 1158  
Baruch Comm on Physical Med 650 973  
Beaumont M Club 909  
Belt Memorial Trustees 581  
Bergen County (N J) M Soc 617  
Billings Front Found 1039  
Boone County (W Va) M Soc 378  
Brazilian Soc for Tuberculosis 971  
British M Research Council 313  
California Board of Osteopathic Examiners 714  
Indust Accident Comm 180  
M A 376  
State Board of M Examiners 441  
Campbell Kenton County (Ky) M Soc 578  
Catholic Hosp A 846  
Central Neuropsychiatric A 509  
Soc for Clinical Research 447  
States Soc of Indust Med and Surg 1039  
West Virginia M Soc 717  
Chicago Institute for Hosp Administrators 39  
Institute of Med of 114 376 579 845 971  
M Soc 905 971  
Pathological Soc 971  
Soc of Internal Med 376  
S Soc 309  
Urological Soc 447  
Child Welfare Information Service 907  
Cincinnati Acad of Med of 191 579 1095  
Cleveland Acad of Med of 42 619 780  
Cline 780  
Cline Found 1159  
Dental Soc 649  
Health Museum 649 781  
M Library A 649 1159  
Colorado State M Soc 1094  
Columbia Found of San Francisco 246  
University of Alumni A 507  
Comm on Physical Fitness 40  
Commonwealth Fund 506  
Community Service Soc 648  
Conf of Professors of Preventive Med 312  
Cong on Pediatrics 183  
Connecticut Hosp A 845  
Manufacturers A of 1158  
State M Soc 39 779 845 1039 1158  
Cortland County (N Y) M Soc 507  
Council of Social Agencies 309  
on Rheumatic Fever 42 183  
Crawford County (Ill) M Soc 970  
Czechoslovak M A 1097  
Dade County (Fla) M A 1158  
Dallas County (Texas) M Soc 1041  
Southern Clinical Soc 446  
Delaware M Soc of 114  
Denver M Soc of the City and County  
of 647  
Detroit Dermatological Soc 376  
Dist of Columbia M Soc of the 246 1039  
Dubuque County (Ia) Tuberculosis A 1039  
Egypt Ophthalmological Soc of 313  
Erie County (N Y) M Soc 648  
Fairfield County (Conn) M A 578  
Field Army 312 578 Marion County and  
Indiana state chapters 246  
Florida Second Dist M Soc of 647  
Forum on Allergy 580 1161  
Found for the Study of Human Relations 117  
French Soc of Surg 782  
Genesee Valley M Care 716  
General Federation of Women's Clubs of Amer-  
ica 183  
Georgia M A of 779  
Pediatric Soc 779  
Greene County (N Y) M Soc 507  
Haddassah 1097  
Harrisburg (Pa) Acad of Med 446 847  
Harris County (Texas) M Soc 182  
Norman Walt Memorial Found 180  
Hartford County (Conn) M A 578  
Harvard M Soc 907  
Harvey Soc 445  
Hastings Found for Tuberculosis Research  
1158  
Hennepin County (Minn) M Found 507  
County (Minn) M Soc 507  
Hog Found for Mental Hygiene 570  
Houston Acad of Med 182  
Idaho North Dist M Soc 1039  
Southwest Dist M Soc 1039  
Illinois State Department of Registration and  
Education 647  
State M Soc 578 1039  
Trudeau Soc 905

Societies and Other Organizations—Continued  
Indiana Eleventh Councillor Dist M A 780  
State M A 246 578 905  
Indust Hygiene Found of America 580  
Institute of Aeronautical Sciences 313  
Instituto Internacional Americano de Protec-  
cion a la Infancia 1042  
Inter Am Hosp A 447 1097  
Intenat Cancer Research Found 248  
Coll of Surgs U S chapter 116 650  
Leptosy A 1042  
Inter State Postgraduate M A of North Amer-  
ica 378  
Iowa State Soc for Mental Hygiene 506  
Isthmian Canal Zone M A of 1042  
Jackson County Health Forum 376  
Jefferson County (N Y) M Soc 310 971  
Jewish Consumptives Relief Soc 970  
Kalamazoo Tuberculosis A 376  
Kansas City Southwest Clinical Soc 247  
M Soc 180 444 841  
State Board of Social Welfare 114  
Kentucky W K Found 182  
Kentucky State M A 180 506 1094  
Kings (N Y) M Soc of the County of 1091  
Kings County (Wash) M Soc 972  
County (Wash) M Service Corporation 847  
972  
Lake County (Ill) M Soc 905  
Lapeer County (Mich) M Soc 246  
Lester Albert and Mary Found 580  
Jews County (W Va) M Soc 717  
Hickfield County (Conn) M A 578  
Los Angeles Acad of Med 570  
Chamber of Commerce 114  
County Civil Service Comm 114  
County M A 114 376 1158  
County Phys Aid A 376 1158  
Heart A 1158  
Louisiana State M Soc 1178  
Madison County (Ill) M Soc 180  
County (N Y) M Soc 40  
Maine Conf of Social Welfare 647  
M A 376 1040  
Massachusetts Board of Registration in Med  
846  
M Soc 115 1040  
Psychiatric Soc 579  
M Correctional A 908  
Meminger Found 180 782  
Metropolitan Life Insurance Company 183 718  
Miami Heart 1158  
Michigan (Childrens) Found of 507  
Public Health A 1158  
Pathological Soc 181  
Public Health Conf 378  
State M Soc 180 506 378  
State M Soc Found for Post Graduate M  
Education 579  
Tuberculosis A 181  
Middlesex County (Conn) M A 578  
Milwaukee Acad of Med 782  
Minnesota Public Health A 906  
Missouri M Service 445 1097  
State M A 445 106 1097  
Monongalia County (W Va) M Soc 378  
781  
Monroe (N Y) M Soc of the County of 376  
718  
Montana Hosp A 846  
Hosp Service A of 846  
M A of 40 846  
Public Health League 846  
State Nurses A 846  
Tuberculosis A 846  
Montreal M Chirurgical Soc of 79  
Museum of Science and Industry 78  
Nassau County (N Y) M Soc 310  
Nat Acad of Med of Rio de Janeiro 1042  
A for the Blind 906  
A of Science Writers 42  
Comm for Education on Alcoholism 509  
Comm for Mental Hygiene 182 183 509  
80 1160  
Comm on Alcohol Hygiene 39  
Conf of Governmental Indust Hygienists  
907  
Found for Infantile Paralysis 312 378  
447 717  
Found for the Care of the Advanced Cancer  
Patients 247 150  
Health Council 906  
Malaria Soc 581  
M A 311  
Music Council 718  
Organization for Public Health Nursing 848  
Phys Comm for the Extension of M Ser-  
vices Michigan Division 715  
Publicity Council for Health and Welfare  
Services 310 781  
Research Council 40 183 718 782  
Safety Council 116  
Soc for Crippled Children and Adults 906  
1096  
Soc for the Prevention of Blindness 1041  
Tuberculosis A 311 579 781  
Nevada State M A 647 846  
New Castle County (Del) M Soc 714 1158  
New England Obstetrical and Gynecological  
Soc 1040  
Soc of Physical Med 1094  
New Haven County (Conn) M A 578

Societies and Other Organizations—Continued  
New Jersey M Soc of 647 1040  
Tuberculosis League 648  
New London County (Conn) M A 578  
New Mexico M Soc 40  
New Orleans Soc of Neurology and Psy-  
chiatry 579  
Tuberculosis A of 506  
Tuberculosis Comm of 506  
New York Acad of Med 376 445 507 579  
971 1095  
Acad of Science 1159  
Cardiologist Soc 1041  
Childrens Aid Soc of 507  
City Comm on Mental Hygiene 1041  
Community Service Soc of 780  
Diabetes A 181 310 Clinical Soc of the  
648  
Hosp A of 716  
Institute of Clinical Oral Pathology 181  
M Soc of the County of 971  
M Soc of the State of 377 579  
State A of Institutions for the Physically  
Handicapped 716  
State M of Public Health Laboratories 716  
State Temporary Comm of M Care 846  
Tuberculosis and Health A 377 1041  
North Carolina State Board of M Examiners  
507  
North Central M Conf 1040  
Northern Dist Health Conf 378  
Illinois Postgraduate Conf 715  
Northwest Pediatric Soc 444  
Northwestern Ohio M Soc 247  
Nutrition Research Laboratories 715  
Ohio Indust Comm of 247  
State M A 1041  
State Radiology Soc 1011  
Oklahoma City Clinical Soc 116  
State M 906  
Omaha Mid West Clinical Soc 447  
Ontario County Comm on Tuberculosis and  
Public Health 115  
Oregon State M Soc 508 649  
Osego County (N Y) M Soc 310  
Ilan Am Conf on Leprosy 319 1042  
Pennsylvania M Soc of the State of 508 847  
1160  
Psychiatric Soc 580  
Public Health Soc of the University of 907  
State A for Health Physical Education and  
Recreation 971  
Penobscot County (Me) M A 1040  
Philadelphia Coll of Phys of 310 847  
County M Soc 310 508 1160  
Roentgen Ray Soc 847  
Tuberculosis and Health A 579  
Illips Henry Institute 509  
Pittsburgh Pediatric Soc 580  
Polish Institute of Arts and Sciences in  
America 780  
Portage County (Ohio) M Soc 41  
Poynter C W M Found 309  
Professional Horsemen A 907  
Public Health Cancer A 848  
Health Research Institute 115  
Queens M Soc of the County (N Y) of  
181 780  
Radiological Soc of North America 42 417  
Reading (Pa) Eye Ear Nose and Throat Soc  
446 649 971  
Rhode Island Curative Center 781  
M Soc 446 781  
Richmond (Va) Hosp Service A 781 1160  
Riggs Austen Found 971  
Rochester (N Y) Acad of Med 1095  
Rockefeller Institute for M Research 846  
Rockland County (N Y) M Soc 115  
Royal Australasian Coll of Phys 117  
Coll of Phys 117  
Soc of Med 579 782 970 1097  
Russia Acad of M Sciences of 581  
Sage Russell Found 509 781  
St Lawrence County (N Y) M Soc 40 310  
Salmon Comm on Psychiatry and Mental Hy-  
giene 579  
San Francisco County M Soc 114 444 1010  
Heart Comm 444 1039  
Psychonathic Soc 714  
Tuberculosis A 444 1039  
Santa Barbara County (Calif) M Soc 444  
Sarance Lake (N Y) M Soc 906 971  
Seaboard M A of Virginia and North Caro-  
lina 906  
Seattle Safety Council 650  
Sedgwick County (Kan) M Soc 114 180  
Snyder Ophthalmic Found 1091  
Sociedad Chilena de Pediatria 417  
Chilena de Tisiologia 180  
Soc for Pediatric Research 249 715  
for the Advancement of Contact Lens Re-  
search 1041  
for the Prevention of Crime 908  
of Am Bacteriologists 908 Texas branch  
1096  
of Experimental Biology and Med South  
west section 446  
of Illinois Bacteriologists 578  
of the New York Soc 115  
South Carolina M A 311  
Soc of Ophthalmology and Otolaryngology  
311

Societies and Other Organizations—Continued  
Southern M A 312 581  
S A 848  
Stato Charities Aid A 908  
Staten Island Council of Social Agencies 971  
Stephen County (N Y) M Soc 906  
Stiff Dr Robert M Memorial A 378  
Suffolk Dist (Mass) M Soc 971  
County (N Y) M Soc 906  
Sugar Research Found 1007  
Texas Acad of Science 972  
A of M Anesthetists 580  
M and Dental Service Bureau 182  
Postgraduate M Assembly 182  
State M A of 649  
S Soc 649  
Toledo Acad of Med 41  
Hosp Institute of M Research 1095  
Tolland County (Conn) M A 578  
Tompkins (N Y) Med Soc of the County  
of 310  
Tulsa County (Okla) M Soc 781  
Public Health A 781  
United M Service 377  
U S Comm for the Care of European Chil-  
dren 183  
Utah State M A 249  
Vermont State M Soc 972  
Virginia Associated Doctors of 781  
Hosp Service A 1160  
M Soc of 377 847  
Soc of Chest Phys 377  
Visiting Nurse A 181  
Warner Institute for Therapeutic Research 310  
Washington State M A 378 440 907  
State Social Hygiene A 182 650  
Tuberculosis A 650  
Waterbury (Conn) M Soc 309  
(N Y) M Soc 115  
Wayne County (Mich) M Soc 1158  
(N Y) M Soc 115  
Wayne University M Science Center 780 905  
Webster County (Utah) M Soc 908  
Westchester (N Y) M Soc of the County of  
507 906  
Western S A 581  
West Virginia State M A 41 311 717 847  
Windham County (Conn) M A 578  
Wisconsin Alumni Research Foundation 41  
1090  
Anti Tuberculosis A 311 781 782  
State M Soc of 312 508 781  
Trudeau Soc 782  
University of M Soc 508 782  
Wood Stuart Memorial Fund 114  
Wyoming State M Soc 41  
Yonkers Tuberculosis and Health A 181  
York County (Me) M Soc 1040

## T

TABLEWARE See Cooking and Eating Uten-  
sils  
TACHICARDIA paroxysmal in Infant [Ve-  
zina] 326-ab  
TACHYSTEROL See Dihydroaethylsterol  
TALCUM dusting powder for rubber gloves  
236-E  
powder granulomas of peritoneal cavity  
[Gardner] 538-C  
TALKING See Speech  
TANTALUM foil sutureless reunion of nerves  
[Weiss] 129-ab  
repair of cranial defects [Robertson] 457  
-ab [Reeces] 526-ab  
TAPE See Adhesives  
TAYLORIAN INFECTION in dogs 466  
TERTIAL Cream of Potassium bitartrate  
TASTY foul in mouth in pregnancy 866  
TAYLOR Instrument Co prize by Rochester  
Academy 1095  
TAX See also Medicolegal Abstracts at end  
of letter M  
social security doubling next year 843-OS  
FEA effect on stomach secretion [Roth &  
others] \*819  
TEACHING See Education Medical  
TEETH See also Dentistry Gums Jaws  
earles and fluorine 40 267 [Ockerse] 1175  
-ab  
earles incidence England 1162  
cause of foul taste in mouth in pregnancy?  
866  
defects (congenital) and maternal rubella  
[Evans] 1120-ab  
dentures (ill fitting) malocclusion perleche  
[Finerud] \*738  
discolor from erythroblastosis fetalis 670  
TFGMFLER C L most cited doctor 5 times  
decorated 502  
TELANGIECTASIA hemorrhagic hereditary  
[Osler Weber Rendu Disease] [Singer] 56  
ab [Stock] 649-ab  
TELEPHONE strike medical calls handled dur-  
ing 904-OS  
TELEVISION military surgeons instruct by  
777  
TELEPH Super Hearing Aid 705  
TEMPERATURE See Climate Cold Heat  
Tropics  
Indoor See Air conditioning  
TEMPERATURE BODY See Fever  
TENDON Treatment See Syphilis

**TICKS**—Continued  
ble fever in 2660 soldiers [Feder] \*293  
borne epidemic encephalitis [Smorodintsev]  
193—ab 962—F  
borne tularemia penicillin for [Josey] \*496  
repellents indalone or 622 268  
**TINEA capitis** epidemic control by U V exam  
ination x ray therapy [Lewis] 196—ab  
**TINIAUTUS aurium** infect tympanum with thy  
roxin or ethyl morphine [Trowbridge] 127  
—ab  
**TIP TOP** Emergency First Aid kits 635—BI  
**TIREDDNESS** See Asthenia Fatigue  
**TISSUES** See also Cancer Cells Endo  
metrium Pancreas Skin  
coenzymes in shock and anoxia [Covick]  
\*749  
pathogenic action of biologic macromolecular  
substances and colloids 770—E  
reaction to catgut [Hopps] 324—ab  
reaction to fibrin form [Ingraham & Bailey]  
\*682  
**TITANIUM** dioxide to protect against harm  
ful sunlight 465  
**TOAD** Test See Pregnancy diagnosis  
**TOBACCO** food contaminated with cigaret  
ashes 336  
waxed paper from cigaret cartons as sur  
gical dressings used by Capt Twyman 712  
**TOENAILS** See Nails  
**TONGUE** epithelioma roentgen therapy [Bac  
lesse] 668—ab  
movements in speech color film record of  
24  
**TONSILLECTOMY** fatal to 2 boys performed  
by osteopath and chiropractor Calif 714  
hemostasis after 991  
hemostasis after use sulfathiazole chewing  
gum [McGovern] 918—ab  
indications pyrexia of undetermined origin  
992  
**TONSILLITIS** See Tonsils infected  
**TONSILS** Excision See Tonsillectomy  
infected sulfonamides for [Fricis] \*93  
polymyelitis in relation to [Lucchesi] 517  
—ab  
**TOOTH** See Teeth  
**TOPAGEN** pertussis vaccine [Felton & Wil  
lard] \*298  
**TORANT** treatment of prurigo estivalis 46  
**TOWNSEND** plan 1943 version Cannon bill  
969—OS  
**TOWELIA** of Pregnancy See Pregnancy  
**TOXICOLOGY** See Poisoning  
**TOXOID** See Diphtheria Dysentery Tetanus  
**TOXOPLASMOIS** human 368—E  
infantile [Zuelzer] 320—ab  
**TRACHYA** cancer intratracheal radium for  
radioactive iodine test [Pleson] \*206  
**TRACHOMA** Palestine Medical Congress dis  
cusses 783  
treatment penicillin [Keyes] \*613  
treatment sulfonamides [Polef] 924—ab  
**TRADIT** Hazard Poisoning etc See Indus  
trial Disease Industrial Health etc  
Union See Industrial Trade Union  
**TRAFFIC** See Automobiles  
**TRAINING** See Physical Education and Train  
ing  
Camps See Subheads under World War II  
**TRAIN** hospital See Hospitals  
**TRANSFUSION** See Blood Transfusion  
**TRANSLATION** of medical books for Latin  
American use 437—E  
**TRANSPLANTATION** See Cancer Muscles  
Skin graft  
**TRANSPORTATION** See Aviation Auto  
biles Traveling  
of Sick and Wounded See Ambulances  
Hospitals ships Hospitals train Stretchers  
**TRANSURFTHAL** Drainage See Seminal  
Vesiculitis  
Resection of Urethra See Prostate  
**TRAUMA** See also Accidents Burns Dis  
asters under specific organs and diseases  
Medicolegal Abstracts at end of letter M  
neclitoid and tumor metastasis [Toth] 261  
—ab  
cancer caused by single injury? [Stewart]  
125—C [Perry] 190—C [Woodward] 724  
—C  
hemiplegia paraneutels and motics for  
[Richtner] \*763  
Industrial See Industrial Accidents  
Perforating See Abdomen wounds  
role in causation of cardiac disabilities 1041  
Shock from See Shock  
**TRAVELING** See also Automobiles Aviation  
effect on incidence of abortion 500—E  
health requirements in Canal Zone 379  
**TREADWAL** WALTER L retires from U S  
P H S 908  
**TREASON** motivations for Meerloo's lecture  
574—E  
**TREATMENT** See Therapeutics  
**TREMORS** produced by DDT [Nelson] 523—ab  
**TRENCH** FOOT treatment Tech Bull of Med  
no 81 644  
**TREPONEMATOSIS** See Frambesia  
**TRIAL** See Medical Jurisprudence  
**TRICHINELLA** skin tests [Horne] 51—ab



- TRICHOMONAS** pathogenicity [Kaser] 264  
—ab  
vaginitis in men [Fcol] 53—ab  
vaginitis vaginitis refractory pruritus vulvae 991
- TRICHOPHYTON** Infection See Dermatomy-  
tosis
- TRITHYLENE** glycol vapor air disinfectant  
[Robertson & others] \*997
- TRIPHENYLCHLOROTHYLENE** effect on ad-  
vanced cancer [Haddow] 1119—ab
- TRIPHENYLIMETHYLETHYLENE** effect on ad-  
vanced cancer [Haddow] 1119—ab
- TROOPS** See World War II
- TROPICAL DISEASE** See also Tropical Medi-  
cine under names of specific diseases as  
Malaria, Leprosy, Malaria, Schistosom-  
iasis, Yellow Fever, etc.  
Army Institute of Pathology Di. Ash. Direc-  
tor 840  
eosinophilia in men home from service  
[Fowle] 398—ab
- TROPICAL MEDICINE** course [McClintock] 42  
fund by Columbia Foundation 246
- TROPICS** dietary protein and physical fitness  
in [Pitts] 195—ab  
ocular symptoms of malaria encountered in  
[Robertson] 1118—ab  
physical therapy clinic in jungle 240
- TRUBY** A. L. account of Walter Reed and  
yellow fever 35—F
- TRYPANOSOMA** epidermidum streptothricin for  
[Robinson] 1052—ab
- TRYPANOSOMIASIS** research on 1043
- TRYPANOSOMID** treatment and asymptomatic  
neurosyphilis 928
- TSETSE** Fly vector of trypanosomiasis 1043
- TSETSUGAMUSHI** Fever mortyr Dr R. C.  
Henderson 786
- TUAMINE** treatment of advanced shock 643—E
- TUBERCLE BACILLUS** bovine cause of pul-  
monary tuberculosis 439—F  
killed vaccine results [Wells] 981—ab  
ulcerative colitis [Bargen] \*1009
- TUBERCULIN** type hypersensitive to penicillin  
sodium [Welch & Rostenberg] \*10
- TUBERCULOSIS** See also Tuberculosis of  
lung under names of specific diseases and  
organs  
air borne 707—E  
case finding free x ray service [N.Y.] 115  
(Kansas State Fair) 840 (Calif.) 1039  
case finding in nurses by Royal College of  
Physicians with Mantoux test and x rays  
249  
case finding in 100 000 selected by chest  
fluorograph method [Zane] 664—ab  
case finding (national) by mass radiography  
Medical Research Council's recommendation  
310  
case finding of employees with mass x ray  
examination 778—OS  
case register (1st) Ia 1030  
commission appointed by 39  
control citizens vote for Ill 970  
control county accredited Minn 1004  
control in Hawaii since Pearl Harbor  
[Pinkerton] \*628  
control in state hospitals Calif 246  
experimental sulfanilamide and sulpyridine  
in [Smith] 592—ab  
first infection type in children 1008  
fluorescence microscopy in [Tanner] 920—ab  
hospital program Cleveland 1159  
immunization vaccine of killed tubercle ba-  
cilli [Wells] 981—ab  
in nurses (primary) [Daniels] 666—ab  
in occupied Holland 242 842  
nutrition in evaluated by blood analysis  
[Getz] 592—ab  
Pan American Congress of (6th) 1044  
treatment center Bronx General Hospital be-  
comes 373
- TUBERCULOSIS OF LUNG** (pulmonary tuber-  
culosis)  
Case Finding See Tuberculosis  
complications syphilis in Negro [Hoffman]  
592—ab  
Diagnosis See also Tuberculosis case finding  
diagnosis (differential) from Loeffler's syn-  
drome [Pirle] 322—ob 837—F  
diagnosis (differential) of apical opacities  
603  
diagnosis fluorographic [Brooks] 398—ab  
diagnosis of active type [Ritchell] 1176  
—ab  
etiology bovine origin 435—E  
pleural friction rub without pain 1007  
sanatorium (1st) in Haiti 1042  
surgical treatment penicillin to control em-  
pyema [White & others] \*1019 \*1020  
surgical treatment reconditioning in [Grow-  
C others] \*1059  
treatment Monaldi's suction drainage [Brun-  
ner] 264—ab  
treatment pneumoperitoneum [Crow] 194—ab  
treatment promin [Dancey] 321—ab [Hin-  
shaw] 322—ab
- TULANE** University (student prizes awarded)  
1094
- TULAREMIA** in California 1039  
in New England [Moore] 663—ab
- TUMORS** See also under names of specific  
organs and types of tumors  
clinic W. Va 781  
diagnostic service at U of Illinois 715  
Mailmont See Cancer Epithelioma Sar-  
coma  
metastasis and accidental trauma [Tolh] 261  
—ab  
TWINS Clies of A A F of World War I  
900—E
- TWITCHING** fascicular from overwork [Mc-  
Clintock] \*801
- TYMPANIC Membrane** See Ear
- TYPHOIDS** use by blind without hands  
St Dunstan's 1098
- TYPHOID** See also Paratyphoid  
Bacillus See *Escherichia typhosa*  
complications intestinal perforation [Du-  
brown] \*495  
complications neurologic [Bambach] 733—ob  
epidemic cheese borne [Meyer] 919—ab  
epidemic from baked beans [Klein Schmidt]  
664—ab  
epidemic in Victoria Australia 185  
epidemics in rural districts Palestine 783  
treatment specific serum [Hodgson] 988—ab  
treatment Walmsun's streptothricin 103—F  
[Robinson] 1052—ab  
vaccination compulsory Buenos Aires 602  
vaccination for those traveling in Central or  
South America 379  
vaccines induced fever plus mapharsen for  
syphilis [Thomas & Wexler] \*550 [Co-  
operating Clinics] \*544
- TYPHUS** clinical observations especially cardio-  
vascular system [Woodward & Bland] \*287  
control by Guatemalan government 313  
epidemic (house borne) at Dead Sea 44  
in Europe 307  
Serub See Tsutsugamushi Fever  
treatment p-aminobenzoic acid [Neomans &  
others] \*349 (correction) 381 (correc-  
tions) 381 782 964—E  
treatment anti typhus horse serum [Volman]  
732—ab
- U S of America Typhus Commission** (medals  
awarded) 306 (honor Egyptian health offi-  
cials) 501 (medal to 4 members of the  
commission) 1034  
vaccination for those traveling in Central and  
South America 379
- TYROCIDINE** treatment of varicose ulcers 466
- TYROTHRICIN** treatment of skin ulcers [Ran-  
kin] 805—ab  
treatment of varicose ulcers 466
- U**
- U B A** pertussis vaccine [Felton & Willard]  
\*299
- U S R** See Russia
- ULCERS** See also Abscess (cross reference)  
Colitis ulcerative Peptic Ulcer  
Runners See Bladder Inflammation  
of leg due to *Staphylococcus aureus* peni-  
cillin for [Johnson] 389—ab  
treatment tyrothricin [Rankin] 805—ab  
Proleal See Leishmaniasis  
varicose See Varicose Veins
- ULTRAVIOLET RAYS** reticent keratoconjuncti-  
vitis or flash burn [Seabec] 51—ab  
examination in scaly ringworm epidemic  
[Lewis] 196—ab  
induced resistance to prolonged sun exposure  
by [Rudd] 194—ob  
Iamps 189—B1  
photomicrography in progressive muscular  
dystrophy [Hoglund] 406—ab  
treatment of psoriasis 603
- UMBILICAL CORD** transfusions in newborn  
[Alayes] 474—ab
- UNDENATURED Bacterial Antigen** pertussis  
vaccine [Felton & Willard] \*298
- UNDERGRADUATE** Work Students etc See  
Education Education Medical Schools  
Medical Students Medical University
- UNDERNOURISHMENT** See Nutrition malnu-  
trition
- UNDULANT FEVER** See Brucellosis
- UNCAPS** analysis comparative cost (Council  
report) \*29
- UNIONS** See Industrial Trade Union
- UNITED MEDICAL Service Plan** of New York  
443—OS 577—OS
- UNITED NATIONS** postwar organization 904  
—OS
- UNITED STATES** See also American Federal  
Army See Army World War II  
Cadet Nurses See World War II nurses  
Children's Bureau See Children  
Civil Service See Civil Service  
Congress legislation enacted See Laws and  
Legislation  
employees Industrial health service for 30—E  
Employment Compensation Commission benefit  
payments 1038—OS  
Food and Drug Administration See Food  
Government Employees See U S Employees  
government funds for cancer research pro-  
posed by Dr Cawdry 1093—OS  
government funds for FWA projects 179—OS  
379
- UNITED STATES—Continued**  
government funds for public works 117  
government funds for school and child care  
allocated 379  
government to limit opium production in in-  
terest of troops overseas 505—OS  
Hospitals building by See Hospitals build-  
ing Hospitals veteran  
Navy See Navy World War II  
of American Typhus Commission (medal  
awarded) 306 (honor Egyptian health  
officials) 501 (medal to 4 members of the  
commission) 1034  
Public Health Service See Health  
Senate hearings before subcommittee See  
Kelley Pepper  
Social Security See Social Security  
Veterans Bureau Facilities See Veterans  
War with See World War II
- UNIVERSITY** See also Education Medical  
Schools Medical under names of specific  
universities  
Degree See Degrees  
Dutch American physicians to give refresher  
courses 111  
Health Service See Students  
maturity and completion of higher education  
838—E  
of Alabama medical school (condemnation  
proceedings) 246 (donation for research)  
144  
of Birmingham (woman professor of obstet-  
rics) 315  
of Buenos Aires (clinics for heart diseases)  
975  
of California (postwar planning) 246  
of Cambridge (research by Chinese) 382  
of Cincinnati (given \$50 000 by Swift) 847  
(joint psychiatric program) 1159  
of Edinburgh (Grant chair of dermatology)  
1042  
of Georgia (building planned) 506  
of Illinois (tumor diagnostic service) 715  
(research fellowship) 779  
of Kansas (first student annual *Jayha cher*  
A D) 844  
of London (chair of child health established  
by Nuffield Foundation) 582 (students re-  
turn to London) 909  
of Oxford (Institute for ophthalmology) 314  
(research by Chioese) 582  
of Pennsylvania (graduate medical school  
to include dentistry) 446 (20th General  
Hospital Unit) 575  
of Texas (considers moving) 446 (expansion  
program) 717 (T S Palmer acting presi-  
dent) 847 (to remain at Galveston) 972  
of Washington (proposed state medical  
dental school) 907  
Students See Students Students Medical  
URFA See Thouroua and Thouroua  
URIDE of Mesovallic Acid See Alloxan  
URMIA treatment desoxycoartecosterone see  
tate [d'Angelo Rodriguez] 399—ab
- URETHRA** cystourethrographic diagnosis of  
enuresis [Brody & Robins] \*1000  
Inflammation See Urethritis  
Transurethral Drainage See Seminal Vesicu-  
litis  
Transurethral Resection See Prostate  
URETHRITIS nonspecific penicillin for  
[Thompson] \*406  
Trichomonas vaginalis infection in men  
[Fcol] 53—ab
- URINARY SYSTEM** See also Bladder Kid-  
neys  
obstruction hypertension associated with?  
268
- URINATION** disorder in interstitial cystitis  
[Cristol & others] \*825
- URINE** Albumin in See Albuminuria  
ammonia in source glutamine 1059—E  
bile in value in infectious hepatitis [H-  
vens] \*17 (correction) 782  
creatinuria in hyperthyroidism and hyperten-  
sion [Tausch] 793—ab  
fluorescent factor F<sub>2</sub> in [Najjar] 594—ab  
gonadotropins excretion in male climacteric  
[Heller & Myers] \*472 [Bauer] 914—C  
Hemoglobin in See Hemoglobinuria  
Incontinence bedwetters in soldiers [various  
authors] \*1006  
Incontinence cystourethrographic diagnosis of  
enuresis [Brody & Robins] \*1000  
Incontinence (nocturnal) ephedrine sulfate  
for [Kittredge] 130—ab  
17 ketosteroids excretion in metabolic cran-  
opathy vs Cushing's syndrome [Grollman  
& Rousseau] \*213  
of Pregnant Women See Gonadotropins  
choleonic  
penicillin excretory blockade use of dil-  
drast and p-aminosalicylic acid 369—E  
[Beyer & others] \*1007  
Polyuria See Diabetes Insipidus  
Protein in See Albuminuria  
Red See Hemoglobinuria  
retention after operation on rectum and sig-  
moid transurethral resection for [Emmett  
& Cristol] \*1077  
riboflavin in [Najjar & others] \*337  
secretion at high altitudes [Volmiejac] 392  
—ab



ISION—Continued  
 temporary stimulation of eumetropic reactivity with nikethamide or amphetamine [Leben solun] 263—ab  
 VISCERAL (Adult) analysis cost (Council report) \*29  
 VISUAL EDUCATION See Television  
 VITA NIGHT Capsules 48—BI  
 Perry's 723—BI  
 VITAMIN analysis cost (Council report) \*29  
 VITAL STATISTICS See also Population  
 birth rate England 249 849  
 birth rate (wartime increase) young mothers and 378  
 Death Rate See also Infants mortality  
 Maternity  
 death rate from suicides declines 183  
 Hawaii 1942 182  
 improved during war England 184  
 morbidity chronic illness in an urban area 1032—E  
 morbidity Mexico 848  
 Rio de Janeiro 351  
 VITAMIN K Enriched Bread 1048—BI  
 VITAMINES Roche analysis cost (Council report) \*29  
 VITAMINS See also Medical Abstracts at end of letter V  
 A A joint section symposium on \*749 758  
 deficiencies See also under names of specific vitamins as Riboflavin Thiamine deficiencies pellagra [Flannerud] \*738  
 deficiencies toxicity of rancid lard 573—F  
 in prepared cereal foods [Hiltz & Lively] \*100  
 in variety meats [McIntire] 393—ab  
 malnutrition antiviral immunity 105—E  
 milk fortified with (Council report) \*432  
 mixtures analysis cost (Council statement) \*29 33—E  
 sulfonamides affect 759—ab  
 supplements to diet effect on health [Ruffin & Cayer] \*823  
 therapy of shock and shock [Gavler] \*74J  
 therapy \$179 000 000 spent for in 1943 33—E  
 Vitaminus Plus analysis cost (Council report) \*29  
 VITAMINS A acid ash high diet to prevent renal calculi 670  
 adult needs [Sevringhaus] \*751  
 diet as predisposing factor in rheumatic fever 174—E  
 margarine fortified with (Council report) 168  
 plasma levels in rheumatic subjects 303—E  
 treatment of acne vulgaris 202  
 treatment of hypertension used by Cuban authors 759—7b  
 Vita Drops or Tablets Roche 314—BI  
 (Council report) \*29  
 VITAMINS B COMPLEX level in diet deficiency level [Foltz] 35—ab  
 pellagra in hospital patients receiving [Roberia] 394—ab  
 prize of Ward Johnson 312  
 treatment of chronic intestinal indigestion [Baumhauer] 702—ab  
 B<sub>1</sub> See also Acid nicotinic Thiamine H<sub>2</sub> drochloride  
 B<sub>1</sub> deficiency cause of constipation? 268  
 B<sub>1</sub> to control complication of shock therapy [Bauer] 794—ab  
 B<sub>1</sub> treatment of megacolon and dolichocolon 1163  
 B<sub>1</sub> Vita Post Vitamin B<sub>1</sub> Tonic 159—BI  
 B See Riboflavin  
 B See Pyridoxine  
 VITAMINS C See also Acid ascorbic Scurvy  
 adult needs [Sevringhaus] \*751  
 anesthesia in relation to [Bever] 396—ab  
 effect on ability to work in hot environments [Henschel] 591—ab  
 treatment of arthritis? [various authors] 758—ab  
 treatment of hay fever questionable value [Fenfeisher] 318—C  
 treatment plus sulfonamides in wound healing [Ruskin] 659—ab  
 VITAMINS D See also Miclets Mesterol  
 D Q (daily quota) milk (Borden's) (Council report) 133  
 D Drisol A & R (Winthrop) 433  
 D in acute rheumatic fever [Dosal] 1176—ab  
 patents court ruling 41 1096  
 treatment of pemphigus with massive doses [Lever] 394—ab  
 treatment of psoriasis 603  
 VITAMINS K See also Menndione  
 cause phlebitis in late pregnancy? 138  
 fatal hemorrhagic complications from salicylates [Ashworth & Mckemie] \*806  
 [Quick] 1167—C  
 in menorrhagia [Cubner] 985—ab  
 induced hypoprothrombinemia [von Kaulitz] 927—ab  
 physiologic action of in vivo anticoagulants [Shapiro] 788—C  
 research Nobel award to Drs. Dolsy and Dam for 640—F (correction) 848 971  
 syntheses in intestine 174—E

VITAMINS P to control ocular hemorrhage [Mathewson] 460—ab  
VITA PORT Vitamin B<sub>1</sub> Tonic 189—BI  
VITA REL Capsules 48—BI  
VISECTION See Antmat Experimentation  
VIVU Scap Treatment 189—BI  
VOCABULARY See Terminology  
VOCATIONAL Placement See Industrial Health  
Rehabilitation See Rehabilitation  
VOGEL VICTOR H on staff for Office of Vocational Rehabilitation 374  
VOICE See Speech  
VOMILING See also Nausea  
emetics to empty infant's stomach in poison ing 138  
in Pregnancy See Pregnancy  
postoperative nicotinic acid for [Mushin] 58—ab  
result of taking yeast tablets liver extract or vitamins [Ruffin & Cayer] \*824  
VULVA Pruritus See Pruritus

## W

WACS See World War II  
WAGENER JOHN A 92nd birthday 846  
WAASMAN S A streptothricin 103—E  
WALKING Fractures from See Fractures march  
WALTER REED Medal See Prizes Reed  
WAR See Army U S World War  
Advertising Council intensified venereal disease control during demobilization 373—OS  
Casualties See World War II casualties  
Cases See Gas Warfare  
Heroes See World War II Heroes and Prisoners  
Loan Drive (6th) Navy medicine featured in 776  
Medical Service See World War II  
Neurosis See Neurosis  
Nutrition in Wartime See World War II nutrition  
Postwar Planning etc See World War II postwar  
Priorities and Allocations See Priorities and Allocations  
Prisoners See World War II Heroes and Prisoners  
production and medical certificates 706—E  
Production Board award to American Pharmacy Association for quinine pool 177  
Veterans See Veterans  
Wartime Graduate Medical Meetings See Education Medical wartime  
Workers See Industrial Health  
Wounded Wounds See World War II  
WARE R missing in action 35  
WARTIME See under War World War II  
WARTS See Veruca  
venereal See Condylomata acuminata  
WASHING Dishes See Dishwashing  
WASHINGTON Office See American Medical Association Council on Medical Service  
University See George Washington University  
University of Washington  
WASSERMAN TEST blood collected at patient's first visit [Howard] 979—C  
WATER See also Dishwashing Fluids Mineral water  
Ingestion work in heat affected by [Pitts] 982—ab  
Metabolism See Dehydration  
Polish Water Woda Polska 1048—BI  
Pollution See Sewage  
supply hardness and pH of and dental caries [Oelise] 1175—ab  
supply services Rio Grande do Sul 381  
WATERHOUSE Medical Clinic at Winter General Hospital 840  
WATERHOUSE FRIDRICHSEN SYNDROME [Boger] 860—ab  
WAX See Beeswax  
WAXED Paper See Paper  
WAYNE University (36th General Hospital unit commended) 175 (medical center fund raising campaign) 905 (fellowships in pharmacology) 1158  
WEAKNESS See also Fatigue Muscles  
differential diagnosis [Altan] 920—ab  
syndrome with muscular atrophy and fascicular twitching [Nielsen] \*801  
WEATHER See Climate  
WEBER Oster Rendu Disease See Telangiectasia hereditary hemorrhagic  
WEIGHT See Obesity  
WEIL'S Disease See Jaundice spirochetal Leptospirosis  
WELFARE See under Children Maternity  
WELLS HORACE centenary 779 1037—OS  
WERLHOFS Disease See Purpura thrombopenic idiopathic hemorrhagic  
WEST ROBERT testimony before Kelley committee 245—OS  
WESTERN New York Medical Plan Inc (Bureau report) 505—OS  
WHEAT See also Bread  
Dr Ray Wheat Embryo 788—BI  
dust silicosis from? [McKay] 803—C  
WHITE PAUL D reversibility of heart disease 436—E

WHITE PAPER See Beveridge Plan  
WHITE S Multi V analysis cost (Council report) \*29  
WHOOPIING COUGH treatment typhoid human serum [Schneiblum] 598—ab  
treatment Sauer's vaccine 202  
vaccines as preventives (Council report) [Felton & Willard] \*294  
WILLAN ROBERT (1757 1812) founder of British dermatology 15—ab  
WILLIAMS CHARLES L directs Bureau of States Services 117  
WILLIS JOHN M shift Ninth Service Command surgeon 902  
WILSON'S DISEASE See Nephrosclerosis glomerular  
WINNEBAGO COUNTY (Illinois) medical society plan [Quattlebaum] \*814  
WINNER ALBERTINE British woman army doctor honored 967  
WINTER poliomylitis virus presence in [Ward] 326—ab  
28 day menstrual interval in 670  
WIRELESS See Radio Television  
WISCONSIN Alumni Research Foundation See Foundations  
WISE S Holmes Tablets 655—BI  
WODA Polska (Polish Water) 1048—BI  
WOLF ROBERT E missing in action 502  
WOMAN'S AUXILIARY library endowment fund Texas 649  
fair for physicians aid Calif 1158  
WOMEN See Marriage Maternity Menstruation Pregnancy  
in Medicine See Physicians women Students Medical women  
WOMEN'S Army Corps See World War II  
Field Army See under Cancer  
WOOD A C testimony before Kelley Subcommittee 112—OS  
WOOD WILBUR STUART memorial fund 114  
WOOD dusts 800  
WOODWARD Laboratory at Winter General Hospital 840  
WORDS AND PHRASES See Terminology  
Medicolegal Abstracts at end of letter M  
WORK See also Exercise Industrial Health  
capacity and carbohydrate metabolism [Mac Bride] 859—ab  
Intellectual See Thinking  
Therapeutic Use See Occupational Therapy  
WORKMEN'S COMPENSATION See also Industrial Accidents  
Medicolegal Abstracts at end of letter M  
British government to take over 719 1098  
committee created New York 579  
cancer caused by single injury? [Stewart] 123—C, [Terry] 190—C [Woodward] 725—C  
Industrial Commission of Ohio disbursed \$347,727 in 1943 247  
research on pneumoconiosis England 380  
silicosis due to what dust? [McKay] 813—C  
L S Employment Compensation Commission 1038—OS  
WORLD WAR I (1914 1918) effect on orthopedic surgery work of Sir Robert Jones [Childwell] \*269  
Giles twins of A A F 900—E  
honorary dead of second A A F division 965  
physicians memorial 41  
Veterans See Veterans  
WORLD WAR II (1939—)  
agar restrictions removed 109  
air raids (1040 11) London patients not up day after labor [Daley] 588—C  
ambulance given to Army Medical Department 575  
American Red Cross See also under other subheads  
American Red Cross home nursing program 503  
American Red Cross women on ships 903  
American Society of Clinical Pathologists military program 374  
anesthesia pentothal sodium [Adams] \*282  
anesthesia pentothal sodium in Canadian Army [Boddington] 1116—ab  
aortic valve congenital subaortic stenosis [Young] 1169—ab  
arthritis effect of penicillin [Boland & others] \*820  
Ash (J F) director of Army Institute of Pathology 840  
aviation A A F regional surgical conferences 901  
aviation A A F rheumatic fever control program with sulfadiazine [Holbrook] \*84  
aviation A A F sulfadiazine to prevent infectious diseases [Warren] 729—ab  
aviation aero-otitis [Fowler] 327—ab  
aviation combat flying [Grant] \*609  
aviation combat operational fatigue in fliers [Murray] \*148  
aviation conference on rheumatic fever 34  
aviation electrically heated flying suits delivered to Army Air Forces 240  
aviation emotional albuminuria in air cadet [Ahronheim] 196—ab  
aviation flight surgeons assistants 107 502  
aviation flight surgeons confer (picture) 839  
aviation medical examiners 372 840  
aviation Navy School for Air Evacuation of Casualties 1091

WORLD WAR II—Continued  
aviation R A F ascorbic acid for bleeding gums and gingivitis 437—E  
aviation reorganize Air Surgeon's office 175  
Belgians grateful for liberation 983  
Bietkewen (W J) neuropsychiatric consultant 34  
blind seeing eye dogs and other aids 903  
blind training at St Dunstan's 448  
blind without hands train at St Dunstan's especially in use of typewriters 1098  
blood donations (increased) service chiefs ask for 843—OS  
blood products use by armed forces [Kenrick] 730—ab  
blood (whole) flown daily to European front 646—OS  
blood (whole) shipped to France 175  
British See also under subheads  
British medical officers meet in France 901  
British psychiatrist inspects army facilities here 1033  
British share their rations with Greeks 1043  
British soldiers home leave to start a family 652  
Bull's fever [Livesay] 1114—ab  
Cariel (Alexis) dismissed by Vichy government 117  
Castellani (A) suspended from Rome faculty 117  
Casualties See also World War II wounded  
casualties airline service to deliver war wounded 776  
casualties and damage in Second Battle of London 510  
casualties army management of head and spinal cord injuries [Everts & Woodhat] \*145  
casualties Navy School for Air Evacuation of Casualties 1091  
casualties new blackout tent poleless field stretcher 1033  
casualties (battle) resuscitation of [Dick] 667—ab  
casualties blast injuries [Hogan] 194—ab  
casualties British Empire in 5 years of war 448  
casualties British prisoners killed in air raids on Germany 849  
casualties civil defense England 849  
casualties flown to Britain from Continent 184 783  
casualties (heavy) Army prepares for 969—OS  
Casualties killed in Action See World War II Heroes and Prisoners following  
Casualties Missing in Action See World War II Heroes and Prisoners following  
casualties of bombardment of England from French Coast 1043  
casualties penicillin treatment [Jeffrey] 525—ab  
casualties returning at rate of 12 000 a week 1037—OS  
casualties 6 500 air borne troops landed at Arrhem 2 000 returned unwounded 719  
China air shipments of Red Cross medicine to 1092  
circumcision all men not routinely circumcised 928  
cocci/didymococci [Lee] 918—ab  
Colorado tick fever [Collins] 729—ab  
Committee on Medical Research Summary of Reports Received 110  
condylomata acuminata at Camp Bowie podophyllin for [Culp] 393—ab  
convalescent reconditioning [Thorndike] \*773  
convalescents physical fitness [Karpovich & others] \*873  
Davis (H J) commission with Army Civil Public Health Division 304  
Demobilization See subheads Physicians Venereal Disease  
dengue at South Pacific advance base [Stewart] 56—ab  
dental corps (army) conference 840  
dental officers to be relieved from active duty 502  
Distinguished Service Award See World War II Heroes and Prisoners following  
Draper (W F) promotion 37  
drugs air shipments to China 1092  
Dunn (W H) neuropsychiatric consultant 107  
dysentery carrier state [Hallwood] 397—ab  
dysentery epidemic [Kinnaman] 983—ab  
dysentery (mild) comparative effects of sulfonamides [Scadding] 460—ab  
epidemic control Mrs Roosevelt praises 969—OS  
filariasis [Ramey] 131—ab  
filariasis (early) in American troops [King] 1114—ab  
filariasis (early) lymphatic lesions in [Wirtman] 1114—ab  
filariasis bazaar in U S from those returning 267  
filariasis troops exposed to observed at Wake man Hospital 305  
filariasis U S Navy establishes registry Klamath Falls Ore 902

- WORLD WAR II—Continued**  
first aid station at Guam statement by G  
W. Linderling 306  
Fischer (P. C.) chief Army nurse of Sixth  
Corps Area retires 107  
Food See subhead Nutrition  
Fort See under specific subheads  
fracture (compression) from stimulation of  
carotid sinus [Hause] \*1029  
fractures (march) [Carlson] 395—ab  
[Krause] 917—ab  
fractures (march) of Camp Wheeler [Hull  
Inger] 729—ab  
fractures (march) of metatarsal bones [Ty  
ner] 657—ab  
fractures of carpal scaphoid in Canadian  
Army [Dickson] 862—ab  
frost injuries [Liebesny] 1053—ab  
gangrene (gas) in Owen Stanley and Buia  
Gona campaign 667—ab  
gas mask (head wound) designed by Chemical  
Warfare Service 901  
gas warfare tests of new anti gas protective  
ointment (M5) 501  
German doctors staff Oklahoma hospital 240  
German military hospitals conscript Oslo  
girls 111  
German occupation of Greece horrors 783  
German Red Cross flag oil cargo under  
9.4  
German War Prisoners See World War II  
Heroes and Prisoners following  
Germans told to expect further food restric  
tions 967  
Glenn (C. R.) appointed Deputy Air Surgeon  
304  
Golden (A.) new assignment 304  
Greece horrors of German occupation 783  
1043  
Hawaii after blitz on Pearl Harbor [Pinker  
ton] \*623  
health news from Europe 37 110 242  
307  
heat effects in British service men in Iraq  
[Morton] 108—ab  
hepatitis epidemic in Middle East in Ameri  
can soldiers [Havens] \*17 (correction)  
782  
Heroes See World War II Heroes and  
Prisoners following  
honorable discharge emblem authorized 903  
Honorably Discharged See also Veterans  
honorably discharged assistance to Com  
mittee report 243—OS  
hospital car for use in U. S. 967  
hospital ship Charles A. Stafford (ex Sib  
oney) designated 241  
hospital ship first whole blood bank aboard  
ship 866  
hospital ship Fleet Hospital No. 113 com  
missioned 1157  
hospital ship patients write in praise of ex  
cellent care 240  
hospitals able to carry mobile x-ray units  
in invasion [McKoon] 386—C  
hospitals Army civilian nurses needed for  
502  
hospitals Army hospitals may employ nurses  
before commissioning 502  
hospitals Billings General Dr. McEvers  
commanding officer 1156  
hospitals Bruns General becomes tuberculosis  
treatment center 373  
hospitals care of dependents of naval per  
sonnel 125 1047 (correction) 126 183  
hospitals (a) given FWA grants of \$382 732  
778—OS  
hospitals (general) 11 needed on European  
front 1037—OS  
hospitals Guy's rebuilding 118  
hospitals Madigan General 711  
hospitals Mayo General R. H. Kennedy ap  
pointed to 304  
hospitals military German Oslo girls con  
scripted 111  
hospitals military surgeons instruct by tele  
vision 777  
hospitals Moore General scope of work 240  
hospitals (navy) physical training routine  
ordered 841  
hospitals naval program to be expanded in  
southern California 36  
hospitals needing interns 37 109 177 242  
307 374 440 504 645 777 903 967  
1035 1157  
hospitals planning for postwar education  
770—E 775  
hospitals Post Graduate 400 from now with  
armed forces 100  
hospitals Rodriguez General San Juan 576  
hospitals staffed by German doctors Okla  
homa 240  
hospitals 36th General Unit of Wayne Uni  
versity commended 175  
hospitals 20th General Unit praised by Ad  
miral Lord Mountbatten 573  
hospitals Veterans Neuropsychiatric Tomah  
Wis 1092  
hospitals Winter General clinics and build  
ings named for medical officers 840  
Industrial medicine and hygiene program by  
Col. Hargreaves 439  
Industrial war area medical care in [Merrill  
& Mills] \*887
- WORLD WAR II—Continued**  
Industrial war production and medical cer  
tificates 706—E  
Industrial workers need of safeguarding health  
emphasized 375—OS  
Infection (air borne) in army camps treat  
floors and bedding with all emulsion to  
control [Robertson & others] \*993  
Italy doctors asked to aid 1002  
Japanese army neuropsychiatry in [Newell]  
\*373  
Japanese doctors missing anatomy book  
found with dead Jap 242  
Japanese medical depots (4) investigated on  
Bik Island [Schnfer] \*34  
Japanese treatment of British prisoners 1162  
jaundice postvaccinal (yellow fever) at  
naval hospital [de Vee] 57—ab  
Killed in Action See World War II Heroes  
and Prisoners  
Lirk (A. T.) National Committee for Mental  
Hygiene honors 840  
Locasio (A. R.) post surgeon of Army Station  
Hospital Pine Camp 373  
Lull (C. F.) addresses Gray Ladies 965  
McMahon (A.) Mississippi Valley Medical  
Society honors 438  
malaria control in Pacific proves successful  
new deodorant and insecticide PDB 575  
malaria epidemic danger in U. S. remate 307  
malaria in tropics eye symptoms in  
[Robertson] 1118—ab  
malaria treatment center (Army) at Moore  
General Hospital A. C. 35  
malaria treatment with quinine 1098  
1163  
Mantz (F. A.) chief of Malaria Control Sec  
tion 241  
March Fracture See subhead Fractures  
Medical Administrative Corps officer 440  
1090  
Medical and Surgical Relief Committee of  
America 110 903  
Medical Corps officers conservation of 35  
medical depots Japanese on Bik Island  
[Schofer] \*34  
medical direction of human drives in war and  
peace [Grant] \*607  
medical field service school Carlisle Barracks  
711  
medical service (civilian) for those on leave  
712  
medical service for dependents of service  
men adopted by American Red Cross 1035  
meningococcal from station hospital in this  
country [Ochs] 729—ab  
Menninger (W. C.) awarded Lasker Award  
902  
merchant seamen rest center for A. 1. 445  
Missing in Action See World War II Heroes  
and Prisoners  
Moore (L. R.) shift 9th service command 902  
Morale Services Division (Army) now in  
formation and Education Division 34  
morals disrupted by war Medical Women's  
Federation statement 1093  
muscle spontaneous rupture of right rectus  
abdominis [Vidgen] 1170—ab  
music as aid to treatment at Walter Reed  
General Hospital 179—OS  
National Wartime Health Program hearings  
resumed 178—OS  
Neuropsychiatry See also subhead Psy  
chiatry  
neuropsychiatry assembly at Institute of  
Medicine of Chicago 114  
neuropsychiatry for general medical officer  
644  
neuropsychiatry in Japanese Army [Newell]  
\*373  
neurosis treatment [Grinker] \*142 [Murray]  
\*148  
noncombat duty to sole surviving son if two  
or more brothers have been killed 711  
nurses (Army) Eisenhower pays tribute to  
240  
nurses first ones to School of Military Gov  
ernment 504  
nurses Fischer (Pearl C.) chief of Army  
nurses of Sixth Corps Area retires 107  
nurses flying 1091  
Nurses Heroic Action See World War II  
Heroes and Prisoners nurses  
nurses Navy needs more 776  
nurses shortage in Army 644 1037—OS  
1090  
nurses U. S. Cadet Nurses (printed forms  
for when traveling) 110 (army hospitals  
may employ) 502 (number enrolled) 903  
nursing in U. S. Public Health Service 440  
nutrition Brazilian war bread 125 863 (cor  
rection) 126 848  
nutrition controlled ration test completed 439  
Office of Civilian Defense Emergency Medical  
Service of 38—OS  
officers (limited service) examined for over  
seas duty 501  
opium production U. S. government to limit  
503—OS  
orthopedic consultants 775  
Paden (P. A.) promotion new assignment  
840  
paratyphoid fever [Schwarz] 833—C
- WORLD WAR II—Continued**  
parasitologists cancel requisition for 107  
parotitis epidemic convalescent plasma in  
cause hepatitis [Beeson McFarlan Hawley]  
461—ab  
penicillin study at Fort Bragg 304  
peptic ulcer variable incidence [Patterson]  
130—ab  
photorentgen films washing 775  
physical therapy clinic in jungle 240  
physical training routine ordered in naval  
hospitals 841  
physical training special course in 902  
Physicians See also World War II Heroes  
and Prisoners following  
physicians Army statement on requirement  
and use 644  
physicians civilian Army discontinues re  
cruitment number in active service num  
ber needed by U. S. Navy U. S. P. H. S.  
Veterans Bureau etc 643—E 645—OS  
physicians demobilization preparation En  
gland 1043 1087—E  
physicians Germans fear shortage of 1035  
physicians graduate education of veterans  
708—F 709  
Physicians Honorably Discharged See also  
Veterans  
physicians honorably discharged assistance  
to Committee report 243—OS  
physicians honorably discharged emblem for  
903  
Physicians killed in action See World War  
II Heroes and Prisoners following  
physicians licensure of returning officers pro  
visions for Committee report 243—OS  
physicians memorial 41  
physicians photostat and microfilm service  
by Royal Society of Medicine 1162  
physicians (women) British army officer hon  
ored Dr. Winner 967  
polyomyelitis in troops in Middle East [Paul]  
460—ab  
polyomyelitis in U. S. troops 305  
postwar anti leprosy program U. S. 1161  
postwar appropriations by U. of California  
246  
postwar challenge to orthopedic surgery  
[Caldwell] \*269  
postwar civilian insect control programs 504  
Postwar Demobilization See subheads  
Physicians Venereal Disease  
postwar educational facilities required for re  
turning medical officers 234—E [Johnson  
& Arestad] \*253  
postwar extension of recreational facilities  
1037—OS  
postwar graduate medical training 6 practical  
questions from overseas officer [Long] \*239  
postwar health security conference 1041  
postwar medical education fund established by  
Kansas Medical Society 444  
postwar medical practice Australia 1099  
postwar medical service Committee on  
(meeting) 243—OS 440 708—E 709 770  
—F 1036—OS  
postwar men now in army to recontinue col  
lege courses 1093  
postwar medical service National Health  
Service (Beveridge plan White Paper)  
314 582 651 898—E  
postwar planning American Red Cross medi  
cal committee to recommend plans 371—E  
postwar planning committee of Medical Society  
of Delaware 114  
postwar planning of hospitals Georgia, 970  
postwar planning United Nations Organiza  
tion 904—OS  
postwar research stressed 778—OS 843  
—OS 904—OS 1093—OS  
postwar social security plan (5 year) Aus  
tralia votes against 1099  
postwar traffic dangers brochure of National  
Safety Council 106—E  
postwar venereal disease conference plans  
646—OS  
Powell (W. H. Jr.) assistant surgeon for  
nationwide A. A. F. Training Command 240  
Procurement and Assignment Service (policy  
statement by P. V. McNutt) 438 (for  
Howell) [Pinkerton] \*630 (number of  
physicians needed) 643—E 645—OS (Com  
mittee on Postwar Medical Service) 1036  
—OS  
Promotions See various subheads as U. S.  
Army U. S. Navy  
Psychiatric See also subhead Neuro  
psychiatry  
psychiatric evaluation of those returning from  
combat operational fatigue [Murray] \*148  
psychiatric selection for armed forces [Wag  
goner & others] \*221  
psychiatric study of successful soldiers  
screening standards [Shops] \*271  
psychiatrist (British) inspects army facilities  
here 1033  
Public Health Under Hitler See subhead  
Health News from Europe  
quarantine branch in Preventive Medicine  
Service 965  
rabies epidemic in Vienna 1035  
Reconditioning News Letter 303

**WORLD WAR II—Continued**  
 reconditioning program (Army) may influence civilian hospitals, 501  
 Red Cross See under various subheads as American German  
 rehabilitation neurosurgery fibrin foam as hemostatic agent in [Woodruff] \*469  
 rehabilitation program 841  
 rehabilitation (aural) 305  
 rehabilitation (psychiatric) clinic at Mount Zion Hospital 177, 180  
 rehabilitation (vocational) new medical members of staff for office of 374  
 respiratory bacterial infections sulfadiazine prophylaxis (Navy) [Coburn] \*88  
 retina detachment 78 cases in Middle East forces [Stallard] 987—ab  
 Rylands (R B) heads Sixth Service Command 840  
 rheumatic fever control by A A F, 34 [Holbrook] \*84  
 rheumatic fever geographic distribution of streptococci [Van Ravenswaay] \*486  
 rheumatic fever in Canadian army [Feasby] 104—ab  
 roentgen ray equipment quota restrictions 1992  
 Rogers (J A) promotion 1156  
 Rosahn (Paul D) lent to U S to study effect of penicillin in syphilis 177  
 Rowntree (L G) scroll of honor to 1092  
 Russia war nephritis cold dropsy [Pirgerstorfer] 708—ab  
 Russian medical aid to Red Army 44  
 Saperio (J J) Gorgas Medal awarded to 966  
 Simmons (J S) honored by Marquette U 439 (awarded Walter Reed Medal) 965  
 South Pacific Brown and White in 119  
 Southern Surgical Association meets at Ashford General Hospital 1090  
 spine diagnostic test of herniated nucleus pulposus [Astrom] 1058  
 spine x ray diagnosis of traumatic lesions [Heubeln] \*950  
 stomatitis from riboflavin deficiency in service men in camp North Africa [Jones] 264—ab  
 surgeons (military) instruct by television 777  
 Surgery See also subhead Wounded surgery (chest) reconditioning in, [Grow & others] \*1059  
 surgery 4 years of 499—E  
 surgical consultants 775  
 surgical dressings waxed paper from elgaret cartons 712  
 Survival Exposition Pensacola 903  
 tleik bite pyrexia in 2 600 soldiers during Tennessee maneuvers [Feder] \*293  
 tonsillitis treated with small doses of sulfonamide for [Frels] \*93  
 treason motivations for Meerloo's lecture on 574—E  
 trench foot treatment Tech Bull of Med no 81 644  
 tropical disease eosinophilia in men returned from service [Lowe] 398—ab  
 tuberculosis case finding in 100 000 selectees [Zanca] 664—ab  
 typhoid intestinal perforation from [Dubrow] \*495  
 typhus (house borne) p aminobenzoic acid for [Yeomans & others] \*340 (corrections) 581 782  
 U S Army See also under other subheads as Hospitals Nurses etc  
 U S Army and Navy asks Congress for post war scientific research 778—OS  
 U S Army Epidemiological Board project Francis Salk influenza vaccine 304  
 U S Army medical corps reduction in 1154—E 1156  
 U S Army Medical Dept 160th anniversary 35  
 U S Army medical officers in France (picture) 991  
 U S Army Medical Research Board to continue in peace 843—OS  
 U S Army Navy E awards to (Koffmorgen Optical Corp Lakeside Laboratories) 777  
 U S Army official medical history of the war 1156  
 U S Army officers transient hypertension in [Lery & others] \*820  
 U S Army psychiatrist asks cooperation of industry 504  
 U S Army reorganize office of Surgeon General 107  
 U S Army 32 medical officers receive regular appointment 305  
 U S doctors save 200 Javanese 242  
 U S naval medicine art exhibit at National Gallery of Art 176  
 U S Navy See also under other subheads  
 U S Navy medical corps commands changes in 902  
 U S Navy medicine featured in 6th War Loan Drive 776  
 U S Navy needs 3 000 doctors 841  
 U S Navy official medical history of the war 841  
 U S Navy Relief Society assistance in medical care of naval dependents 438  
 U S Navy transfer of reserve officers to regular Navy 1157

**WORLD WAR II—Continued**  
 urination bedwetters in soldiers [various authors] \*1006  
 vaccination (forcible) of soldier, 184  
 venereal disease control during demobilization discussed 375—OS  
 venereal disease control National Conference Nov 9 11 178—OS  
 venereal disease control program (Dallas), 708—E  
 venereal disease 5 day sulfathiazole treatment of gonorrhea [Campbell] 389—ab  
 venereal disease gonorrhea treated with penicillin and sulfonamides 575  
 venereal disease gonorrhea treatment of sulfonamide resistant with penicillin sodium [Sternberg & Turner] \*157  
 venereal disease gonorrhea urgic special microscopic tests 110  
 venereal disease syphilis agranulocytosis from mapharsen penicillin for [Smith & others] \*1027  
 venereal disease syphilis, obstructive jaundice after mapharsen, [Frels & Vater] \*892  
 venereal disease punishment in armed forces ended by Congress 572—E [Zeligman] 1167—C  
 venereal disease disclose source to military authorities 185  
 Veterans See Veterans  
 vital statistics improved England 184  
 WACS personnel may be assigned to sanitary corps 840  
 Walker (M C) honored 107  
 Wartime Graduate Medical Meetings 110 177 (Committee on) 243 307 374, 440 504 645 712 777 842 967 1035 (will clear through Committee on Postwar Medical Service) 1036—OS 1092 1157  
 Willis (J M) shift 9th Service Command surgeon 902  
 Wounded See also subhead Casualties  
 wounded color film record of tongue movements in speech 249  
 wounded four years of war surgery 490—E  
 wounded naval hospital in England treats hundreds first 2 weeks of invasion 36  
 wounded Netherlands liners become mercy ships to evacuate 177  
 wounded plastic surgical treatment at Queen Victoria Hospital England 1162  
 wounded surgical management in Mediteranean theater [Churchill] 1050—ab  
 wounded surgical operating trucks take hospital to soldiers 107  
 wounded two thirds of Army wounded returned to duty 06 per cent recover 35  
 wounds skin cover for 1043  
 wounds sulfathiazole profarinc powder [Feggetter] 58—ab  
 yellow fever control 772—F

#### WORLD WAR II HEROES AND PRISONERS

Alexander (H A) Bronze Star Medal 305  
 Andersen (H A) Bronze Medal 776  
 Apanasewicz (L D) killed in action 586  
 Arbuckle (L D) Legion of Merit 109  
 Austin (O) missing in action 307  
 Bajohr (A J) Bronze Star Medal 502  
 Baker (B M) Legion of Merit 666  
 Baker (W N) Soldier's Medal and Presidential Citation 1991  
 Bates (J H) killed in action 188  
 Baxter (M L) Legion of Merit 592  
 Baze (R E) killed in action 978  
 Becker (C S) Bronze Star Medal 1034  
 Benson (A L) Japanese prisoner 241  
 Benson (O O Jr) Legion of Merit 576  
 Boylen (F L) Bronze Star 241  
 Braden (A H Jr) Silver Star 774  
 Bridgman (E W) commended 1990  
 Broccoli (F J) killed in action 654  
 Brown (W E) killed in action 382  
 Bullock (B E) killed in action 47  
 Burden (J A) Bronze Star Medal 1091  
 Butler (G L) killed in action 1165  
 Campbell (G C) killed in action 382  
 Camrona (D P) killed in action 1165  
 Carter (E N) killed in action 123  
 Caton (R J), Bronze Star 108  
 Clapp (J A) killed in action 1947  
 Cochrane (B B) citation 966  
 Company C Third Medical Battalion commended 36  
 Connell (J) Silver Star Medal 395  
 Conner (G R) Soldier's Medal 839  
 Connor (J J) Bronze Star Medal 967  
 Conrad (C D) Soldier's Medal 395  
 Cooke (M) killed in action 1165  
 Craig (W C) killed in action 721  
 Cunningham (V S) Silver Star 502  
 Curtin (E D) Navy and Marine Corps Medal 777  
 Custer (J L) Bronze Star Medal 842  
 Cuttle (T D) Bronze Star Medal 841  
 Daly (B V) Bronze Star Medal 593  
 Davis (S D) Bronze Star Medal 774  
 Deffinger (W) citation by Secretary of Navy 776  
 Demeter (P L) killed in action 252  
 Dent (P L) Bronze Star Medal 712  
 Dick (M W), Bronze Star Medal 965  
 Doherty (E J) Silver Star and Purple Heart 576

#### WORLD WAR II HEROES AND PRISONERS—Continued

Dowling (G B) Distinguished Service Medal 841  
 Dry (F A) Silver Star 592  
 Dunn (R A) killed in action 1165  
 Earhart (H T) Bronze Star Medal 175  
 Edikraut (E C) Soldier's Medal 774  
 Egyptian health officials (3) honored for typhus work 501  
 Elmore (S E Jr) Silver Star Medal 176  
 Finglish (G G) commended 777  
 Etheredge (S N Jr) Bronze Star Medal 1033  
 Fitejt (A J) Bronze Star Medal, 108  
 Farris (J T) killed in action 586  
 Feves (L J) Soldier's Medal 576  
 Finkelnburg (W O) Bronze Star Medal 1033  
 Flaherty (T T) Air Medal 396  
 Flanagan (J F) killed in action 450  
 Forsythe (R M) Navy Cross posthumously 199  
 Fox (L A) Typhus Commission Medal 501  
 Frese (F J) Legion of Merit 576  
 Funk (J E) killed in action 1165  
 Gallagher (B J) citation to 1934  
 Gibbons (J J Jr) killed in action 747  
 Gist (E H) Camp Lec Certificate of Commendation 241  
 Gleysteen (R R) citation 36  
 Goff (H L) Bronze Star Medal 967  
 Goodwin (C R) citation 36  
 Goodwin (W F) Soldier's Medal 966  
 Graffagnino (P C) prisoner of war 34  
 Grant (F G) citation 36  
 Graves (F C) Gold Star 1157  
 Grezman (S) Legion of Merit 1166  
 Hair (G M) killed in action 1047  
 Hall (F M) Navy Cross 1091  
 Harmon (J P) Purple Heart and Silver Star 774  
 Harriett (D C) Legion of Merit 593  
 Harvett (E F) (killed in action) 654 (Silver Star posthumously) 1156  
 Hays (S B) Legion of Merit 774  
 Heard (J G) Bronze Star 902  
 Heck (M V) Bronze Star Medal 966  
 Heffner (W N) Silver Star 1990  
 Henderson (C H Jr) killed in action 47  
 Henderson (Hilchard G) tsutugamushi mar tyr 786  
 Horodko (F J) Bronze Star Medal 1091  
 Hugonot (C A) French officer cited by U S Army 197  
 Hume (Edgar Erskine) Oak Leaf Cluster to Distinguished Service Medal 108  
 Hunt (W L) Silver Star Medal posthumously 108  
 Hyatt (J V) Bronze Star Medal 966  
 James (D C) Navy and Marine Corps Medal 439  
 Jensen (W S) Legion of Merit 576  
 Johnson (H M) special citation 576  
 Johnson (T G) killed in action 721  
 Johnson (W B) Bronze Star Medal 966  
 Jones (E C) Legion of Merit Award 175  
 Kang (F S) prisoner of war 34  
 Keefe (J P) killed in action 383  
 Kelly (E A) Silver Star 373  
 Keyserling (B H) Silver Star, 306  
 King (F M) killed in action 912  
 Klein (S M) citation 644  
 Kober (W M) killed in action 1166  
 Koren (P H) Silver Star Medal 1977  
 Kosciuski (L J) citation 36  
 Lago (G H) Presidential Citation 576  
 Lampert (E G) Bronze Star Medal 1091  
 Landaul (H B), killed in action 654  
 Landrum (O B) Bronze Star Medal 775  
 Lederman (E I) Silver Star 774  
 Libascl (A M) Legion of Merit Award 176  
 Livingston (C S) Bronze Star Medal with citation 830  
 Lyon (H F) Air Medal 107  
 Lyons (C) Legion of Merit 902  
 McCallig (J J) Purple Heart 712  
 McClain (W E Jr) killed in action 1192  
 McFadden (R I), Bronze Star Medal 1156  
 McLaughlin (L G) killed in action 383  
 Major (R H Jr) Cross of War for Military Valor by Italian government 840  
 Makart (C D) Silver Star 576  
 Mapes (B T) Bronze Star Medal 1033  
 Maupin (C S) prisoner of Japanese 712  
 Maxson (C W) commended 1090  
 medical corps unusual bravery of 838—E  
 Meyers (F R) commended by Secretary of Navy 776  
 Mobley (W R) citation to 1033  
 Morgan (C V) Legion of Merit 373  
 Morse (B W) killed in action 721  
 Mountbatten (Louis) 575  
 Murray (H B) letter of commendation 644  
 Napp (E E) Silver Star Medal 36  
 Neal (W B Jr) Navy and Marine Corps Medal to 36  
 Nunnery (W E) Soldier's Medal 35  
 nurses D D Eisenhower pays tribute to 240  
 nurses bravery medals to 242  
 nurses Lyon (H F), Chicago nurse receives air medal 107

WORLD WAR II HEROES AND PRISONERS

—Continued  
nurses (17) decorated for gallantry under fire 107  
O'Neal (L C) killed in action 852  
Oughterson (A W) Legion of Merit 176  
Parish (W C) killed in action 787  
Pernice (S L) Bronze Star Medal 966  
Persing (A V Jr) Bronze Star 576  
Phelan (R S) Silver Star 108  
Phillips (R L) Bronze Star Medal 1156  
Pickhardt (W L) German prisoner of war reported missing in action 373  
Postma (E A) Bronze Star Medal 1034  
prisoners American Red Cross sends penicillin by air for in Germany 842  
prisoners (British) barbarous treatment by Japanese 1162  
prisoners (British) killed in air raids on Germany 849  
prisoners of war services by American Red Cross 712  
Robbins (T J) killed in action 383  
Roble (T P) killed in action 902  
Rogers (J A), Legion of Merit 108  
Roller (J P) Oak Leaf Cluster to Silver Star 503  
Rosenthal (H C) citation 939  
Rosokoff (S) Bronze Star 644  
Ross (W T) Legion of Merit 966  
Rois (R D) Bronze Star Medal 966  
Sapero (J J) Distinguished Service Medal 176  
Sating (R J) Silver Star 1156  
Schneiderman (B I) Bronze Star 35  
Schuster (E G) Distinguished Service Cross 176  
Schwartz (R) Silver Star 774  
Sherrill (S F) Bronze Star Medal 1034  
Silverman (I M) killed in action 1102  
Sokal (J E) Bronze Star Medal 35  
Speer (C A) Silver Star 241  
Sprockin (B E) Soldier's Medal 644  
Stable (V V) killed in action 787  
Stewart (J E) Legion of Merit 841  
Stone (H J) Distinguished Service Cross 241  
Stotz (K F) Legion of Merit 774  
Strann (L M) Silver Star 241  
Tajjar (L W) Legion of Merit 965  
Tegtmeyer (C E) named most cited doctor 6 times decorated 502

WORLD WAR II HEROES AND PRISONERS

—Continued  
Thornburg (H B) killed in action 978  
Thorpe (G L) Soldier's Medal 576  
Tolliver (H A) Bronze Star Medal 1091  
Tracy (E J) Legion of Merit 35  
Tucker (E) prisoner of war 34  
U S of America Typhus Commission Medal 306 1034  
Wacs given bravery awards 242  
Wakeman (F B) Legion of Merit Posthumously 108  
Walker (R E) citation 1091  
Ware (Robert) missing in action 36  
Washburn (H H) killed in action 912  
Watson (R E) Silver Star Medal 1090  
Weingart (Z B Jr) killed in action 1102  
Wheeler (R) Silver Star and Purple Heart 1091  
Willets (A T) Silver Star Medal 176  
Williams (J S) killed in action 978  
Wisely (W R) Silver Star 1091  
Wolcott (M W) Air Medal 439 842  
Wolf (R E) missing in action 502  
WOUNDED See World War II wounded  
Transport of See Ambulances Hospitals, ship Hospitals, train, Stretcher  
WOUNDS See also Accidents, Burns, Trauma under specific organ and region  
absorption of sulfathiazole from [Wand] 838—ab  
healing (delayed) and disruption Auer's phenomenon [Hopps] 324—ab  
healing vitamin C sulfonamide compounds for [Ruskin] 659—ab  
infected merlides for [Ponte] 864—ab  
infected after nephrectomy penicillin curies [Thompson] \*466  
infected Gramicidin S for [Causc] 1034—ab  
infected streptothricin for [Robinson] 1032—ab  
stab in right ventricle [Gilesby] 934—ab  
Suturing See Sutures  
treatment envelop method [Osborne] 987—ab  
treatment local crude penicillium filtrate [Alston] 58—ab  
treatment proflavine powder [Raven] 525—ab  
treatment sulfathiazole proflavine powder [McIntosh] 58—ab [Feggetter] 58—ab  
Wai See World War II

WRIST See also Scaphoid Bone carpal injury applying cast to forearm stimulates hypersensitive carotid sinus [Hauser] \*1029  
WRITING WRITERS See under Bibliography (cross reference) Books Book Notices at end of letter B Journals Terminology

X

XENOPUS Test See Pregnancy diagnosis  
X RAYS See Roentgen Rays

Y

YALE library acquires herb cabinet of Dr Seth Bird (1733 1805) 309  
YAWS See Frambesia  
treatment dichlorophenarsine hydrochloride (chlorarsen) \ \ R (description) (Squibb) 169  
YEAST brewers yeast tablets \ \ R (Squibb) 769  
extract tablets untoward effects from taking [Ruffin & Cnyer] \*923  
YELLOW FEVER and Walter Reed Truby's account 33—E  
control during war 772—E  
interference phenomenon in acquired cellular resistance [Mudd] \*635  
serum jaundice [MacCallum] 99—ab [Ollphant] 595—ab  
treatment sulfonamides [Koprowski] 518—ab  
vaccination hepatitis after [Findlay] 923—ab 988—ab  
vaccination jaundice after fatal case [de Vicer] 57—ab  
virus in cultures and sulfonamides [Koprowski] 517—ab  
YOGALAN 48 BI  
YOUTH See Adolescence

Z

ZINC chloride treatment of lip cancer 32—E  
paste to protect against harmful sunlight 465  
sulfate use in emptying infants stomach in poisoning 138  
ZOSTER See Herpes zoster



## AUTHOR INDEX

In this Index are the names of the authors of articles which have appeared in THE JOURNAL, the names of those who have read papers before Societies as published in THE JOURNAL and those whose articles have been abstracted in the Current Medical Literature Department. The \* preceding the page reference indicates that the article appeared in full in THE JOURNAL. For subject index see page 1181.

- A
- Abreu, B E \*1066  
Adair, F L 454  
Adams, G 592  
Adams, J M \*333  
Adams, M A 1053  
Adams, R C \*282  
Adams, W E 594 921  
Ahrnholm, J H 196  
Albanese, A A 194  
Albright, F 859  
Alexander, H B 657  
Alexander, J \*1139  
Alexander, J R B 397  
Allan, F N 920  
Allende, G 462  
Almy, T P \*703  
Alpers, B J 523  
Alrich, E M 262 262  
Alston, J M 58  
Altschule, M D, 731  
Alvarez, W C 521 796  
Ambrose, A \*231  
Anderson, C R 190 660  
Anderson, T F \*561  
Anderson, W B \*12  
Andrews, C H 600  
Andrews, J 664  
Andujar, J J 459  
d'Angelo, Rodriguez, A 399  
Applebaum, H S 261  
Applebaum, I L 919 1115  
Arens, R A \*605  
Arestad, F H \*253  
Arling, P A 599  
Armstrong, C D \*685  
Armstrong, S H Jr 596  
Armstrong, T G 264  
Arnold, R C \*63  
Aseltine, L F 597  
Ashworth, C T \*806  
Astwood, E B 596  
Atkinson, A J \*814  
Atkinson, M 659  
Aurol, M 198  
Aycock, W L 1113  
Ayre, J E 324
- B
- Baclesse, F 668  
Baggensloss, A H 53  
Bailey, C C 982  
Bailey, C P \*1016  
Bailey, O T 128 596 \*680  
von Balay, L Jr 889  
Baker, D C Jr \*616  
Baker, E M 1054  
Ball, F E \*291  
Bambach, B 733  
Banfi, R F 668  
Barborka, C J 55  
Barcham, I 323 396 519  
Bergen, J A \*1009  
Barr, D 592  
Basden, M 1175  
Bauer, D J 59  
Bauer, E 798  
Baur, J 914  
Baumhauer, J H 792  
Bay, R 668  
Bayley, R H 590  
Beardwood, J T Jr \*1079  
Beattie, G F \*544  
Bechell, L M 725  
Beckwith, J R 132  
Bede, B A 192  
Beelman, F C 983  
Beerman, H \*408  
Beeson, P B 461 1113  
Benedict, W L \*880  
Benzans, T H C 1051  
Berens, C \*671  
Bering, F A Jr 596  
Berry, N E 1116  
Bersack, S R \*1025  
Berwald, W P E 53  
Best, A E 60  
Beyer, K H 396 \*1007  
Bibcrstein, H 390  
Bichel, G 462  
Bleichowsky, F 923  
Bigger, J W 666 1175  
Biggs, A D \*1070
- Binder, M L 388  
Binger, M W \*532  
Bisson, C 524  
Black, G H B 59  
Black Schaffer, B 85  
Blalock, A 598  
Bland, E F \*297  
Blaney, L F 727  
Blankenhorn, M A 197  
\*691  
Blatt, M L 792  
Bloom, M S \*333  
Bloomfield, A L \*685  
Blount, S G Jr 663  
Blum, S D 917  
Boddington, G D M 1116  
Boger, W P 860 885 \*1062  
1169  
Boland, E W \*820  
Bondi, A Jr \*1016  
Bonnin, J M 398  
Boone, J A 796 1173  
Boroff, D A 391  
Botterell, E H 858  
Bottifoll, E 135  
Botvinick, I 856  
Bouman, H D \*695  
Bowen, B D \*98  
Bowman, J C \*331  
Roid, L J 1115  
Braceland, F J \*221  
Bradley, W H 863  
Brams, W A 1167  
Brazhnikova, M G 1054  
Breed, E S 323  
Brockbank, M J 886  
Broders, A C 657  
Brodney, M L \*1000  
Bronstein, L H 856  
Brooks, W D W 398  
Brown, B A 192  
Brown, E A 658  
Brown, H G 130  
Brozel, J 591  
Brückner, R 668  
Brun, H 1176  
Brunner, A 264  
Brunner, H 519  
Bryce, L M 733  
Bucey, P C \*26  
Buck, F 989  
Bullowa, J G M 598  
Burch, G E \*163  
Burdett, W F \*1016  
Ruschke, F 1118  
Butler, B C 132  
Butler, F C B 732  
Byron, F Y \*1139
- C
- Cairns, H 134  
Caldwell, G A \*269  
Calvery, H O 523 \*908  
Campbell, G 389  
Campbell, M 133  
Cannaday, J E 599  
Cannefay, G R \*623  
Cannon, A B \*544  
Cannon, E A 795  
Cantarow, A 325  
Cantrell, S T 1118  
Carabba, V 519  
Carlson, G D 395  
Carpenter, G K 860  
Carpenter, C R 389  
Casamajor, L 1050  
Castex, M R 864  
del Castillo, E B 989  
Castrojo, R 435  
Carviness, V S 994  
Cayer, D \*823  
Chadwick, V 264  
Challinor, I S W 732  
Chambers, H D 725  
Charosky, L 60  
Chenault, H \*26  
Cheney, R H 981  
Chesney, G 461 461  
Chiles, G G 268  
Churchill, E D 1050  
Cipollaro, A C 196  
Clagett, A H Jr 388  
Clark, P 1113  
Clark, R L Jr 857  
Clark, W M 666
- Clarke, T W 322  
Clute, H M 56  
Coburn, A F \*88  
Cogswell, R C \*752  
Cohen, F \*1027  
Cohen, M 54  
Coleman, R \*427  
Coleman, R R 796  
Coller, F A \*1 \*709  
Collins, B C \*233  
Collins, S D 729  
Collins, S D 861  
Colp, R 862  
Comfort, M W 1171  
Consolazio, F C 195 982  
Contratto, A W, 390  
Cooperstock, V 192  
Cope, O 793  
Corner, B D 600  
Coriscaden, J A \*1134  
Co Tui 323 396 519  
Coulter, J S \*360  
Core, A M 593  
Crabtree, F G \*810  
Cramer, F 1174  
Crawford, T 707  
Crip, L H \*429  
Cristol, D S \*825 \*1077  
Crittenden, P J 55  
Crittelli, C A 462  
Crook, C E \*1  
Crow, H E 104  
Crowe, J T 517  
Culp, O S 393  
Culler, M 321
- D
- Daley, A 588  
Dancey, R J 321  
Dandy, W E 455  
Danforth, D N 132  
Daniels, M 666  
Darby, F U 1052  
Davey, T H 397  
David, P, 524  
Davidson, C N 657  
Davlin, J R 322  
Davis, A 58  
Davis, E 197  
Davis, E V 522  
Davis, M I J \*209  
Dean, A L 665  
Declerd, G M Jr \*760  
(correction) 973  
Dees, J F 506  
Deltrick, J E 1169  
Delparte, T 462  
Deslome, L 526  
de Takats, G 921  
Deutsch, J V 326  
de Veer, J A 57  
Devine, K D 53  
Dible, J H 461  
Dick, D S 667  
Dickins, R D \*1149  
Dickson, J C 862  
Dingley, A R 327  
Divine, J P 393  
Dixon, J J \*96  
Dobrin, M 261  
Docherty, W B 320  
Dolan, F C 104  
Donath, E R \*96  
Donovan, G E 134  
Dore, S E 797  
Dosal, A 1176  
Dotia, J S 462  
Dotter, C T 855  
Douglas, G H 985  
Downy, A H 860  
Doyle, M E 660  
Drablin, D L 982  
Draze, J H 523  
Draze, H W 727  
Dresser, M 660  
Dressler, W 453  
Drinker, C K 395  
d'Silva, J L 133  
Dublin, W B 192  
Dubrow, A A \*495  
Duffie, D H \*95  
Duggan, T L \*1132  
Duguid, J P 732  
Duncan, C N 990  
Duncan, G W 1116
- Dunham, W B 661  
Duthie, E S 134  
Dyer, W W 796
- E
- Eagle, H, \*538  
Ecke, R S \*349 (correc-  
tions) 581 782  
Eckes, W P 594  
Edens, E, 924  
Edidin, L 862  
Eger, S A 795  
Eichelberger, L 594  
Eisenberg, H 1170  
Eills, G J 591  
Elvehjem, C A \*100, 393  
Elwyn, H 54  
Emmett, J L, \*1077  
Engel, G L 197 728  
Engel, S 197  
Engels, D L 318  
Erickson, C A, 1173  
Evans, G 133  
Frans, M W 1120  
Everts, W H \*145  
Ewalt, J R \*150
- F
- Faget, G H, \*937  
Falls, L S 858  
Fan, P L 60  
Farley, D L 396  
Farr, J 327  
Farrell, L 660  
Fauley, G B, \*1132  
Faulkner, I M 590  
Faust, E C 128  
Favata, B V 922  
Favorite, G O \*1016  
Feasby, W R 1054  
Feder, I A, \*293  
Feggetter, G Y 58  
Feinberg, S M 522  
Felsly, R 60  
Feldman, W H 322  
Fel, S S 456  
Felsner, Z 127  
Felton, H M \*294  
Fee, L C 53  
Ferguson, F 592 1169  
Ferguson, H 660  
Ferraris, A A 462  
Ferris, E B Jr 197  
Fetterman, F S \*877  
Ficarra, B J 986  
Findlay, G M 923 988  
Finkler, R S 1118  
Finnerud, C W \*737  
Fisher, J K \*544  
Flitzhugh, O G 523  
Flahiff, E W 981  
Fleet, J 661  
Fleischmann, G \*357  
Fletcher, A G Jr 981  
Filipin, H \*1007  
Florio, L 704  
Floyd, J R 996  
Foley, G F 1113  
Foltz, E 55  
Forbes, C B 1052  
Foster, F P \*281  
Foulds, G S 1053  
Fowler, E P Jr 327  
Fowler, R H \*1016  
Fox, H 725  
Fox, M J 658  
Frankston, J E 194  
Frant, S \*944  
Fraser, D T 660  
Freeman, W 264 457  
Freireich, A W 792 1169  
Freis, E D \*93 \*892  
French, J D 519  
Friedewald, W F 983  
Friedman, M H F 260  
Furber, J R 459  
Furst, N J 1118
- G
- Gall, Mainini, C 989  
Gambin, M A 989  
Gans, J A 1170  
Garb, J 856
- Gardner, R H 997  
Gardner, L U 588  
Garfield, S R \*337  
Garré, O A 526  
Gaskill, H S 523  
Gause, G F 1054  
Geeslin, L E 521  
Gefter, W I 917  
Gelsendorf, W 1176  
Gerl, A J 596  
Gessler, C N 262  
Gettler, A O 792  
Getz, H R 592  
Gibbs, J \*1079  
Gillesby, W J 984  
Gilligan, D R 731  
Giordano, D G 462  
Gladstone, A \*1084  
Glenn, W W L 323  
Glover, R E 600  
Godfrey, E S Jr, 789  
Godfrey, L Jr \*23  
Goedbloed, J 399  
Goltin, P L, 058  
Goldblatt, S 127  
Goldner, M G 1051  
Goldsmith, N R 914  
Goldstein, S 320  
Gómez, Pimental, J L 526  
Gomorí, G 1051  
González Ribas, M 1055  
Gooch, J O 129  
Goodman, L \*1084  
Goel, E F 263  
Goranson, E S 595  
Gorby, A L 129  
Gordon, N F 658  
Gordon, R M 397  
Govier, W M \*749  
Govons, S R 981  
Graham, E A 598  
Graham, W E \*623  
Grant, D N W \*607  
Grant, F C 730  
Green, G C 797  
Green, H F 264  
Greenberg, M \*944  
Greenblatt, R B \*161  
Greene, H S A 54  
Greene, L F \*825  
Greene, R 924  
Grieco, E H 593  
Griffey, E W 51  
Griffith, A D 397  
Grill, J 390  
Grinson, K S \*218 727  
Grimmer, R R \*142  
Grollman, A \*213  
Gross, Hessler, R 197  
Grossman, L L 1174  
Grow, J B \*1059  
Gsell, O 199  
Gubner, R 985  
Guerrero, P 733  
Gunders, K 525
- H
- Haddow, A 1119  
Hafford, B 396  
Hagan, W H 982  
Hallwood, J G 897  
Haines, S F 793  
Hamburger, M Jr \*993  
Hardy, J D \*23 981  
Harper, J G W \*703  
Harrall, G T 51 \*929  
Harrington, L A 917  
Harris, A \*63  
Harris, F I \*232 (cor-  
rection) 718  
Harris, H I 855  
Harrison, T R 981  
Hauser, C U \*1029  
Havens, W P Jr \*17  
460 (correction) 782  
Hawley, W L 461  
Hawn, C V 596  
Headley, N E \*820  
Hecht, H-H 518  
Heimoff, L L 599  
Heinbecker, P 859  
Heintzelman, J H L 922  
Heller, C G \*472  
Heller, F F 397  
Hemphill, R E 732



- Hench P S 53 \*820  
Henderson H J 592  
Henschel A 591  
Henthorne J C 857  
Herbst E J 393  
Herbst R H 1117  
Hempel F K 664  
Herrmann G R \*760 (cor  
rection) 973  
Herschberg A D 1176  
Hervick R P \*959 \*1024  
Heubeln G W \*950  
Hewdemann J 395  
Higley C S \*281  
Hileman W T 657  
Hill H C \*218  
Hillarp A A 998  
Hillman C C \*829  
Hinson R A \*1129  
Hinslaw H C 322  
Hirst G K 983  
Hoagland C L 456  
Hodes H L 195  
Hodgson A E 988  
Hoffman H V \*1073  
Hoffman R 592  
Hogan B W 194  
Hollbrook W P \*84  
Holland D F 861  
Hollander F 862  
Holt L E Jr 194 \*357  
Homann N H 793  
Homans J 396  
Hopkins R \*937  
Hopps H C 324 324 324  
Horne S F 51  
Horowitz E A 320  
Horstmann D M \*1061  
Howard F H 979  
Howard J E 1170  
Rowe C W 986  
Howell I B 127  
Howell K M 1167  
Hoynes R M 1171  
Huddleston O L \*1039  
Hudson R V 58  
Hughes L W \*231  
Hullinger C W 729  
Humphrey A A 453  
Hunter D 1045  
Hussey H H \*335
- I  
Ingalls J C 863  
Ingraham F D 128 \*680  
Ingraham A R Jr \*408  
Irvernizzi D 864  
Iob V \*1  
Irby V 194  
Irvin J L 1116  
Isaacs H J 862  
Israel J E 135  
Iry A C 55 \*814 1174
- J  
Jablon J M 1172  
Jacobsen D 988  
Jacoby A 389  
Jacoby N M 133  
Jandorf B J 1172  
Janczewski C A \*674  
Jeans W D 525  
Jeffrey J S 525 525  
Jelsma F 262  
Jemerlin E E 862  
John H J 1113  
Johns G A \*307  
Johnson D G 320  
Johnson F C \*27  
Johnson H M 389  
Johnson J F \*1073  
Johnson L F 662  
Johnson R E 195 982  
Johnson R W Jr 728  
Johnson V \*253  
Johnston W A 395  
Joiner L S 57  
Jones D B 393  
Jones F M \*339  
Jones G M 728  
Jones H E 264  
Jones J C 1117  
Jones T D \*491  
Jones T E \*1013  
Josef A I \*496  
Jucker P 92  
Junco J A 60
- K  
Kaser O 264  
Kahn A J 193  
Kahn J \*358  
Kaplan I W 393  
Karnaky K J 796  
Karpovich P A \*873  
Katz I N 1167  
Katzenellenbogen I 1170  
Kauffman L R 594  
Kauffman R F 592
- ron halia K N 925  
Kay G A 1172  
Keegan J J \*868  
Kell H 390 521  
Kell W S 858  
Kellner T F \*535  
Kendrick D B Jr 730  
Kenney W E 986  
Kenny M 923  
Kendrick J P 919  
Kepl M \*96  
Kepler E J 657 793  
Keppeler J F 730  
Kernodle C E Jr \*218  
Keyes J E L \*610  
Keys A 591  
King A J 461  
King B G 1114  
King E F 797  
Kinnaman C H 983  
Klirby W M M 392 \*685  
Klirner J B 53  
Kittredge W E 130  
Klitzes G \*100  
Klein A 388  
Klein C 51  
Klein M 1118  
Kleinberg S 857  
Kleinschmidt E E 664  
Klunzinger W R 323  
Koblik R E 1169  
Koch F 135  
Koelle F S 590  
Koenig A 917  
Koffler A 1169  
Koller P C 1119  
Komarov S A 456  
Korn B E 324  
Koprowski H 517 518  
Kotepa P \*833  
Kramer D W 917  
Krause G R 917  
Krieger V 601  
Kuder K 730 855  
Kuzma J F 390
- L  
de la Balze I A 859  
LaBoccetta A C 517 \*948  
Labourdette J 60  
LaDue J S 590  
Landgrebe F W 198  
Lange K 1115  
de la Torre H 60  
Latven A R 590  
Lavin G I 456  
Lawrence G 1173  
Lebensohn J E 263  
Leberman P R 922  
Lee R V \*630 918  
Lehan T R 57  
Lehman F P 262  
Lette Ribeiro V R 924  
Lemon H M \*993  
Lenhardt H F 263  
Lennette E H 517 518  
Lenroot K F 49  
Jentz J W \*409  
Levan A B 454  
Levenson S M 1053  
Lever W F 394  
Levine S A \*80 453 1173  
Levinson D C \*1079  
Levy R L \*829  
Lewey F H 982  
Lewin W S 134  
Lewis G M 196  
Lewis J H 1170  
Lewis K C 1173  
Lewis L D \*424  
Lieberman R 326  
Liebeson P 1053  
Likoff W B 453  
Lillic R D 458  
Lipton S \*766  
Livesay H R 1114  
Ljunghusen E 399  
Lockwood J S \*948 1050  
Lohnis H 601  
Long P H 239  
Loosli C G \*943  
Loutit J F 863  
Love J G 457  
Love T E 398  
Lowenberg E L 132  
Lowenstein B E 195  
Lowry T 861  
Lubchenco L O 664  
Lubschetz R \*477  
Luchesi P F 517  
Lukones C C 462  
Lukens F D W 1054  
Lund P K 54  
Lutz K 925  
Lyford J III 728
- M  
MacBryde C M 859  
MacCallum F O 59  
MacCana J C \*341  
MacCarroll H R 522  
McClure R D 858  
McCormick W J 326  
McCort J J C 67  
McCreary J F 595  
MacDonald R 921  
McEachern C C \*281  
McFarlane A M 461 461  
Macfarlane C \*877  
McGavriel T H 596  
McGovern F H 918  
McGowan F J 1174  
McIntire J M 393  
McIntosh C B 661  
McIntyre J 58  
McKay R C 853  
McKemie J F \*806  
McKinley W F \*760 (cor  
rection) 973  
MacLinn M T 192  
McKoon J W Jr 386  
McLetchie N C B 197  
McLinn T R 728  
McMichael J 461  
McMillan R B 863  
McMullen H L 58  
McMurray J 600  
McNeal W J 661  
Macrae T F 863  
McScott D B 594  
Macchilling F \*544  
Mingd M A 393  
Mahoney J T \*63 \*67 \*73  
Malmejac J 392  
Mancle R 733  
Mann F C \*467  
Mann I 863  
Marburg O 1050  
Marescot F 135  
Marks A R 192  
Martha H E 793  
Martha N H 923 988  
Martha P 987  
Masson J C 320  
Mater D A \*892  
Mathewson W R 460  
Mattis P A 590  
Mattison B T 1053  
Matzner W J 57  
Maunsell K 863  
Maxwell R W 727  
Mayer H Jr 922  
Mayer H W 454  
Mayo H 59  
Mazzel C S 864  
Means J H 793  
Meck K F 860  
Medaly G F \*357  
Merlotto A M \*553  
Melick W F 393  
Melnick J L \*1061  
Menchaca F J 517  
Menninger W C \*221  
Meredithe J M 524  
Merkle C 526  
Merkle B J 658  
Merricks J W 1117  
Merrill M H \*887  
Melbony D 1174  
Meyer F 320  
Meyer K A 862  
Meyer F 919  
Michelsen J J 731  
Michelsen O 591  
Miller E S 1113  
Miller H \*776  
Miller J H \*251  
Miller M M 52  
Milles G 57  
Mills M \*887  
Milton R 1055  
Mingrone R 526  
Mitchell H H 196  
Mitchell J B 923 988  
Mitchell L I 1116  
Mixer W J 731  
Monckeborg B C 668  
Moir C 460  
Mokotoff R 1167  
Monahan D T 986  
Montefiore de Barros O 1120  
Moore F D 663 793  
Moore J E \*67 \*73  
Moore M T \*523  
Moore T D 129  
Mora J M 862  
Morehead R P 919  
Morginson W J 1170  
Morlock C G 455  
Morton H E 922  
Morton T C 198  
Moss E S 984  
Mounlin J W \*203  
Movano Lopez L 601  
Mudd S \*61 \*632  
Mugrage E R 794  
Mule J 394  
Mutholland J H 323 519  
Mund M H \*424  
Muro L A 199
- Murphy F D 390 \*948  
1950  
Murphy R J 595  
Murray E S \*349 (cor  
rection) 581 782  
Murray J M \*148  
Mushin W W 58  
Muskatblit E 196  
Myers G B \*472
- N  
Naclerio E A 986  
Najjar V A \*357 594 94  
Nathel E F 393 458  
Nelson A W 727  
Neller J L 665  
Nelson A A 523  
Nelson H 593  
Nelson R A 728  
Neter E R 1113  
Newell T E \*373  
Newhall C A 499  
Nicholls J V 595  
Nichols R G \*1027  
Nicholson W M \*12  
Nicol C S 461  
Nielsen J M \*801  
Nimond R \*560  
Norris C W \*1016  
Noth P H 518  
Noyes C B Jr 324  
Nulsen F E 128
- O  
Oatway W H Jr 857  
Ober F R \*769  
Ochs L Jr 729  
Ochsner A \*96  
Ockerse T 1175  
OConnell J F 921  
Olmysty J 960  
Oliphant J W 595  
Ollswang A H 389  
Oppenheimer A 321  
Oppenheimer B S 195  
Orgel S Z \*225  
Osborne R P \*97  
Osterchrist W 526  
Otto J 924
- P  
Page S G Jr 599  
Palinton J F 993  
Palk F E 984  
Palk F 1176  
Palmer H D 664  
Palmer W \*709  
Parker L O 57  
Parkes T 58  
Perry S C 397  
Parson W 1170  
Parsons W H 857  
Paschke K E 325  
Paterson E 1119  
Pater D H 58  
Patterson H M 325  
Patterson M 130  
Paul J R 460  
Payne J T 519  
Peck S M 856  
Pemberton J deJ 657  
Perella de Mesquita W 924  
Perez de los Reyes R 60  
Perlman L 453  
Perry I H 190  
Perry K M A 732 1055  
Peters J P \*1027  
Peters M 729  
Pfeiffer C C \*1132  
Pfuetze H H 322  
Phaneuf L E \*139 459  
Phillipsborn H F Jr 1173  
Pi C C 60  
Pickard R J 190  
Pierson J W \*884  
Pierson P H \*206  
Pile G C L 53  
Pilgerstorfer W 798  
Pincus I J 260  
Pinkerton J F \*625  
Plquet J 1176  
Pirkle H B 322  
Plrzada M A 1053  
Plitts G C 195 982  
Plattner P 601  
Plotz M 130  
Poate H R G 864  
Poleff L 924  
Pollard W 1114  
Polley T Z 390  
Porter H G 730  
Porter W 58  
Portis S A \*413  
Poth E J 597  
Potter H W 856  
Poulin J 195 982  
Power M H 793
- Priscott F 1175  
Probst E W \*424  
Prudente A 730  
Luck T T \*993  
Pustiz M E 522  
Putnam L E \*1024  
Putnev F J \*620
- Q  
Quittbaum E C Jr \*844  
Quick A J 1167  
Quigley D T 588  
Qrist G 600
- R  
Rackemann F W 521  
Raines O M \*1059  
Ratloff A E 325  
Ramey W O 131  
Ramirez Mendoza A 399  
Randall E 392  
Randall W A \*1024  
Randolph T G \*166 \*430  
Rankin L M 855  
Rautz L A 392  
Rappaport M B 453  
Raven R W \*25  
Rawling F F A \*166  
Rawson R W 793  
Razoyk A 195 982  
Rechnitz L 1176  
Reeres D L 520  
Reforzo Membrives J 989  
Rehfuuss W E 260  
Reichel I W 1176  
Reidi V 1170  
Reifenstein E C Jr 809  
Reinhold J G 917  
Reiss M 732  
Remolar J 864  
Rendell R A 917  
Reveno W S \*153  
Richards D W Jr 390  
Richmond J B \*1149  
Rickard F R 983  
Rienhoff W F Jr \*1123  
Riese W 524  
Rigler L C 861  
Roach J F \*884  
Roback R A 1174  
Roberts D W 594  
Roberts L W 1174  
Roberts P C 731  
Robertson F C 660  
Robertson J N 1118  
Robertson O H \*993  
Robertson R C L 457  
Robins S A \*1000  
Robinson H J 1052  
Rodriguez J J \*544  
Rogerson C H 398  
Rojas F \*15  
Romano J 197 728  
Rones B 662  
Roome N W 1116  
Rosemond G P \*1016  
Rosenbaum S 914  
Rosenberg D H 599  
Rosenberg E F 53  
Rosenfeld C 1120  
Rosenthal A 1172  
Ross C A 597  
Ross K C 667  
Rostenberg A Jr \*10  
Roth H 59  
Roth J A \*814  
Rothbard S \*274  
Rouatt J W 1171  
Rousseau J P \*213  
Rubin G 856  
Ruch W A 855  
Rudd J L 194  
Ruffin J M \*823  
Rugiero H R 60  
Ruskin S L 260 659  
Rutstein D D \*484 \*944  
Ruttle L 1116  
Ryan J D 132  
Ryan W P 667  
Rychener R O \*763  
Ryder H 197
- S  
Sabin A B 326  
Sachs M D 518  
Sahs A L \*560  
Salfi M T 666  
St Johnston C R 525  
Sako W \*427 661  
Safman M H 461  
Saland G 51  
Salar Luis E 327  
Sampson L 198  
Sanabria A 199  
Sanchez Yllades L 399  
Sano M E 52  
Sapirstein M R 388  
Sarnoff S J 1116

- Sawyer, C S 663  
Sawyer W H Jr 598  
Scadding J G 460  
Scandalls R 664  
Schaefer, B F \*535  
Schaefer, E W \*34  
Schaefer P W 921  
Scheindblum I E 598  
Schleichner E W 792  
Schmidt F R 665  
Schmidt H J 134  
Schmidt R H Jr 321  
Schmith K 1120  
Schragner V L 323  
Schwartz, H 792  
Schwartz L 856  
Schwartz R P \*695  
Schwartz W H \*67 \*73  
Schwarz J 853  
Schwedel J B 453  
Schwepert B S 393  
Schwimmer D 596  
Schwittalla A M \*709  
Scobee, R G 51  
Scott, E P 597  
Scott R B 728  
Scudder J 132  
Sebbie F R 58  
Sellmann A W Jr 922  
Sellers F A 995  
Sellers T H 000  
Semans J H 1171  
Seneckie H A \*5  
Serrvinghaus E L \*701  
Sewell R L 860  
Shafer E 857  
Shaffer C F 53  
Shaffroff B C P 396  
Shallow T A 795  
Shank R E 456  
Shannon J G 862  
Shapiro M T \*934  
Shapiro S, 789  
Sharman A 198  
Shaskan D A 518  
Shay H 456  
Sheehan H L 462  
Sheehan J E 454  
Sheffery J B 911  
Shenkin H A 981  
Shepler J R 785  
Sheps J G \*271  
Sherlock S 1119  
Shrager J 1110  
Siedt W 733 925  
Silverman I J 1169  
Silvers S H 196  
Simmons W K 304  
Simonsen D G 793  
Singer K 56  
Siplet H 456  
Siris I E 132  
Skillem P G 514  
Skook A L 190  
Sloan H E Jr 921  
Sloane H O \*164  
Smalley R E \*532  
Smith A \*958  
Smith C R 592  
Smith D G 1052  
Smith H H 981  
Smith H V 134  
Smith, J V 663  
Smith L B \*1027  
Smith V H D \*418  
Smith M I 458 458  
Smith R B Jr 523  
Smith W 1116  
Smith W J J \*894  
Smith W K \*695  
Smithwick R H \*15 1115  
Smorodintser A A, 193  
Snow R S 660  
Snjder J C \*349 (correc  
tion) 581  
Soloway S 195  
Sorsby A 397  
Spaulding F H \*1016  
Spence P H Jr 662  
Spencer S H 862  
Sples T D \*752 985  
Spitzer F H 55  
Spolnar W 730  
Stachelski J 190 982  
Stallard H B 987  
Stamm W F 863  
Starr I 981  
Starr M P \*873  
Staub R R 984  
Sterly C L \*454  
Steele C W 598  
Stefansson V 682  
Steigman A J 461  
Steigmann F 192 792 862  
Stein A 388  
Stein K F 1170  
Stephens L J 727  
Stern L S 591  
Sternberg T H \*67 \*73  
\*107  
Sternier B L \*63  
Stewart C A 661  
Stewart F H 56  
Stewart F W 125  
Stewart M O 794  
Stewart O W 858  
Stock M F 659  
Stock R P \*358  
Stoesser A V 1114  
Stohlman E F 458  
Stokes J H \*73 \*408  
Stone S 661  
Stormont R T \*1132  
Stranahan A 1174  
Strauss H 320  
Street A R \*161  
Strong G F 1116  
Stroud W D \*829  
Stubbins S G Jr \*1146  
Sturgis M C, \*877  
Stutzman J W 796  
Sullivan R R 263  
Sumerlin H S \*954  
Swan C 59  
Swanson C A \*616  
Sweeney D A, Jr 793  
Sweet W H, 1175  
Swift H F \*274  
Symmers D (correction), 42  
Szanto P B, 454  
T  
Talbot J H 394  
Tanner F H 920  
Tanturi C A 668  
Taran L M 1172  
Tarlov I M \*741  
Taylor F H L 1053  
Taylor H C Jr 1172  
Taylor H K 261  
Taylor H L 591  
Terrell, E H \*529  
Thomas C B \*490  
Thomas F W \*556  
Thomas E W P 797  
Thomas F F 260  
Thomas R B \*623  
Thomas W C 981  
Thompson D R 1905  
Thompson G I \*493 \*825  
Thompson J R Jr 917  
Thompson V C 699  
Thompson W P 1117  
Thomson S 325  
Thornlike A \*773  
Thornton T F Jr 594 921  
Thurnherr A 798  
Timonlin M I 1171  
Tingley P R 1119  
Tisdall F F 595  
Titus P 386  
Toomey J A 49  
Tostevin A L 59  
Toth B J 261  
Tourish W J 325  
Traub E F 459  
Trethewie E R 307  
Treusch J V 793  
Trowbridge B C 127  
Truog C P 518  
Tubbs O S 987  
Turgasen F E \*1150  
Turner T B \*137  
Turvey S E C \*25  
Twombly G H 665  
Tyler G R 523  
Tyler W L 729  
Tyner F H 657  
U  
Uehlinger E 199  
Ufer J 798  
Ungerleider H E, 980  
Unsworth K 397  
V  
Valdemar G 664  
Valdes Ruiz M 327  
Valentine F C O, 732  
Valle A R 598  
Valotta J 135  
Vandergrift H N 727  
Van Dyck L S 390  
Van Gelder, D W 1002  
Van Ravenswaay A C \*486  
Van Rooyen C E 460  
Van Winkle W Jr \*958  
Vaughan J M 666  
Vennings W \*929  
Verwey W F \*1007  
Vezina N 326  
Vldgroff I J 1170  
Vltter C F \*691 \*732  
Vltter R W 985  
Vincent J G 800  
Vinci V J 519  
Vitt A E 393  
Vogel M 986  
Vogliito P F \*1066  
Vorhaus M G \*225  
W  
Waggoner R W \*221  
Wagner F B Jr 795  
Waltzkin L 856  
Walking A A 325  
Walsh B J \*535  
Walsh F B 455  
Walshe F M Jr 667  
Walters W 405  
Walton H J 657  
Wandall H H 1129  
Ward R 826 \*1061  
Waring A J Jr \*418  
Warren H A \*281 729  
Warren K W 838  
Warren S 086  
Wartman W B 1114  
Waters R M \*1068  
Watkinson J M 1119  
Watson R F \*274  
Watts G W T 456  
Watts J W 264 457  
Watts R M 454  
Waud R A 978  
Webb J P 197  
Wechsler I S 388  
Wedum A G 1113  
Wedum B G 1113  
Weeks K D 131  
Weinstein V A 862  
Weiser H I 593  
Welss P 129  
Welss R A \*873  
Welss T 729  
Welch A D 590  
Welch H \*10 \*1024  
Weld S B 455  
Welden I 1172  
Wells C W 981  
Welsh C A 1172  
Wertz R F 395  
Westfall I S 592  
Westman A 988  
Wexler G \*550  
Weyr H A 1172  
Wheeler S M 1113  
White J C 1119  
White J W \*1146  
White P D \*15, \*829  
White V 594  
White W L, \*1016 1000  
Whitwell G F B 1055  
Whlensky A O 789  
Wilkie J M 221  
Willard C V, \*294  
Williams D 1173  
Williams D I 461  
Williams, J W 660  
Williams L 1116  
Williams R H 56 1172  
Wilson M G \*477  
Winkelman A W 523  
Winsor T \*163  
Wise H \*093  
Wiltner J J \*344  
Wolf W A \*829  
Wolfson S A 394  
Wolfson W Q 56 860  
Wolman M 732  
Wood H M 58  
Wood P M \*867  
Wood W B Jr \*67 \*73  
Woodard G 523  
Woodard H Q 665  
Woodbury R A \*1066  
Woodhall B \*145 \*469  
Woodward R \*1007  
Woodward T E \*287  
Woodward W C 724  
Wright A M 323 510  
Wright G P 666  
Wright J M 57  
Wright R D 397  
Y  
Yannet H 326 794  
Yater W M 919  
Yeomans A \*349 (correc  
tions) 581 782  
Yonkman F F 518  
Young C L 795  
Young D 453 1169  
Young E W 917  
Young F 922  
Yudkin S 863  
Z  
Zakon S J 857  
Zamanillo, A 327  
Zanca P, 664  
Zarafonitis C J D \*349  
(corrections) 581 782  
Zellman I 1167  
Zepp H D 195  
Zfass I S 524  
Ziegler J F Jr 195  
Zuelzer W W 720  
Zwally M R, \*63

## INDEX TO PAGES

OF THE JOURNAL ACCORDING TO WEEKLY ISSUES—VOLUME 126 SEPTEMBER—DECEMBER 1944

| Pages   | No | Date    | Pages   | No | Date   | Pages   | No | Date   | Pages     | No | Date   |
|---------|----|---------|---------|----|--------|---------|----|--------|-----------|----|--------|
| 1—62    | 1  | Sept 2  | 331—402 | 6  | Oct 7  | 601—670 | 10 | Nov 4  | 867—929   | 14 | Dec 2  |
| 63—138  | 2  | Sept 9  | 403—466 | 7  | Oct 14 | 671—736 | 11 | Nov 11 | 929—992   | 15 | Dec 9  |
| 139—202 | 3  | Sept 16 | 467—528 | 8  | Oct 21 | 737—800 | 12 | Nov 18 | 993—1058  | 16 | Dec 16 |
| 203—268 | 4  | Sept 23 | 529—604 | 9  | Oct 28 | 801—866 | 13 | Nov 25 | 1059—1122 | 17 | Dec 23 |
| 269—330 | 5  | Sept 30 |         |    |        |         |    |        | 1123—1228 | 18 | Dec 30 |

